A Cautionary Tale for the Entrepreneur

The fatal glass of beer

At this very moment at least one small group of technically adept people are sitting around a table somewhere, drowning their sorrows and talking about the latest indignities to be suffered at the workplace. Electronic designers and builders all, they will listen as one of them, at a given level of alcohol concentration, proposes that they throw over their steady if un rewarding jobs and light out for the exciting terrain of self-employment.

Loud will be the discouraging comments, but our prophet will persevere; opportunities are vast in the infant homebrew computer field. A standard circuit card size and bus format exists already—all that remains is to make something that plugs right in and does the latest trick at a lower price or with some other gimmick.

More drinks are consumed, pencils come out and figuring begins. Clever ideas are brought up and elaborated. It is an exciting, heady evening. All present assure the prophet that he can count on their assistance when he takes the plunge. All go home and sleep it off.

Occasionally such a prophet goes through with it. He rents a vacant garage or other workshop space, files the necessary legal papers, and enters the world of the "garage shop operator"—owner and sole operative, future mogul. His enthusiasm is as boundless as that of the buyers of personal computer equipment, who buy millions of dollars worth of strange new programmable toys on the basis of sheer possibility.

No one knows quite why people buy the stuff, and on the basis of a quick look around inside the production end it would be difficult to say why people go through the pains of producing it, unless out of sheer love of creativity.

Capitalization

Banks are seldom useful for providing startup capital. They tend to want a "track record"—meaning that startup capital is available only to those who have already started.

A surprising number of garage shop operations have started on money fraudulently obtained. One mechanism in use is unemployment insurance claims. Another is the practice of advertising a product before it is designed and carrying out the development on the proceeds from advance sales. In the homebrew market, this has proven an effective way of raising money. Federal Trade Commission regulations have recently been tightened up, making this process more risky, but it is apparently still in use. Indeed, an impressive amount of money has been raised on the basis of line drawings of equipment in ads bearing Post Office box addresses and quoting no delivery date. In many cases where equipment is introduced through magazine articles, the lead time to publication requires that a prototype or dummy model be photographed and preliminary specifications be published while representing that devices are available off the shelf. In cases of embarrassing demands on the part of customers to see what they're buying, the operator may blame the magazine and vice versa. This proves mutually convenient for everyone except the prospective customer, who should really know better in the first place than to take a magazine article at face value.

Other significant sources of capital include rich and/or gullible relatives, and working wives.

Paging Tom Swift

A common character encountered in the early stages of a garage shop operation is the "Tom Swift"—the technical zealot who will turn out useable designs
almost before being asked. In fact, most problems with this person arise when he has conceived a design which, it is then discovered, requires changes before it can be marketed. Characteristically he will be intolerant of such interference with his creative processes, regardless of the facts. When he loses his case, he will sulk and may be prone to irrational behavior.

During his tenure, it is useful to allow the Tom Swift to hover about looking over people's shoulders. When he interrupts a conversation with a monologue beginning, "You know what you could do?" it is best to allow him to say his piece. A new, improved design is probably on the way.

Of course, these ideas may or may not be practical, and you may have to interrupt his monologue by citing such obstacles as production problems. He will then weave his design around these problems if he is any good. If, however, you wait until his grand design has been spun out before you make your practical objections, he will dig in and avoid redesign.

Tom Swifts have generally proven incompetent or worse in handling management problems. They have been the downfall of many a small company.

It's so simple and easy

Technically adept as the garage shop operator may be in circuit or logic design, he will most likely not have much experience in such esoteric skills as drafting, printed circuit layout and artwork, photo-offset layout and typography, or mechanical and sheet metal design. Many a design which is basically sound in principle has been rendered unreliable by poor work in these areas done by a jack-of-all-trades who is either the operator himself or a friend who will work on speculation.

Documentation is one area which suffers drastically. All schematics shipped with products from garage shops must be considered to contain errors. At times the schematic is all the documentation that accompanies the product. Manuals are almost universally written in gibberish and prefaced with errata notes which often go beyond their scope by containing significant design modifications.

