

Landforms of the Northern Tribes

by Richard D. Heath (from an article written for <http://numbersciences.org>)

This paper extrapolates from the work of Peter Halldorsson, which finds similar landforms to that found by Einar Palsson (English: 1993), but in other parts of Europe and Middle East such as London, Athens, Rome and Jerusalem. The details of Halldorsson's circular structures, called "cosmic images", vary in size, and in peripheral alignments to the central point, but two constants appear to have been (a) a diameter of 216,000 feet, belonging to different modules, and (b) a central square of 36,000 feet, of the same module¹. The circle and square of Halldorsson's 2017 cosmic image in London (see figure 1) will here be central to reconstructing (a) the practical lengths used to generate such images and (b) the simple geometrical scheme used for their geodetic construction. The proposed image for London employs the English foot, which was the root of the Greek module and also the root of ancient metrology as a system [Neal, 2000].

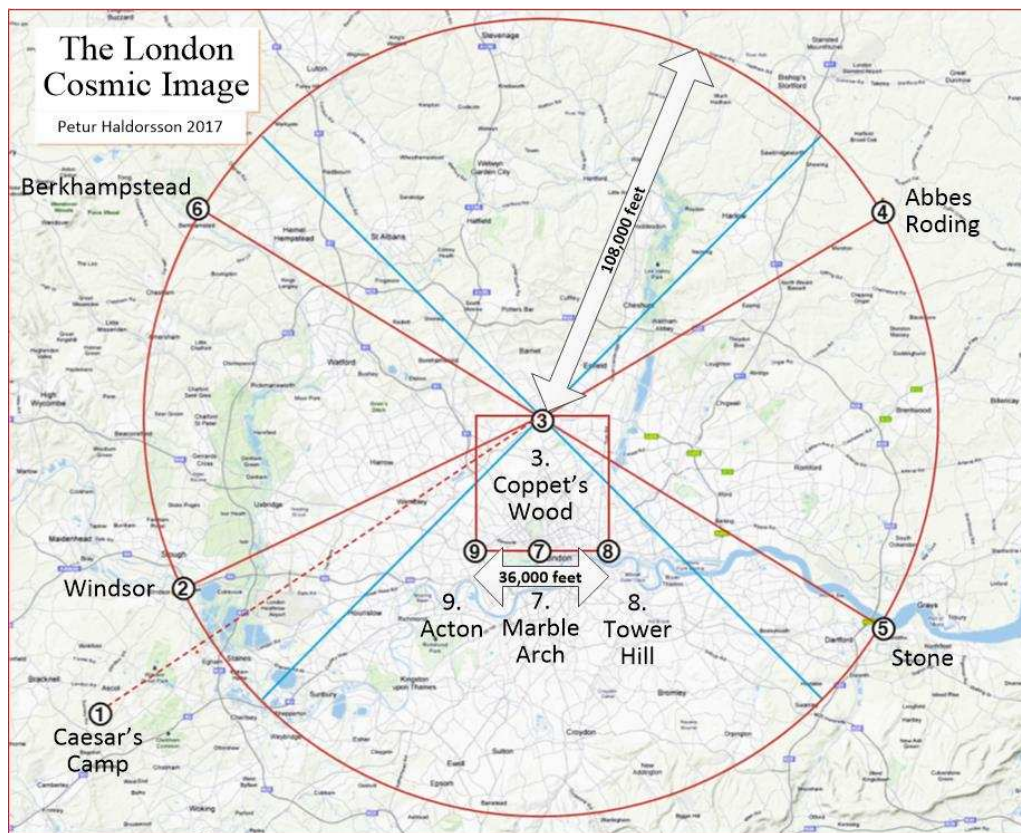


Figure 1 Halldorsson's cosmic image in London. [Annotated]

¹ In ancient metrology, feet are varied by ratios to each other and the similar variation within each module.

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The side length of the central square (36,000) is one third of the radius of the circular perimeter (216,000). This means that three of its sides could be reformed into an equilateral triangle such as those employed in geodetic surveys such as the Ordinance Survey of Britain (see figure 2).

