Measurement Systems Related to the Digit

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The length of the ancient Egyptian digit, or finger, is contained 2,160,000,000 times in the polar circumference of the earth. One finger is the hieroglyphic sign for one digit. The quarter circumference, from the equator to the pole, is 540,000,000 digits. One average degree of latitude is 6,000,000 digits. One minute of latitude is 100,000 digits. One-tenth of one minute of latitude is 10,000 digits.

In *The Sand Reckoner*, Archimedes equates 10,000 fingers with the length of one stadia. The polar circumference contains 216,000 of these stadia. The quarter circumference is 54,000 stadia. One average degree of latitude is 600 stadia. One minute of latitude is 10 stadia. One-tenth of one minute of latitude is one of these stadia.

The Egyptian remen contains 20 digits. The remen is contained 108,000,000 times in the polar circumference. The quarter circumference is 27,000,000 remen. One degree of latitude is 300,000 remen. One minute of latitude is 5000 remen. One-tenth of one minute of latitude is 500 remen, or 10,000 digits. The 28.28... digit length of the royal Egyptian cubit was obtained by multiplying the length of the remen by 99/70, or the square root of two. The short Egyptian cubit contains 24 digits.

The Roman cubit also contains 24 digits. The Roman cubit, or the short Egyptian cubit, is contained 90,000,000 times in the polar circumference. In addition to the digit, the Roman system also includes Roman inches that are 4/3 the length of the digit. The Roman cubit is 24 digits or 18 Roman inches. The Roman foot is 2/3 the length of the cubit, or 16 digits, or 12 Roman inches. One degree of latitude is 250,000 Roman cubits, or 375,000 Roman feet, or 75 Roman miles of 5000 Roman feet. The Roman stadia is 625 feet, or 10,000 digits, or one-tenth of one minute of latitude. The Roman stadia, or furlong, of 625 feet is contained eight times in the Roman mile of 5000 feet.

According to Herodotus 1.78, the Babylonian cubit contains one cubit plus three finger breadths, or 27 digits. In *The Structure of Linear Units*, Livio Stecchini stated: "The cubit considered standard in Mesopotamia is the barley cubit, composed of 27 basic fingers." Cuneiform texts indicate that the Babylonian foot was divided into 20 shusi and the Babylonian cubit was divided into 30 shusi. The shusi and the digit converge in the Babylonian foot of 18 digits = 20 shusi, and the Babylonian cubit of 27 digits = 30 shusi, giving 9 digits = 10 shusi. The Babylonian cubit is contained 80,000,000 times in the polar circumference, or 20,000,000 times in the quarter circumference. 200 Babylonian cubits are contained 400,000 times in the polar circumference, or 100,000 times in the quarter circumference, from the equator to the pole.

The Greek *orguia*, or fathom, contains 100 digits. The Greek fathom is contained 21,600,000 times in the polar circumference. The Greek fathom was divided into six feet, or four cubits. The Greek cubit, of 100/4, or 25 digits, is contained 86,400,000 times in the polar circumference, or 21,600,000 times in the quarter circumference, or 240,000 times in one degree of latitude. The Greek stadia is 100 fathoms, or 600 feet, or 400 cubits, or 10,000 digits, or one-tenth of one minute of latitude.

Ezekiel's cubit, also known as the Talmudic cubit, or the Hebrew cubit, or the Jewish cubit, contains 30 digits. The original Greek version of Ezekiel 40:5 gives this length as a cubit and a hand breadth. The Tosefta is a supplement to the Mishnah, which is a compilation of the laws of Judaism. Tosefta 6:12-13 gives the common cubit as five hand breadths and the cubit of the altar as six hand breadths. Ancient Egyptian cubit rods and texts indicate that a palm is four digits, and a hand, or hand breadth, is five digits. The cubit of five hand breadths referred to in the Book of Ezekiel and the Tosefta is a cubit of 25 digits, the same as the Greek cubit, and the additional hand breadth gives Ezekiel's cubit of 30 digits, which is contained 72,000,000 times in the polar circumference, or 18,000,000 times in the quarter circumference, or 200,000 times in one degree of latitude.

The Indus Valley foot is the same length as the Babylonian foot. The Indus Valley inch is contained 10 times in the Indus Valley foot, and the Indus Valley inch is twice the length of the shusi. The Indus Valley foot contains 10 indus Valley inches, or 20 shusi, or 18 digits. In 12 BC, Roman general Nero Claudius Drusus adopted the Northern foot for use in the Germanic provinces and defined the Northern foot as two digits longer than the Roman foot, or 18 digits, the same length as the Babylonian foot and the Indus Valley foot. 300 Northern feet, or 300 Babylonian feet, or 300 Indus Valley feet, are contained 400,000 times in the polar circumference, or 100,000 times in the quarter circumference. The Northern mile of 8 furlongs of 600 feet, or 4800 feet, is contained 25,000 times in the polar circumference.

The length of the unit of measurement known as the megalithic yard is 45 digits, or 50 shusi, or 25 Indus Valley inches, or two and a half Northern feet. In 1993, Saburu Sugiyama published the results of a survey that concluded the length of the unit of measurement used to build Teotihuacan was very nearly, if not the same, as the length of the megalithic yard. The length of the traditional Indian measure known as the gaz is 25 Indus Valley inches, or two and a half Indus Valley feet, or one megalithic yard, or 45 digits.

