

students a sense of how those atoms can hook together in different ways to provide different functions. Here, qualitative thinking serves us well.

We never suggest using explanations before phenomena, but we do insist on providing the tools by which explanations can follow phenomena. The explanations can follow the phenomena after the basic ingredients have been learned. If more physics than was taught in ninth grade is needed in, say, a biological process, then by all means invite in the physics teacher. This will enrich the physics that was learned at an admittedly low level and encourage the taking of advanced physics courses after the three-year sequence. The same scenario can be applied for the chemistry that biologists must know.

In all of this, we must not forget the objective: to bring the science way of thinking to all high-school graduates. I believe doing so will in no way hurt future scientists or engineers. The curriculum should be rich enough to give them the advanced courses that can profitably build on the firm, conceptual, and process-rich sequence I am trying to describe.

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An Earlier Bar to Rescaling Units

Solomon Golomb, in his letter to *PHYSICS TODAY* (October 2001, page 12) has proposed that physical quantities—for example, time and temperature—be expressed in logarithmic scales, preferably based on the decibel system widely used by engineers.

Years ago, the late Lewi Tonks and I made the same proposal,¹ but specifically for measures of pressure or vacuum. We proposed to use the common logarithm (base 10) of the absolute pressure in bars, and to name the unit step on that scale “one boyle.” We noted that “one deci-boyle,” one-tenth of a boyle (about 12%), would be a fair measure of the precision with which extremely high or low pressures are measured in all but the most precise work. Our paper referred to similar earlier proposals and mentioned a table of constants to be added to 10 times the logarithm of pressures expressed in various units (for example, torr,

inches of mercury, psi, and atmospheres) to convert them to the deciboyle scale. It also gave a list of examples ranging from the lower limits of the ionization gauge (–140 dB) to the pressure at Earth’s center (65.61 dB).

Besides the *Nature* article, our proposal was presented to the American Society of Mechanical Engineers at their winter meeting in 1964² and was described to and discussed by readers of the trade journal *Research/Development*.³ Predictably, there were various alternative proposals. When readers were polled by the journal, 43% favored “retaining the present system”—whatever that is!—while 41% favored some form of logarithmic scale. Not all of the 41%, however, favored our designation of the bar as the base of the scale. Many said that we already have a logarithmic system in the prefixes (milli, micro, and so forth). We responded to them at length in the March 1966 issue, noting “an irrational component of conservatism in such matters, which has been noted and deplored by most students of creativity.”³

To my knowledge, that was the first proposal to apply the decibel system to other than acoustic measurements, and the only one I have been aware of before Golomb’s letter. I am unaware of any formal action on our proposal.

I wish Golomb more success with this proposal than we had 35 years ago!

References

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2. G. C. Baldwin, L. Tonks, American Society of Mechanical Engineers Pub. no. 64-WA/PT-19,d, United Engineering Center, New York (1964).
3. G. C. Baldwin, L. Tonks, *Research/Development*, F. D. Thompson Publications, Inc., February 1965, and comments in the issues of September 1965 and March 1966.

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Is The Universe’s Expansion Accelerating?

A Search and Discovery article titled “Farthest Supernova Strengthens Case for Accelerating Cosmic Expansion” (*PHYSICS TODAY*, June 2001, page 17) deals with the present state of a central question in