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American Institute of Certified Public Accountants

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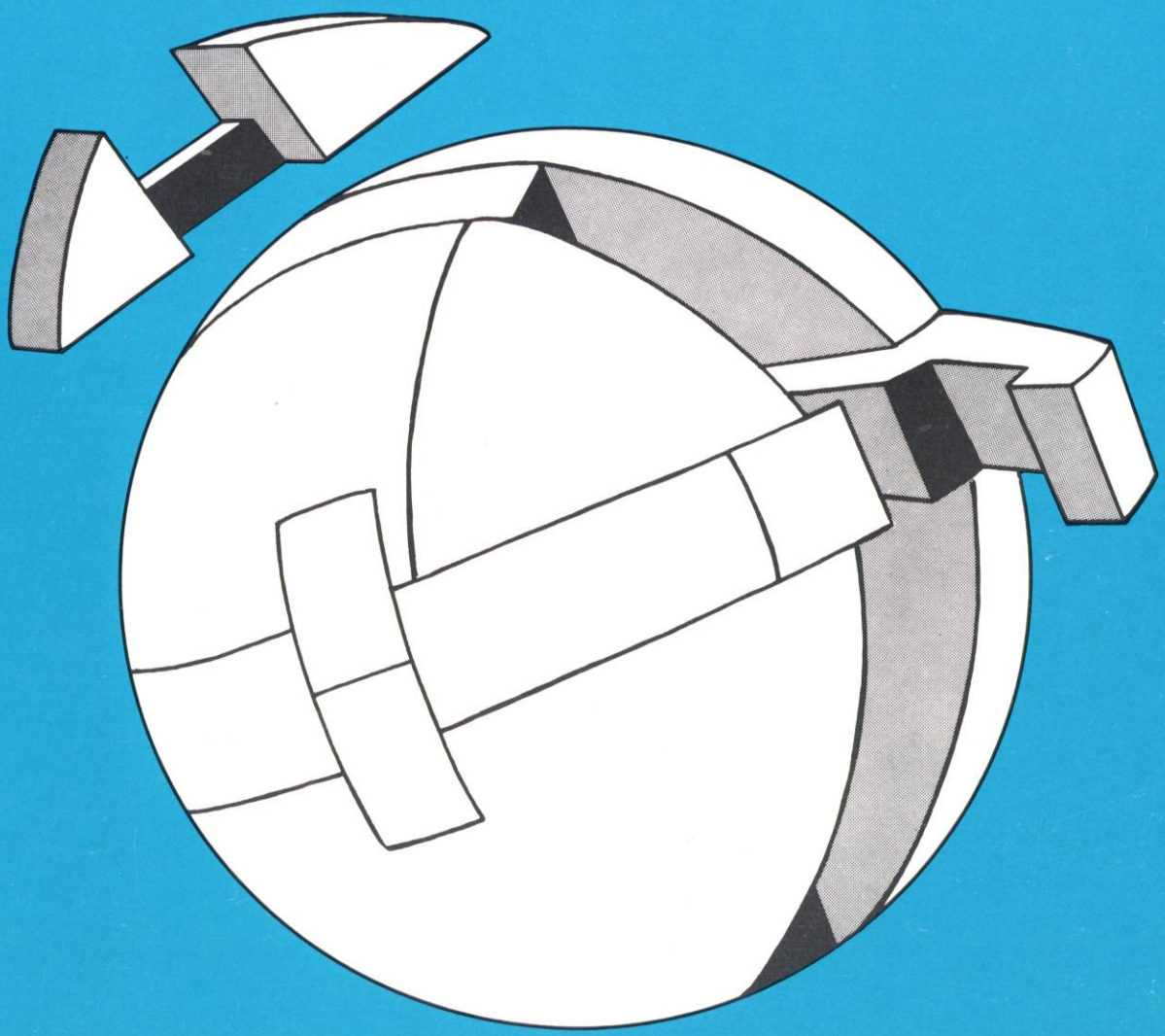
July-August, 1974

Putting It All Together

Carl H. Poedtke, Jr.



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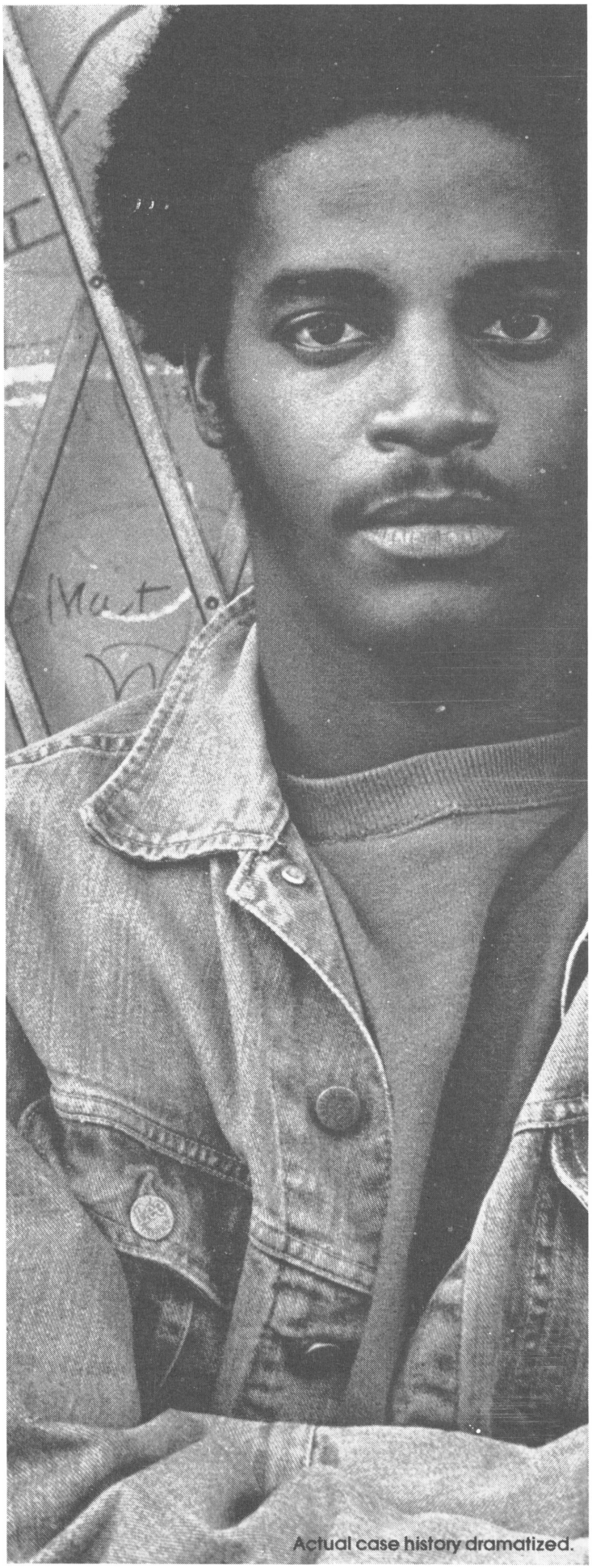

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July-August, 1974

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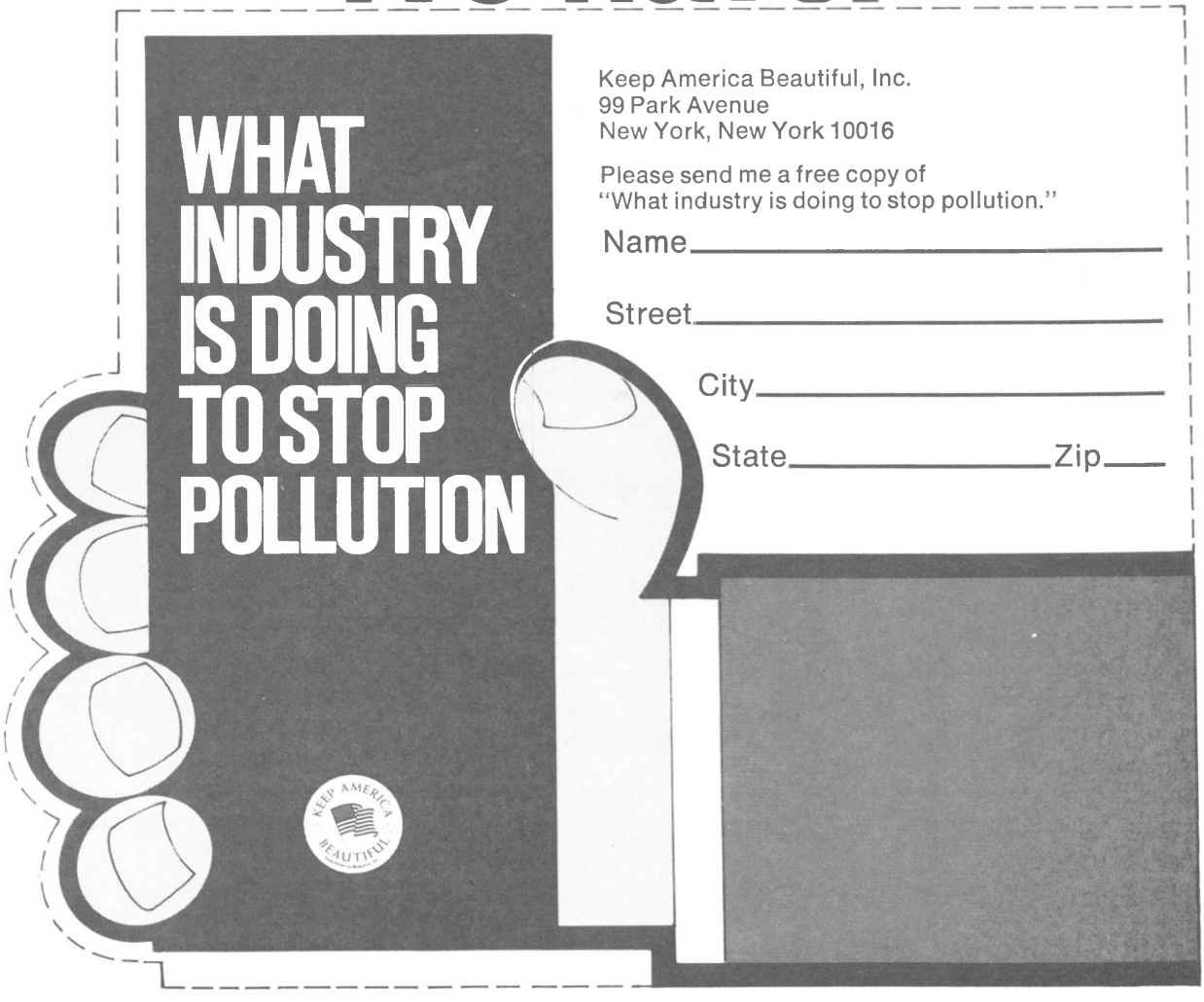

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Uses of Energy Becoming Less Efficient, Commoner Warns Chicago Group; Short-Run Policies of Past Produced Energy Crisis, Federal Official Says

The efficiency with which energy is converted into goods and services has declined, observed Barry Commoner, director of the Center for the Biology of Natural Systems at Washington University, St. Louis.

Speaking at a public lecture sponsored by the University of Chicago's Graduate School of Business, under a grant from ITT, Mr. Commoner said we are using increasing amounts of energy to produce given units of food and given units of value added in manufacturing and to move given units of freight.

He sees the need to redesign the nation's productive technologies to use energy and other resources, "including the environment," more efficiently.

"We need to ask why this seemingly irrational trend in productive technology has taken place. The answer is to be found in our economic system which, after all, governs the decisions as to what is produced and by what means.

"Increasingly, energy has become the means by which the behavior of the productive system is made to respond to the goals of the economic system," he stated.

Causes of energy crisis

Another speaker in the University of Chicago lecture series, William A. Johnson, assistant administrator, Federal Energy Office, asserted that policies designed to reach short-run objectives in the past have precipitated the current energy shortage.

"For years we have been sacrificing long-run interests to secure various short-run objectives, such as unrealistically low prices, wasteful patterns of consumption, and too rapid application of environmental controls and restrictions . . . Now we are paying for these policies," he said.

Price controls have not improved the situation either, he added: "Even with the Cost of Living Council now a thing of the past, provisions of the Emergency Allocation Act of 1973 extend controls over oil prices until February 28, 1975, and there is support in Congress for continuing these controls even further. I expect that they

will continue to intensify this crisis for as long as we persist in trying to replace the market price with administrative decision."

Price controls have: distorted production patterns, leading to shortages of some refinery products and surpluses of others; encouraged questionable actions by different industry segments; and discouraged new investment and exploration, Mr. Johnson said.

"Some uncertainty is a natural part of business operations, and profits are, among other things, a return to the businessman who is willing to take risks. The uncertainties created by price controls and other Government policies have been unnatural. These controls have deterred investment and, because of this, increased our dependence upon high-cost, unstable foreign sources of oil," he stated.

Goodyear Aids Hospital Management as Counter To Rising Health Costs

In 1968 The Goodyear Tire & Rubber Company paid out $25,863,000 for its domestic medical employee benefit program; in 1973 it paid out $55,451,000 for the medical program, reported O. M. Sherman, Goodyear vice president-corporate relations.

Mr. Sherman spoke at The Conference Board's "Health Care Issues for Industry" meeting, April 23, in New York.

"With this kind of mounting outflow of dollars over a relatively short period of time, we decided to embark on a course of action which would have as a goal a program of cost control, at least to the extent that the possibility exists for control or containment," the Goodyear executive said.

Goodyear formed its own health care committee and subcommittee composed of corporate executives who sat on hospital boards in Akron or whose scope of responsibility was directly affected by the problem, and included legal, financial, and industrial relations officers. The corporation also hired a full-time health care consultant to develop and initiate a program to assure the company that its employees were getting quality health care at the lowest cost consistent with such care.

"We had to consider that providers of health care services are Goodyear suppliers, a somewhat different characterization than we have been used to," Mr. Sherman told The Conference Board meeting.

First the Goodyear group realized that a data collection system must be devised. It knew that the length of hospital stay in Akron was three days longer than that of other company locations, exceeding the national average stay by two days. Local hospital authorities provided varied reasons for this. Goodyear felt statistical refinement was necessary. The company is now in the process of developing a system with which it will be able to compare hospitals by: discharge diagnosis, age, and sex of patient; inpatient services for like diagnosis; and disability codes.

"These figures will then be related to criteria of care, provided by the medical profession, and our basis for negotiating with hospitals will be on as firm a foundation as possible," Mr. Sherman stated.

Foundation serves as model

In one location, Goodyear has contracted with a medical foundation to have a group of physicians perform hospital utilization and peer review of all health services rendered to Goodyear employees at that site. This is also to provide data on comparative length of hospital stay, necessity of inpatient admissions, and physician charges.

"Another facet of our policy of health industry relations revolves around the concept of 'approved providers.' Having access to carefully studied data and determination of 'quality of care' through medical foundations and Professional Standards Review Organizations, we feel, as a payor of health care, that we should have the right to approve or disapprove a provider of health care for payments under the company-paid benefit program. To protect both company and employee interests, a hospital, nursing home, physician, laboratory, or any other health care provider which does not conform to the standards of rendering quality care at a reasonable cost should relinquish their right to our benefit payments. Fully realizing that any negative judgment made under this policy must be carefully determined, nevertheless, we expect to continue to develop the concept," Mr. Sherman declared.

Goodyear management employees are urged to serve on hospital governing boards, bearing in mind that the company views hospitals as suppliers of an expensive service, he explained. In some communities Goodyear is the major payor of a hospital's revenue. The company has provided management and engineering consultation to help hospitals increase their efficiency and improve their planning. Its executives have become members of local planning agencies.

"As a member of the National Chamber of Commerce's Committee on Health Care, and chairman of the Health Care Financing Subcommittee, I have worked on the Chamber's recommendations regarding national health insurance. Our work is in its final stage and, very shortly, the Chamber's bill will be presented," Mr. Sherman reported. "Briefly, the concepts supporting this piece of legislation will include the following:

"(A) Private administration outside of the bureaucracy of the Federal Government.

"(B) Meaningful cost controls with payors assuming some role in monitoring the costs, efficiencies, and qualities of the service.

"(C) Provider accountability wherein health care suppliers are responsible to those paying for and receiving the service.

This is the last issue of MANAGEMENT ADVISER.

Founded 11 years ago as MANAGEMENT SERVICES, the magazine realized its original circulation goals within the first two years of its existence. Estimates of its advertising potential, however, were never realized.

As the cost of every ingredient that goes into publishing rose over the years, the magazine's financial difficulties increased. Finally, the Board of Directors of the AICPA, on recommendation of the management advisory services executive committee, decided that it would be best to increase the number of management articles in *The Journal of Accountancy*, our more prosperous sister publication, and abandon MANAGEMENT ADVISER.

All current subscribers to this magazine may have their subscriptions fulfilled through *The Journal of Accountancy*.

We would like to take this opportunity to thank each of our contributors, and also each of those who have served on our editorial advisory committee, management advisory services forum, and magazine review panel for their loyalty and efforts over the years.

We would like, too, of course, to use this last editorial to thank our many readers who have written in or otherwise communicated with us to tell us of their regret over the magazine's end.

To all of you, we repeat our thanks, and sign off with the traditional "30," the newspaperman's customary signal to indicate that a story has ended.

—The Editors

"(D) The legislation encompasses benefit tradeoffs or actuarial equivalency."

Mr. Sherman stated that Goodyear decreased its monthly employee health service costs in Akron by seven per cent in 1973, from $32.50 per employee per month in 1972 to $30.15 in 1973. However, he admitted it is not easy to determine how much of this decrease should be attributed to the cost control program.