The meter contains 54 digits. Errors in 18th century surveys and calculations of the ellipticity of the earth resulted in the adoption of the modern meter that is contained 40,008,000 times in the polar circumference. 40,008,000 x 5000/5001 = 40,000,000. An accurate statement of 2,160,000,000 digits in the polar circumference and 54 digits in the meter requires lengthening the modern meter by a factor of 5001/5000. The traditional measure known as the chi, or Chinese foot, has been standardized, in accordance with the metric system, as one-third of one meter, or 18 digits.

In *The Statute for Measuring Land* (1305), King Edward I defined the English foot and English yard in terms of 10/11 of the Northern foot and Northern yard as follows:

"It is ordained that three grains of barley, dry and round, make an inch, twelve inches make a foot, three feet make an Ulna, five and a half Ulne make a rod, and forty rods in length and four in breadth make an acre. And it is to be remembered that the Iron Ulna of our Lord the King, contains 3 feet and no more, and the foot must contain 12 inches measured by the correct measure of this kind of Ulna; that is to say the thirty-sixth part of the said Ulna makes 1 inch neither more nor less; and five and a half Ulne make 1 rod, sixteen feet and a half, by the aforesaid Iron Ulna of our Lord the King."

The odd length of 16.5 English feet or 5.5 English yards for the rod was chosen to equal the length of the rod of 15 Northern feet, or 5 Northern yards, or 6 megalithic yards, or 270 digits, or 300 shusi, or 150 Indus Valley inches, or 15 x 12 = 180 Northern inches, times 11/10 = 198 English inches = 16.5 English feet.

In *The English Yard and Pound Weight* (1952), F. G. Skinner stated:

"The current Imperial Yard and Pound Avoirdupois legalised in 1855, are directly descended from standards established by the English Statutes of the Realm some 600 years ago. These are the two basic standards from which all other British Weights and Measures are now derived. But the origins of these standards go back far beyond even Saxon times, having their roots in the remote ages of the most ancient civilisations of the Middle East...

The Saxon foot was derived from a very ancient and widespread measure known as the Northern Cubit, a non-Semitic standard which can be traced in building work, and as actual Cubit Measures in Mesopotamia and Egypt from about B.C. 2000 and which was always associated with land measure. This cubit and its half or foot passed westwards into Europe with the early migrations from the east of the Teutonic tribes. In B.C. 12, this foot was recognised as the standard for land measurement among the tribes of Lower Germany and its length was recorded by the Roman general Drusus as '2 digiti longer than the Roman Pes' (foot), i.e. a length of 13.11 inches.

After A.D. 410 with the departure of the Romans and the coming of the Saxons, the Northern Cubit and Foot became established in England in the Saxon kingdoms at a value of 26.4" for the Cubit or Ell as a cloth measure and a foot of 13.2" for building and for land measure for their 'Open Field' system of ploughlands, in which the various 'holdings' were rectangular strips side by side, known as 'Roods' (1/4 acres). The sides of the Rood were always in the

relation of 1 x 40, i.e. 1 Land Rod in breadth x 40 Land Rods in length, i.e. the 'Furrow length' or 'Furlong', Four Roods side by side made up the 'Acre', the sides of which were thus 4 x 40 Rods. The Land Rod was 15 Saxon feet of 13.2", i.e. 16 ft. 6 ins. in our current Imperial Measure. The Furrow-length of 40 Land Rods or 600 Saxon feet was thus 660 feet or 220 yards by our current measure and is still the recognised length of the furlong, eight of which make our statute mile of 5,280 feet or 1,760 yards."

The English mile of eight furlongs of 660 English feet, or 5280 English feet, is equal to the Northern mile of eight furlongs of 600 Northern feet, or 4800 Northern feet. Based on 10/11 of the old Northern foot of 18 digits, rather than the lengthened Northern foot from after the fall of Rome, the English mile of 5280 English feet is also contained 25,000 times in the polar circumference. The length of this English foot is .9944 times the length of the modern English foot: 24,860 (polar circumference in modern English miles) divided by 25,000 = .9944. Given 18 digits for the Northern foot, 54 digits for the meter and 10/11 for the English foot/Northern foot, the length of the English inch is contained 39.6 times in the meter. One tenth of one mile, of 480 old Northern feet of 18 digits, or 528 English feet of 10/11 of the old Northern feet, is contained 250,000 times in the polar circumference.

250,000 x 528 = 132,000,000 of these feet in the polar circumference, or 33,000,000 of these feet in the quarter circumference, or 396,000,000 of these inches in the quarter circumference, or 4,400,000 of these inches in one degree of latitude, or 73,333.333... of these inches in one minute of latitude, or 7333.333... of these inches in one-tenth of one minute of latitude, compared with 10,000 digits in one-tenth of one minute of latitude, or 11/15 equals 7,333.333.../10,000, or .7333... of this inch equals one digit.

	Digit	R.foot	N.foot	Remen	R.cubit	B.cubit	E.cubit	M.yard	Meter
Digit	1	1/16	1/18	1/20	1/24	1/27	1/30	1/45	1/54
R.foot	16	1	8/9	4/5	2/3	16/27	8/15	16/45	8/27
N.foot	18	9/8	1	9/10	3/4	2/3	3/5	2/5	1/3
Remen	20	5/4	10/9	1	5/6	20/27	2/3	4/9	10/27
R.cubit	24	3/2	4/3	6/5	1	8/9	4/5	8/15	4/9
B.cubit	27	27/16	3/2	27/20	9/8	1	9/10	3/5	1/2
E.cubit	30	15/8	5/3	3/2	5/4	10/9	1	2/3	5/9
M.yard	45	45/16	5/2	9/4	15/8	5/3	3/2	1	5/6
Meter	54	27/8	3	27/10	9/4	2	9/5	6/5	1