Having been confronted with a schematic that says one thing, a parts list that says another, and equipment which clearly implies a third, an inquiring customer is likely to be told that a certain change was not documented. Most home-brew customers are grateful for information of this sort. If the customer is a computer professional, he will likely be irritated, but he soon finds that such quality of documentation control and support is the norm in the field.

So far, service manuals appear to be unheard of in the norm, and the dictum governing customer support is "Send it back and we'll fix it." In some cases this service policy extends to setup adjustments as well. In most cases the vendor assumes that some test equipment is available at the customer's site along with someone who can operate it. This is not always true.

Many garage shops hire their first employee—usually a receptionist—a few days after their first advertisements hit, when the phone starts ringing with questions. Sometimes the new receptionist is left no other information than the same ad copy that prompted the call. This can be very stressful for all parties involved—except the owner-operator, who, after all, hired the receptionist to deflect just this sort of communication from him in the first place.

In other cases several people are set to work answering telephone inquiries, each with conflicting information. Oral tradition is the in-house communication system for new product information, price and availability information, and other customer support data. The shop operator, who has much more important things to worry about at this time, is seldom disposed to institute paperwork systems. They spoil the fun.

Cash flow

Just when the operator feels things are under control, with the ads drawing some response and inquiries, reality again intrudes—this time in the form of the "cash flow crisis." The operator will typically not have extended his startup capitalization far enough to get beyond initial production and to the point where actual cash is coming back in.

He will, of course, be pleased to see how many inquiries and even orders are received from large organizations (especially AT&T subsidiaries), but he will be distressed to find how few of them contain cash or its equivalent. (In one well-known case a garage shop operator eagerly opened his first order only to find a purchase order from another garage shop operator.)

At any rate, about this time the operator will be required to suspend work on the development of the product and rush frantically about attempting to secure more capital. More advertisements, new wealthy partners, and deferred or reduced compensation for employees are some of the symptoms of the dreaded cash flow crisis. There is, of course, no cure but money.

Life can be beautiful

Nothing will be said here about the heroism of those PC board fabricators who can make a working board from the most amateurish layout, or of the sagacity of the component suppliers and distributors who are called upon to provide components (the ones intended rather than the ones ordered) with same-day service on 120-day purchase orders. They also serve.

With luck, energy, and far more money than originally intended, the garage shop operator may reach a point where he is in regular production of a moderately well debugged product, with only a medium of complaints coming in. His long-deferred reward will be close at hand.

But not for long. Some unmentionable bunch of squirts that no one has ever heard of will begin advertising a similar product with line drawings in an ad bearing a Post Office box address. His product is being pirated!
obscure but incontrovertible fact that many garage shop operators, demonstrating a surprising command of the rhetoric of laissez-faire, consider that they have the right to a monopoly on their product, and that only "sour grapes" interference from a few unworthies stand between them and total domination of the market.) Fortunately very few people pay attention to these fulminations. In one instance a company denounced as "parasitic" the efforts by others to market kits to fix certain bugs in the company's computer. The response was the establishment of a firm advertising such kits under the name of "Parasitic Engineering."

The garage shop operator is left either to run endlessly in the competitive squirrel cage or to carve out a dedicated market by expanding his product into a system. Selling out is another alternative. It, of course, presupposes offers to buy.

Garage shop operators today face the likelihood that the corporate giants are only waiting until the market has been sufficiently developed before moving in with massive capital to undercut them, as was done in the field of calculators. The only hope for the shops is refuge in small systems production or the opening of newer markets (this of course in addition to hoping that the majors will want to buy them out rather than brush them aside).

It is an existence in continuous motion, always pursued by the real or the imaginary, but always offering at least the thrill of the chase. The successful garage shop operator must take his sustenance from that thrill rather than counting on a golden future of peace and plenty.