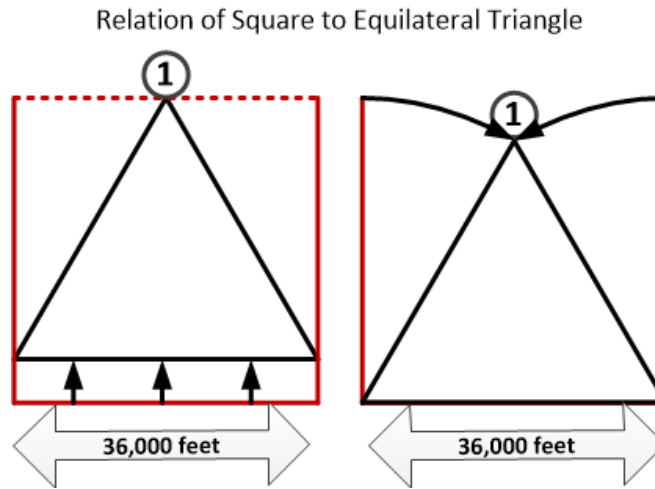


Figure 2 How a geodetic triangle could have led to a 36,000 foot square.

If an equilateral triangle, with sides 36,000 feet long, preceded the central square then one can see how the whole structure was almost certainly, in practice, laid out (see figure 3) and hence how other dimensionally similar structures most likely were, despite the different lengths of foot used.

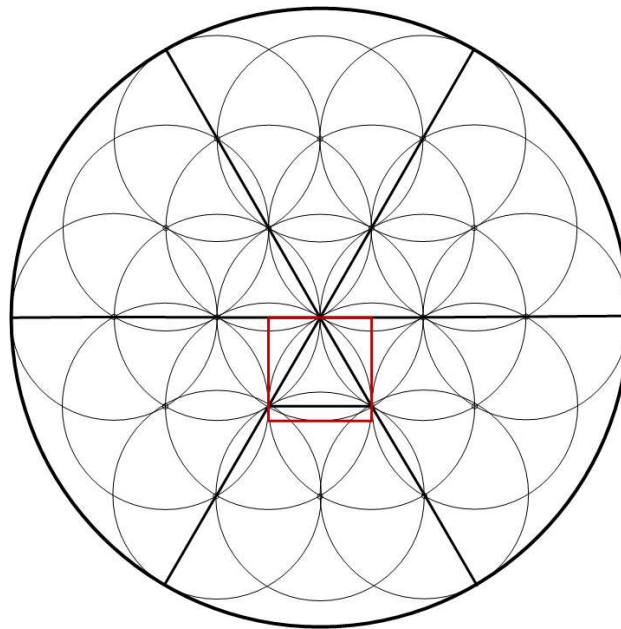


Figure 3 The geodetic use of overlapping circles to create a circle with diameter six times the central square's side length.

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The geodetic unit of 36,000 feet naturally leads to the overlapping circles ending in 19 circles of **twelve** (outside) plus **six** (in-between) plus **one** (central) circle of six such geodetic triangles. The practical metrology of handling 36,000 feet as a length holds further clues. Firstly, one would not use feet except as a longer length of convenience: not too large but not too small (like a foot). Metrology has the step of 2½ feet, the pace of 5 feet, fathom of 6 feet and a staff of 10 feet. There are larger units such as the stade of 600 feet. If we use 10 feet (a double pace), then the 36,000 feet becomes 3,600 double paces, which is 60 x 60 whilst the circle's diameter is 216,000 feet which is 60 x 60 x 60. A common factor of 60 is revealed, as likely to have been intended for these cosmic images.

