

So You Want To Abolish Time Zones

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Laudable!

Let's take a look at some of the changes that arise from this, through a simple case study: making an international phone call to a relative.

Before abolishing time zones

I want to call my Uncle Steve in Melbourne. What time is it there?

Google tells me it is currently 4:25am there.

It's probably best not to call right now.

After abolishing time zones

I want to call my Uncle Steve in Melbourne. What time is it there?

It's 4:25am there, same as it is here, of course! Same as it is in New York, Bangalore and Hawaii, at the South Pole and on the Moon.

Well, hold on a second. First of all, we need to straighten out some terminology. The terms "a.m." and "p.m." (*ante meridiem* and *post meridiem*) are strongly deprecated now, because they refer to the position of the Sun, not of the clock. With time zones, these were *roughly* the same, but now the position of the clock is objective whereas the position of the Sun is subjective. In much of the world, they do not agree in the slightest. 12:00 is nowhere near the middle of the solar day, if it's even *during* the solar day. Likewise, 00:00 is nowhere near the middle of the solar night. Worse, in many places there *is* still a "7pm" (i.e. 7 in the afternoon), but it's at 07:00. Similarly, "7 in the morning" is at 19:00... but is followed by "8 in the afternoon", because the Sun passes its zenith at 19:30.

So, you have to say "solar noon" to refer to the instant when the Sun is at its zenith, and "twelve hundred hours" to refer to the instant when the clock reads 12:00. Similarly "solar midnight" and "zero hundred hours". And you have to use the twenty-four hour clock, it's the only way to be unambiguous.

So to rephrase: I want to call my Uncle Steve in Melbourne. What time is it there?

It is 04:25 ("four twenty-five") there, same as it is here.

Does that mean I can call him?

I don't know.

*

...Well, put it this way. I'm in the UK. He's in Australia. How far ahead of me is he?

He isn't. Not at all. Uncle Steve is zero hours ahead. Melbourne, Australia is on the same time zone, the same week day and the same calendar date as me, and the rest of the world. We have blissful disambiguation. We have eliminated time zones, daylight saving and the international date line.

I still don't know if I can call my uncle, though!

*

Alright, there must be a way to work this out. We can find out what hours Uncle Steve's office operates, add a few hours beforehand for breakfast, and a few more hours after that for evening activities. Then we can see whether 04:25 falls in that range.

Well, *those* ranges. I'm in the UK, and a typical "nine to five" office (hah, bit of an anachronism there) now operates multiple ranges of times each day:

Monday	17:00 to 24:00
Tuesday	00:00 to 01:00, 17:00 to 24:00
Wednesday	00:00 to 01:00, 17:00 to 24:00
Thursday	00:00 to 01:00, 17:00 to 24:00
Friday	00:00 to 01:00, 17:00 to 24:00
Saturday	00:00 to 01:00
Sunday	closed

Although, some people go home early on Saturday evening, because that's the start of the weekend. "Saturday evening" means around 01:00 in the UK at this time of year. (It can vary seasonally.) Some people even go home as early as 23:00, which is Friday

evening. The *second* Friday evening, that is. There are two Friday evenings now. In this country, anyway.

In any case, you can see very easily (?) that if it's currently 04:25, then my office closed a few hours ago.

It's actually Saturday today, so in fact my office is closed for the weekend.

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But there's another dangerous word: "today". You can't say "it's Saturday today" anymore. It's more correct to say that "it's Saturday *right now*". The term "today" usually means "the current solar day" but "Saturday" is no longer a "day" in that sense - it no longer corresponds unambiguously to a single solar day.

Instead, solar days are now formally given hybrid names, as in "it's Friday/Saturday today". And in fact, business hours here in the UK are typically documented in this much simpler form:

Monday/Tuesday	17:00 to 01:00
Tuesday/Wednesday	17:00 to 01:00
Wednesday/Thursday	17:00 to 01:00
Thursday/Friday	17:00 to 01:00
Friday/Saturday	17:00 to 01:00
Saturday/Sunday	closed
Sunday/Monday	closed

As you can see, a "weekday" is Monday/Tuesday to Friday/Saturday. Again, this is not the case all over the world: some countries work on Sunday/Monday to Thursday/Friday. This means that it is not possible to say universally whether Friday/Saturday is a "weekday". And other countries still are well-enough aligned with Standard Time that they get to retain conventional weekly timetables, which run from "Monday" to "Sunday". Lucky them!

