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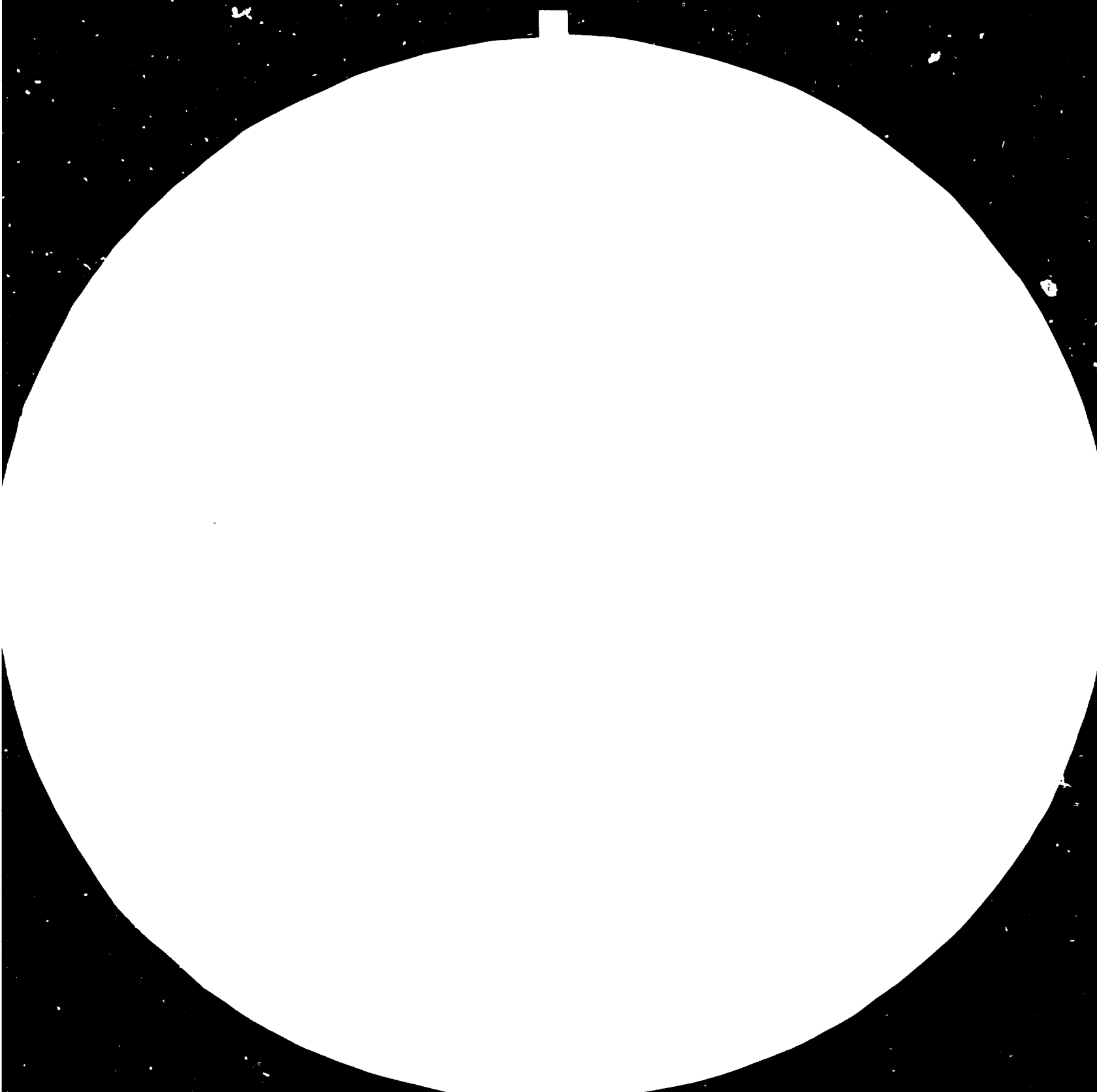