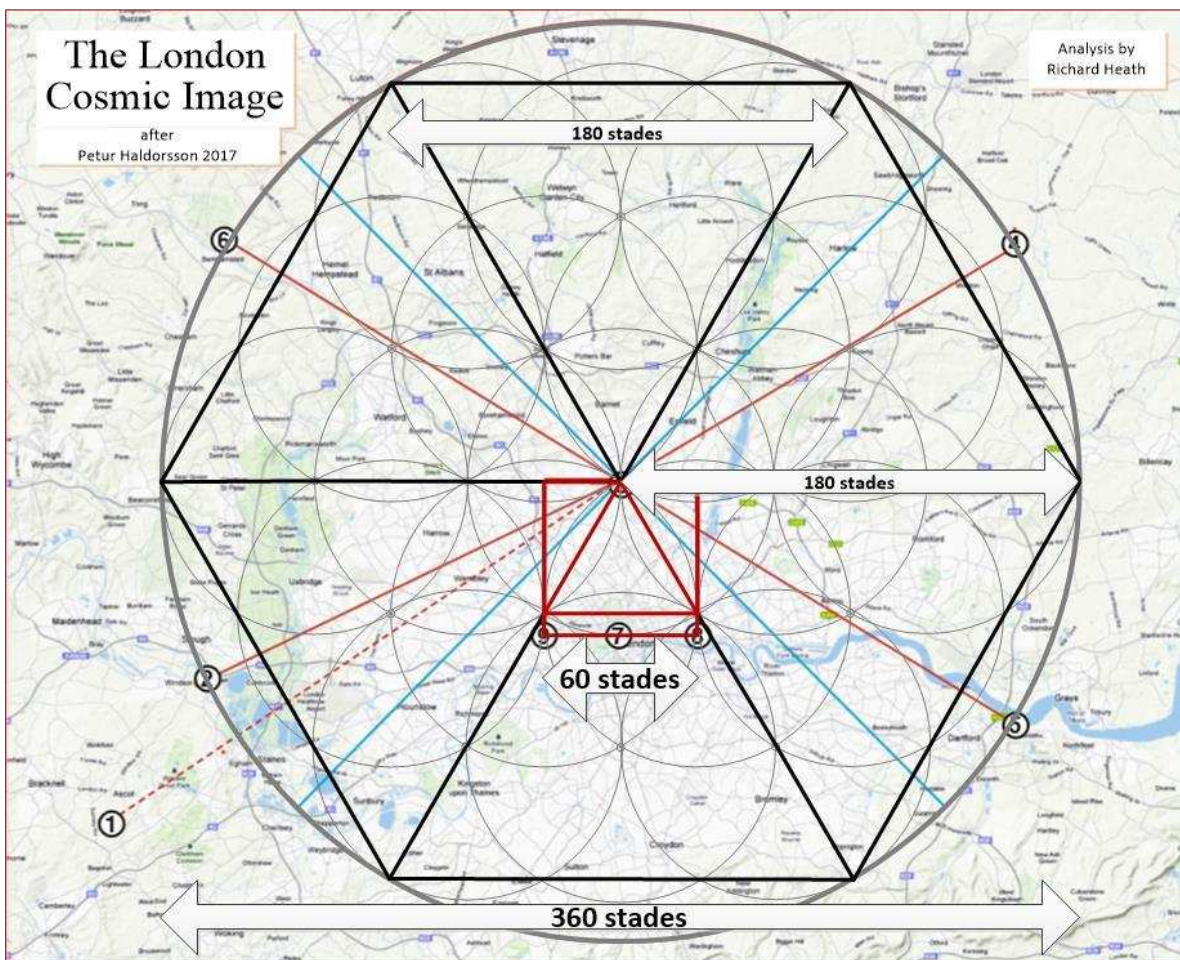


Figure 4 The cosmic image in its most-natural units.

If the day-to-day measure was a staff, ten feet long, then sixty end-on-end applications of this staff would arrive at the stade of 600 feet. When 36,000 feet is

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divided into stades the result is sixty stades. The radius of London's cosmic image is then 180 stades and its diameter is 360 stades² (see figure 4).

In figure 4, the original geodetic triangle can be seen as grown to three times its size, so that six upward and downward facing versions interlock to inscribe the circle, in a manner reminiscent of the iconography of Thoth, the Egyptian god of measure. He is shown within a semicircle in which he is delineating and measuring the top chord of one of our equilateral triangles. The radius of the circle is given as 21 units and the chord also since they are sides of the geodetic triangles. If pi is taken to be 22/7 then the arc above the chord of 21 units is 22 units, allowing one to simply relate the radius of a circle, the equilateral chord and the arc adjacent to the chord according to the Thoth ratio of 22/21.

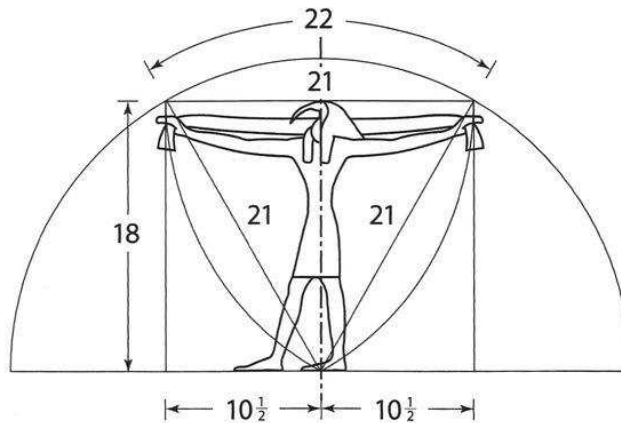


Figure 3.2. The iconography of Thoth as directly relating to the sector of a circle and the ratio twenty-two to twenty-one. (Drawing from R. A. Schwaller de Lubicz, *The Temple of Man* [Rochester, Vt.: Inner Traditions, 1998].)