(When does Monday/Tuesday roll over to Tuesday/Wednesday? Who knows?)

Interesting aside: Due to religious stipulations, some people take the second half of Friday/Saturday off, or the first half of Sunday/Monday. Some people, obeying *other* religious stipulations, now consider the Sabbath to be the entire solar day of Saturday/Sunday and its preceding solar night. It sort of varies. This is to say nothing of the religious stipulations which alter the

meanings of the usual day names to refer to nonstandard periods of time - i.e., whole local solar days. It was all quite contentious for a while there.

Sunday trading laws look a bit weird now, too.

But anyway: we can find out Uncle Steve's working timetable and work forwards from that. Except that Uncle Steve's organisation doesn't have fixed working hours. Or maybe it does, but it doesn't publish them online. Or maybe I'm such a bad nephew that I don't even remember where Uncle Steve works. Wait, now I remember why I don't remember: he's retired.

Do normal humans publish "waking hours"? Not typically.

Hmm.

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Okay, it looks like I'm going to have to do this the hard way. Is the Sun up in Melbourne?

Let me find a webcam somewhere in that city.

...Looks like it's daylight, but I can't see the Sun itself from this angle, and even if I could I don't know if I could tell whether it was rising or setting. But if it's daylight, doesn't that mean Uncle Steve will be awake?

Well, not necessarily. Where I am, in the UK, the Sun set hours ago. But it's northern hemisphere winter here, and the days are short. Just because the Sun is down doesn't imply that I'm asleep, and conversely just because the Sun is up in the southern hemisphere summer doesn't mean Uncle Steve will be awake.

I guess I *can* conclude that the Sun is rising there. That means it's the morning, so he's likely either awake or *soon* to wake up. But what time in the morning is it? (04:25! We've been over this!) But how many hours ahead is he? (Zero!)

*

Erm... Let's assume a typical human being is awake for approximately 16 hours per day - 14 for safety - and that this period of time is centred on local solar noon for convenience purposes. What time is solar noon in Melbourne today? I'll take that time, subtract half a day (7 hours) and assume that that's the time Uncle Steve typically gets up in the morning.

So, we know that solar noon along our new prime meridian is 12:00 by definition, or at least kept within one second of it through the

periodic introduction of leap seconds. And the prime meridian, as we all know from history, is now at 120° east, running slightly east of Beijing, China.

Oh, where did you think it was going to be? Somewhere convenient for you?

One of the stronger reasons for adopting a new time zone is to more easily do business with a neighbouring territory which already uses that time zone. China, a gigantic country spanning some sixty degrees of longitude (and therefore, nominally, four whole "hours") has been unified on a single time zone since 1949. And it was already **the largest single time zone in the world by population**.

So, this phenomenon has now spread globally. Everybody wants to do business with China and her allies - everybody is China's ally. Everybody is on China Standard Time, UTC+08:00.

So the prime meridian is at 120° east. Meanwhile, according to Wikipedia, Melbourne is at longitude 144° 57' 47" east. That puts Melbourne 24° 57' 47" further east than the prime meridian. Assuming the solar day is precisely 24 hours, and my arithmetic is correct, that means Melbourne experiences solar noon 1 hour 39 minutes 51 seconds earlier than the prime meridian, at 10:20:09. So, Uncle Steve's diurnal routine probably involves getting up around 03:20 and going to sleep around 17:20. (Dang, I bet the Australians still get to use regular days like "Thursday". I'm envious.)

It's 04:25 now - he's definitely up. I'm calling him.

It's ringing.

It's been ringing for a while...

*

"Who is this?"

"Hello Uncle Steve!"

