The Business of America

Standard Time

WE ALL LIVE BY WHAT HAPPENED ON NOVEMBER 18, 1883.

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Perhaps nothing so separates the world of today from that of our ancestors before the Industrial Revolution as do standards. Yet most of the time, we don't even know they are there. A standard is simply "something set up and established by authority as a rule for the measure of quantity, weight, extent, value or quality." Correct spelling is a standard, made possible by the dictionary. So are clothing sizes, right-hand driving, electrical voltages and cycles, and one mouse click to do one thing and two mouse clicks to do another.

Today, new standards are being set all the time, and nowhere are they developing so rapidly as in the exploding field of electronics. I recently bought a DVD player and discovered an attribute of the technology that I didn't know existed. Onscreen displays can be seen in numerous languages, and what is astonishing is the sheer number of languages taken into account in this system. No fewer than 141, from Abkhazian to Zulu, have been assigned a standard fourdigit number to facilitate the use of this multilingual capacity. Even Latin and Sanskrit, which ceased to be living languages millennia ago, are numbers 1313 and 1495 respectively.

At some point in the development of DVD technology and the marketing plans of the various companies that manufacture the players and disks, these numbers were agreed to by everyone involved, to make it easier for someone who speaks Albanian (language number 1511) to enjoy Jurassic Park.

The twentieth century was the great age of standard setting, although I suspect it will be rapidly eclipsed in this regard by the twenty-first. But one of the most important standards by which we live was established in the nineteenth century: standard time. And it was established for strictly commercial reasons. For though Benjamin Franklin, that savvy businessman, coined the phrase "Time is money" as early as 1748, it was the railroads, multimillion-dollar corporations operating over thousands of miles, that made the truth of the statement inescapable.

The measurement of time, at least in the Western world, was determined thousands of years ago in Mesopotamia, when the day was divided into 24 hours. Each hour was broken into 60 minutes, and each minute into 60 seconds. But because the day is determined by the rotation of the earth on its axis, time in the astronomical sense is intensely local. Noon, by definition, is when the sun crosses the meridian, an imaginary line in the sky running due north and south. Local noon at the latitude of New York City comes one minute later for about every 13.5 miles you move westward.

American farmers, the majority of the working population until late in the 19th century, often lived in isolation and had to keep their own time. Because clocks and watches were still expensive, many made do with nothing more than a noon mark for telling time during the day. Really a primitive sundial, a noon mark is simply a line

drawn due north and south in the ground. When the shadow of a stick placed at the line's southern end crosses it, it is local noon. In the 1850s, the young Jay Gould, working as a surveyor and mapmaker, picked up extra income by charging farmers a dollar to determine true north so they could have an accurate noon mark. In towns and villages, noon was often marked by the ringing of a bell, the firing of a cannon, or the lowering of a time ball on a high mast. (Today, many towns test their fire sirens at noon, and the time ball survives nowadays largely to mark midnight, not noon, on New Year's Eve in New York's Times Square.)

The problem for the railroads was that each city kept its own time. When it was noon in New York City, it was 11:55 A.M. in Philadelphia, 11:47 in Washington, 11:35 in Pittsburgh. The state of Illinois had 27 different local times; Indiana, 23; and Wisconsin, 38.

In the days when a trip from New York City to Philadelphia was at the least a long day's journey, the time difference between the two cities simply didn't matter. But, when the railroad made it possible to make the journey in a morning, and the telegraph made it possible to communicate nearly instantly, the traveler had to know what time it was at his destination so he could schedule appointments. Pocket diaries of the period often had handy charts to tell the harried businessman how to calculate local time.

As the railroads grew and coalesced into systems running hundreds and then thousands of miles in the mid-nineteenth century, scheduling became a big problem. Often a train would arrive at one station at an earlier time than it had left the previous one. Irate passengers and shippers, who missed connections because of time confusion, complained.

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In 1848, Great Britain became the first country to adopt a de facto time standard, when its principal railroads adopted Greenwich time throughout their systems. But Britain is a small country, covering only about 8 degrees of longitude, so a single standard time works well there. The United States was an altogether different story. The lower 48 states alone cover some 60 degrees of longitude. If the local time at, say, Kansas City were made the national standard, then noon would come before 10:30 in the morning in San Francisco and at 1:30 in the afternoon in Boston. A better idea was needed.

In 1872, the Time-Table Convention, which would evolve into the Association of American Railroads, was founded to look for a solution. Charles F. Dowd, who was the principal of the Temple Grove Seminary for Young Ladies, in Saratoga Springs, New York, suggested a system of numerous wide time zones, and the idea began to take hold. Others began to press for a standard time as well. The distinguished Canadian railroad engineer, Sir Sandford Fleming, pushed for a similar scheme as chairman of the standing committee on time of the American Society of Civil Engineers. Fleming surveyed both railroad men and scientists regarding his ideas and planned to petition Congress.

But congressmen, fearing local reaction, had resisted any such measures for years. So, the railroads acted instead. In 1883, William F. Alien, managing editor of the Official Guide of the Railways, presented a specific plan to the General Time Convention, as the Time-Table Convention had been renamed in 1875. His plan had four time zones—Eastern, Central, Mountain, and Pacific—centered on the seventy-fifth meridian of longitude (which passes near Philadelphia), the ninetieth (Memphis), the one hundred and fifth (Denver), and one hundred and twentieth (Fresno, California).

The railroads that were members of the General Time Convention—which is to say every major railroad in North America—agreed to Alien's proposal in October 1883, setting November 18 of that year as the day they would begin operating on the new standard time. In many localities, the switch went smoothly. In commercial-minded New York City, the mayor ordered all city clocks to conform, everyone else simply fell into line, and that was that. In Washington, however, the Attorney General, Benjamin H. Brewster, ruled that congressional approval was needed to change government clocks from local time. The superintendent of the Naval Observatory, the nation's official timekeeper, simply ignored him and began telegraphing the new railroad time to subscribers to its time service.

Predictably, there were snickers and resistance. Many religious people insisted on operating on "God's time — not Vanderbilt's," and a preacher in Tennessee, giving a sermon on the subject, smashed his watch with a hammer in the pulpit to emphasize the point.

In adopting Alien's system for standardizing time in North America, the railroad men had taken a certain risk. The meridians on which the new system was based assumed a prime meridian that passed through Greenwich, England, where the Royal Observatory was located, and which had legally been the basis of British standard time since 1880. But that prime meridian was acknowledged by no other country. Congress was urged to call an international convention to settle the matter and did so the following year.

Some of the delegates opposed making the Greenwich meridian official. The French, needless to say, objected strongly. Others called for running the prime meridian through the middle of the Atlantic, while many clergymen pushed for Bethlehem. But when the dust settled, an overwhelming majority of delegates voted for Greenwich.

Within a few years, the simple need to know when the trains would arrive and depart had forced nearly everyone to acquiesce to the inevitable and set their watches and clocks to the new time standard. Today, standard time is so deeply imbedded in the culture that it is nearly impossible to imagine the old world of many local times. After all, how could we set our VCRs without it?

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