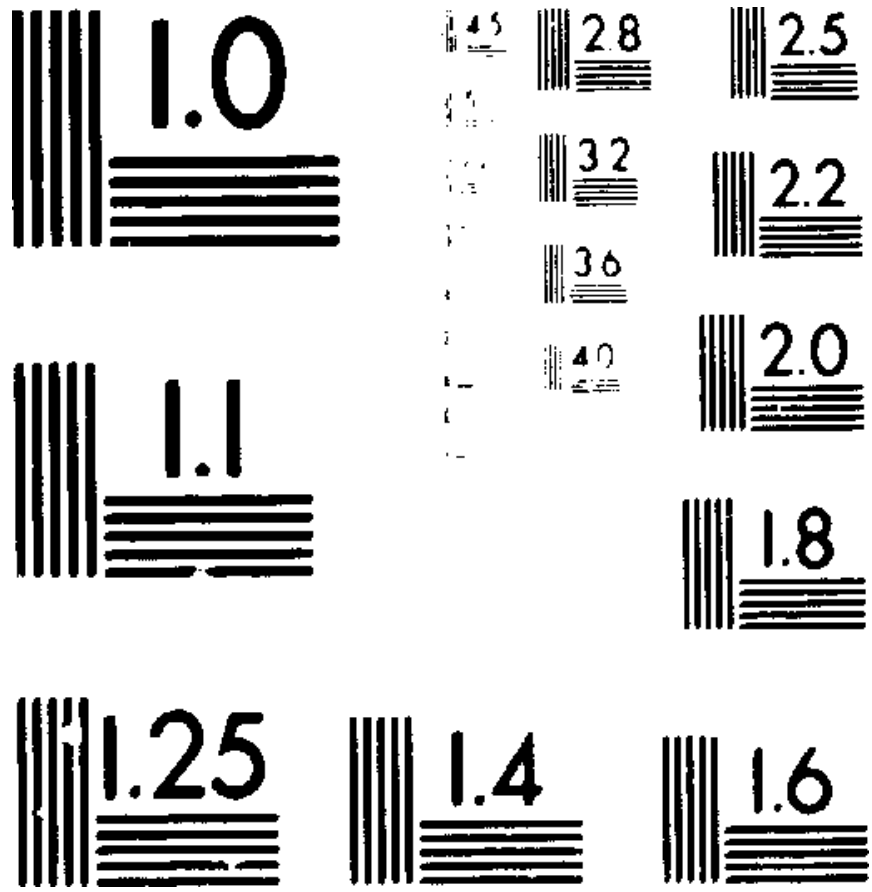

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SOME THOUGHTS ON SHARING INFORMATION FOR INFORMATION MANAGEMENT*

by

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SHARING INFORMATION ON INFORMATION MANAGEMENT

I think we must all take as a given, that microcomputers are - through the hardware industries' efforts, and the inherent attractiveness of the product - a permanent fixture worldwide.

The initial questions of micros' appropriateness to the developing countries were never ours - the Western development professionals - to answer. These were answered in the marketplace by the consumers' interest.

What was evident from the start was that the process of trial and error in application, the struggle with the making the systems work, could be facilitated by those who had been there first.

The history of technology transfer is filled with tales of these difficulties, and with the suspicions on the part of the developing countries that the concerns that we bring to technology applications are merely another manifestation of denying them access to these tools. (There is also the competing argument that Western nations push their technologies on the developing world and drain them of scarce foreign reserves.)

There has been good reason, however, for the concern of many of us, regarding the drawbacks of technology transfer. Who, now, in Mexico City's pollution-filled valley can deny the appalling consequences of unchecked proliferation of the combustion engine and industrial waste? The warnings came first from Los Angeles.

Back in the early 1970s, educational television was going to overcome the deficiencies of education. In the developed countries, the promise of reaching large numbers of students with uniformly excellent teachers, innovative curricula,

and stimulating visuals, fired the imagination of educators. Their thinking quickly informed that of educational planners concerned with the problems faced by developing countries - including those that were newly independent, and promising free education for all. Like all communications media, television had the potential to carry a message to an enormous audience - provided the audience could be reached. That is, if the technology were in place, both on the transmitting and the receiving end.

But then, the problem arose: What was the message - the program transmitted - going to be? Who was going to plan it, write it, produce it? What was it going to say or teach? What was it going to cost to do all this? Who would pay the costs? Could the cost justify the results? These were questions that confronted the educational planner everywhere. The answers were fairly fast in arriving in the U.S. Educational television was <u>not</u> the final answer to educational deficiencies. The problems lay in the programming - the software. It simply was not good enough, not varied enough, and there wasn't enough of it to do the job. This is not to say that it does not have a place in education, it does, particularly as a supplementary teaching tool. It's just that the results did not meet the initial expectations. I hope you see the connection here. The claims being made today for the microcomputer have to be rigorously examined in the light of experience to date, and this experience lies, for the most part, in the developed countries. The literature on computers in developing countries indicates that mini - and mainframes are current and well-utilized in the private sectors there and that micros are rapidly being assimilated. The introduction of micros to the public sector, however, has been handicapped by the relatively recent expansion to a 16-bit system, the lack of purchasing standards that would ensure compatibility among government offices, software inappropriate to public needs, lack of understanding

on the part of officials as to the range and suitability of microcomputer applications, and lack of trained personnel to adapt, program and maintain micros.

These are all issues relating to the "tool" function of the microcomputer - issues to resolve before serious benefits can begin to be realized. More fundamental is the purpose to which this tool will be put.

Many kinds of applications present themselves. They can generally be grouped into three functional areas: administration, education, and information management.

In the first of these uses, administration, one finds a lot of number manipulation - financial and statistical data spring to mind; demographics and inventories, payrolls. This is the most practical and accessible of micro applications. A number of good financial packages have been developed for micros that can provide spread-sheets, modeling and statistical handling. These are not yet to the level of sophistication found in minis, but the quality is improving as is the capacity of the micros.