Figure 5 from Heath, 2004.

Metrology can then show its magic by having a foot, 22/21 feet long. The 180 stade chord of the London image will have an arc beside it also of 180 stades but then of feet 22/21 feet long. For many years the foot of 22/21 feet remained obscure but recently Paul Quayle has researched the Manx foot of 25/24 feet which, multiplied by 176/175 creates a root canonical Manx foot of 22/21 feet long [Quaid, 2017]. This confirms my prediction [Heath, 2014. 170] that 25/24 feet was a key unit in the early evolution of ancient metrology. The Manx foot in its canonical form enabled easy knowledge of the circumference of their cosmic images as six times the radius

² See also my article *Fields, Racetracks and Temples in Ancient Greece* [Heath,2017b] regarding the significance of the agrimeasure called stade of 600 units, if 600 Saxon feet then 660 feet, the furlong.

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in stades, but then of canonical Manx feet. This knowledge was well-presented in Thoth's iconography: a fathom of six feet being scaled up to 60 stades.

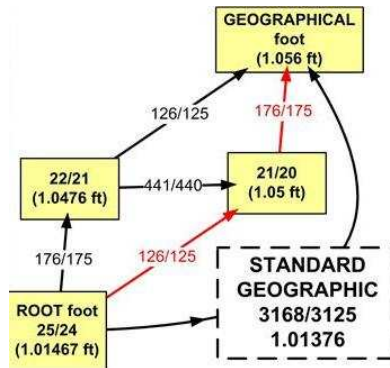


Figure 6 diagram of the Manx module.

[Heath, 2014].

If cosmic images were constructed in this way, using geodetic triangles, then the creation of the central square of 36,000 feet side length must have served another important purpose for the builders. Most likely it established North and the cardinal directions of East, South and West. Since North would need to be established then it could in part have provided a means for determining North without a pole star. Circumpolar stars “orbit” the north pole, at a fixed angular distance, anti-clockwise. It is possible to detect the furthest east and west of the same star (or of a constellation such as Ursa Major) so as to resolve the mid-point where the pole must be. [Heath, 2011]

By starting with the act of establishing true North at a centre, chosen to provide long sights to significant landscape features, a square of 60 stades could be constructed and a central equilateral triangle for the pattern of the first circle of six triangles. The resulting image of 19 circles (54 triangles) would always be 360 stades in diameter and the circumference would always be 1080 stades, of feet 22/21 longer.

Some cosmic images used the Roman foot of 24/25 feet and when this foot is multiplied by the ratio 22/21 the result is the root Greek foot of 176/175 feet (called root canonical). In the Icelandic cosmic image of Palsson, the diameter of 216,000 Roman feet was made to match the radius of the mean earth by using feet 126/125 larger = 0.9677 feet. 216,000 Roman feet becomes 209,901.88 feet, the resulting model being scaled down to one 100th. When this is multiplied by 22/21 and divided by 216,000 part, the geographic foot (3168/3125 = 1.01376 feet) is the resulting natural unit length on the circumference. This can be seen by multiplying 24/25

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126/125 to generate the Icelandic radial foot of 0.9677. Instead, multiplying 24/25 by 22/21 obtains 176/175 feet. Multiplying by both results, 126/125 by 176/175 creates the standard geographical foot.

Iceland's design was a very late cosmic image probably formed around 1000 AD (unless inherited). It applied a very sophisticated usage of 24/25 (the inverse of the Manx foot), times 126/125, so as to model the mean earth in both its radius and circumference. Intuitively a circle with a mean earth radius must also model the mean earth circumference, but to arrive at the correct modelling required knowledge of how the Thoth ratio, Manx and Roman feet act with respect to the Greek module. The result today is a glimpse of a simpler understanding of the measures of the earth and of the formation of Cosmic Images.

The credibility of the Icelandic design is especially clear in its choice of metrological units since its standard canonical Roman feet allows the circle to render the mean earth radius of 20901888 English feet as 1/100th part of it (209018.88 ft) as the canonical³ 216,000 feet. Being circular, the mean earth circumference is then automatically modelled to one hundredth part as the circle's circumference, but the geometry between radius, chord and arc means the arc on the circumference must be 22/21 of "the chord which equals the radius" as per figure 5.

