What is the best calendar design?

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When I was working on my comprehensive theory, I ran into the problem of calendar design, and, as usual, I was bitten by burning curiosity that compelled me to solve the relevant problems. As per my theory of knowledge, the best calendar design is the simplest, most accurate design.

Leap year. The most interesting problem in calendar design is to solve the problem of leap year, and this problem is illustrated in figure 7.2.2 in my 2008 book *In Pursuit*.

The reason for leap year is to keep the cycle of months fixed relative to the cycle of seasons, that is, so that a month, such as March, always occurs in the same place in the cycle of seasons. This implies that rotation through the cycle of months should occur at the same rate as rotation through the cycle of seasons. By definition, it takes exactly one year to rotate through the cycle of seasons, so the goal is for rotation through the cycle of months to take exactly one year. The problem is that a calendar consists of a whole number of days, while a year does not.

The Julian calendar was established under Julius Caesar and was named for him. Under the Julian calendar, leap year occurs every four years. This would be fine if a year — the time that it takes for the earth to orbit the sun — took exactly 365.25 days, that is, 365 days and 6 hours. But a year takes about 11 minutes less that this, totaling to about 45 minutes every four years. As a result, a day should be dropped from the calendar every 128 years, but this will still leave the calendar year longer by about 1/8 of a day every 400 years, so every 3200 years, another day should be dropped.

The Julian calendar didn't drop a day every 128 years, so the calendar was rotating forward through the cycle of seasons about 3 1/8 day every 400 years, totaling to about 12.5 days by the late 1500s.

To correct this problem, in 1582 Pope Gregory 13 instituted our current calendar, which is named for him — the Gregorian calendar. Under this calendar, leap year occurs every four years (on years that are a multiples of 4) except for years that are multiples of 100. Leap year occurs every four of those years (on years that are a multiples 400). Thus, as compared to the Julian calendar, 3 days are dropped every 400 years. But this still leaves the extra 1/8 day per 400 years that must be dropped every 3200 years. And even that isn't precise, leaving yet another correction to made on some multiple of 3200 years to be calculated when needed.

To make matters worse, the days are gradually getting longer as the rotation of the earth slows down.

In seeking to design the simplest, most accurate calendar system, I devised the following solution: a calendar that *never* gets out of synchronization with the seasons. This calendar remains in synchronization with the seasons every single year. I call it the Exact calendar.

Additional calendar problems are as follows.

Week length. What is the best week length? What would you think of having longer weeks and longer weekends? How about 10-day weeks with 3-day weekends?

Year numbering. What is the best way to number years? Can we get rid of the BC/AD, or BCE/CE, system and replace it with a system that makes both mathematical sense and historical sense? The current system has no year zero, so normal mathematical calculations can't be used for years that span the two, treating BCE years as negative numbers. By the way, why do you think that there is no year zero in the current system?

Global time reckoning. What is the best way to achieve global time reckoning? Can we get rid of time zones?

Pages. I cover this topic in my 2008 book *In Pursuit*, p. 675-680. In the unpublished, unabridged version of my book, this topic comprises 33 pages, where I go into much greater detail than I do in the abridged version.