A great deal is being hoped for from computer-assisted education beyond drill and practice. What is sought is some magical formula - or program - that will teach a student anything in a logical progression, in an exciting yet patient manner. And in truth, the links with videodisc for interactive training, as an example of recent directions, are full of promise. The potentials are enormous, but the program design factor is tremendously inhibiting. The time and skill necessary to design a complete course are daunting. It should be tested, revised, then applied and corrected as the student proceeds through the instructional module. If the syllabus has been measured against the anticipated learning and the program developed accordingly, the effort expended will push the cost of the program beyond easy recuperation. More important, where are the skilled and dedicated program designers to be found?

Although some good educational software exists in developed countries that could be transferred, to be truly appropriate and content specific, each country should develop its own educational software programs. The ultimate decision to use micros in developing countries must rest with their cost-effectiveness, since "much of what is taught by educational computer programs could be taught by other means at lesser cost."[1]

The information management applications for the microcomputer are many, if the term "information" is seen broadly. The word-processing function is still most efficiently done on a dedicated computer, but the word processing programs are improving steadily - in English, at least.

Communication software is making packet-switching networks - where they exist - available for the accessing of major databases. As a supplier of information, I am personally sceptical about the ultimate usefulness of vast amounts of unscreened, undifferentiated bibliographic data for materials that are not generally available in developing countries, and which can only be obtained at considerable effort and expense. On the other hand information which is generated locally, in-country or in the region, can be of enormous value if it is effectively gathered into a computer data management program so that it can be shared, accessed, and added to, locally and/or regionally.

In order that this kind of sharing can take place, however, there must be some policy decisions taken to ensure some sort of standardization in a user group's hardware. Without this, the agricultural research stations of a country would not be able to equally access or add information to their agricultural data base. "... governments, if they (wish) to coordinate information resources of all agencies, should view the problem of coordination from the wider angle of

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[1] J. Friend, "The Future of Computers in Education in the Developing World," Development Communication Report #43, Washington, September 1983.

coordination of information rather than merely establishing machinery to control the procurement of equipment."[2]

Coordination must also exist for the format of the information to be entered into a system. Computerization formalizes the information-handling function and imposes a process to which all must adhere if the information is to be equally beneficial to all.

The potential of the microcomputer to assist developing countries in their planning and priority-setting through effective gathering and analyzing of information has yet to be realized.

The constraints of high costs of software program development, hardware maintenance, lack of trained personnel, insufficient standardization of hardware and software procurement can be overcome to a substantial degree if the problems that developed countries have had are shared - and listened to and learned from - by those seeking to establish an institutional framework for computers in any of the three areas discussed here.

The Clearinghouse on Development Communication - an information center on the applications of the communications media to development - has long been interested in the computer as a medium of communication. Our initial interest dates to the early 1970s when computer-assisted instruction, like educational television, was going to revolutionize education. More recently, our cooperative venture (along with a number of other development information groups) in the creation of Control Data Corporation's DEVELOP database, initiated us into the world of micros, and gave us insights that we are trying to share, both in our

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[2] "Regional Workshop on The Role of Mini- and Microcomputers as Tools for Economic and Social Development." ESCAP, Bangkok, November 1982.

quarterly newsletter, Development Communication Report, and in answer to direct information requests.

Examples of our contacts and information include the very careful work being done by the Economic and Social Commission for Asia and the Pacific in Bangkok. Not only have they held several regional meetings on the role of computers as tools for economic and social development, but they also regularly publish a fine newsletter on agricultural information which frequently features articles about computer applications.

Two years ago during a visit to Nairobi, I was delighted to discover a computer software program that was available on request to any member government of the United Nations. Developed by the UN Center for Human Settlements, the Urban Data Management Software package was designed to meet the needs of physical planners. The article I wrote about the program for our quarterly newsletter, Development Communication Report, generated considerable interest on the part of planners in a number of developing countries, and demonstrates a very practical sharing of information.

The Bolivian National Computer Center (CENACO) has been in frequent contact with our Clearinghouse, requesting information, referrals, documentation, and other assistance to expand their effectiveness in that country.

An effort is underway in Peru to test the feasibility of telecommunications links to U.S. network ports in order to access commercial databases, and as long ago as 1980, there was a regional meeting on Computing and Data Processing for Latin America, held in Venezuela. Both Brazil and Argentina are developing major computer systems for national data collection, bibliographic handling, and agricultural research; and ILET, the Latin American Institute for Transnational

Studies has just published New Frontiers of Development: Informatics and Telematics, an overview from the Latin American perspective.

There is a good deal happening in most of the countries of the world, and to the extent that it is possible, we are letting our readers know about it. We at the Clearinghouse stand ready to share applications information that we have gathered, and welcome your contributions to our information base so that others will have access to them.