Looking to figure 7, the standard canonical Roman foot (0.96768 feet) times 22/21 is the standard geographical Greek foot of 1.01376 feet. The "arc above the chord" equals the radius in this Greek foot, so that the mean-earth-circumference model of the Icelandic cosmic image is six times this or 1,296,000. The Meridian, even today taken to be half of the mean earth circumference, is 648,000 geographical feet or (x12) 7,776,000 geographical inches, exactly one hundredth of the actual mean earth as being 777,600,000 geographical inches – a number equated to YHWH (McClain, 1976. 92) and Apollo (Bremer, 2005. 316)).

Conclusions

Palsson's main cosmic image is therefore a model of the earth, cunningly conceived in metrological terms so that distances on the circumference would be one hundredth

³ A canonical measure is a whole number whose factors are only powers of the first three prime numbers: 2, 3 and 5. The term canonical in metrology was evolved loosely by Michell and Neal, from their observation that measures containing a denominator of seven (as in Royal 12/7 feet) could be simplified (as decimal fractions) when multiplied by the seven in 126/125 (standard canonical) and similarly with eleven in the denominator (as in Sumerian 12/11 feet) when multiplied by 176/175 (root canonical). The terminology stuck because of the the Royal Egyptian and Sumerian modules were key to the development of historical metrology,

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of those experienced on the meridian of the Earth itself. Palsson appears to have known little of the ancient model of the earth or of the structure of ancient metrology – which was not properly recovered until after he had defined the numerical structure of this cosmic image. So, he would not have had predispositions to find a model of the earth in the settlement pattern. The only remaining issue might be accuracy: did the landmarks within the pattern lead to the radius length suggested of 209,018.88 feet? 200 feet of error is one part in 1000, a definitive level of accuracy when discriminating metrological units within ancient metrology’s microvariations of as little as a 440th part.

The use of the Manx foot of 22/21 reveals a ratio within metrology useful in circular structures, a “rule of thumb” for seeing “arcs above chords” as immediately commensurate through choosing that ratio between modules. But the modelling of the earth is more symbolic in the London image and in many of the other cosmic images documented by Halldorsson and so strangely, what was probably the latest and best documented example (in Iceland) was also the most metrologically significant, in being an exact metrological model, in the ancient style, of the mean earth.

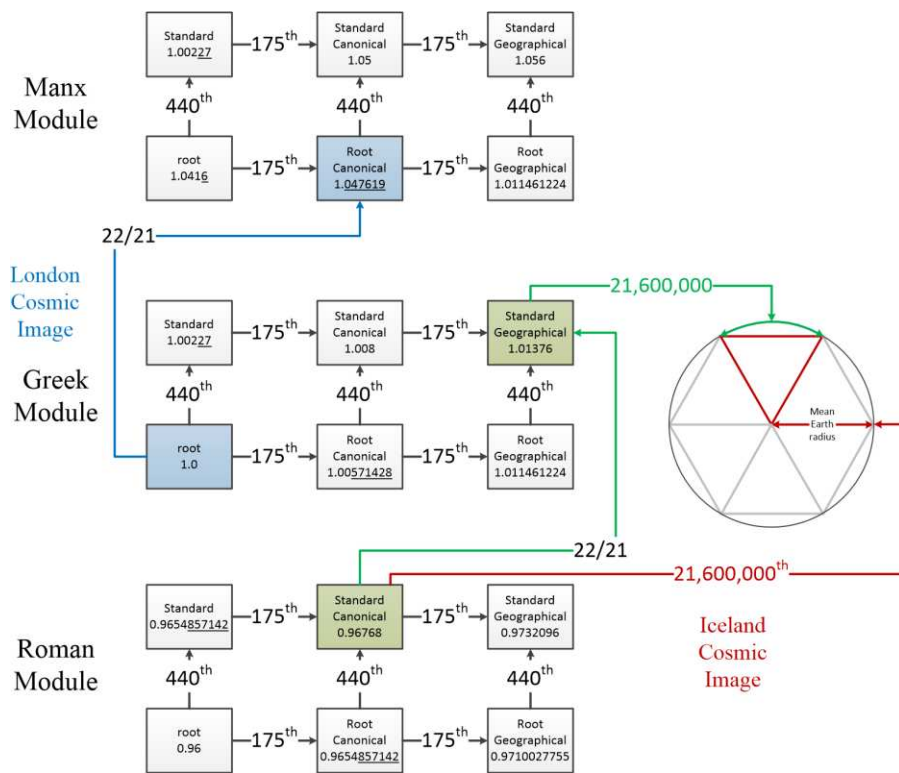
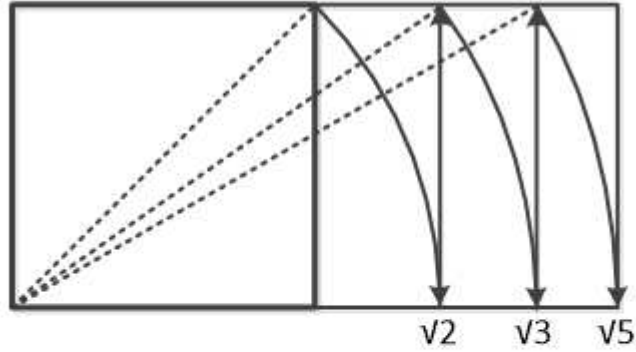


