Bill Gates' OPEN LETTER TO HOBBYISTS made a lot of eyebrows go up and sparked some heated discussion in clubs and among enthusiasts of micros (see The Old Soldier's reply last issue, PCC Vol. 4 No. 5). Below we have reprinted the body of that letter, to accompany Bill's latest communique. Jim Warren, an alter ego of Dr. Dobbs, gives his views on the opposite page.

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Davidoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DISK BASIC. The value of the computer time we have used exceeds $40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two surprising things are apparent, however. (1) Most of these "users" never bought BASIC (less than 10% of all Altair owners have bought BASIC), and (2) the amount of royalties we have received from sales to hobbyists makes the time spent of Altair BASIC worth less than $2 an hour.

Why is this? As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?

Is this fair? One thing you don't do by stealing software is get back at MITS for some problem you may have had. MITS doesn't make money selling software. The royalty paid to us, the manual, the tape and the overhead make it a break-even operation. One thing you do do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting his product and distribute for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC, and are writing 8080 APL and 6800 APL, but there is very little incentive to make this software available to hobbyists. Most directly, the thing you do is theft.

What about the guys who re-sell Altair BASIC, aren't they making money on hobby software? Yes, but those who have been reported to us may lose in the end. They are the ones who give hobbyists a bad name, and should be kicked out of any club meeting they show up at.

dr. dobb's journal of

COMPUTER

Calisthenics & Orthodontia*

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TINY BASIC

Consider then, TINY BASIC

- Integer arithmetic only – 8 bits? 16 bits?
- 26 variables: A, B, C, D, . . . Z
- The RND function – of course!
- Seven BASIC statement types
    - INPUT
    - PRINT
    - LET
    - GO TO
    - IF
    - GOSUB
    - RETURN
- Strings? OK in PRINT statements, not OK otherwise.

Pretend you are 7 years old and don't care much about floating point arithmetic (what's that?), logarithms, sines, matrix inversion, nuclear reactor calculations and stuff like that.

And . . . your home computer is kinda small, not too much memory. Maybe its a MARK-8 or an ALTAIR 8800 with less than 4K bytes and a TV typewriter for input and output.

You would like to use it for homework, math recreations and games like NUMBER, STARS, TRAP, HURKLE, SNARK, BAGELS, . . .

Greetings,

There is a viable alternative to the problems raised by Bill Gates in his irate letter to computer hobbyists concerning "ripping off" software. When software is free, or so inexpensive that it's easier to pay for it than to duplicate it, then it won't be "stolen."

Example: There are at least five versions of Tiny BASIC up and running on at least three processors. A cassette containing Tiny BASIC for the Intel 8080 is available for five bucks. A version for the Motorola and AMI 6800 also costs $5, including complete user documentation. If the price is still too high, complete user documentation and implementation details for one of the 8080 versions has already been published. This includes complete annotated source code. Anyone is welcome to retype it and reassemble it. No one will yell, "thief." All details of a second version will be published before the end of April. Several more versions will be published shortly thereafter, including a cross-assembled version created using the macro facilities of the IBM 360 Assembler. Versions are expected shortly thereafter for the MOS Technology 6502, and Signetics 2650. Note: Tiny BASIC is, essentially, BASIC sans array and floating-point operations, although one of the versions has array operations, and another uses a calculator chip to obtain floating-point capabilities. It is explicitly designed for minimal memory micros.

Example: Gary Kildall, who built the PL/M compiler for Intel and the PLuS compiler for the Signetics 2650, is making an entire floppy-disc operating system available. He plans to sell a disc and complete documentation for not much more than what it would cost to duplicate them.

Example: A complete alpha-numeric music system, including amplitude control, has been designed and made available. The documentation costs only $2, including complete schematics for the minimal hardware that must be added.

Information on all of these systems—and much more—is being published in a new, reference journal for home computer users (and anyone else interested in micros), *Dr. Dobb's Journal of Computer Calisthenics & Orthodontia*. The *Journal* is publishing all available details. For instance, the first issue contained: complete design details for Tiny BASIC, complete user documentation for the first 8080 version, complete details for using a calculator chip to obtain mathematical and floating-point functions, and a 16-bit, binary-to-decimal conversion routine.

The second issue included: complete implementation details and annotated source code for the first version of tiny BASIC, complete documentation and source code for a simple music program for Altair 8800s, design notes on a forthcoming high-level language for 8008/8080s, two articles on a $1K phoneme generator kit for micros that allows unlimited English speech synthesis, and a quick note on the 6800 version of Tiny BASIC.

The third issue will include complete details and code for the second 8080 Tiny BASIC which includes 1-D arrays, a simple debugger for the 6502, a keyboard loader for octal code, details of a contest to generate public-domain graphics software for CroMemCo's TV Dazzler, and much more. The *Journal* is also reprinting carefully selected, good stuff from the growing multitude of computer club newsletters. Additionally, it is publishing complete indices to all major computer hobbyist publications and selected articles from other publications, lists of hobbyists and their equipment, used equipment sources, clubs and organizations, computer stores and distributors, etc. Finally, it is actively pursuing a consumer advocacy role relative to the home computer user.

