Calendars and Messy Classifications

Reality, the philosopher Harry Binswanger once said, is like a roast chicken. Echoing Plato, he argued that one of our epistemological goals is to find the right joints to carve up nature. With all due respect, sometimes reality is more like a living chicken, dancing about in a barnyard and resisting our attempts to neatly carve it. As a case in point, consider the year.

It takes around 24 hours for the earth to spin on its axis and make a day; the moon takes just over 29.53 of these days to complete its orbit around the earth, and the earth orbits the sun in around 365.24 days. Some quick computations quickly show that there is no neat way to reduce all of these numbers to one easily usable metric. There's always going to be some slop.

Many cultures have used the orbit of the moon as the basis for other metrics. Indeed, the English words moon and month come from the same root indicating "measure." The basic problems, however, are that we like our days to begin at the same time (e.g., 12 AM), and we like our months to begin at the beginning of a day. Thus, we tend to want our other units to be divisible to a whole number of days. As a close approximation, rounding up to 30 days would give us 12 months of 30 days. An even better approximation would be to round down and have 13 months of 28 days.

Both of these measures leave some slop, time left over. Of course, one could attempt to ignore these extra values. Over time, however, they would add up. For example, a simple mistake in how to compensate for the extra parts of a day caused the Julian calendar to drift 14 days in around 1500 years.

Our current system is a compromise between the 12 and 13 month systems. Our weeks clearly show remnants of a 13 month system, with their cosmically inspired 7 days being an even portion of 28. Seven days represents the sun, moon, and the five wandering lights the ancients called "planets", and one wonders what systems we would have if the ancients had known of Uranus and Neptune. However, we also like the "12 month" approximation because it lets us divide by 2, 3, 4, and 6, and we can use these to easily break the year up into neat chunks. In support of this scheme, the number 4 corresponds to the number of astronomically significant days in the solar year (the two solstices and two equinoxes). Even here, however, there are not an equal number of days in each division. There's 88.99 days from winter solstice to the spring equinox, but 92.75 days from here to the summer solstice (and 93.65 and 89.85 days between the remaining).

As we have seen, there are several possible calendar systems. This does not mean, however, that any system is as good as any other (e.g., it's hard to justify the Baha'i calendar of 19 months with 19 days). This does mean that when we strive for exactitude, we have to be aware that sometimes the system we use is going to be a compromise between equally valid but conflicting ways of grouping items, and reflect unspoken assumptions. I think we should remain aware of these tensions, because this encourages one to remember that one hasn't found the only way to group things, and that maybe the world is filled with better or worse, instead of right and wrong, ways to group them.

Christopher Robinson, PhD
13 January 2013