Of Companies Surveyed, One-Fifth Offer Workers Drug Abuse Assistance

Counseling or referral programs for employee drug abuse problems are in operation in 20 per cent of the companies that responded to the Bureau of National Affairs, Inc., survey, *Personnel Policies Forum.*

Two-hundred and four companies were covered in the survey, 47 per cent of which had 1,000 or more employees.

Alcoholic counseling

Among the survey's findings were: twenty-eight per cent had counseling or referral programs for alcoholics, 25 per cent for emotional illness, and 24 per cent for personal problems.

Seventy-five per cent reported having company medical facilities including first aid stations. Fifty-five per cent of the respondents said they had sick rooms. Full- or part-time doctors were on the staff of 59 per cent of the companies and full- or part-time nurses were on the staff of 63 per cent.

Although 80 per cent of the companies provide their employees with pre-employment physicals, only 20 per cent give all employees follow-up physicals, 39 per cent give follow-ups to management only, and 22 per cent give them to "certain groups of employees."

Company credit unions are available at 61 per cent of the responding firms. Child care services are in operation at 6 per cent of the firms, none of them manufacturing companies.

Fifty-four per cent of the companies said they had employee lunchrooms with vending machines and 43 per cent had employee cafeterias.

"Service for Employees," *Personnel Policies Forum* Survey No. 105 is available at $5.00 per copy from the BNA at 1231 25th Street, N.W., Washington, D.C. 20037.

Both Government and Business Distrusted By Public, Ramo Says

The public is paranoid, trusting neither the Government nor business, Dr. Simon Ramo observed in the keynote address of the University of Southern California Business School's Annual Seminar. The seminar was attended by USC's business administration students, faculty, and invited business leaders April 16.

Dr. Ramo, vice chairman of TRW, Inc., said that the public equates business with selfish profiteering and sees the Government as a hopelessly inefficient bureaucracy, "populated by slow workers and led by incompetents, empire builders, or scoundrels."

"Today business success, when it occurs, is often interpreted as proving that profits are too high and should be taxed away by the Government. Yet the Government is considered by the same interpreters as sinfully wasteful, and taxes and Government expenditures are believed to be too great. When these views prevail together, they constitute a perfect formula for slowing progress," he said.

The United States is unique in having the combination of technological strength, natural resources, a single large and integrated economy, and proven national talent for organization, the TRW executive stated. The nation's future economic and social health will depend on business and Government working together, Dr. Ramo believes.

"More of our most creative and well-educated young people should interest themselves in the interface between Government and business. There are opportunities here for new and satisfying careers. The most outstanding business firms in the future will be those whose leadership is skilled in the interface problems: technology and economics, marketing with social change, and business with government . . . The ability to put it all together will characterize success," he concluded.

Former Price Controller Sees Possible Return if Inflation is Not Beaten

Unless business and labor prove the free market system works, the United States is likely to have new wage and price controls in two or three years, warns former Price Commission Chairman C. Jackson Grayson, Jr.

Prices are rising three times faster today than they were a year ago, when Phase II held the inflation rate at three per cent, Mr. Grayson observes.

"This is a most regrettable situation for the American people and a danger to the economy. We could fall into the low economic growth pattern and problems of the European nations, as typified today by Britain," he stated.

Now dean of the Graduate School of Business at Southern Methodist University, Mr. Grayson is promoting his book *Confessions of a Price Controller,* Dow-Jones-Irwin, Inc. The book is addressed to the general public because he believes that is who will determine whether further controls are necessary.

In the book, he tells of the Ad-

ministration's lack of preparedness for controls and criticizes the inadequacy of statistical and other information he feels was needed for the country's economic decision making. A list of do's and don'ts for future controls is outlined in his book.

'Think Tank' Seeking Women's and Minority Integration Organizes

An interdisciplinary group financially backed by the Xerox Fund, IBM, and General Electric has come together to formulate some new ideas to more completely integrate women and minority groups into the United States economy. It is called the Economic Think Tank for Women and it anticipates having its first summit conference this fall.

Reporting on the group's May 11 planning session, Betty Freidan told a press conference that the women's movement is proceeding from the crest of stage one, which entailed breaking through explicit sex discrimination. "What is needed now is new economic thinking," she announced.

The economic turmoil of the nation and the emergence of women seem to be on a collision course, she remarked. Women who have been only recently hired, overcoming previously existing barriers, are quickly being fired as cutbacks become necessary. She cited the case of the first female airline pilot, who suffered this way. The Economic Think Tank for Women is designed to act as a catalyst for new thinking, for developing options and alternate proposals for the future, Ms. Freidan stated.

"Events are moving too fast for our economists," Alvin Toffler, author of *Future Shock*, said at the press conference. "There have been few new economic ideas since Keynes." He pointed out that, in the past, outside groups pressing to get into a system have been the ones to bring new ideas to it. Some of the issues he believes the group should study are the implications of the growth of the single-parent family; the acceptance of childlessness as an option; and husbands and wives sharing a career. Flexible working hours, retirement, retraining, tax structures will be topics for the Think Tank's attention.

The Center for Policy Research, Inc., is temporarily volunteering space to the project. Its director, Amitai Etzioni, mentioned two issues he is interested in seeing work on. One is the concept of "compensatory seniority," which would help end women and minority groups' suffering from the last-hired-first-fired syndrome. This idea would have those who spend some time in managing a home be given compensatory recognition.

The 'liberated family'

His second area of inquiry would be the redesigning of buildings to take into the consideration "the liberated family." This might mean day care centers and communal kitchens being placed in office buildings for the convenience of families where both husband and wife work outside the home.

"It's time that women and minorities quit fighting over the same piece of the pie," Althea Simmons, National Education Director of the NAACP stated. "We have to take full advantage of the Affirmative Action programs, limited though they might be." Ms. Simmons believes the new economic ideas generated by the Think Tank will benefit minority groups as well as women.

Ernest Boyer, Chancellor of the State University of New York, said that his interest in the new group was in seeing how institutions can become flexible and interlock. How universities can meet the needs of not just 18-year-olds, but all age groups. He explained, "Early retirement and greater longevity have the capacity for making education a continuing activity for people who are to be trained and retrained to grow and regrow." Education should be related to increased aspirations, freedom, time, and leisure, he said, and perhaps even the retirement home.

Theodore Kheel, labor mediator, pointed out that these new economic ideas will cause problems in the labor area. For instance, on the idea of compensatory seniority, he said, "There is merit to that but necessarily it will be taking something away from somebody." However, Mr. Kheel endorsed the project, "What I like about the Economic Think Tank for Women is that it is thinking about possible solutions, not just cursing the darkness."

The fall summit meeting will invite 200 attendees to join the Think Tank effort. The group hopes to get more funding from various corporations and foundations and has so far received substantial voluntary help. It expects to be an ongoing project that will produce research papers, cassettes, and other media to promote its findings and to raise revenue. Its budget now calls for $150,000 a year and includes a proposed staff of six.

Temporarily, the Economic Think Tank for Women has offices at the Center for Policy Research, 475 Riverside Drive, New York, N.Y. 10027.

Decentralized Buying May be Outdated, Says Logistics Newsletter

Although decentralized purchasing has become a standard practice for many corporations that want to maintain autonomy of divisions and avoid conflict with line managers, it may not be the best policy to follow in a shortage economy, suggests Japan Air Lines in its *Logistics Newsletter* May issue.

"But whereas in the past central-

ization was assessed primarily in terms of its potential for improving price leverage, today it must be viewed in terms of its potential for assuring a reliable supply. Rather than weigh in the added administrative costs and problems against the potential price savings, the firm must consider whether the alternative and less costly decentralized procurement activities may not in the end generate far greater costs in interrupted production, for example, or widespread customer service failures," the newsletter states.

JAL points out that centralized procurement potentially means added transportation costs as a single source of supply rather than numerous local sources are used. Stockpiling purchases at a central point with a single safety stock may help to offset this expense.

The airline explains, "This will have the effect of reducing overall supply requirements and inventory investment while at the same time providing tighter control of scarce materials. As is already the practice in many firms, spot shortages at individual plant locations can be overcome by expedited transportation or air cargo.

"In some instances inventory savings plus reduced production costs due to reliability of supply will justify a regular air cargo replenishment program for plants beyond a certain radius from the central supply point," JAL advises.

Copies of the May newsletter are available at no charge, by writing to Cargo Sales Department, Japan Air Lines, 655 Fifth Avenue, New York, N.Y. 10022.

National Materials Policy Uncoordinated, Says NBS Director

The nation needs a coherent materials policy, Richard W. Roberts, director of the National Bureau of Standards, told the Mechanical Failures Prevention Symposium sponsored by the NBS, May 10, in Gaithersburg, Md.

"If you look hard enough, you'll find that there is national policy on materials and mechanical failure, but it is a diffuse, uncoordinated, stop-gap policy that lacks a real focus," he said.

Dr. Roberts suggested that the Government: 1—foster development and use of sensitive, reliable methods to test for flaws; 2—support materials research; and 3—help develop a clear definition of product liability.

Product liability cases are becoming more frequent, he observed. In 1960 there were 50,000 such suits and in 1970 there were 500,000.

"At a time when sophisticated new engineering applications and shortages of traditional materials put a premium on innovations in materials and on imagination in design concepts, this legal climate may lead to an overly cautious approach by industry," Dr. Roberts stated. "For example, the avoidance of new materials, overdesign, and delays in marketing. This is an appropriate area for new policy—for strong Governmental support of materials characterizations research and of research and development of non-destructive evaluation (NDE) test methods."

NDE techniques are used for the location of flaws in a structure. These techniques are becoming more precise but still have a long way to go. In ultrasonic testing, one of the most popular NDE methods, "No standard is available against which to make meaningful calibrations; phase and frequency data that could greatly increase the information output is ignored; and automation to increase efficiency and reduce operator variability is not used widely," the NBS director observed. Similar problems are common to other NDE techniques.

The Government's prime mover role in the fields of atomic energy and space exploration and its special responsibilities, such as providing for the common defense, explain its concern for the consequences of mechanical failure, Dr. Roberts stated.

Computer Makers Call For Greater Trade with Eastern Bloc Nations

The Computer and Business Equipment Manufacturers Association has called on the Senate Subcommittee on International Trade to extend the Export Administration Act through 1977. One of the reasons cited was that uncertainty over U.S. export control policy has inhibited socialist countries' acceptance of U.S. company proposals for larger commercial and civil computer systems.

CBEMA officers warned that, "If we cannot adapt U.S. export control policy to the needs, U.S. participation in this market will be self-limiting. In that case, the need will be met either by internal development or from increasingly available alternative sources."

The Association said that international markets are just beginning to open up for the application of business methods. And nowhere is the potential market for commercial and other civil applications greater than in socialist countries.

Peter F. McCloskey, CBEMA president, said, "We believe in the realistic implementation of detente. The markets opened by detente can provide significant benefits to the United States, its industries, and its workers, in addition to serving the cause of international peace. Trade thus generated can be conducted responsibly and with proper regard to the national interest. However, it needs adequate financial credit resources for the large transactions involved. In addition, it needs the assistance of an adequately staffed Department of Commerce Bureau of East-West Trade. And, finally, it needs the continued vigilance of Congress to assure that the U.S. economic interests are balanced against our legitimate national security requirements."

For the Management Consultant—

Computers Outpace People Who Run Them, Causing 'Energy Crisis' in EDP Installations, AFIPS President Says

While the computer industry has become a people-intensive industry, it does not have the ability to master an adequate force of skilled manpower, George Glaser, president of the American Federation of Information Processing Societies, Inc., said in the keynote address of the National Computer Conference, May 6-10 in Chicago.

"We are, it would seem, plunging headlong into an energy crisis of our own. We are building and installing powerful machinery for which we already have an inadequate supply of its most important fuel element—talents of our people—and we are doing far too little to maintain and replenish that supply."

Five elements cited

This situation arises from a combination of not enough well-trained, qualified people, their early obsolescence, and lack of adequate career paths for computer professionals. Mr. Glaser broke the situation down into five elements:

"1—There are a distressingly large number of poorly qualified people at all levels, and particularly in user development organizations.

"2—Those who are now competent are becoming less so every day as technological developments continue at an overwhelming rate.

"3—The long-term career prospects for data processing people in most user organizations are not sufficiently promising to attract the talented young men and women who could add to and strengthen our supply of available professional manpower.

"4—Our universities are turning out far too few computer-oriented problem solvers.

"5—We are having a painfully difficult time achieving the level of professional maturity that would help stimulate and reward the continued self-renewal of individual competence."

In detailing some of his points, Mr. Glaser cited the "Paul Principle" articulated by Paul Armer of the Center for Advanced Study in the Behavioral Sciences: "Individuals often become incompetent over time at a level at which they once performed well, because they become 'uneducated' (technologically obsolete) for that level."

Since our economy is becoming more and more dependent on computers, Mr. Glaser believes "the technological obsolescence of computer professionals becomes a national problem."

Although the computing profession may provide challenging and interesting work, the speaker said he had his misgivings as to its providing a long-term rewarding career. He noted that according to the findings of the American Management Association, the data processing chief is the next to the lowest paid manager in the average company, surpassing only the transportation manager. Data processing does not usually report to the company president. The DP manager's energies are often concentrated on managing his specialty and perhaps he does not have time to develop the broad general management skills that would qualify him as a candidate for executive positions, Mr. Glaser speculated.

"For whatever reason, DP managers seldom are given the opportunity to participate personally in the tough decisions that develop and temper the skills of other executives. As a result, they are likely to retain their image as narrow specialists unless they make a concerted personal effort to redirect their careers—admittedly a tough assignment for anyone, and particularly so for the unfortunate soul who has been categorized—however unfairly—as an obsolete manager with no clout," Mr. Glaser added.

Among the activities AFIPS is undertaking to improve the EDP personnel situation is the development and dissemination of information covering improved systems design, job analysis, codes of conduct, and related matters.

"In a broad outline, AFIPS is considering a program designed to (1) assist the Federal Government by supplying technical advice and assistance, when requested, on computer-related issues, (2) improve communications between industry, academic institutions, and Federal agencies concerning research and development in computer science and engineering, and (3) supply information to the AFIPS constituent societies [including the AICPA] about Federal activities and policies affecting computer science and engineering," Mr. Glaser said.

"I'm bullish about computing and about the computing industry. But it is time for introspection—as unsettling as it may be," he told the NCC audience.

IBM Continues EDP Security Study; Report Planned Soon

Two years have passed since IBM announced it was investing $40 million over a five-year period to study and develop data security techniques (see M/A, July-August, '72, pp. 6-7). At the 1974 National Computer Conference IBM announced it had completed a study

that will serve as the basis for its guidelines for protecting EDP information. Copies of the six-volume 1,300 page study are scheduled to be available within the next 60 days.

Each of the security project study sites installed IBM's experimental Resource Security System (RSS), a software system designed to make their operating systems secure. At the MIT site the RSS procedure was modified so that not only a security officer was able to decide who could use or alter a set of data, but the creator of the data could also authorize others to use information in ways such as read only, copy, modify, and destroy.

Most vital in financial field

MIT researchers also surveyed EDP users in the financial, medical, service bureau, and university fields, and found that security was of more apparent importance to those in the financial field than to the other groups. Social forces, company policies, and experiences with computer fraud were cited as reasons for the financial community's increased interest in security.

Another MIT finding was that most executives, even data processing managers, believe that data security exists in their installations and, therefore, do not view it as a problem. However, those technically knowledgeable people more directly involved in the actual computer operations are aware of how serious the problems can be, MIT researchers reported.

Another IBM study site, TRW Systems, Inc., arrived at a list of 187 requirements for data security. TRW found to determine the compliance of complex operating systems with security requirements, automated aids must be used such as: module connectivity tools for analyzing the structure of an operating system and path analysis tools that measure the thoroughness of testing.

The IBM Federal Systems Center in Gaithersburg, Md., studied the problem of installing a secure operating system in an ongoing data processing operation. The Center underscored the need for special identification procedures for regularly scheduled jobs where operators or other production people (rather than the programer or end-user) had the primary, direct access to the computer. Names and code words were not found to be sufficient by the Center and it suggested better alternatives should be considered, such as comparing the time a job is submitted against an established schedule. Names of the programs running should be checked against the list of program names authorized for the job.

The fourth IBM study site, Illinois' Department of Finance, Management Information Division, produced a booklet for executives on the social implications of protecting private information. It also detailed procedures for implementing security, taking into consideration available technology, legal requirements, and necessary training of operations personnel.

Twenty-three research papers are included in the guidelines IBM is planning to release soon. The work will be distributed without charge to IBM computer customers, appropriate trade associations and industry groups, and some large university libraries. Others will be able to purchase the guidelines from their local IBM branch office. The price has not been set as of this writing, but is estimated by a company spokesman to be approximately $30-35 for the six volumes.

Small Businesses Told To Stress Variety When Hiring, Recruiting

When small businesses are hiring, they should extol the career benefits of work in their size organization, the variety of experience and early opportunity to contribute significantly, advises J. H. Cohn and Company, a Newark CPA firm, in its newsletter, *Time and Tide,* issue 21.

"Neither age nor tenure should be a deterrent to getting a job done efficiently and professionally," states the newsletter. "Hire the person for the job, not for life."

In addition, when hiring remember, "it is often faster, cheaper and safer to hire the missing expertise than to experiment with a home-grown product," the firm states.