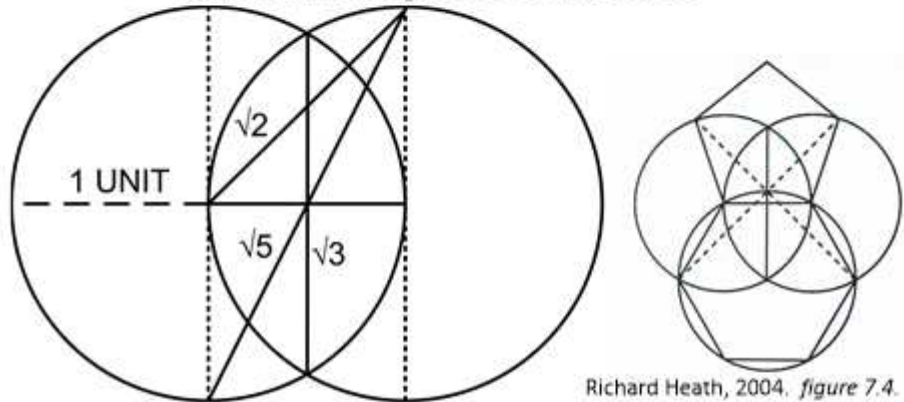
Figure 7 Metrological Context of Iceland and London Cosmic Images

Appendix: Generative Properties of Squares, Circles and Cubes

Generative Properties of the Square

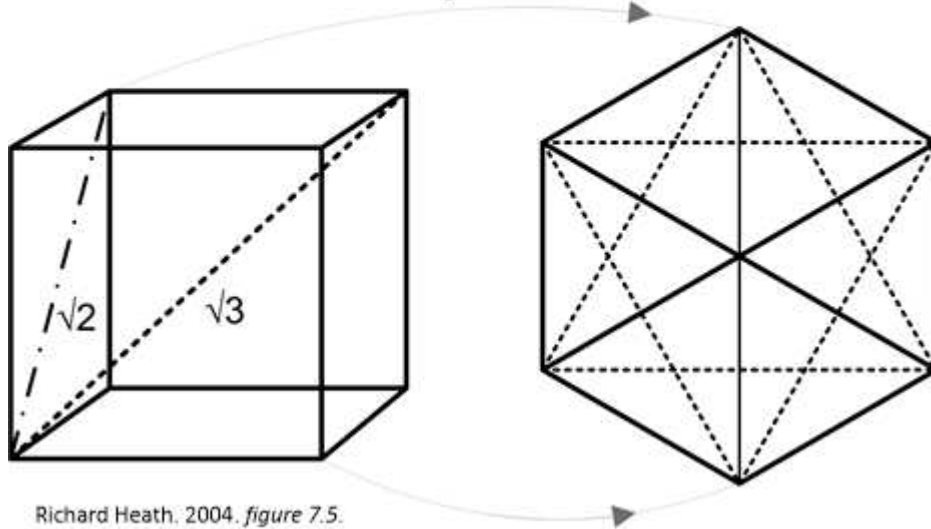


Generative Properties of the Circle



Richard Heath, 2004. *figure 7.4.*

Generative Properties of the Cube



Richard Heath, 2004. *figure 7.5.*

Richard Heath, 2004. *Sacred Number and the Origins of Civilization.*

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