



Rodney Smith for The New York Times

Time Gap, The

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In 1972 the superaccurate atomic clocks that keep the world's official time were "paused" for precisely one second. This little-noticed leap second was a crude solution to a problem that began five years earlier, when atomic clocks replaced the rotation of the earth as the authoritative instrument for measuring time. Because atomic clocks are more consistent than the earth (which slows slightly almost every year), the earth had fallen one second behind. To help the planet keep pace, 31 additional leap seconds have been added since 1972.

But this solution has led to another problem: the widening time gap. Over the years, as leap seconds have been added to official time, atomic time, as calculated by the International Bureau of Weights and Measures in Paris, has held steady. In addition, the Global Positioning System (G.P.S.), the world's dominant navigational tool, was set to official time in 1980 but has not incorporated the 13 leap seconds added since.

As these three time schemes -- official, atomic and navigational -- slip farther apart with each additional leap second, coordination between them becomes harder and potentially hazardous: just consider that the watches of air-traffic controllers, set to official time, are out of whack with their navigational equipment, set to G.P.S. time. This May a working group of the International Telecommunication Union (I.T.U.) proposed dropping the leap second, which would set the stage for a unified time scale. There might be other advantages too, like avoiding legal disputes over the exact time-stamping of certain sensitive events, like the sale of bonds or securities.

Not everyone, though, would benefit from closing the time gap. Astronomers rely for their measurements on time being in accord with the position of the earth, and a number of them expressed concern this year when the I.T.U. asked them for input. For the rest of us, the consequences would be at once profound and hardly noticeable. If we drop the leap second and rely only on atomic clocks, it will mean severing time's connection to the natural world, so that daytime and nighttime, as determined by the position of the sun in the sky, will very slowly phase out of sync with daytime and nighttime as determined by our watches. Eventually, "high noon" will fall in midmorning -- though fortunately that will take thousands of years.