Sources of people to fill available posts are: your own current employees, referrals from employees, ex-employees, advertising, employment agencies, and people who were previously interviewed by the company but not hired.

"In hiring a $20,000-a-year employee you are probably making a minimum investment of $10,000, as it usually takes six months to make a fair judgment on a new employee at the technical or managerial level. Spending 10-20 hours for proper interviewing and checking is a modest investment and the time required to select from among the candidates will be well spent," the firm states.

Telephone calls or personal visits to check references are better than written references, Cohn advises. Written references can be carefully worded to reveal nothing and thus need to be investigated.

Getting to know a professor at a local university whose graduates are likely candidates for your firm is a technique Cohn advises for choosing inexperienced personnel. The professor can influence students to apply and can also provide you with a deeper knowledge of the student than a limited interview can.

When hiring straight out of school, "Hire with the expectation that a probationary period (one to three years) will be needed before final placement or assignment is made. This policy eliminates the need to be precise about a specific job when hiring and gives both the firm and the applicant an opportunity to test each other. The selection, training and judgment-producing experience come later for the college recruit," according to Cohn.

AICPA Engages Texas University to Study Skills Needed in MAS

On May 23 the AICPA engaged the University of Texas to undertake a study of the body of knowledge required by a management advisory services practitioner in a CPA firm and ways to test candidates' knowledge. Over $100,000 will be spent for this 15-month project.

Responsibility for the project lies with the MAS body of knowledge and examinations task force, chaired by H. George Trentin, CPA, Arthur Andersen & Co. He reported that the task force was first brought together on December 12, 1973. It presented its prospectus for the study to the AICPA Board of Directors on February 20, gained its approval, and then on April 17 sent out a request for proposals to 14 universities and research organizations. On May 23 the University of Texas was selected as the contractor.

Four phases of work

The work is to be performed in four phases: fact finding; development of body of knowledge concepts; development of examination concepts; final report. Phase One is to be completed by September 30, 1974, Phase Two by December 31, 1974, Phase Three by May 15, 1975, and Phase Four by August 31, 1975. The AICPA has retained the option to terminate the study after completion of the first two phases.

Quality document expected

Mr. Trentin said that hopefully the study will produce a document of the quality of *Horizons for a Profession,* the AICPA publication describing the common body of knowledge for CPAs. The new study would be a kindred document for MAS practitioners, CPAs and non-CPAs alike, he explained.

Throughout the project the AICPA task force members will interact with the University of Texas research team. The task force will assist the researchers in setting up interviews with MAS practitioners and in providing them with AICPA policy information. Three non-CPA and six CPA MAS practitioners, and the executive director of the New York State Society of CPAs make up the task force.

Personnel of project

Dr. Edward L. Summers is the director of the University of Texas project. His associate director is Dr. Kenneth E. Knight. The University of Texas project policy committee is composed of Dr. George Kozmetsky, Dr. John S. McKetta, Dr. Thomas H. Williams, and Dr. Glenn A. Welsch. They will work closely with a subcommittee of the AICPA task force including Mr. Trentin, Arthur B. Toan, Jr., Price Waterhouse & Co., and Max F. Sporer, Touche Ross & Co., and, serving as an alternate, Kenneth S. Caldwell, Ernst & Ernst.

Witte Award Will be Made at Annual Meeting

The annual Lester Witte Foundation award for the best article "promoting or exemplifying the practice of management services in a small or medium-size firm" will be presented this year to Paul J. Beehler, of the Bank of America, for his article "Cash Management: Forecasting for Profit," which appeared in the July-August, 1973, issue of MANAGEMENT ADVISER. The award, a plaque and a check for $100, will be presented at the AICPA annual meeting, October 13-16, in Seattle, Wash.

For the Executive in Finance—

Meat Packing Company Uses Computer to Increase Meat Yield

Consumers say they are paying too much, cattle ranchers say they are not being paid enough, and the beef processor is in the middle. In the midst of this situation, American Beef Packers, Inc., of Omaha, is using an integrated system of an IBM 360 Model 30 and Sycor 340 intelligent terminals to maximize the yield of its cattle.

American Beef has four plants that process an average of 200 cattle an hour, or about 1,500,000 head a year.

After the cattle enter the plants and are killed, bled, and the hide and entrails removed, they are cut into sides and weighed and numbered. This data is entered into a Sycor 340 terminal via a typewriter-like keyboard. The information is stored on cassette tapes for later batch processing. Management receives reports on the weighing so that it can evaluate its buyers' judgment on cattle selection.

When the beef has been chilled overnight it usually loses one to two per cent of its weight. Consequently, an additional weighing is made and the results recorded via a terminal.

The sides are separated into those being sold as carcasses and those to be fabricated. The numbers of each type are recorded.

Those sides that are fabricated (cut into primal and subprimal pieces, trimmed, and deboned) are weighed for edible yields and this information is also stored in the terminal. Management is able to compare these yields with initial weights to take note of improper procedures (such as excessive waste or pilferage).

Truck summaries by item, box count, and weight, are produced by the terminal and printed out on a Sycor 80 cps printer. This enables warehousemen to check the manifest before the shipment goes out and lets customers and remote storage facilities check the incoming shipment.

Southern Bankers Urged To Adopt Electronic Funds Transfer System

The substructure for a national electronic funds transfer system is being formed by automatic payroll deposits, preauthorized payments, and the automated teller, the president of the American Bankers Association said May 10 at a meeting of the North Carolina Bankers Association.

Rex J. Morthland, ABA president, stated, "acceptance of EFTS will follow a pattern, with the public accepting services which are needed, supply direct benefits, run smoothly, and can easily be understood. By introducing EFTS services in a systematic manner, the public will adjust and adapt without major problems. Through this step-by-step approach, the complete package of electronic services will emerge as a natural progression," he predicted.

(The coming of EFTS was forecast at the Tenth Annual AICPA Conference on Computers and Information Systems, see page 28.)

Automatic payroll deposits

According to a recent ABA study, one of the most acceptable electronic banking services is automatic payroll deposits. Employees favor it because even if they are out of the office on pay day their checks are automatically deposited, Mr. Morthland reported. Pre-authorized payments to savings accounts, mortgages, and installment loans are other consumer services that can be handled expeditiously by electronic transfers, he stated.

"If electronic transfers loom large in the future of banks, automated tellers will provide a link between the old and new methods of furnishing bank services. They may even be an alternative to smaller branches . . ." Mr. Morthland,

chairman of the board of Peoples Bank and Trust Co., Selma, Ala., stated.

Automated tellers are capable of providing cash withdrawal, deposit payment, and fund transfer services 24 hours a day. Currently more than 1,000 automated tellers are in use in the United States and the ABA predicts that by 1980 some 34,000 automated tellers and currency dispensers will be purchased.

NCR reports that since April 1, 1974 it has operated an on-line automated teller to service its employees credit unit.

Each user is given a six-digit "secret code" number that must be entered into the terminal in conjunction with a plastic card to activate the machine.

The credit union has served as a test market for the NCR 770 terminal. By the end of the third test week, the automatic teller was being used 50 times a day and loan activity had accelerated, NCR reports.

Using the automated teller, the credit union member can make deposits and withdrawals from his savings account, obtain cash advances from his credit account, make payments to his loan account, transfer funds from his savings to make loan payments, and pay his utility bills. The 770 could also enable a user to pay mortgages or other pre-authorized bills, such as for medical or dental services.

First customer deliveries are scheduled for this fall. The price of the 770 ranges from $18,000 for a terminal with only cash dispensing capability, which can be upgraded, to the complete on-line self-service terminal priced at less than $33,000.

New Products and Services—

Electronic Point-of-Sale Equipment Expected to Sell $10 Billion by 1984

Ten billion dollars' worth of electronic point-of-sale equipment will be sold to the retail sector within the next decade, reports Frost & Sullivan Inc., market researchers.

"Though the initial impact of the electronic POS development has been on the general retail department store, the trend has begun to spread to supermarkets, restaurants, service stations, hotels, entertainment locations, and wherever credit cards are accepted," the researchers observe.

The sales of central computer systems will be boosted by the addition of POS equipment. Frost & Sullivan predict over the next 10 years approximately $700 million in computer revenues will be attributed to the upgrading of computer installations to meet the needs of electronic and credit terminal systems.

According to its study the "real virgin territory" consists of supermarkets. By 1976 sales to supermarkets are projected by F&S to reach 20,000 terminals or $200,000,000 annually in sales.

By 1979 the firm expects sales of POS equipment to supermarkets will surpass that to general retail department stores as supermarket terminal volume increases to $340,000,000.

According to F&S's survey of the battle for the POS markets, NCR's popularity has "increased substantially" over Singer's since F&S's 1972 study of the market. IBM is in third place in popularity among the general retailers and second place among the supermarkets.

On April 18 Singer announced an electronic point of sale system "especially tailored to the needs of food retailers." At the center of the system is the Model 940 electronic terminal which can operate as a freestanding cash register and later be upgraded to collect and control all data required for a front end operation and a backroom management system. However, Singer does not appear to have its Universal Product Code scanners ready for sale. Grocery manufacturers are gearing up to place UPC identifying ten-digit linear bar codes on their products. The first five digits identify the manufacturer and the last five the item.

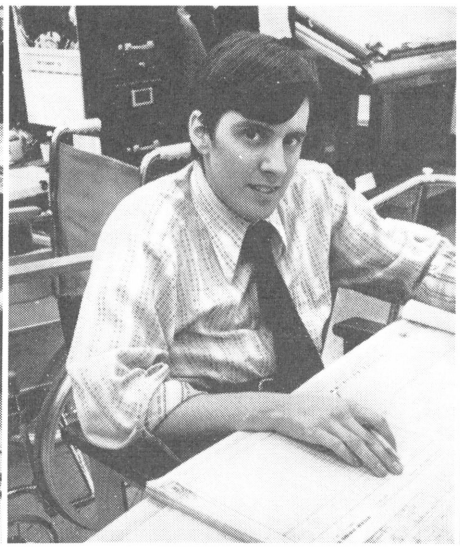
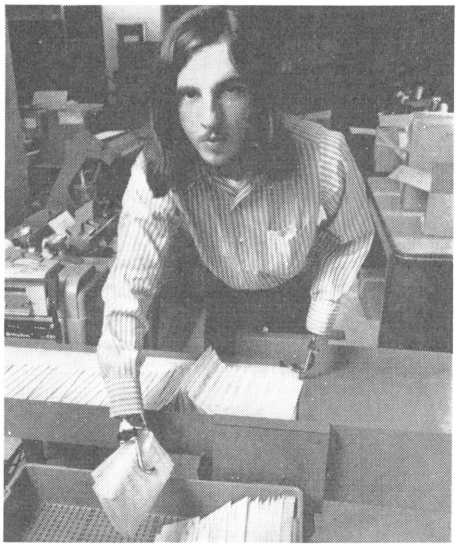
"A store-test of the Singer slot laser scanner will begin this September with production models available about the time supermarkets need them," Richard O. Baily, president of Singer's Business Machines Division, said. "It is estimated that about 50 per cent of the 18,000 items in the average supermarket will have the UPC symbol by 1975. However, it is generally conceded that a supermarket should have at least 70 per cent of its merchandise UPC coded before a full scanning system is economically justified. Most industry sources predict that this level of source marking will not be achieved until late 1976 or 1977."

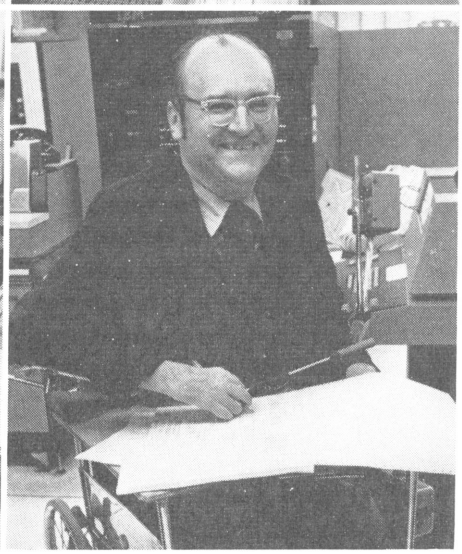
Minicomputer for All School Needs Shown

The administrative and student record keeping tasks of elementary and secondary schools and small colleges can be done with minicomputer software systems recently introduced by the Hewlett-Packard Company. The systems allow the computer to be simultaneously used for instructional purposes.

H-P's three new Terminal-Oriented Administrative Data Systems (TOADS) are: the College Information System (CIS/2000) to build and maintain a student data base, register students, and process grade reports via an on-line, interactive system; the Student Information System (SIS/3000) to allow schools to establish an integrated data base on all families living in its district, distribute student grades, and maintain and report student attendance records via batch-mode or remote computing; and ADMIN/2000F to handle staff payroll and financial budget record keeping on time-sharing systems.

If these six people don't impress you, maybe the companies who hired them will.

These people aren't actors. They are real people doing real jobs for real companies.

Take Joseph Minikovsky, for example (top left), an electronic maintenance engineer. He has learned to use one hand the way most people in his field have to use two. As quickly, as efficiently, as accurately. He's a crackerjack technician and the National Broadcasting Company knows it. Yes, he works for NBC.

Robert Thompson (top center) is a mechanical engineer. At Syska & Hennessy in New York.

Frank Gaal (top right), a machine operator for Con Edison.

James Withers (bottom left), an administrative assistant with Control Data Corporation.

Mildred Hudson (bottom center), a coding and terminations clerk for Standard Security Life Insurance.

And Thomas Clancy (bottom right) is one of the best computer programmers New York University ever had.

They're all working. At jobs they enjoy. For companies who are very grateful to have them.

You see, despite their obvious disabilities, these people are skilled, hard-working men and women. And traits like that are hard to come by these days. (Ms. Hudson's supervisor told us she was one of only three people in their company who made it to work during a heavy snowstorm.)

It takes a lot of determination and many months of rehabilitation to get where these people are.

But it takes very little more than a letter to find people like them and hire them.

The Director of Vocational Rehabilitation in your state has a file of skilled, trained, rehabilitated people in every field. Ready, willing and able to work.

Write to him, next time you have an opening. His office is in your state capital.

And join the impressive ranks of Con Edison. And NBC. And Syska & Hennessy. And Control Data. And Standard Security Life. And NYU.

Write the Director of Vocational Rehabilitation in your State Capital.

The U.S. Department of Health, Education, and Welfare.

A Public Service of This Magazine & The Advertising Council

The rapid changes in politics, in economics, in society itself, are inevitably reflected in the business world. This means that old methods that once worked there are no longer necessarily valid. Perhaps it's time we all restructured our thinking—

PUTTING IT ALL TOGETHER

by Carl H. Poedtke, Jr.
Price Waterhouse & Co.

EACH MORNING'S headlines, each evening's news broadcasts, remind us once again that we live in a world of accelerating change. Things that have been taken for granted for years are not necessarily true any longer. To quote the ruler of Siam in "The King and I": "When I was a boy, world was better spot. What was so was so, and what was not was not."* The King's plaintive lament could very well be the most enduring truth of our time.

That truth has meaning to each of us in the business community, aside from our concern as citizens. Each of us who has spent a significant portion of his career dealing with the development, implementation, and operation of logistics systems should be thinking, as seriously and thoroughly as one can, of the implications of that "enduring truth" today.

Things have changed so rapidly —particularly over the last few months (and they show every sign of continuing to change)—that it seems to me we're all obliged to reassess not only our mode of operations, but also the logistics systems we should use to support these operations in the future.

When using the term "logistics systems," I have in mind the chain of systems, both mechanized and manual, formed by sales forecasting, inventory planning and control, production planning and control, and distribution. I have concluded—slowly and somewhat reluctantly—that, while the classical systems with which we've been familiar for years and the more advanced concepts that have come into use recently are useful, valid, even necessary—in today's environment they are not enough.

In the remainder of this article, I hope to trace the background and observations that have led me to this conclusion. I hope, as well, to offer several suggestions as to what changes might be made—and I believe must be made—to bring those logistics systems concepts and operating practices up-to-date. I believe I can demonstrate that the future holds not only the challenges with which we have been familiar so long, but a whole new group of very real obstacles to our being able to "put it all together."

International business expansion

During the last decade it has become painfully evident to each of us in the daily carrying out of our duties that we are a part of a

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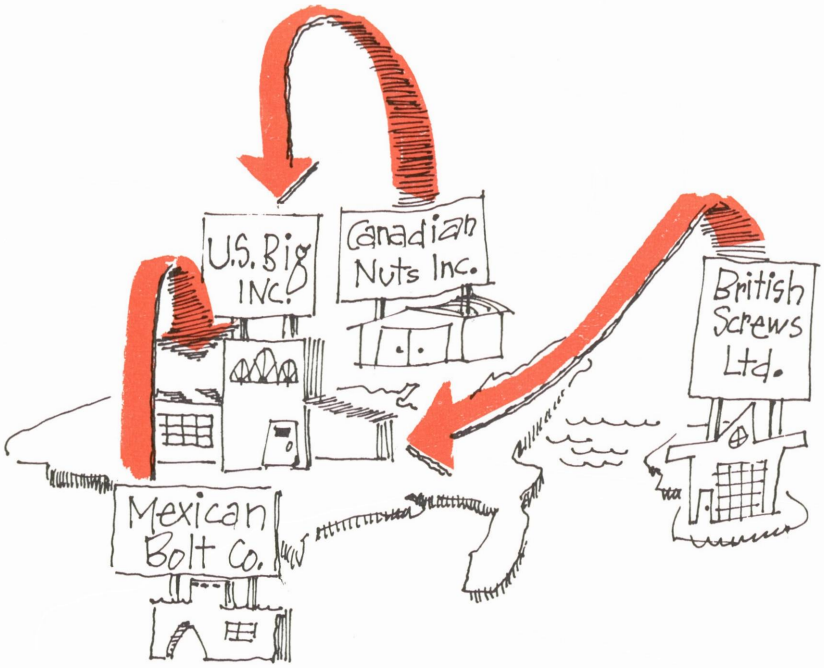


Procurement of materials is no longer primarily national in scope. Components for a plant in Chicago can come as easily from Mexico or the United Kingdom as from Milwaukee.

worldwide business community. This global statement is easily translated into some hard day-to-day facts.

