Rally ‘round the yardstick

In the March 1974 issue we reported the courageous efforts of some noble, patriotic Computer Society leaders to defend the shores of our Republic against the creeping tide of Continental European metrification. As we noted at that time the real issue is not the length of the measuring rod (although even such a giant of a man as George Washington measures less than 39.37 inches from tip of nose to tip of finger!). Rather it is the absurd notion on the part of the metric partisans that all units of measure should be divisible by ten. We computer engineers discovered long ago how much easier and more logical it is to use two as the basis of all our counting and measuring, and have championed the cause of binarity ever since.

Rumors have been coming to us recently, borne by overland travellers, of popular uprisings in Boston (that cradle of the Revolution) and in Dan'l Boone’s Kentucky. Because the common thread connecting all these rumors was the phrase “black and white” we had naturally assumed that these actions were in support of our Back to Binary cause. Alas, we were mistaken. The latest schooner to arrive at Yerba Buena (after a perilous voyage ‘round the Horn from Madrid) brings authoritative word that the demonstrations in Kentucky and the riots in Boston have nothing to do with the binary-decimal controversy at all. Rather, we are informed, the public there are aroused over bus structures and large-scale integration.

We have, however, found support for our cause in an unexpected quarter. The Federation Internationale di Musique (F.I.M.), meeting recently in Paris (within the very shadow of the building which houses the pretended “international” standard meter-bar), voted unanimously to adopt the recommendations of its Metrication Committee and reject the demands of the Establishment. In a resolution dated July 4, the committee stated its reasons for rejecting the metrication proposals. According to our correspondent the two most objectionable of these proposals called for replacing the present eight-note octave with a new ten-note decave, and for replacing the present system of whole notes, half notes, and quarter notes with a new system of notes, decinotes, and centinotes. The musicians clearly displayed no enthusiasm for the new instruments which several manufacturers had prepared for exhibition at the meeting. These included a ten-string violin, a pianoforte having 100 keys (all white), and a slide trombone fitted with a calibrated leadscrew for precise positioning of the slide. Aside from the practical difficulties of composing and performing music to the new proposed standards, the musicians rejected as spurious the argument that metrification would be necessary to promote international exchange of music. Although the official Establishment reaction to the F.I.M. resolution is not known at this time, a usually reliable source is understood to have said that the musicians appear to be mired in tradition, and that the apparent lack of harmony in decimal music is merely a matter of cultural conditioning. If this view is correct, we can expect to see a move to teach the new music in the elementary schools, so that after a few years the youth will flock to the music which their elders so vehemently despise.

The advent of home computing as a hobby seems to have opened another can of worms for those who like to worry about software protection. One manufacturer of kits went to considerable expense to develop a Basic compiler for its machine. The apparent intention was to recover the software cost by charging for copies of the compiler. The price per copy was set in the hundreds of dollars, with discounts to buyers of certain hardware configurations. This company now complains bitterly that very few have paid for copies of the software, but that bootleg copies are found everywhere.

It could well be argued that this company would have sold only a few machines if there were no Basic available, for it appears that a majority of computer hobbyists attach great importance to the ability to run computer games. Most of the games were originally developed on timesharing systems that use Basic. The problem with being the first to invest some money in a software package for a microcomputer is that all of your competitors are using the same microprocessor chip and can take advantage of your software to enhance their sales. At least this microcomputer maker can take comfort in being in the same boat with IBM (vis-a-vis Amdahl) and DEC and Data General, with their growing numbers of software-compatible competitors. The general problem facing the microcomputer industry in this wise is that you don’t even start out with a proprietary instruction set. The large-volume buyers of microprocessor chips are not the least bit interested in something until at least two sources of manufacture are available. The only immediately obvious way (to me) out of this problem is for the microcomputer maker to employ a microprocessor having its instruction set made unique by means of an on-chip custom-programmed ROM. (A separate ROM won’t do, because the contents can easily be determined and duplicated in a field-programmable ROM.)

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The other point at hand is that one can't take too much for granted concerning the scruples of the hobbyist buyer. If a software package is sold to a business firm it isn't too hard to establish a reasonable and enforceable contract between the buyer and seller governing copying of the software. As one vendor representative put it, "Dealing with commercial customers is nice, because they are generally willing to pay for what they need; and if disagreements arise we can continue our day-to-day work while our lawyers and their lawyers hammer it out."

Now, private individuals may be basically honest in their dealings with their fellow beings; but when a hobbyist has sunk all his spare change in a computer kit and is faced with a choice between spending several hundred dollars for a legitimate copy of a tape, or having the Teletype ASR punch one out locally in a couple of hours, the temptation can get to be rather extreme. Then there's another thing that separates the hobbyists, legally, from the business-type software buyers. If a software vendor should sue a hobbyist for violation of copyright, could the hobbyist claim exemption under the fair-use doctrine?

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A topic which can perhaps stand a little repetition, or re-emphasis with particular attention to microcomputers, is Harry Huskey's Polish Assembler, which was written up in *IEEE Transactions on Computers*, Vol. C-22, No. 1, November 1973, pp. 1035-1040.* The idea is that for a small machine it is advantageous to have a very compact assembler and a very compact assembly language, so that you don't spend hours reading the assembler or its input when all you have is paper tape at 10 characters per second. The input language looks more like Chinese than Polish at first reading; but it's very easy once you get the hang of it. The basic concept is that you use single characters to represent the machine instructions and some of the assembler pseudo operations. For example. Suppose Variable Names are ordinary character strings:

- Load the Accumulator is represented by \*.
- Add Memory to Accumulator is represented by +.
- Unconditional Branch is represented by \:.
- Branch is Equal is represented by =.

The pseudo-operation of placing a label is represented by \#:.

A piece of program then might be:

```
COUNTL : M = 1 + L.
```

In more familiar and verbose terms this would be expressed as:

```
LAC COUNT : Load accumulator with COUNT
L: BEQ M : Branch to M if it's zero
ADD #1 : Add literal 1 to accumulator
```

The assembler is called "Polish" simply because the way of writing the code, operand-operator pairs, resembles Polish suffix notation (which it really isn't). For that matter, it somewhat resembles APL in its compactness. Who's going to be first with a one-page Basic compiler? ■

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