Biblical Weights and Measures: Ancient, Imperial, or Metric?

By John Brug

A fairly big problem for Bible translators is dealing with measurements in the text. It seems that the most common solution in recent English translations is to retain the ancient measurement in the text and to put either the American/Imperial measurement, or the metric measurement, or both into the footnotes. This is the easiest solution, but is it the most reader-friendly? Readers will fairly quickly learn to convert cubits to either feet or meters in their heads without too much disruption to their reading. It is simple math with an approximation of a foot and a half per cubit or two cubits per meter. But what about omers, homers, and geras?

For the Evangelical Heritage Version we decided early on that it would be most reader-friendly to have the modern measurement in the text of the translation and the ancient measurement in the footnotes. We were rather surprised to find very few English translations that placed the modern measurement into the text, but we decided to take the plunge and prioritize what we believed would be an aid to readers.

For this reason our rubric was to translate ancient measurements into modern American measurements, such as feet, pounds, gallons, etc., except when it is necessary to keep the ancient measurement in order to preserve the numerical symbolism in the text.[1] For example, if a city measures 12,000 x 12,000 stadia, something is lost if the translator uses an online converter which tells us that the precise modern equivalent is 7283464.56692916 feet by 7283464.56692916 feet.[2] It is not much of an improvement to render 1379.4440467669199 miles by 1379.4440467669199 miles or even 1380 miles by 1380 miles.

Another situation in which the EHV retains ancient measurements is when one ancient measurement is explained in terms of another ancient measurement (an omer is ten ephahs). When a modern measurement is used in the text of the translation, footnotes may provide an *approximation* of the ancient measurement, and vice versa.

Alert readers will notice that our two principles in the preceding paragraph are inconsistent. But one of the inescapable principles that we discovered during several years of translation work is: "Sometimes it is necessary to be inconsistent to be consistent." For example, it is sometimes necessary to be inconsistent to an overall rubric to preserve consistency within a given context. (More on this later.)

We soon found that our seemingly simple solution to the issue was laden with problems and pitfalls.

1) *Ancient measurements were not based on a universal standard,* but were ad hoc measurements, which varied depending on the body size of the measurer or on the size of the container used to make the measurement. The value of given measurements also changed over time and space. For this reason, all conversions to modern measurements in Bible translations are at best approximate. All calculations should be rounded off. It is foolish to calculate measurements to multiple decimal points when we do not even know the precise value of the original unit of measure. Attempts at precise calculations give a very false impression about our knowledge of ancient measurements. Often, depending on the scale of the item being measured, it is best to round-off to the nearest whole unit, and to round off in a way that preserves the ratio of pairs of measurements, such as length and width. (4.4 x 8.8—a 1 to 2 ratio—would round off to 4 x 8, not 4 x 9.)

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[1] This is largely limited to Ezekiel and Revelation.

[2] This is not a joke but an actual conversion offered by one of the many online stadia to feet converters.

A *cubit* is the distance from the fingertip to the elbow.[3] Scholars use a standard cubit of 18 inches, but the cubit of a typical 6-foot-tall man is 19½ inches.

A *span* is the distance from the tip of the little finger to the tip of the thumb with the hand spread out. Scholars use a span of 9 inches, but the span of a typical 6-foot-tall man is 10 inches.

Each specific temple, palace, administrative unit, or building project probably had its own standard, which was recorded on a set of measuring sticks or cords, which was distributed to the supervisors. In trade, what was important was not that the same standard was used everywhere by everyone, but that individuals used the same standard when buying and when selling commodities. My cubit is 19 inches; my wife's is 17 inches, so we use her cubit when we are selling material, and mine when we are buying material.

For this and other reasons, the precise value of many of the ancient units of measurement is uncertain, so all figures are approximations. Values of a unit of measurement may also vary with time and place. Calculations in the EHV are often rounded off to the nearest full unit.

2) In the case of several measurements *there is no consensus on even an approximation of the value of a unit of measure.* This uncertainty about the size of measurements applies especially to the Old Testament measurements of dry and liquid capacity and to the weight of the talent. Estimates of the value of these units vary widely. For example, estimates for a talent vary from 50 to 120 pounds. The value of a talent varies over time and place. The EHV uses 75 pounds as our default value.