The point is that all of this information—systems software, design notes, schematics, etc—is being made available for little more than the cost of reproduction. The *Journal* came into being, explicitly to aid creation and distribution of that information. In some ways, it creates a sort of manufacturer-independent user's group.

It is reasonable to expect that free and inexpensive software will become increasingly available to and through the hobbyists' community. This is true, in spite of the failure of such SHAREing in the business and industrial communities.

1. Hobbyists are developing home-grown hardware and software, just for the fun of it. Since it's "fun" rather than "work," they have shown a great willingness to share and distribute what they develop. This is not an unknown phenomenon. It is the usual practice in most other hobby environments, and is certainly true in the academic environment.

2. As with the industrial mini and micro markets, hobbyists have learned to be wary of purchasing hardware from manufacturers who provide no software support. Through common sense, and by observing Mr. Gates' experience, those who wish to sell software for significant sums of money must realize that there is only one group that can practically be expected to pay for it: the hardware manufacturers. They need it to enhance their products in a highly competitive marketplace.

3. Concerning quality: A significant minority of computer hobbyists are also experienced computer professionals. It's their (our) play as well as work. The competency level is more than sufficient for the design and implementation of excellent systems software.

4. Finally, the approach used in producing the Tiny BASICs will be continued and expanded, a sort of modified Chief Programmer Team approach: An experienced pro does the overall design and outlines the implementation strategy (via the *Journal* and other hobbyist publications). Following those directions, the more experienced amateurs do the necessary hack-work (exciting to them, but drudgery for the "old pro"). Since it is a symbiotic effort, the implementors are almost certain to share their work with the designers, and hence, with the larger community of home computer users.

It's amazing how much "good stuff" becomes available when the producers think of their labor as "play" instead of "work." All who wish to do so are invited to join with the publishers of *Dr. Dobb's Journal* in the pursuit of realizable fantasies.

Jim

Jim C. Warren, Jr., Editor
Dr. Dobb's Journal of Computer Calisthenics & Orthodontia

A SECOND AND FINAL LETTER

Since sending out my "OPEN LETTER TO HOBBYISTS" of February 3rd I have had innumerable replies and an opportunity to speak directly with hobbyists, editors and MITS employees at MIT's World Altair Computer Convention, March 26-28. I was surprised at the wide coverage given the letter and I hope it means that serious consideration is being given to the issue of the future of software development and distribution for the hobbyist. In my remarks at the WACC I spent a great deal of time explaining why I think software makes the difference between a computer being a fascinating educational tool for years and being an exciting enigma for a few months and then gathering dust in a closet.

Unfortunately, some of the controversy raised by my letter focused upon me personally and even more inappropriately upon MITS. I am not a MITS employee and perhaps no one at MITS agrees with me absolutely, but I believe all were glad to see the issues I raised discussed. The three negative letters I received objected to the fact that I stated that a large percentage of computer hobbyists have stolen software in their possesion. My intent was to indicate that a significant number of the copies of BASIC currently in use were not obtained legitimately and not to issue a blanket indictment of computer hobbyists. On the contrary, I find that the majority are intelligent and honest individuals who share my concern for the future of software development. I also received letters from hobbyists who saw the stealing going on and were unhappy about it, and from small companies that are reluctant to provide software because they don't think enough people will buy the software to justify its development. Perhaps the present dilemma has resulted from a failure by many to realize that neither Micro-Soft nor anyone else can develop extensive software without a reasonable return on the huge investment in time that is necessary.

The reasons for writing my first letter were to open the issue for discussion, let people know that someone was upset about the stealing that was going on, and to express concern about the effect such activities will have on future software development. Some letters suggested that software should be sold for a flat fee to hardware companies who would add the cost of the software to the price of their computer. Whether this is legal or not, the marketability of software to hardware companies is questionable when software is so freely shared among hobbyists. Providing software in ROM may help, but commiting a complex software package to ROM before it has been field tested means that users will have to accept the bugs that inevitably turn up. Having a select trustworthy group do field testing for six months would mean that most of the bugs could be eliminated, but delaying the introduction of a product this long isn't feasible or desirable. In any event, software on ROM can be copied.

In discussing software, I don't want to leave out the most important aspect, viz., the exchange of those programs less complex than interpreters or compilers that can be written by hobbyists and shared at little or no cost. I think in the forseeable future, literally thousands of such programs will be available through user libraries. The availability of standardized compilers and interpreters will have a major impact on how quickly these libraries develop and how useful they are.

Two factors that will encourage people to develop software are that the hobbyist market is expanding rapidly and that many commercial applications of microcomputers require the same software that hobbyists need. Unfortunately, some of the companies I have talked to about microcomputer software are reluctant to have it distributed to the hobbyist, some of whom will steal it, when the company is being asked to pay a huge sum to finance the software development.

To avoid an endless dialogue, and to keep the current controversy centered on the primary issue, this is the last open letter I will write on this subject. I thank those who responded in writing to my first letter.

APL is well under way and should be completed by the middle of the summer, when it will be made available to hobbyists. Micro-Soft also has a high-level language compiler in the design stage and is trying to work out a way to publish the source of one of its interpreters in a fairly inexpensive book form along with about one hundred pages of explanatory text.

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