The Human Side of Computers

So long as computers were simple and operated only by specialists, the human interface was relatively unimportant. The frustrations caused by complex procedures and software idiosyncrasies were borne by experts motivated to accept the challenge. But all that has changed. Not only are sophisticated systems becoming accessible to all, but there is growing concern about the quality of working life. As a result, information systems designers are increasingly being called upon to develop products that are easier to install, easier to service, and—above all—easier to use.

The need to make computer equipment more "friendly" to users has brought new stature to the field of applied psychology called human factors in the United States, or ergonomics abroad. Within IBM, management has made a major commitment to improving the human factors of our hardware and software products. Much progress has been made, as evidenced in part by this and the next issue of the *IBM Systems Journal*. But much work remains to be done in extending the computer's usefulness despite its limitations, and in reducing those limitations.

In the past, most of the human factors work in our industry has focused on improving the design of hardware to improve human productivity. But there is more to good human factors than productivity and hardware. Ergonomic concerns about matters such as visual fatigue are being treated as serious issues by governments. Getting the facts documented and known is the only answer to unjustified standards. And the real bottleneck in access

to computing is not hardware but ease of programming. Ideally, users should not feel they are "writing" a program at all when they ask for information from a computer system.

Another hurdle facing the human factors community in the eighties is a methodology for measuring and quantifying ease of use. This young science has come a long way since its beginnings during World War II. The state of our knowledge is reasonably good in anthropometrics and the physical factors of keyboards, displays, and the like. Yet few behavioral principles exist. Human factors is still an experimental science and not yet a predictive one. Tools and measures for quantification are sadly lacking. The "wet finger" approach lives on. Improved human factors must be a conscious design goal and its success subjected to the discipline of independent testing under realistic conditions. You can't evaluate ease of use without use.

The challenge to our industry for this decade is to bring computer capability—usefully and simply—to people without special training. If we succeed, future generations will acknowledge that the information systems born in this century quickly became the most supportive tools, compatible with human needs, that mankind has ever devised.