Procurement is no longer principally national in scope. It is international, as are the new generation of problems and challenges associated with it. Components for a product to be assembled in Chicago may flow from foreign countries almost as readily as from Milwaukee. Fabrication and assembly are scheduled and coordinated across the border buffer zone of the Republic of Mexico and the United States. Related logistics systems must be able to cope with the uncertainties that this adds to our operations.

Monetary exchange rates, once the province of Wall Street (something most of us encountered only on vacation) have come to mean more and more to each of us both on and off the job. For example, make-or-buy decisions among foreign and domestic sources can be severely impacted by a swing in exchange rates. As a result, the cost analyst must not only develop an accurate and objective comparison of the alternatives presented; someone also must assess the future probability of material changes in monetary exchange relationships.

In short, this "internationalism" has made economic advantages even more transitory than they have been in the past; it has now put bidding for raw materials and resources on the broadest scale possible. It is also pertinent to observe that this bidding is by no means in the classical "free market."

Uncertainty of business climate

A superb contemporary description of the present climate was expressed by a businessman on my commuter train who said that he could not survive the trauma of the daily news reports: enough is enough!

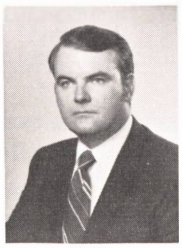
Realistically, of course, we must, as quickly as possible, face up to those developments which will impact our business activities no matter how disagreeable they may be. This may be reminiscent of "cowards die a thousand deaths, brave men die but once," but there appear to be at least four factors which certainly will not disappear even if we were to pretend they weren't there.

Energy Shortages—Even after we pass the current "crisis," experts believe that shortages will continue. We, therefore, need to provide means to cope with this problem not just in the present "for-the-duration" fashion, but as a continuing fact of life. The sooner this is recognized, the sooner business problems can be cast in a more rational and durable framework for analysis and consideration by management.

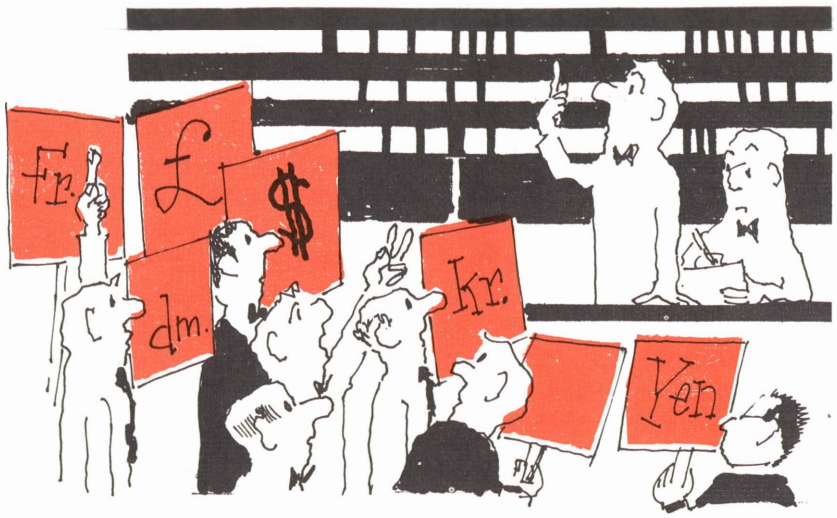
Inflation—I see nothing to make me believe that this has not become a way of life here in the United States. In fact, it has been a worldwide way of life for some time. This should force us to rethink our classical approach to investment analysis, as in the case of inventories. It also forces us to think of what were normal procurement decisions in the past as almost speculating in commodity futures in today's world.

Government Regulation — Even now that wage and price controls have been lifted, their effects are still with us. Economic dislocations will continue to cultivate shortages at all levels of consumption. Businessmen will be wary of renewed controls. I am afraid I see great temptation in various areas to continue to "tinker" with our economy.

Labor Attitudes—With less romanticism but with considerably more effectiveness, labor will continue to be strong and, in some areas, intransigent. Recent events in the United Kingdom convey this more clearly than anything further I might write.



CARL H. POEDTKE, Jr., is a principal and member of the management advisory services staff of the New York office of Price Waterhouse & Co. Before joining the firm he was manager of value engineering for the Chicago Rawhide Manufacturing Company. Mr. Poedtke is a member of the American Institute of Industrial Engineers. He holds a B.S. degree from the Massachusetts Institute of Technology. His articles have appeared in this and other professional journals. Much of the material contained in this article was presented by Mr. Poedtke at the APICS Annual Seminar, held March 2 in Pittsburgh, Pa.



Monetary exchange rates must now play a significant role in our choice between domestic and foreign supply sources, putting bidding between alternative sources on the broadest possible scale.

The last 20 years or so have seen logistics systems evolve at an almost revolutionary speed. Remember, when I discuss logistics in systems I am speaking broadly of the interrelated systems including sales/demand forecasting, inventory planning and control, production planning and control, procurement and purchasing, and warehousing and distribution.

The first phase of this evolution might be called the establishment of reliable static systems. Static systems are those basic planning and control systems using quantitative techniques such as inventory control by means of reorder factors or capacity planning by time periods. The importance of this phase was that it introduced quantitative techniques on a broad basis and began basic improvements in data discipline.

The second phase of this evolution began with availability of the modern computer for business use. Following the mechanization of accounting applications, inventory control generally appeared attractive. Production control applications logically followed. This phase was characterized by mechanization of the basic static systems and by intensive work on improving data integrity.

We are now at the close of what I call the third evolutionary phase. This phase has been characterized by the mechanization of dynamic systems which provided for such advancements as frequently revised sales forecasts using statistical techniques and time series production planning capable of frequent and rapid revision. I regard the systems discussed here as part of this third evolutionary phase.

Not a time for classical approach

The picture of the world which I have painted indicates in the strongest terms that this is not the time for classical approaches and that even the foremost advances of the third evolutionary phase will not completely meet the challenge with which we are confronted. Success in the future, in fact, may be gained most readily by those who can easily disregard past practices and display maximum flexibility. As I see it, *we require a fourth evolutionary phase now!*

Some personal experiences

Most production and inventory control systems designed and implemented in the United States have been broadly based on economic optimization of resources, with a virtually implicit assumption that

Even now that wage and price controls have been lifted, their effects are still with us. Economic dislocations will continue to cultivate shortages at all levels of consumption.

raw materials and energy were infinitely available. This was certainly true of both my academic training and my early business experience.

The first time in my career that I was confronted with a practical situation which called for a truly radically different treatment occurred in Mexico in 1966. In examining the production and inventory control systems of a producer of synthetic fibers, I noted what appeared to be an extremely high level of raw materials. In questioning the president of the company, he quickly and tersely explained that it was possible at any time for the government to close the border to certain materials based upon changes in economic policy. He had to be prepared to keep his plant in operation as long as possible under such circumstances or face severe shut-down and start-up costs as well as other problems. A somewhat high investment in raw materials was insignificant in comparison to the consequences of a shutdown.

During the past year and a half, I have been directing the design and implementation of an improved logistics system for the European manufacturing branch of a large U.S. company. This operation has traditionally had widely scattered sources of supply. Located in Scandinavia, it has procured materials such as electronic components from the United Kingdom, plastics from West Germany, mirrors from Japan, and a large number of items from the United States. Frankly, events of the last six to eight months have necessitated incorporating a number of new features into the system. What was once a fairly straightforward system has now been forced to incorporate a formal hedging strategy.

The following vignette is an example of what I've heard a number of times in the last few months. Recently, I was in the office of an executive of a company engaged in manufacturing paper and plastic products. About a year ago he and I had discussed some severe problems of the company's archaic and inflexible logistics systems. To my knowledge the system had not been changed and I was curious as to how it was functioning under present conditions.

"We no longer have problems with the system because we don't use it," the executive told me. "You see," he went on, "we order all the supplies we can get, manufacture 'flat-out,' and our customers buy everything we make. We are able to pass on our increased costs. Systems are not for times like these. Let's talk about an improved system when things are *normal.*"

After further, more rational, and more purposeful discussion, the executive and I reached some interesting conclusions:

—"Normal" is relative and what will be normal in the future may be radically different from normal in the past.
—The company's system was aborted not because "systems are not for times like these" but rather because the company's system could not be responsive to existing needs.
—The company's enviable position could be quite short lived.

Some factors pointing to this are:

- Finished goods inventories were growing and turnover declining so customers weren't quite buying everything that was made.
- There were indications of customer stockpiling which means that "soon the merry-go-round must stop."

Quite obviously, to avert acute discomfort or perhaps disaster, this company requires a strategy as to what to do when demand slackens and, just as important, systems to support and implement that strategy. Equally as clear was the fact that management was convinced, and I believe rightly so, that any new approach would have to be

There appear to be four factors that simply will not disappear no matter what we may wish: Inflation, Government Regulations . . .

capable of dealing effectively with "times like these."

From my perspective, the most important aspect of changing conditions is how management is reacting to them and how this will influence its future behavior and thereby help mold future systems requirements. I, therefore, attempt to keep apprised of such developments. I have made a special effort to "test the water" recently. During the past weeks I have had a number of informal conversations with some executives of both large and small companies representing such diverse industries as chemicals, electro-mechanical equipment, textiles, home appliances, and paper products. There is a certain unity of viewpoint to be distilled from their comments and I would like to summarize them.

If this informal survey were to be given a title it probably should be, "Things Will Never Be the Same!" An obvious subtitle would be, "Now We Know Who Our Friends Are!" More specifically:

- Logistics systems have suffered a general loss of credibility: they did not meet the challenge!
- Supplier reliability – broadly defined—will be regarded by management as more important than ever before. As one operations vice-president put it, "We will be less likely to be seduced for ½¢ per thousand."
- There will be more demands upon purchasing for flexibility and development of reliable sources. In fact, people are "roaming the world" for supplies. A paper products manufacturer recently sent a purchasing agent to West Germany on short notice because he "heard" there was glue available there. When that turned out to be a wild goose chase, the purchasing agent was directed to head for Norway and size up the paper situation.
- Substitution will be accepted as "normal." Value analysis techniques will be dusted off to push this. Liaison with design and engineering will be closer than ever before.
- Flexibility of production operations will be more closely examined. For example, a chemical processor now mixes two components he previously purchased ready-mixed because they were more readily available in that form. A textile manufacturer with a high degree of vertical integration is prepared to introduce "raw materials" into its process at a number of levels depending upon current availabilities.

It also became apparent that thinking regarding systems has been undergoing a metamorphosis:

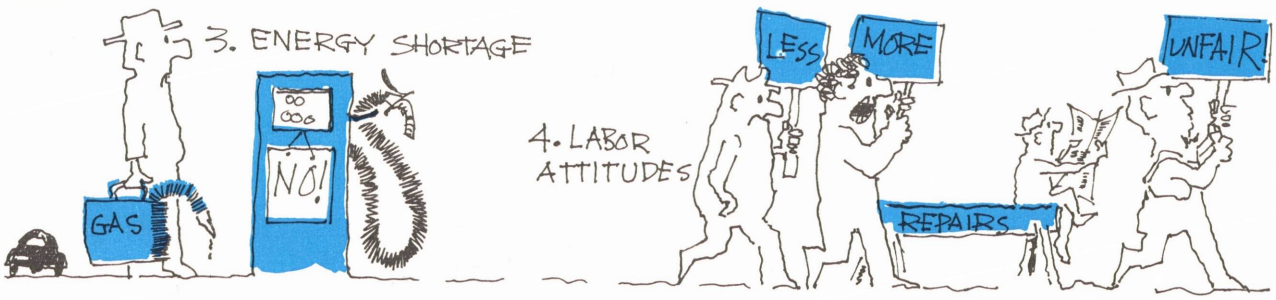
- Non-economic factors, sometimes expressed as utility functions, would appear more frequently in analyses.
- Systems would tend to be less finely tuned, meaning that buffers would appear to provide flexibility.
- More than ever, management wants to feel and be in complete control of its logistics system.

The fourth evolutionary phase

The future needs of management and its attitudes have brought us to what I have called the fourth evolutionary phase of logistics system development. I visualize building upon the sound planning and control concepts which exist, but with some important differences.

The key to progress and to meeting the needs discussed lies in the concept of being *interactive*. Feedback theory introduced us to this notion and in third phase systems this has been characterized by being able to update based upon newly reported information. The fourth phase demands are significantly more advanced. I believe that I can best describe my view of this by briefly discussing a few of the changes required in each logistics system component.

- *Sales/Demand Forecasting* — Current widely applied statistical forecasting techniques, which are



. . . the Energy Shortage, which still continues even if in slightly less critical form, and Labor Attitudes, which may become intransigent.

primarily time series based, need to be tempered by approaches giving greater weight to external factors. At the same time, appropriate means must be developed to provide more rational means of integrating *judgment*—executive, expert, or otherwise—into this process.

- *Inventory Planning and Control*—Present optimization techniques must be tempered by the use of techniques employing utility functions to account for shortages, inflation, and risk factors not readily definable in discrete economic terms. Reliable substitution subsystems are vital to operation in an interactive mode.
- *Procurement*—Purchasing agents need to know not only more about their suppliers but more about their suppliers' suppliers! Materials shortages may make it often necessary to help vendors in obtaining supplies.
- *Production Planning and Control*—Production planning and control must be highly interactive with other systems and with people. Shortages and uncertainties demand systems capable of functioning with frequent intervention. In this area particularly, this means a high degree of coordination between manual and mechanized procedures. There also will be a need to examine capacities in terms other than machines, perhaps in the broader terms of resource availability.

It should be noted that efforts to improve both the quality and timeliness of information are vital. Sound information will be needed now more than ever.

This, then, is what I see as the general shape of future logistics systems:

- Interactive
- Flexible
- Responsive to people and to judgment
- Optimizing in non-economic as well as economic terms
- Not tied to traditional capacities
- More responsive as a total mechanical/manual unit.

In many ways, these are all of the nice things we've talked about in the past but which could not be justified economically or otherwise or which did not seem as important then as what we were working on at the moment.

Conclusion

Uncomfortable or not, this realistically is where we stand at this moment. International business expansion has provided us with new markets and opportunities but it's also provided us with attendant problems. Our business climate is saturated with uncertainty. Problems of considerable magnitude are almost certain to persist.

Each and every one of us will be affected by this. Conversely and fortunately, each of us can affect what will happen. We each need to look at what we are doing and how we can move into the fourth evolutionary phase. By being creative, flexible, and innovative we can be better prepared to combat the problems I have described.

This, then, is the challenge to each of us: to meet reality head on in the job we do; to profit by our past experience; to be better prepared for the future. Then each of us can play a more significant part in "putting it all together."

Purchasing agents must know not only more about their suppliers but also about their suppliers' suppliers. Materials shortages make it necessary to help vendors in obtaining supplies.

Tenth Annual AICPA Computer Conference draws record attendance in Chicago. Simplicity may be answer to computer problems, keynote speaker advises.

TENTH ANNUAL AICPA COMPUTER CONFERENCE

by Louise H. Dratler
Managing Editor

THE TENTH Annual AICPA Conference on Computers and Information Systems—a bit of a milestone—was attended by a record crowd drawn from all segments of the accounting profession. Over 300 CPAs attended the conference in Chicago May 6-8. It was filled with many new insights, some old insights, and quite a bit of interesting shoptalk. Electronic funds transfer systems, computer abuse, the possibility of EDP equipment that works in picoseconds (trillionths of a second) were discussed as well as more commonly confronted issues such as dealing with service centers, minicomputers, and partners who don't believe in computers.

It still seems the computer is a Frankenstein monster that is ready to run amuck, with the help of its manufacturers, if the business community does not force it to behave. Simplicity may be the key to the business user's getting the most out of today's advanced EDP technology, Dr. Herbert R. J. Grosch, editorial director of *Computerworld,* told the AICPA conference in his keynote address.

"Ladies and gentlemen, I submit to you that there is something wrong somewhere when you have a machine 100,000,000 times as fast as key-driven equipment and it still takes all morning to run a payroll," he told the audience. "When we ran key-driven equipment in accounting departments and wrote out paychecks on a multiple-part form with carbon paper, and tore them loose, and posted some of them in a multi-ring binder for permanent records, and folded the others up, and stuffed them in pay envelopes, and so forth, it cost between ten cents and a dollar per unit of pay. It now costs between one and ten cents with these super machines that I've been talking about. We only gained a factor of maybe tenfold in economics and we ought to have gained 10,000 times."

Dr. Grosch believes complexity is promoted by clever computer salesmen and overzealous EDP professionals.

"The software artists love to complicate it up; it makes them feel powerful. The salesman loves to slow it down by selling you, or giving you, a lot of this gorgeous free software which has the effect of making it almost impossible for you to get down and through all that stuff to the fundamentally fast, powerful hardware underneath."

However, he told the CPAs they are not a strong enough user group to force a revolutionary change in computer design, nor is any other user group. But when given a design alternative, opting for the less complicated he believes to be the CPA's best choice.

