

# Ramblings from Ed Roberts

by Ed Roberts,  
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## WACC

We are all gratified and honored at the overwhelming response to the first World Altair Computer Convention. Let me take this opportunity to thank all of you who attended and helped make it such a success. Special thanks to the clubs and in particular to the SCCS which was well represented. Next year we anticipate an even bigger and better convention with additional emphasis on technical and applications sessions and more exhibits.

## USER GROUP

As a result of meetings at the WACC, we have launched a campaign to greatly strengthen the User Group in terms of what it supplies and what it does for the Altair user. This effort is to be made in conjunction with the dealers. We will make all library software available free through the dealers for User Group members.

## DEALERSHIPS

We are seeing more and more aggressive support of the Altair by all Altair dealers than ever before. As a matter of fact, I have been authorized by the dealers to pass along their offer to render support. If you have a problem with an Altair, even if you did not buy it from the dealer originally, feel free to go to them for assistance for either software or hardware problems. This service is free. All of our dealers have expressed an interest in getting systems up and running and solving existing problems.

## SCCS

As I mentioned above, the participation of the SCCS was certainly one of the major factors contributing to the success of the WACC. SCCS stands for Southern California Computer Society, implying an organization restricted to Southern California, but this is certainly not the case. SCCS has become not only a national, but international organization. As a matter of fact one of the prizes awarded during the convention was supplied by the SCCS chapter in Mexico City.

## IMSAI

As a matter of policy I have deliberately avoided discussing competitor's products, but in view of recent developments I felt compelled to respond. The following is my "objective" evaluation of the IMSAI. This evaluation is based upon a comparison between the currently advertised IMSAI and the early Altair.

We received our IMSAI machine approximately 30 days after the order was placed (January). My initial reaction was positive from two standpoints. The first being that it obviously wasn't a piece of junk and indeed appeared to consist of good quality materials. I had been concerned that IMSAI

might be another junk house like so many of the companies that have come and gone during the last year. The second pleasant surprise was that essentially it is only a slightly modified version of the Altair design I did over two years ago.

Based on their advertisements we expected a machine with a 22 slot mother board, a 24 amp power supply and memory. What we received was a transformer that we would rate at approximately 12 - 13 amps, a 4 slot (1/16" thick) mother board, and no memory. The price we paid was \$439.00 + a 5% handling charge, or approximately \$460.00. I understand the price for the same unit has been raised almost \$200.00 since that time.

## Improvements Over Original Altair

a) Front Panel Wiring: The front panel plugs into the system bus, a nice touch which eliminates the bulk of the front panel wiring harness.

b) Improved Power Supply: The system power supply has approximately 20 to 30% greater capacity than the early Altair (not 300% as claimed).

## Flaws

a) Cabinet: The IMSAI advertisements imply that the Altair is in a "hobby" case, while their machine is a commercial quality case. The fact is all Altairs have OPTIMA enclosures which are the highest quality cabinets available anywhere. The IMSAI cabinet is similar to a glorified mini box folded by some local sheet metal shop, it does not have any of the standard features included in an Altair, such as the sub-chassis, dress panel, etc.

b) Cabinet Rigidity: Related to the above comment, great care must be used when moving the IMSAI machine as the cabinet will flex enough to pop cards out of their edge connectors. This is especially a problem if the top (as in the case of a mini box) is removed.

c) Assembly Manual: We have received some justified negative comments concerning the Altair manual, but if you think that the Altair Assembly Manual is less than fantastic, wait till you see the IMSAI manual. It is primitive by our standards. The same is true of the schematics, from a drafting standpoint they are excellent, but from a usability standpoint they are almost worthless.

d) Front Panel: The front panel is a real do-it-yourself kit, lots-of-luck. All that work you saved on the front panel harness is made up for here. Its final appearance is totally subjective so you be your own judge.

e) Front Panel Switches: Construction of the front panel switches results in a sloppy appearance, and

contrary to what you may have read, they are standard toggle switches with inexpensive plastic handles. Manual loading of a program is significantly slower as a result of the close spacing of these switches.

f) AC Power Location: The AC power is on the top of display and control so watch your fingers (the original Altair design is not ideal in this regard either).

g) Ventilation: Like the very early Altair there is a large opening in the back panel for a fan (watch your fingers).

h) PC Boards: The PC boards are not silk screened. This coupled with assembly manual can make for tough assembly and maintenance.

i) Bus Driver: The CPU bus driver is an 8212 instead of 8T97 or 74367.

j) Memory Protect: It doesn't have a front panel protect capability.

k) Intangible Factors: Lack of mature software, minimal peripheral hardware and many other inadequacies that can only be solved with time.

There are a number of other minor problems with IMSAI, but I assume that IMSAI could solve them. In summary the IMSAI does not represent any advancement in the state-of-the-art and indeed is at best a slightly modified imitation of the original Altair. If you ignore the software, peripherals, etc., that go along with the original Altair and if you further assume the IMSAI sells for less than the original Altair, then the IMSAI is competitive with the early Altairs.

One final point, I have been asked about the Hypercube, i.e., asked if I had anything to do with its design, the answer is no. Where this rumor apparently started was the IMS advertisement which states in effect that IMSAI 8080 technology and the hypercube technology are common. Since the IMSAI 8080 is an imitation of the Altair, I guess its easy to extrapolate that the Altair is responsible for the hypercube, but it just isn't true. Some of the readers of this column are probably aware of a system design that I worked on in parallel with the early Altair to allow for a multi-processor system (256 CPU's). The Altair bus structure was configured in part to facilitate its implementation in a multiprocessor environment. This turned out not to be a practical way to achieve increased computing power, therefore, I abandoned the technique. Maybe someone reading this column will prove me wrong.

This evaluation was based entirely upon the original Altair and not on the second and third generation machines (8800A and 8800B). We feel these later machines are in an entirely different league than the IMSAI or original Altair.