3) *It is not always clear which system to use in a given case*. The American system uses quarts and ounces, but Americans are now more familiar with liters and grams for some commodities. Bushels and pecks on the other hand are becoming less well known. Metric tool sets are common.

The UK is officially metric, in line with the rest of Europe. However, Imperial measures are still in use, especially for road distances, which may be measured in miles. Many Brits know their height and weight in the old measures. Imperial pints and gallons are 20 per cent larger than the US measures. Who knows what Brexit will bring? [4]

When we were talking about doing a metric version, an Australian seemed rather insulted about the idea, "You think we don't know how to use the old measurements?"

4) There is *not a consistent pattern of whether solids are measured by weight or volume.* Should large quantities of grain be measures by bushels, cubic liters, or tons or tonnes?[5] We tend to think of certain commodities such as wheat in terms of bushels, but other commodities such as flour are usually measured by the pound, so conversion of the ancient terms may not always be to the same English term.

5) *Monetary units are a special problem.* Coins did not exist until very late in the Old Testament period, so early payments refer to the weight of a mass of metal and not to the number of pieces of silver.

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[3] Compare the English *foot* which was the length of a man's foot and the *yard* which was the distance from the tip of the nose to the end of fingers.

[4] The same mixed usage occurs in Canada.

[5] Then there is the problem of meters or metres, kilos or kilograms, etc.

Ingots were known, but one thousand shekels of silver was often a bag of scrap silver weighing one thousand shekels.[6]

It is difficult (actually it is impossible) to make a meaningful translation of ancient monetary values into contemporary dollars, pounds, or marks. (By the way, does a British pound still weigh a pound? Centuries ago it was a pound of silver.) Inflation, debasement of coinage, devaluations, the shifting ratio of silver to gold, and a host of other factors make such attempts to derive a modern value largely meaningless.

The best we can do is to define the value in terms of the ancient economy. "A denarius is a day's wages for a workman." "A pound of silver would buy 15 cows." "This was 25% of the annual taxes of the kingdom."

So the best practice is to stick with ancient monetary units like shekels, rather than modern units like dollars, except perhaps in idioms like "pay the last penny." When the reference is to an amount of metal used to make an object, use pounds, tons, ounces, etc. But when a large number of talents is a tax payment, put *talents* in the text and the weight in a footnote.[7]

6) *The problem* extends not only to the units of measure but *includes the numbers used to specify the amounts.* Although numerical systems comparable to Roman numerals were known in ancient Israel, all the numbers in the Bible are written out as words, regardless of the context, but this is quite problematic for English style.

Our default setting in narration is to write out all numbers as words, just as the Hebrew and Greek Bible do. In narrative texts writing out the numbers is preferred except for large, complex compound numbers over 100 (e.g., 123, 1234). Even in those cases, words can be retained to keep the narrative consistent and to avoid an isolated numeral.

In lists, such as censuses or commodity lists, all numbers should be written as numerals regardless of their size to maintain consistency throughout the list. These are formatted as lists or tables.

Even then, problems remain. A common English rule has been write out numbers up to ten and use numerals above that. But is there a rationale for being able to write eight but not twelve?

A variant rule is to write out numbers under 100, and use numerals above that, but this too is not without problems and inconsistencies. When a section contains a mixture of numbers over and under 100, adjust them all to one format. NOT "ninety to 100" BUT "ninety to one hundred." NOT "123 men, 125 women, and seventy children" BUT "123 men, 125 women, and 70 children." We have earlier mentioned the principle: "Sometimes it is necessary to inconsistent to be consistent." To give a consistent look to a given text we often have to do things that are inconsistent with our general rubrics.

The only rule translators can follow consistently is "Do whatever is clearest and most natural for your readers." Sometimes *seventeen hundred* sounds better than *one thousand seven hundred.*

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[6] The Hebrew word *keseph* usually means *silver,* but at times it means *money.* (In modern Hebrew *keseph* even includes paper money).