"It is possible to be alert to the fact that most of these supposed aids that are offered to you by the salesmen and by the computer professionals do not add anything economically or intellectually to the quality of the work; they just make it more complicated and slower. In general, eschew the complication. In general, try to do it the simple and straightforward way. If you have the alternative possibility, minimize the unnecessary complications. Do not buy the fancy COBOL compiler which has all the extra capabilities: Insist on a stripped-down standard one instead. Do not go to computer hardware and software that features the world's most complicated and forgiving operating system. But go to one that has the thinnest operating system in which you can get most easy access to the fundamental power of the hardware. . . . Believe me it will pay off economically. It will also pay off in the length of time it takes you to achieve a result."

Complications multiply

The more complex a system, the harder it is for one person to go through the debugging process. With complex systems, when an applications programer hits a snag he has to go to a systems programer, who, in turn, may have to go to a maintenance engineer to see if something is wrong with the hardware, and then all three may mull the problem over, Dr. Grosch noted.

Surveying the future EDP environment, he said that although there will be little progress in systems analysis and programing, there will be radically different computer architecture in the next few years.

IBM cast as villain

"In fact, it's my belief that IBM will intentionally 'kick over the milk bucket' in 1976 with Future Series, in order to make it more difficult for the competitors to stay in business and in order to make it more difficult for the customers to tell IBM how to use the equipment. Instead, customers will have to submit their necks to the guillotine so that IBM can tell the customer how to use the equipment, which will be, in a word, 'wastefully.'"

Change in market predicted

In addition, there is going to be a change in the mode of computer operation, Dr. Grosch predicted. Whereas annual financial growth in the EDP industry has been 15 per cent worldwide over the last few years, the big growth has been in sales of the medium-size computers. For the next ten years, at least, EDP market growth will be greater at the two ends of the spectrum—the minicomputers and the large centralized data bases. The CPA will, consequently, be more often faced with dealing with his client's computers at either extreme.

"Many of your clients are going to want, for economic or security reasons, to operate at the lower end of the spectrum, the minicomputer kind of thing. That means that even the small client can have his own private we-use-it-one-shift-a-day-and-lock-it-up-at-five-o'clock sort of computer installation. This will be based on the new long-word-length minis, much cheaper peripheral equipment, much more easily available applications software and technology than we have had in the past."

He continued, "At the other end of the spectrum, those of you who are connected with organizations that are doing large-scale work—the insurance companies, the big banks, the large retailing organizations, large manufacturing firms that have extensive accounting responsibilities—I think for those people you should look for the other end, the large centralized data processing organizations, to grow.

"That does not necessarily mean that all the computers will be in the shop where you are working. They may be at the central part of the organization, at another part of the continent, or another part of the world. You may be connected with them with satellite data links, you may be connected with them with microwave links within a continent, you may be connected with them even on a dial-up basis, because more and more we are seeing the data communications people offering alternate routes of data communication. . . . The availability of reliable and economic data communications means that that kind of centralization is increasingly attractive to the large organization. One of the things it does is centralize the human capabilities of the outfit. Good systems analysts, good problem people, good technical training are scarce—especially scarce in your subset of the auditing profession. If you have small groups of people, they tend not to grow as rapidly because of the lack of professional possibilities for them within a group of one, two, four, five people. However, if you are centralizing an activity for a large organization so that the professional group at that center is of a more viable size, then you can begin to attend technical meetings, to read the technical literature, to split people off for specialized

training, to explore alternate kinds of hardware and software, to do the good things that make it possible to keep up in a rapidly changing field. . . . On the other hand, the central activity does require more management; it does expose you to greater losses if you do the wrong thing, just as it offers the possibility of larger savings if you do the right ones."

All auditors EDP experts?

Another conference speaker went further in his predictions about the future of EDP auditors: He said that is the only kind there will be.

"I suspect that the concept of 'EDP auditing' will become more generalized than it is today. If fact, probably even the term 'EDP auditing' will disappear simply because that's the only way you'll be able to audit and the only things there will be to audit will be within computer environments. So all auditors will essentially be EDP auditors, but, along with this advancing technology and the narrowing of responsibilities and expertise, there will be more specialists identified within the auditing field. We'll have systems program specialists in auditing, application program specialists, even electronic engineers specializing in the auditing end of activities," said Donn Parker, senior information processing specialist, Stanford Research Institute.

Mr. Parker has concentrated on investigating computer abuse, an area which Equity Funding has shown to be in the accountant's domain.

"Technology is steaming ahead at a very rapid rate. The problem is that other supporting functions that go along with the use of that technology have lagged behind. We find the adapting of business functions to the technology available provides us with some serious problems. . . . There is a definite lag of the auditing methodology needed to keep up with advancing technology. . . . Crime, on the other hand, keeps right up with it," he stated.

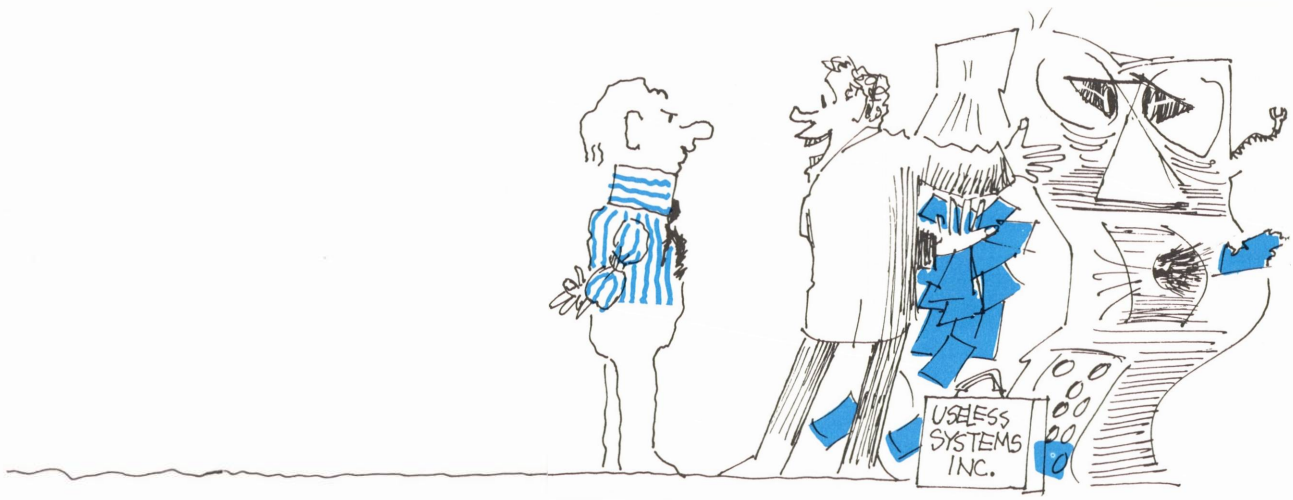
Mr. Parker has reported on 230 cases of computer abuse. The Stanford Research Institute published a report last year describing 140 of these. He defines "abuse" as "any act in which the victim suffered a loss or could have and the perpetrator gained or could have."

Up until this past April, Mr. Parker had never been able to verify a case of a magnet being used to destroy magnetically recorded material. Various magnet stories that have been widely quoted are "myth, they just never happened," as far as he can tell. The case he was able to verify happened in 1962 in Girl Scout headquarters in New York where a disgruntled employee ran a magnet through the window in the side of the flange of the tape reel.

"I could regale you for hours on end with these bizarre tales of things that happened and in almost every case something new and unusual that has never happened before occurs. And also, in most cases they were discovered purely by accident—by the perpetrator having goofed, or some circumstance—and practically none of them were discovered by any purposive action or generally anything that has come out of auditing, any kind of external or internal auditors' activities," Mr. Parker stated.

Among his verified cases are three in which computers were shot with guns and one which used a computer to send out phoney invoices. This scheme capitalized on the fact that some people pay bills automatically, without questioning their validity. When an individual did question the fake invoice, the company would send back a letter saying, "Sorry. Our computer made an error."

In trying to characterize the typical computer criminal, Mr. Parker said the perpetrator is usually in



Stripped-down basic computers are a better buy than ones equipped with fancy compilers and useless software.

the 18- to 30-year age group, very bright, highly motivated, ambitious, egotistical, or trying to solve some financial difficulty. He found these criminals seem to suffer from a variation of the Robin Hood syndrome ("steal from the rich and keep it") in which they differentiate between doing harm to individual people and doing it to corporations.

"They also demonstrate to a great extent the 'differential associations theory' which says that often white-collar criminals, and that's generally what these people are, tend to deviate in only small ways from the accepted practices of their associates," Mr. Parker explained.

For instance, in the case of an employee of a time-sharing service who managed to gain access to another service's network and have it print out a competitively valuable program, his actions were not too different from his peers'. Mr. Parker found "in interviewing other people, people who work for commercial time-sharing companies, for example, that it's not uncommon for these programers to often legitimately buy time on their competitor's system, get on a terminal, and then do everything they can to test, penetrate, and even crash their competitor's system. To load it up, to look for customer information, copies of programs, and so forth. And they defy me to say they're doing anything unethical. They say that's just 'reverse engineering'; it's Ford buying a Chevrolet to see how it's made."

He disagrees—especially if they are actively trying to do harm. The same enjoyment of challenge that motivated people to take up computer programing, the same game playing, prompts them in these instances to see how far they can go, he maintains.

"Another thing that bothers me is seen in universities, where we find that universities often reward their students for compromising or penetrating the campus computing system. And I suggest that that is wrong. Somehow or other we have to create the image of the computer and our professional responsibility towards it as almost a sacrosanct tool that must be treated with great care and respect and that it is not something you run around compromising," Mr. Parker stated. "I think the end, in this case, does not justify the means. And that as professionals in the computer field we just shouldn't be doing things like that."

Severity of incidents increasing

The number of incidents of white-collar crime is going to go down as computers are more widely used, the speaker said. However, according to 1971 statistics, the average bank embezzlement loss via manual systems was $104,000 per incident. The average computer embezzlement loss, not including Equity Funding, was $1,000,000 per incident. Potential computer abusers need skills, knowledge, and access that manual embezzlers did not require. Consequently, more collusion is found in these computer crimes because often no one person has enough of these skills, knowledge, and access. So despite the decrease in the number of white-collar crimes the losses from these crimes will increase, he forecasts.

"We're barely scratching the surface in using the computer as an aid in watching for anomalous computer situations," Mr. Parker stated. He cited the case of a bank employee who transferred to his wife's account $100 from each of 41 different individuals' accounts. He knew that although this would be printed out in the daily exception report it would be ignored because of the sheer size of the report. Mr. Parker suggested that an exception of the exception report should have been printed to bring it down to size to gain management's attention and for action to be taken on it.

The AICPA is aware of Mr. Parker's research and similar investigations, and is responding via its committee structure.

Richard J. Guiltinan, CPA, Arthur Andersen & Co., chairman of the computer audit subcommittee of the AICPA's computer services executive committee, said, "This has been a year of interesting developments and of developing interests in the EDP-audit area. I guess it is a matter of timing—there's been a lot of bad publicity of late because of Equity Funding and other situations; Stanford Research Institute has published a report which cites page after page of known computer frauds; and managements, client management and our own management, have finally committed themselves to involvement in this area."

He reported that a statement on auditing standards dealing with the impact of computer-based systems on accounting controls has been prepared and is awaiting balloting of the auditing standards executive committee prior to exposure.

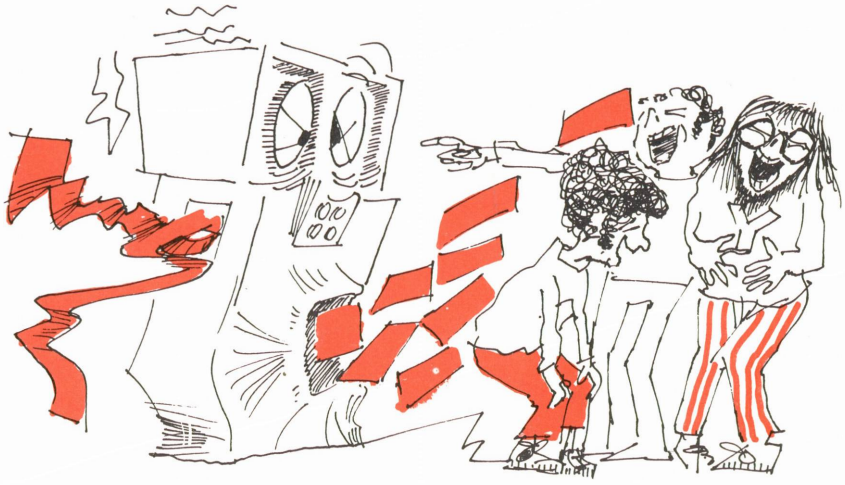
"It is a generalized statement and refers the readers to other sources for specifics and 'how to' procedures. Further, and I believe of prime importance, it establishes that the auditor must have sufficient understanding of the system to enable him to identify and evaluate its essential accounting control features. It recognizes a requirement that the necessary audit procedures be performed by persons having specialized expertise in EDP matters in complex EDP system situations," he stated.

Computer audit guides projected

Mr. Guiltinan observed that this document will establish that the auditor cannot audit around the computer but "must involve himself at least to the point of understanding the system and the controls in the system." Consequently, the computer audit subcommittee plans to undertake the development of a series of audit guides dealing with control reviews, computer audit techniques, etc. By the end of the year, the subcommittee hopes to have a completed draft of a detailed audit guide covering recommended detailed procedures for reviewing accounting controls in the EDP environment.

Audits of Service-Center-Produced Records, a guide recently released by the AICPA, was discussed at one of the conference's parallel sessions. The publication includes a section on accepted practices for conducting a third-party review and how the information produced by that review should be used. Dana R. Richardson, CPA, Arthur Young & Company, reported on one such review his firm conducted for a users' group of the NCR on-line savings and loan system in southern California. Forty-five savings and loan associations, employing 30 auditing firms, decided to pool their funds and engage Arthur Young & Company to audit the NCR data center. The results of this audit, a 130-page document, were passed on to the members of the users' group, who, in turn, handed them over to their auditors to aid their overall evaluations of the total systems employed by the savings and loan associations. The report included a transmittal letter, comments to the user auditor, comments on potential system improvements, scope and results of field work, and system description. The firm performed the following procedures: reviewed the service center organization for segregation of duties and management supervision; reviewed practices and procedures in the area of documentation, program changes, file protection, and user record security; reviewed selected program documentation; reviewed procedures related to the input, editing, processing, and output phases of the application being reviewed; observed, on a test basis, actual operations including transactions input through remote terminals at three savings and loan association branches using the system; and conducted tests of processing under normal operating conditions.

One portion of the Arthur Young report was entitled, "Comments on System Controls Requiring User-Auditor Considerations." This flagged areas where cooperative efforts on the user's and service center's parts were necessary for control to be effective. For instance, Mr. Richardson cited a fail-safe feature of the NCR system which does not allow a teller to enter an unauthorized transaction into his terminal. A deposit to an account which is dormant or a withdrawal from an account which is not cleared will produce a hold code that needs a supervisory override to have the transaction entered. The override is performed by physically putting a supervisor's key into the terminal. At lunchtime, the supervisors would leave their keys in the machines while they were gone, the CPA team observed. Obviously, that control went off to lunch too.



Universities too often "reward" their students for penetrating or compromising the computer center.

Third-party reviews provide information for the user-auditor, but the responsibility for the evaluation of overall controls still lies with him, Mr. Richardson reiterated.

"I think we will find in the near future that almost a new area of business development can arise as a result of the third-party review. They're going to have to be done. The guide [*Audits of Service-Center-Produced Records*] says we can't just turn our heads the other way any longer. And as such, it behooves us to look towards the interests and economies of our clients and of their service centers and to perform this kind of review in the best possible manner, with the best possible people," Mr. Richardson stated.

Looking into the more distant future, Everett C. Johnson, CPA, Haskins & Sells, spoke about some of the "blue sky thinking" that the auditing advanced EDP systems task force has done. This task force is currently involved in research regarding the effect of advanced EDP systems on the auditor and has produced a preliminary paper, "Auditing Advanced EDP Systems and the Auditor's Concerns." The future corporation envisioned, "Ultimate Corporation," could exist "in the year 2000 or maybe tomorrow," he said. It is a chemical corporation dealing only in liquid chemicals which it processes in vats. The company has an automatic reorder system, so that when the level of the chemical in a vat gets below a certain point there is a sensor that detects this and communicates the information to Ultimate's computer. The computer then communicates the information to a vendor's computer which processes the order and starts pumping chemicals through a pipeline to Ultimate Corporation. Ultimate Corporation has a sensor on the pipeline which meters the receipt of this chemical

and as soon as it receives the amount that it ordered it sends an electronic signal to the bank and the bank transfers the money from Ultimate's bank account to the vendor's.

"No payables, no receivables, no receiving report. Easy audit—you don't have to look at all that stuff, right? All you get is financial statements. The president says, 'That's no problem. I'll push a button and get it for you right away. Give them to you daily if you want,'" Mr. Johnson said.

To compound the problem, Ultimate's customers have the same system that Ultimate does, he added. Ultimate illustrates some of the auditing problems that may exist in the future, namely: the lack of source documents, the lack of an audit trail, the lack of evidence for authorizations, and the need for new hardware and software for audit purposes (e.g., an auditor's sensor on the pipeline), he explained.

"Will there ever be an Ultimate Corporation? Maybe so. Probably not the way I have described it. But maybe some of you are seeing some signs of Ultimate Corporation in your own clients right now," Mr. Johnson suggested.