"Do you have any idea what time it is?" Uncle Steve asks, sounding as if he is still asleep.

"Of course I do, and so do you! It's 04:25 on Saturday... *everywhere*." I add a dramatic emphasis to the last word.

"But do you know what 04:25 on Saturday *signifies* in Melbourne?"

"Breakfast time?"

I can actually *hear* him rubbing his eyes.

"We don't centre our waking/sleeping cycle on solar noon, fool nephew," Uncle Steve explains. "We centre the *school day* on solar noon. In countries above and below certain latitudes, where seasonal variation in the amount of daylight is significant, it's important for there to be the maximum amount of light when children are going to school in the morning, and coming home from school in the afternoon. Here in Melbourne, solar noon is about 10:30 Standard Time, so the average school day is timetabled from 07:00 to 14:00, and a typical working day runs from about 07:00 to 15:00. That means that on a working day, I get up at 05:00, at the earliest."

"Ooogh. Sorry. That's about two hours later than I reckoned," I tell him.

"I know," he replies.

"I didn't know you did that in Australia," I say. "That deliberate misalignment of the diurnal routine. Does every country do it?"

"No. Equatorial countries don't, because they get plenty of light all year round. Temperate countries do, though. The technical term for it is 'daylight saving'."

I blink.

"And 05:00 is when I get up on a *working day*," Uncle Steve continues. "On Saturdays, I like to lie in. Until solar noon, if possible. That's more than five hours from now."

I'm beaten. "I guess I have no idea what 04:25 on Saturday signifies. It used to be pretty universal, but now where I live it signifies a time to go out and get drunk..."

"And where I live," Uncle Steve says, "it signifies a hangover."

"The same time of day on the same day of the week means many different things to different people all over the world," I say. "Too many to remember them all."

"Yeah," Uncle Steve grumbles. "It would be neat if there was a lookup table for that kind of thing."

In summary

Abolishing time zones brings many benefits, I hope. It also:

- causes the question "What time is it there?" to be useless/unanswerable
- necessitates significant changes to the way in which normal people talk about time

- convolutes timetables, where present
- means "days" are no longer the same as "days"
- complicates both secular and religious law
- is a staggering inconvenience for a minimum of five billion people
- makes it near-impossible to reason about time in other parts of the world
- does not mean everybody gets up at the same time, goes to work at the same time, or goes to bed at the same time
- is not simpler.

As long as humans live in more than one part of the world, solar time is always going to be subjective. Abolishing time zones only exacerbates this problem.

Other objections not mentioned above:

- **We already do have a global standard time zone, and everybody who cares already uses it: UTC.** There are also more accurate time standards in use for more specialist purposes.
- There already exists an extremely well-maintained, public database of every time zone in every world territory going back to 1970 and some distance beyond, called [zoneinfo](#). Zoneinfo can be used to answer questions such as "If a person says they live in Angola, how should their computer's clock be set?", "If it's 20:35 in Djibouti, what time is it in St. Kitts and Nevis, and for that matter is it the same calendar day there?" and "When does the U.S. observe daylight saving?"
- Even in the best case scenario, it is impossible to *retroactively* scrap time zones. The past will always exist, and the people who lived there will never adopt your new standard. Nor can all of past history be renumbered. The history of timekeeping will remain exactly as complicated as it always has been, and the zoneinfo database can never be abandoned.
- In fact, altering the global distribution of time zones yet again - even to scrap them - only serves to make the zoneinfo database *larger* and makes the past *more* complicated. Now you need to record when every territory switched over to the new global Standard Time. What if they don't all make the switch simultaneously, but at a convenient local time in the middle of the local night?
- No matter what the law says, people will continue "unofficially" using their own local time for most purposes, maintaining two clocks in parallel if need be. This already happens in western China, and can only increase ambiguity. (I guess you'd call that "civil time disobedience"?)

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If it's any consolation, all of this is extremely unlikely to happen, since it relies on an international agreement between every single nation in the world. Or on China attacking and conquering the entire world and installing China Standard Time as part of a totalitarian regime, which is slightly less unlikely but still very unlikely.

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