[7] An additional problem is that the biblical text sometimes omits the ancient unit of measure, assuming readers will know what it is: *100 _____ of silver* is likely *100 shekels,* but *100 pieces of silver* can be used if you are unsure, or two options can be given, shekels and bekas.

Numbers should not have an *and* in them: *one hundred fifty* not *one hundred and fifty,* but there may be some exceptions when inclusion of *and* sounds better and is clearer. Do whatever looks and sounds most natural to you.

7) *The problem extends to time of day.* Ancient time hours did not have absolute value, but were fractions of a light or dark period. There were twelve "hours" in every daylight period, but the hours were shorter in winter than in summer. For time of day, the EHV uses the ancient system of third hour, sixth hour etc., with the approximate modern time in the footnote. This may be especially necessary in some places in which it is uncertain which time system is being used. Most debate about this issue centers on the Gospel of John.

Hours may be numbered from midnight to noon or from dawn to sunset. Days may start at sunset or at sunrise or at midnight. Different cultures do not divide the parts of the day in the same way. We tend to divide the day into early and late morning and early and late afternoon, but other cultures may divide it into thirds: the time the sun is rising (four hours from dawn to 10 am), midday (four hours from 10 am to 2 pm), and the time the sun is setting (four hours from 2 pm to 6 pm). Does the biblical *between the evenings* refer to the twilight between sunset and dark or to the time between when the sun is low in the sky, that is from about 4 pm till sunset?

8) *Attempts to assign exact dates in our calendar to Old Testament events are doomed to failure.*

The first reason for this is the fact that the Jewish and Babylonian calendar years do not match up evenly with our solar years of 365 (or 366) days, which begin in January. Biblical books dated kings' reigns in terms of two different calendar years, one of which began with the month of Nisan at the time of the spring equinox and the other which began with the month of Tishri at the autumn equinox.

An even greater problem is that Israel's years did not have a uniform number of months or days. Because twelve lunar months, which total approximately 354 days, do not equal one solar year, the Jewish and Babylonian lunar calendars occasionally had to add a thirteenth month to a year, in order to bring the lunar calendar back into line with the solar year and to keep agricultural events in the right months.[8]

The beginnings of both Israel's months and their years were not determined by a set mathematical formula but by observation,[9] so their months and years did not follow a set mathematical pattern as our modern calendar does. Because of the irregular nature of their calendar, all systems of trying to link days of the month in these books to an exact day in our calendar by mathematical calculation are not valid. Mathematical calculations can determine when that date *should have* occurred on our calendar. They cannot determine when it actually *did* occur.

Another complication is that, throughout history, calendar systems have had occasional corrections and adjustments, and we are not necessarily aware of all of these adjustments. This problem of calendar correction is not just an ancient phenomenon. George Washington was born in Virginia on February 11, 1731, according to the Julian calendar, in use at the time of his birth. So if he had a birth certificate, February 11, 1731 would have been the date listed on it. However, in 1752, Great Britain and all its colonies switched to the Gregorian calendar, a change which moved

[8] The result is that a calendar year with 13 months could have as many as 383 days.

[9] On the evening of the 29th day of a month an observer looks for the new moon. If he sees it, it is the start of a new month, and the old month was a month of 29 days. If he does not see it, the new month starts the next day, and the old month has 30 days.

Washington's birthday a year and eleven days to February 22, 1732. A more recent problem caused by calendar shift is the question whether the Russian Revolution of 1917 happened in October (Julian calendar) or in November (Gregorian calendar).[10]

Conclusion

Translators should avoid translating or commenting in a way that gives readers the impression that we have a very precise understanding of the ancient systems of measurement when in most cases we do not.

We should translate in ways that will best communicate with our particular set of readers. This will be different in various times and places.

[10] To read more about this issue, see the articles on chronology in section IIIC of the Wartburg Project online library and an extensive excursus in the introduction to Ezekiel in the EHV Study Bibles.

The EHV uses American measurements in its basic pew Bible, a forthcoming print study Bible, and an electronic study Bible sold through Microsoft Store. It uses metric measurements in another electronic study Bible sold through Microsoft Store. The metric text is also available in the Digital Bible Library of the United Bible Societies.