One system part exists now

Dale Reistad, president of Payment Systems, Inc., proved that one part of Ultimate Corporation's operations are not that far off; in fact, electronic funds transfer systems already exist in every section of the United States and he is predicting their future expansion.

"EFTS is the combination of the plastic card going through an evolution of its own from a credit orientation to a debit orientation. If you will, it is an extension of the paper check, or an extension of the passbook. A representation that you have money of some kind in a financial institution and you want to conveniently have access to it. . . .

"The second part of that is this piece of plastic going into some form of electronic point-of-sale terminal in your local merchant's establishment. . . .

"The third part of this is that the terminal is connected through some sort of switching and processing center to other terminals in other financial institutions."

Mr. Reistad said that the herd effect is seen in utilizing EFTS; once one competitor initiates it, the others follow. Although places all over the country are experimenting with various forms of transfer systems, Wilmington, Del., may be the first city to go to EFTS. Two banks there are testing cards that are used at point-of-sale terminals in retail establishments and automatically transfer funds.

The major changes brought about by electronic funds transfer systems, as seen by the speaker, include working towards: a "zero-float," where retailers collect fees instead of giving discounts; plastic substitutes for cash and checks with third-party transfer power; emergence of the retailer as an important part of the funds transfer system; NOW (Negotiated Order for Withdrawal) accounts which never have money sitting idly, but earn interest on funds in the bank and exact no service charge for NOW drafts (equivalent to checks); national banking in a real sense—a card issued by a bank at one end of the country will be able to draw money out of a cash-dispensing machine at the other; massive new doses of consumerism (Ralph Nader "is already making speeches on the subject. And I think he is getting very close to understanding them."); and gradual development of a national authorization system, which eliminates paper transfer, communicating financial authorization as well as information.

The speaker suggested that accountants become involved in EFTS committees, learn its accounting and legal implications, get their clients interested in the subject, and investigate the security problems involved (wiretapping the system could clean out hundreds of cash drawers at one time). Through professional organizations, such as the AICPA, the accountant should "confront the myriad of problems of standardization" that are involved in EFTS, Mr. Reistad urged.

Six design objectives cited

One of the problems of standardization the AICPA is confronting through its committees is the development of guidelines for designers of applications systems. Speaking at a parallel session on management advisory services, a new feature of the annual computer conference, George H. Rittersbach, Peat, Marwick, Mitchell & Co., explained the six objectives of the document being prepared. These are:

1—To prepare an AICPA-distributed formalized document that will serve as a basis for knowledge about the accounting profession's understanding of what the EDP design cycle entails.

2—To provide a means by which the completeness of EDP design, development, and implementation can be measured. He explained that quality or appropriateness are harder to judge than completeness.

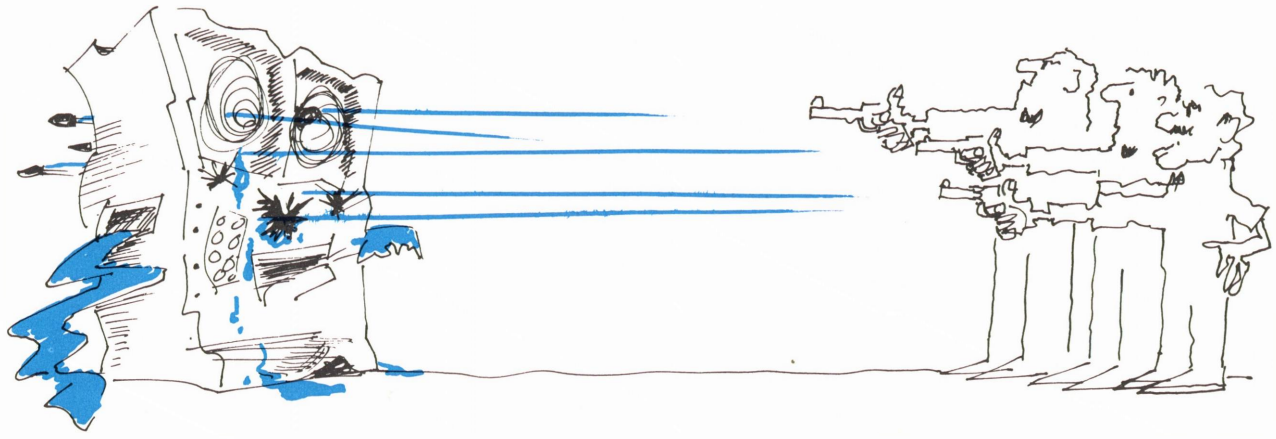
3—To serve as a basic foundation of skills necessary for EDP professionals around which courses can be developed for entry-level MAS practitioners.

4—To develop a document for clients indicating the profession's defined requirements for applications systems design.

5—To provide a structure of work paper organization for EDP systems design that will relate to the MAS engagement cycle and MAS staff.

6—To include a glossary of consistent terminology, relating EDP technology to examples and specific definitions.

Mr. Rittersbach said that the task force had completed six months of work, as of the May conference, and he believes their activity should be completed in another 18 months. Because of the rapid changes in EDP technology, annual review of the document will be



Among the more unusual cases of computer abuse: three that were shot with guns.

necessary, he observed, and he carefully pointed out that the document being developed was a set of "guidelines" and not "standards" for the MAS practitioner.

Doing a feasibility study

The second speaker at the MAS session discussed how to handle EDP feasibility studies. In brief, Robert B. Nadel, CPA, Hertz, Herson & Company, said the first step is to have a general conversation with client management to ascertain what they want and to assess if their words match their needs. This includes visiting the company, gathering general documentation, and talking to personnel on all levels.

Then a written proposal should be drawn up explaining exactly what the MAS practitioner plans to do. The consultant should also outline the study techniques he expects to follow. Some idea of the costs should be stated, giving a high-low range and telling the client that final costs can be dependent upon the amount of cooperation the company provides.

If the proposal is accepted, a detailed study of the client's operations then starts. The consultant should go through the client's existing systems and document the work through flowcharts, or narrative, or a combination of techniques. Speaking to lower-level employees helps to get more detail. Mr. Nadel also advised against using a tape recorder during interviews because it tends to stop the flow of information.

Samples of filled-out forms with live data should be gathered to provide a picture of current operations. Time and cost statistics should be developed. An idea of volume can be obtained via such data as the number of invoices, lines per invoice, and the number of items in inventory. Internal control and management capabilities should be evaluated while the other measurements are being made.

After all data has been gathered and analyzed, a preliminary report is made to management telling what the consultant's findings are and indicating whether or not a computer is justified. It includes an estimate of the approximate cost of a computer installation, the cost of the existing operation, and the cost savings or trade-offs to be made by the conversion.

Once the preliminary report is made and accepted, specifications for the new system can be written. These will serve as the basis for bidding by equipment vendors. Sample reports may be developed to show the vendors what information is desired and in approximately what format, Mr. Nadel suggested. These sample reports should be cycled back to management to make sure that they reflect management's needs. The bidding package finally turned over to the vendors should include samples of desired reports; something about the non-reporting applications such as order-invoice processing; volume statistics; flowcharts that have been made during the study; file sizes; and, possibly, the type of computer the consultant has in mind. The vendor should be told generally what the client wants the system to do.

The consultant should ascertain from the vendor who will do the programing and what its costs will be; the costs including machine rental, analysis of personnel costs, shift plans, and how rigid is the meter billing; space and air-conditioning requirements; investment credit; languages and software packages available for the hardware; service and support availability; educational and test facilities offered. By talking to the vendor's other customers in the area, the consultant can evaluate its local reputation. Finally, some sort of written report should be given to client management, Mr. Nadel told the session.

While the MAS session was in progress, parallel sessions on audit-

A time-sharing estate planning system allows the accountant to seem like a wizard when he comes back to clients with a printout showing the effects of their planning decisions.

ing, taxation, and practice administration were going on. Auditing drew the largest, in fact a standing room only, crowd. As part of that session, over 125 practitioners heard a description of the National Automated Accounting Research System (NAARS), a computer-assisted accounting information retrieval system developed by the AICPA in conjunction with Mead Data Central, Inc. Its data bank contains over 5,000 corporate annual reports, Accounting Research Bulletins, Accounting Principles Board Opinions, Statements on Auditing Standards, and pronouncements of the Financial Accounting Standards Board. Later, in his concluding remarks, Arnold Schneidman, CPA, Seymour Schneidman & Associates, chairman of the AICPA computer services executive committee, said that it is one of his goals to see NAARS and LEXIS (Law and Tax Information Retrieval System which includes New York and Ohio laws and a Federal tax library) available to every small practitioner cheaply. He said by next year's conference he hopes to report on his success.

Perhaps the most talked about speaker at the parallel sessions was John Van Benten, CPA, managing partner, George S. Olive & Co. He spoke at the practice administration session as a man less than enamored by the computer but who has been forced to admit, "The computer is really good for something after all!"

His firm prepares a majority of its tax returns on an in-house computer and has been pleased with its meaningful savings of professional time from clerical work; also the returns are good looking, Mr. Van Benten added. A time-sharing estate planning system allows the accountant to seem like a wizard when he comes back to clients with a printout showing the projected effects of their planning decisions, he admitted.

In the MAS area, Mr. Van Benten conceded that his firm found it could do more thorough and precise financial planning via time-sharing, and that half of its MAS practice is in information systems analysis. The advent of the on-line minicomputer makes it possible for even smaller clients to use real-time systems, he stated. However, he believes that not enough time is given by MAS practitioners to developing original cost estimates. With the result that client management is left with a "sour taste in their mouths."

"I really think many of the applications being done on machinery today should never have been done on machinery in the first place. The only reason they are is because the blasted machine is so big that it has to be fed things to do. . . . Hardware is too big for the job, generally speaking," Mr. Van Benten observed. Perhaps the minicomputer will improve the situation, he stated.

If the accountant decides he wants his practice to grow, and Mr. Van Benten feels a decision not to grow is a viable alternative, then "the computer business is one price of growth," he concluded.

Trials with service centers

One afternoon of the AICPA conference was given to viewing the National Computer Conference exhibits. How large and competitive the industry is was quite evident. Other features of the AICPA conference were the informal sessions and roundtable discussions. One table had a group of accountants who believe a computer in every office is not necessarily the way to go. The leader of the table was Bernard Revsine, CPA, corporate controller, Royal Continental Box Co. The table's topic was "dealing with service centers" and probably the same complaint has been uttered by similar groups at the previous nine computer conferences: "The service center people don't understand accounting."

Most of the participants were CPAs from the Midwest. One found that the service bureau in his area says "do it our way or go find someone else" and there is not much of a choice in his locality. For instance, his service center features an outdated method of depreciation. Most of the table members were using service centers for clients' write-up work. Generally the contracts hedge about the center's responsibility to meet prearranged turnaround times. The moderator suggested that the key is "to be aggressive" when confronted with a service center's lack of attention to your job. One CPA said that a client of his changed centers three times in one year because he was not getting the attention he demanded.

Three of the practitioners' firms

had formed their own service bureaus to process their clients' work in the absence of existing service centers satisfying the CPA's requirements. Even a firm in a large eastern city found such a move necessary.

As for selecting a service center, it should be like any other business decision, the CPAs said. One should not be intimidated by jargon and should arm himself with a precise knowledge of his EDP needs. The quality of service centers differs from region to region and the best way to determine how good a local center really is is to speak to its customers. Also, referring to the center's financial statements helps to assure the user that the center isn't likely to go out of existence shortly.

Computer inspires poem

One CPA who has also suffered abuse at the computer's hand fought back with a poem. Now he is Chairman of the Board of the AICPA—Sam Derieux. He was introduced to the conference via a stanza from his poem, originally published in the February, 1972, issue of *The Journal of Accountancy*:

"The days of slavery did not end
with Lincoln's proclamation.
Vicious forces are now at work
to enslave this modern nation.
The masters are not ruthless men
with thoughts and deeds demonic.
Our captors are machines controlled by circuits electronic."

Upon being introduced, Chairman Derieux said, "Some of my best friends are computers."

He continued, "It is becoming increasingly apparent that many firms, particularly the local ones, at some time in the future are not going to be able to conduct audits with their presently constituted auditing staff. That there is expertise in computers and their use, and perhaps their misuse, that will have to be available to us if we are to do the job the way we should do it, so that reliability is based on factual information. . . ."

"I see the need in the future for a greater awareness of public interest and for this to show itself in our recommendations," the AICPA chairman said. "There are three reasons for our acting responsibly: 1—We can simply do it because we are members of a responsible profession and we believe it is the right thing to do; 2—We can act responsibly and give responsible advice because we recognize this is the best policy from a practical standpoint; 3—We can do it because we recognize that our very survival depends upon it. If the public cannot rely on the financial information that is distributed to it, then there is no necessity for the accounting profession; indeed, there is no necessity for the financial statements for they will prove to be worthless. Whatever our motives, I believe we can work together for greater reliability in the information that is disseminated; that we can adapt ourselves to ever-changing requirements of a responsive and a responsible profession," he concluded.

In conclusion

Delivering the conference's closing remarks, Arnold Schneidman stated, "Things are changing. They're changing here. We couldn't sell an audit session before; everyone wanted time sharing. This year we couldn't sell time sharing; everyone wanted audit. Things are happening out there and they're going to continue to and it's you 300 here who are going to have to bring it to the profession. I asked you last year to bring five members with you and some of the firms did; I ask that next year you bring five more and maybe we'll get the word out that there is an AICPA computer division and that we are concerned about EDP as it affects the CPA."

Next year's conference is to be held May 5-7 in the Los Angeles Marriott Motor Hotel.

As for selecting a service center, it should be like any other business decision . . . One should not be intimidated by jargon and should arm himself with a precise knowledge of his EDP needs. The quality of service centers differs from region to region and the best way to determine how good a local center is is to speak to its customers . . .

If your computer is overloaded it's not necessarily an automatic signal to rush out and buy new, larger equipment. It may be possible with modern machines to increase capacity by adjusting configuration or improving peripheral units—

A SYSTEMS APPROACH TO PLANNING AND ADJUSTING COMPUTER CAPACITY

by Peter B. B. Turney

Northwestern University

THE IMPORTANCE of defining computer capacity cannot be disputed. The installation of a new computer system generally requires a large investment of corporate resources. An error in the definition of the capacity the system can handle will be serious. The acquisition of a system that is too small to fulfill all the demands on it may necessitate a substantial upheaval and further investment. A system that is too large will provide a commitment to a cost level substantially higher than would otherwise be necessary.

Planning for computer capacity has traditionally emphasized the role of the computer hardware in determining the output of the entire system. This article demonstrates that planning for computer capacity may be substantially improved when other important capacity variables in the system are considered. Where computer systems have been installed and are found to be straining capacity, it is possible to upgrade the system in less costly and less time-consuming ways than by moving to a larger computer. Computer capacity should be considered to be much more responsive to short-run management control than is generally thought.

In other words, if your computer is overloaded, that isn't necessarily a signal to rush out and buy new equipment. There are many other approaches that can be used first.

The traditional view of capacity limits the analysis to hardware considerations alone. More precisely, it is frequently defined in terms of one particular computer model. It is becoming impossible, however, to define the capacity of a modern computer because of its modular design.

Buying a computer system is a little like buying a car. Certain items are standard equipment, other items, such as a "floating point package," are optional extras. If a second processor is found necessary, or if core storage needs to be expanded, this may still be done at a later date.

Many companies include expandability and open endedness as selection criteria. Expandability refers to the ability to increase stor-

age and processing speed without a major disruption such as rewriting many programs. An open-ended system is one where additional equipment may be added without major disruption.

"It may also become desirable to make additions to, or improvements in, the peripheral equipment. More communication lines may be added, or the file capacity may be enlarged. It may be necessary to improve the speed of access to part of the files, perhaps by adding drums."[1]

In addition, most computer manufacturers sell or rent compatible families of computers. The move to a new computer does not imply a constant increment to cost or capacity. A smaller computer may be added to enlarge the current system or a new, larger one exchanged for the older, smaller one.

The significance of all this is the ability to adjust capacity merely by making an adjustment to the existing system to remove bottlenecks. A change in the configuration can eliminate bottlenecks and expand the capacity of the system as a whole. Hardware monitors are available to evaluate the system and determine the location of these bottlenecks.[2] When the system is designed, the capacity of each facility is enough to accept the total demand expected. The total demand may be higher simply because the demand has increased or because the mix and use of resources has changed. Modularity provides flexibility to meet both types of change to the extent allowed by the design of the computer.

1—Martin, James, *Design of Real-Time Computer Systems,* Englewood Cliffs, N.J., Prentice-Hall, 1967, p. 256.
2—Warner, C. D., "Monitoring: A Key to Cost Efficiency," *Datamation,* January, 1971, pp. 40-49.

The performance of the hardware is heavily dependent on the quality of the programs used in the operation of the system. The kind of programing languages, the efficiency of the library routines, utility programs, application programs, and the operating system all determine the revealed performance of the hardware. Changes in these software items will clearly be a source for improving hardware performance. Coyle gives an interesting example of the possible improvements available to users of one kind of software, the Indexed Sequential Access Method (ISAM) for file processing. He improved the processing of new records, for example, by applying the input transactions in descending order and creating the data set with "dummy" records.