Rewards of an intangible sort may also be anticipated. The occasional observation of the excitement of the lay customer with the newest gadget, and the slow development of imaginative uses which can spring only from the amateur's genius. The alienation of the product from the producer is a very real phenomenon, and can be overcome in part without too much trouble in the world of home-brew computing, where many local clubs have grown up to allow the lay users to interconnect.

It is the users who are the real heroes of this tale. They pay the bills in advance, suffer through needless agonies in attempting to reconcile things which they understand imperfectly, and, with undiminished expectations, always come back for more. Their numbers are growing. The field of electronics needs them perhaps more than it knows.

They even start their own garage shop operations in spite of the odds.

Lee Felsenstein
LGC Engineering

April 1977

Classified Ads

Engineering, Computer Engineering and Information Sciences, Crawford Hall, Case Western Reserve University, Cleveland, Ohio 44106.

CASE WESTERN RESERVE UNIVERSITY

Senior Faculty Position in Computer Engineering and Information Sciences: A senior faculty position in Computer Engineering and Information Science will be filled by August 1977. The successful candidate will have demonstrated ability to initiate and obtain funding for research programs, to lead in the development of junior faculty, and to be an effective teacher at the graduate and undergraduate levels.

Salary is open. Case Western Reserve University is an equal opportunity, affirmative action employer. Qualified applicants should send their resumes to Professor C. W. Rose, Department of Systems Engineering, Computer Engineering and Information Science, Crawford Hall, Case Western Reserve University, Cleveland, Ohio 44106.

As Technical Search/Member Employment Consultants to IEEE & MTS Worldwide, we receive 1-2,000 jobs monthly (see Spectrum). Very heavy demand for Software Dev. Engns. w/1-20 yrs. exp. OK. $30,000-$90,000. Very heavy demand for Operating Divisions. Senior Exec. Jobs. Please send resumes to: Janet Porretti Sperry Research Center Sudbury, Massachusetts 01776

An equal Opportunity Employer

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Faculty Position in Computer Engineering and Information Sciences: A tenure track faculty position at the rank of Assistant Professor of Computer Engineering and Information Sciences will be filled by August 1977.

Candidates' areas of interest should include one or more of the following: programming languages and compiler theory, theory of computation and algorithms, computer systems architecture and operating systems, and computer graphics.

The position requires a doctorate and a strong commitment to teaching and research.

Case Western Reserve University is an equal opportunity, affirmative action employer. Qualified applicants should send their resume to Professor C. W. Rose, Department of Systems

Position Wanted


Rates
Minimum charge - $30.00 up to 10 lines, average of six words per line; $2.00 per line thereafter. Add $5.00 for box number. No ad shall be longer than 30 lines. Payment with order due the first of the month prior to month of publication.

Exceptions - IEEE Computer Society members for positions wanted: $10.00 up to 10 lines; $1.00 per line thereafter. Situations wanted for unemployed Society members are free. Include IEEE member number in either case.

University Faculty and Research Positions: The Electrical and Computer Engineering Department at Syracuse University seeks inquiries from persons interested in teaching and research in the Computer Engineering area. The Department offers undergraduate and graduate degree programs in both Electrical and Computer Engineering and is active in research in a variety of areas. Inquiries are sought for temporary, visiting, and regular appointments. Send resumes to Professor E. Stabler, Electrical and Computer Engineering Department, 111 Link Hall, Syracuse University, Syracuse, N.Y., 13210. Syracuse University is an Equal Opportunity/Affirmative Action Employer. Minority and Women Candidates are encouraged to Apply.

Faculty positions in Computer Engineering and Computer Science are available, beginning September 1977. Doctorate and strong credentials are required. Duties include both teaching and research activities; interest in curriculum development is desirable. Rank commensurate with qualifications. Send resume and statement of goals to:

Professor E. J. Smith
Division of Computer Science
Department of Electrical Engineering and Electrophysics
Polytechnic Institute of New York
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