"We enjoyed a 400% improvement without buying new software and I only hope that the time we have spent and the techniques we have used can be of help to others fighting the ISAM problem."[3]

Extra operator can be added

Computer equipment is highly automated but it is not independent of human interference; operators must be assigned to run the equipment and help smooth the flow of work. The volume of work that can be handled will depend to some extent on the number of operators working with the computer. There may be a reduction in system delays and rerun times, for example, if an extra operator is added.[4] There is, of course, a limit to the number of operators who can run one piece of equipment. After a certain point there are diminishing returns as new operators are added. Emery argues that changes (such as adding extra operators) have little effect on either total cost or capacity.[5] A recent study on management information systems (MIS) cost behavior showed that in the operations area alone, personnel expenditures are little less than total hardware expenditures.[6] The Diebold Research Group noted that 31 per cent of operations personnel expenditures are accounted for by operators.[7] It must be concluded that capacity may be affected by changes in manning and these changes are likely to affect total cost in a significant manner The pattern of computer operator expenditures in the long run is graphed in Exhibit 1, page 34. The actual pattern of expenditures will be somewhat smoother since overtime may be utilized to increase the volume of work that any one operator can handle.

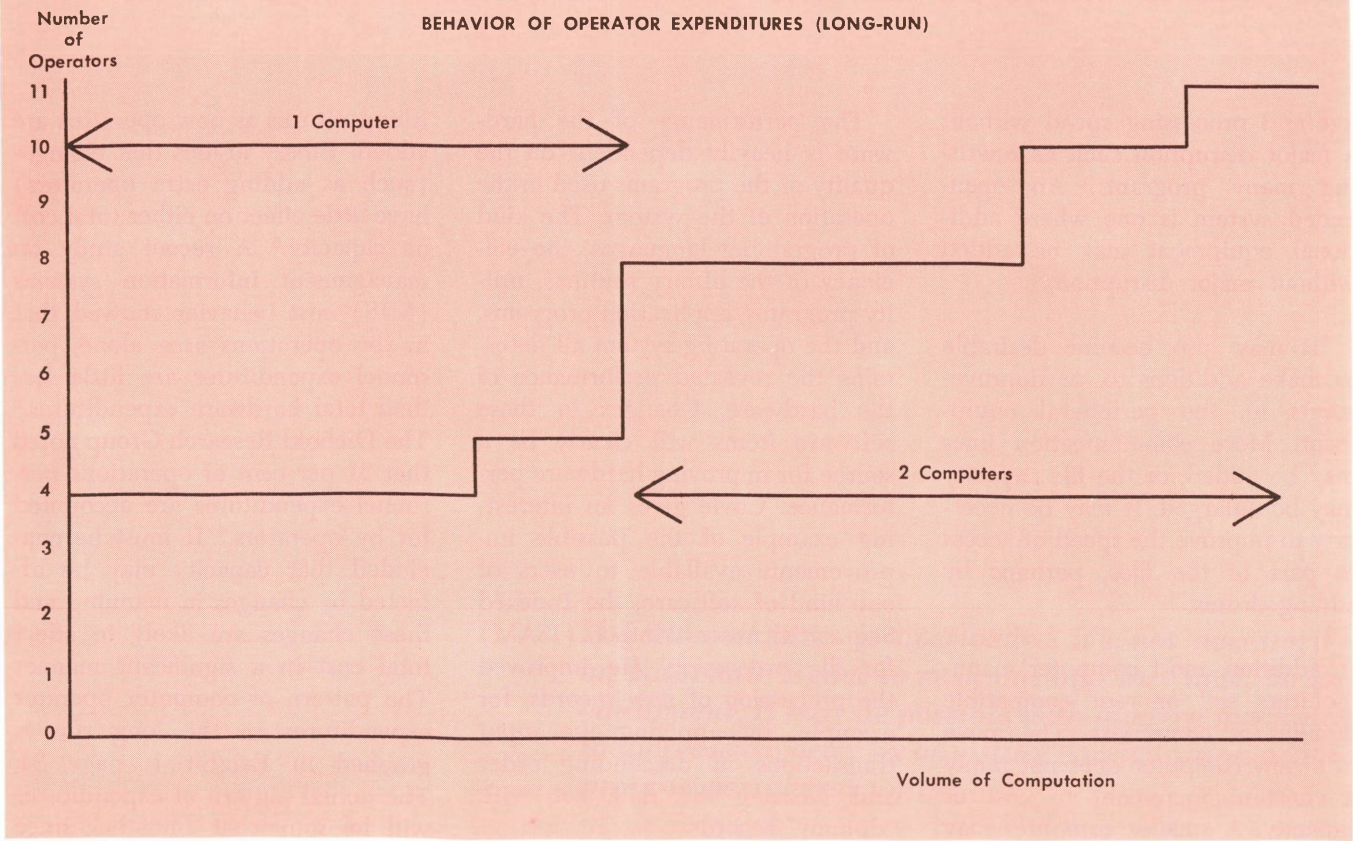
3—Coyle, F. T., "The Hidden Speed of ISAM," *Datamation,* July 15, 1971, p. 48.
4—Ruth, S. R., "The Love and Care of Antique Systems," *Datamation,* July 15, 1971, p. 43.

Systems improvement can help

Equipment capacity cannot be defined in a vacuum (even with a given number of operators). Capacity or throughput capacity is a function of the interaction of all aspects of the system. To increase capacity, for example, the quality of the operators may be improved through training so that they can

5—Emery, James C., "Cost/Benefit Analysis of Information Systems," SMIS *Workshop Report* No. 1, 1971, p. 11.
6—A study was conducted in a large manufacturer of consumer goods. The results of the study may be found in: Peter B. B. Turney, "An Accounting Study of Cost Behavior and Transfer Pricing of Management Information Systems," unpublished Ph.D. dissertation, University of Minnesota, 1972.
7—Diebold Research Program, "Management Costs and Control Studies: Guidelines to the Composition of the ADP Budget," *Management Implications,* M-21, Diebold Group, Inc., February, 1971, p. 14.

EXHIBIT I



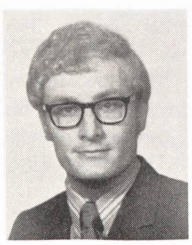
take better advantage of the system. The balance between input and output may be adjusted, even a certain amount of reprograming may be done. Ruth suggests that a 10 to 25 per cent improvement factor in available computer time is possible in many computer centers utilizing such system modifications.

"By taking the worst of all these cases which I've looked at in government and industry there is perhaps 25 per cent more computer time available simply by using better, faster, more efficient procedures in the computer room. Even if it's only 10%, it's very easy to find. And 10% of a million dollars is still worth the trouble."[8]

Capacity must always be defined in terms of equivalent service levels for some given time period. Every user entertains an expectation regarding turnaround time. When a computer is new and few jobs have yet to be converted or programed for it, turnaround time is likely to be as good, if not better, than expected. At a later stage when capacity limits are being reached, turnaround time will become longer. Capacity is thus not a rigid limit; it is as flexible as turnaround times and service levels permit it to be.

The capacity adjustment decision

The capacity increase decision is generally viewed as a long-run decision. From the beginning of a feasibility study for a new system to conversion is likely to take at least 20 months.[9] Once the system has been designed, the equipment configuration set, and the order placed, it may still take six to 12 months before delivery of the equipment can be made. This is only true, however, if capacity is being increased through the acquisition of an entirely new system. If a very large increase in system capacity is required, then it is likely that a company will have to convert to a new and larger system. If the required increment is more moderate, then it may be affected through manipulation of any one of the variables mentioned above. The configuration of the system may be adjusted, core storage may be increased, the operating system may be made more efficient, or an additional operator may be added. None of these changes requires the long-lead time necessary for the installation of a new computer. To



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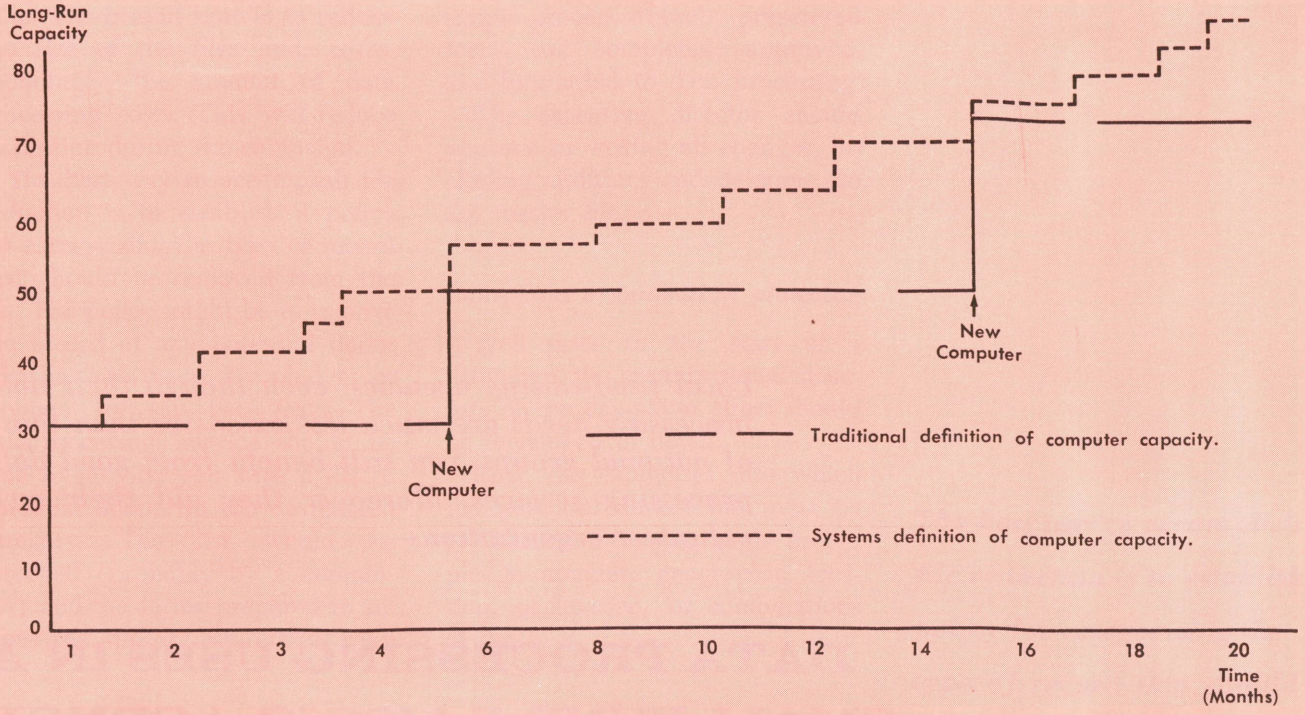
8—Ruth, S. R., *op. cit.*, p. 43.

9—Davis, Gordon B., *Computer Data Processing*, New York, McGraw-Hill, 1969, p. 484.

EXHIBIT 2

COMPUTER CAPACITY



change the capacity of a computer system by ten or even 20 per cent will generally be possible with reasonable alacrity and cost. To change the system by 50 per cent will require a much more fundamental revision and upgrading.

The ability to provide improvements in the short and medium terms should ease long-run planning for computer capacity. It should also provide a new capability for solving systems design errors, adjusting for incorrect forecasts of system demands and unforeseen overloads in the system's work schedule. Exhibit 2, above, compares the traditional approach to increasing and adjusting computer capacity with the more flexible systems approach that is proposed here. The emphasis on upgrading to larger computer systems under the traditional approach limits management's flexibility in the short run and requires capacity changes to be in large and costly increments. Where management considers other system variables that also affect capacity, such as variable operator manning and modularity in computer design, it is possible to reduce the lead time necessary to make capacity adjustments. It further reduces the size and cost of required increments to capacity by smoothing the path of capacity increase.

One of the problems that affects the capacity adjustment decision is the difficulty in forecasting the demand for computer services. If computer capacity were totally inelastic in the short and medium run, an error in forecasting the demands would be critical. It is possible, however, by consideration of computer capacity variables, to adjust and compensate for at least a moderate error. Errors in forecasting demand that are more serious suggest that the planning process for computer capacity is inadequate. Long-run demand for computer services in most companies is managed demand. The demands that are met are those for which the system has been planned or is capable of handling. Demand for computer services cannot be translated into actual output without some delay; in many cases the lead time in designing a new application is as severe as that for acquiring a new system. If long-run demand can be limited to the increase in long-run capacity, the errors in forecasting demand in the short and medium runs may be smoothed out through the numerous techniques outlined above.

Conclusion

Computer capacity cannot be defined in terms of hardware alone. An expanded definition of capacity to include all the factors that interact to create the output capability of the system is a more correct—if more ambiguous— definition of capacity. Further, it implies changes in policy and strategy for the computer management in relation to capacity adjustment. In the short and medium terms, it is possible to adjust or upgrade the system to handle significantly higher demands without requiring the acquisition of a new system.

Local fund-raising agencies, even though their data processing needs are much less extensive than those of national groups, can still benefit from good data processing services. Moreover they aid their own volunteer organizations—

DATA PROCESSING USES IN A SMALL FUND-RAISING AGENCY

by David C. Gustin
New England College

A FUND-RAISING organization, particularly one that appeals to a local group, or audience, and serves a local population of clients, has some individual characteristics that distinguish it from the average business organization or even from the large national fund-raising associations.

It operates with a skeleton professional staff; most of the work is done by volunteers.

Its appeal is periodic in nature, depending on campaigns tied to particular times of the year.

Data processing benefits

As such, it is particularly suited to data processing methods. The work done must be accurate, and it must be timely but it will not necessarily be at the same level throughout the year. Thus in most cases data processing agencies, if they are good ones, can do the job, provided a careful outline of what is needed is provided to them. So let's see how fund-raising organizations can properly organize their campaigns and process transactions to gain the maximum benefits from the use of data processing.

Master files

Comprehensive information relating to individual donors and campaign status should be maintained on data processing records. These records will serve as the basis for the management and control of pledges and pledge payments as well as for reporting of campaign status and progress.

Typically, the records will contain data about each donor or potential donor as follows:

- Name, address, and occupation
- Telephone number
- History of past pledges by campaigns
- History of payments and status of accounts receivable.

New master file records should be added to the file when potential donors are first identified. There are numerous sources for identifying new donors. One would be to "buy" or otherwise obtain lists of names from affiliated or comparable fund-raising organizations. Another would be to have direct communications with affiliated agencies which would provide reciprocal reports of the arrival of potential donors in the appropriate geographic areas.

The important feature is to add potential donor names to the data processing file as soon as possible so that when the campaign occurs, these individuals will receive the full benefit of the campaign effort.

Another important element of file

maintenance is to remove records of donors from the files in those cases where there has been no activity—either making pledges or payments—for a long period of time. The benefit here is to reduce the size of the files and, correspondingly, the amount of data processing costs. This will reduce disruption during the campaign.

The best way to accomplish file reduction is to establish a policy for categorizing the type of record that should be removed from the file. The policy might be to remove the record of any potential donor who has not made any pledges or payment for, say, two years. The data processing service should be able to provide you with a list of potential donors in the designated category. The list would be screened (probably by a committee) and the forms prepared to remove the appropriate records from the file. In most cases, this will be followed by a "write-off" of unpaid pledges.

Other file maintenance (change of address, etc.), should be a simple process whereby preprinted forms are completed, approved, and forwarded to data processing.

The executive director should approve in writing all changes, including additions and deletions, to the master file.

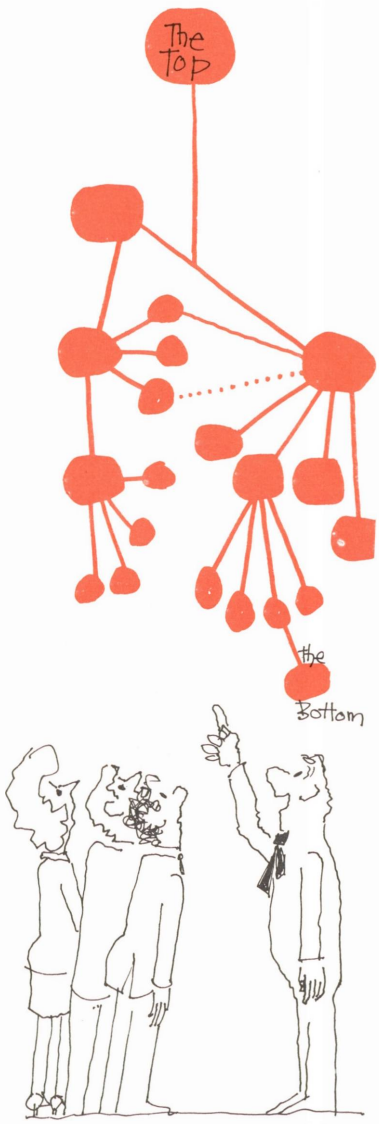
Campaign organization planning

Well prior to the start of a campaign, the organizational structure of the campaign effort should be developed in detail.

First, the categories into which the potential donors fall must be established. Grouping might be by: pledge amount, geographic location, occupation, or combinations of these.

The best way to accomplish file reduction is to establish a policy for categorizing the type of record that should be removed from the file. If every prospect who hasn't made either a pledge or a payment in two years is the category chosen, the data processing service can easily prepare such a list . . .

A vital activity is keeping the files clean, winnowing out prospects who haven't made pledges or payments for a long time.



Responsibility for organizing units should be assigned. This might involve selecting a chairman and appointing captains for each of the divisions and/or subdivisions. Following this each captain is assigned a number of solicitors.

Next, responsibility for organizational units should be assigned. This might involve selecting a director (or chairman) for the campaign and appointing captains for the divisions and/or subdivisions. Following this, each captain is assigned a number of solicitors based upon the number and complexity of the donor group he will be responsible for soliciting. The last step is to assign potential donors to individual solicitors based upon a balanced workload for each solicitor.

Establishing goals and dates

As part of the campaign planning, goals (expressed both in dollars and number of donors), and campaign dates should be established.

Goals expressed in terms of amounts to be raised and percentage of the number of potential donors making a contribution should be assigned to the solicitors. Goals would be established on the same basis for captains and division chairmen.

The campaign dates to be established are:

- Starting and ending dates of the campaign
- Date when campaign solicitation material should be ready for presentation to workers
- Dates when campaign status reports should be issued.

Initiating the campaign

All data regarding the campaign organization (assignment of potential donors to solicitors, etc.), budget figures, and all pertinent dates are transmitted to the data processing service to be incorporated in the master files. The data processing files and records will be established so as to conform to the organization structure for the campaign and as designed by the executive director of the fund raising entity. It is important to structure the files and records so that campaign materials and reports will be provided in the proper format to minimize manual sorting and record keeping in the organization office.

After the files and records are established and on the specified date, the data processing service will prepare and forward campaign pledge cards and related control records and reports to the chairman for implementation. The usual material needed to initiate a campaign is as follows:

- Set of pledge cards arranged by division, solicitor, etc.
- Set of pledge cards arranged alphabetically
- Listing of potential donors providing historical data arranged by division, solicitor, etc., and including designation of goals
- Alphabetical listing of potential donors identifying the division, solicitor, etc.

Processing pledges

Completed pledge cards should be forwarded to the organization office by the division chairmen (the solicitor would forward them to the captain for review and subsequent forwarding to the chairman). Great care should be taken to ensure control over the forwarding and handling of pledge cards.

Pledge cards will be reviewed by campaign clerks in order to ensure that data is correct and complete. Following the review, the following processing tasks should be performed:

- Batch the cards (usually 25 to 50 in a batch)

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- Obtain batch totals (dollars) and enter on a batch control record
- Forward cards to the data processing service for recording on the records
- Record the pledge amounts on the accounting records.

After the data processing service has updated its records, it will return the pledge cards together with related edit runs. On return of the material, the following processing will be undertaken:

- Validate the edit run against the batch control record
- File the cards alphabetically in completed pledge file.

Campaign activity reporting

The data processing service will provide the reports needed to effectively manage and control the campaign. The reports listed below should be provided:

Unrealized pledge roster—This identifies potential donors that have not pledged as of the date of the report. The roster should be provided in a format which enables each captain to know the status of the collection effort of each of his solicitors and so that division chairmen and the campaign chairman know the current status of the organizational units for which they are responsible.

Realized pledge roster—This report identifies all pledges received to date of run (the reports should be cumulative). It should be organized on the same basis as the unrealized pledge roster (by solicitor, captain, and division) and an alphabetical roster should be provided for the office. The reports arranged organizationally should be directed to the campaign chairman for use by him as well as by the division chairmen and captains for campaign management. The alphabetical roster should be used for reference purposes in the headquarters office.

Detailed campaign statistical reports—The content of these reports would depend to a great extent upon the needs of the particular campaign organization. At a minimum, the information listed below should be provided:

- Comparisons of actual donor amounts and numbers to goals arranged by solicitor, captain, and chairmen
- Number of pledges realized and unrealized by division and captain
- Data relating to size of donation by divisions and captains.

Copies of the statistical reports should be provided to the campaign director for management purposes and to the headquarters office for reference purposes.

We have previously described the receipt and processing of pledges at the data processing service center. When pledges are processed, the billing system should be activated so that pledge statements are prepared and forwarded on a monthly basis.

Payments and collections

Payments are received at the office usually accompanied by the appropriate statement.

When received, payments should be processed as follows:

1—Validate payment and statement, write account number on payment, and prepare dummy payment card, if necessary.

2—Simultaneously, prepare deposit slip and data processing input form. Record total on control record.

3—Forward remittances to bank and input form to data processing.

4—Validate input to edit listing from data processing.

5—Make accounting entries from data processing record.

Each month, the data processing service should provide a listing (or card record) of all delinquent accounts. These lists should be forwarded to the collection committee for appropriate action.

As part of the campaign planning, goals (both in dollars and number of donors) and campaign dates should be established.

Management Information Systems, the author believes, were set up to supplant accounting as the major reporting system in business. But the traditional MIS has many drawbacks. He suggests a controlled information system, in which accountants would have a distinct role—

ACCOUNTING'S NEW ROLE IN COMPUTER-BASED INFORMATION SYSTEMS

by Surendra P. Agrawal
Florida International University

THE NEED and importance of an information system in a business organization requires no emphasis here. Timely information is needed by various company members for decision making and operations within the organization, as well as by many external parties; the system develops and communicates this information to the various users.

Traditionally, accounting has been the only, or major, information system in business organizations; but in recent years, many businesses have set up computer-based management information systems (MIS) as an alternative to accounting information systems. Although accountants often are associated with MIS development and operation, generally no specialized function is assigned to them in these systems. The growing use of MIS, therefore, is a matter of grave concern to the future of accounting, particularly management accounting, as a distinct discipline. In order to continue to render useful services to management in the modern environment, accountants must, of necessity, find a role in computer-based information systems that they can perform effectively and usefully as specialists in their own right. This, in turn, presupposes the adoption of a model of such systems which would require the specification of that role.

Need to develop a new model

Management information systems are replacing accounting systems because accounting has not kept pace with the informational requirements of various users, particularly members of modern management. The following appear to be the reasons for this situation:

1—The scope of traditional accounting is limited primarily to reliable financial information, whereas management also needs other types of information: non-financial aspects of personnel, marketing, production, research and development, and economic environment.

2—Developments in the management sciences have encouraged the use of highly sophisticated quantitative information which can be produced by various mathematical and statistical methods. Accountants have not been able to adopt

The author is grateful to Dr. Lawrence J. Benninger who supervised the preparation of the dissertation on which this article is based, and to Drs. Harvey Hendrickson and Frank Luh who reviewed some of its earlier drafts.

In many organizations with an MIS, managers suffer from an overabundance of irrelevant information.

and integrate these techniques within their accounting model.

3—The actual information needs of users are not known with any precision. Accountants are acutely aware of this problem, and have been making constant progress in ascertaining such needs and making appropriate modifications in accounting. They cannot, however, match the enthusiasm of the systems experts in this regard, who have been known (in the past, at least) to promise the provision of all the needed information.

The establishment of an MIS eliminates some of the shortcomings of accounting. But a survey of the numerous empirical and other studies reported in the literature shows that expectations concerning MIS have been only partially realized in most organizations, and that it has not been possible to utilize in full the potential of the computer. The more significant deficiencies of MIS pointed out by these studies are mentioned below:

Overabundance of irrelevant information—In many organizations, managers suffer from an information overload. They must spend a great deal of time separating the relevant from the irrelevant.[1]

Communication gap between experts in the systems area and users of information—This deficiency has attracted the attention of the largest number of researchers, and is at the root of many other problems. The communication gap exists not merely between experts in the systems area and users of information, but also among the various categories of such experts.[2]

Inadequate understanding of information needs—Systems specialists are often unaware of the exact needs of management,[3] and, hence, the information supplied is not tailored to the user's needs. This situation may arise because of either or both of the following reasons: (a) Systems specialists fail to ascertain such needs. They often emphasize what the users ought to need rather than what they actually need, and tend to disregard non-quantitative aspects of information. (b) Decision makers are unable to specify their exact requirements. In many cases, managers cannot identify the important variables involved in decision making and cannot reduce the decision process to quantitative expressions.[4]

Incompatibility of sophisticated information and management capabilities—An important part of the output of an MIS consists of highly sophisticated information. The operations research specialists involved in the development of the information processing formulations are trained to avoid suboptimization and, hence, create "grand schemes." But management is frequently not able to use such analyses.[5]

Exclusion of judgmental factors—A computer can develop information only in accordance with un-

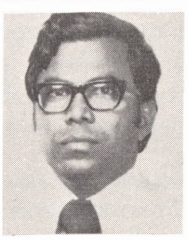
1—Ackoff, Russell L., "Management Misinformation Systems," *Management Science,* December, 1967.

2—Stuart, Walter J., "An Experiment in DP Management—Revisited," *Datamation,* November, 1969.

3—Gallagher, James D., *Management Information Systems and the Computer,* AMA Research Study #51, New York, American Management Association, 1961, p. 13.

4—Schoderbek, Peter P., and Stephen E. Schoderbek, "Integrated Information Systems—Shadow or Substance," *Management Adviser,* November-December, 1971.

5—Vandell, Robert F., "Management Evolution in the Quantitative World," *Harvard Business Review,* January-February, 1970.



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equivocal instructions. Information processing techniques that require the use of undocumented judgment or interpretations are, therefore, excluded from an MIS.[6]

Lack of flexibility in MIS—A large computer project is a one-time job. New programs may, of course, be added with comparative ease; but making changes in the existing interrelated programs used in the MIS would involve a complex operation. Hence, an MIS often lacks flexibility and is difficult to change.[7]

Inadequate control over input—Although the control of input data is one of the most critical areas in MIS, usually this is given less thought than computer programs. This situation arises because of (a) the attitude that a poor method of creating input will work, (b) the fact that source materials are created in areas outside the MIS, and (c) the tendency to believe the "world ends at the door of the computer room."[8] MIS specialists consider the data input as "given," and hence inadequate attention is paid to its control.

From the foregoing discussion it would appear that neither accounting nor MIS has been able to adequately achieve the purpose of an information system, and a need exists to develop an improved model to do so.

The controlled system

A review of the basic deficiencies of accounting and management information systems suggests that a good information system should possess the following features:

(a) It should have control over its input so that it would accept only the data needed to develop the required information, and would keep in touch with new types of data available, so as to develop the capability to utilize the same.

(b) It should have the capability to produce various types of information using whatever processing techniques are called for. In particular, it should be able to utilize both quantitative and qualitative inputs, and make use both of human judgment and the vast computational capability provided by computers in the processing thereof.

(c) It should keep in constant touch with the needs of various users and try to supply the required information.

(d) It should have adequate flexibility and provision for ongoing developmental research.

A general model, called the "controlled information system," is developed here to incorporate these features.

The controlled information system will consist of four subsystems that are assigned specific functions and responsibilities, as follows:

Input subsystem—Functions of this subsystem will be to accept all data that meet appropriate standards relating to their usability, authorization, and reliability. It may also make feedback to the developmental subsystem when necessary for proper utilization of available data. These functions may require exercise of subjective judgment by the person in charge of the subsystem, particularly when dealing with new types of data which have not been previously available. Some of the data entered into the system may be found to be unusable, and may, therefore, be subsequently expunged.

Processing subsystem—This will be divided into two sections, one using the computer for storage, retrieval, and manipulation of data, and the other carrying out these tasks manually. The computer will primarily deal with quantitative information in accordance with detailed programs.[9] Other types of data and processing will be handled by individuals who may or may not utilize various types of other mechanical aids. Both sections will follow standardized procedures or guidelines. The outputs of the two sections must be combined, which may be done by manual input into the computer, and the information may then be considered ready for reporting to users. The processing programs and guidelines are laid down when the system is originally set up, and subsequently are added to, or modified by, the developmental subsystem with which there would be frequent interaction for this purpose. As far as possible, the processing should be done in an integrated manner, modular programming should be adopted, and the techniques used should be compatible with the needs and understanding of users. In order to be helpful in problem solving at the higher levels of management, the processing may include such advanced techniques as model building and simulation.

Output subsystem—This subsystem is responsible for enforcing appropriate standards in the output of the system. Such standards should ensure that information of the correct reliability level is supplied to a particular user or for a particular purpose, that only the information actually needed is reported, and that only properly authorized information is communicated to people who are entitled to receive it. However, it would be extremely difficult to achieve the ideal of providing custom-made information for each individual decision maker and for each individual decision. To the extent that information reporting is not standardized and users have made no specification of their informational requirements, the person in charge of this subsystem would need to use his judgment to determine what information should be provided to whom.

He may also help the developmental subsystem by providing feedback about information actually needed but not being supplied, information being provided but not

6—Long, Charles L., "Needed: A New Profession," *Journal of Systems Management,* June, 1971.

7—Toan, Arthur B., Jr., "MIS—A Status Report on the Concept and Its Implementation," *The Journal of Accountancy,* June, 1970.

8—Rubin, Martin L., *Handbook of Data Processing Management,* Princeton, Auerbach Publishers, 1971, Vol. 4, p. 1.

9—Some nonquantitative data may also be processed by the computer, particularly for storage, indexing, and retrieval.

used, and changes in information needs.

Developmental subsystem – This subsystem will also be divided into two sections. One will receive and interpret feedback from the other subsystems as well as from users of information. The second section will carry out research and develop or modify procedures and guidelines used by the processing subsystem. The techniques of research may include operations research methodology. Additions or modifications may be made after a proper study of technical feasibility and a cost/benefit analysis. Such an analysis may either be a study of the total cost and total benefits of the system, or an incremental analysis of any proposed changes.

Exhibit 1, at the right, contains a diagram of the controlled information system and shows the interrelationships of its subsystems and their sections.

Distinct new entity

The controlled information system is distinct both from accounting and MIS. It differs from accounting primarily in that it is capable of supplying all types of information needed by various users, including highly-sophisticated quantitative information. It differs from MIS because it utilizes and provides both quantitative and qualitative information, has flexibility in processing techniques, and exercises continuous human control over its input and output. Furthermore, it has explicit provision for utilizing feedback and developmental research. The principal advantages of this model may be summarized as follows:

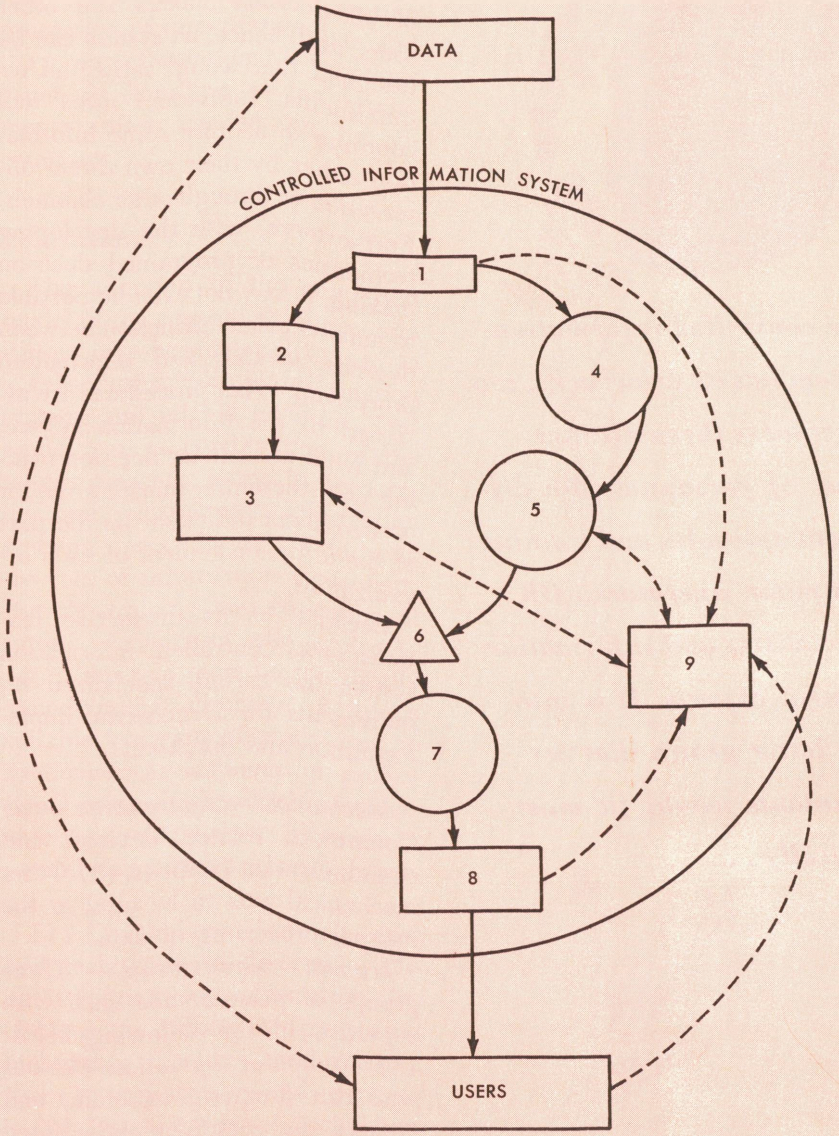
(1) It has the capability to develop various types of information, such as financial, nonfinancial, quantitative, nonquantitative, internal, external, past, present, and projected.

(2) It has the capability to communicate information in accordance with the actual requirements of various users.

(3) It possesses flexibility, that

EXHIBIT I

Model of Controlled Information System



Legend:
1. Standards for Input
2. Data for Manual Processing
3. Manual Processing (storage, retrieval, manipulation)
4. Data for Computer Processing
5. Computer Processing (storage, retrieval, manipulation)
6. Combination
7. Information Available for Reporting
8. Standards for Output
9. Development (feedback and research)

The controlled information system has its drawbacks, too. It requires three distinct types of personnel with different aptitudes and training: computer operators; OR specialists; and information control experts. It is into the latter group that accountants would fit most logically . . .

is, ability to change in keeping with changing needs and environment.

(4) It has technical and economic feasibility at all times.

However, the controlled information system also has its limitations. In view of the constantly changing environment it will never be possible to make an accurate prediction of the total informational needs of all decision makers and other users, and, hence, no system can be designed that would satisfy all requirements. Individual users will continue to acquire some information either by their own direct observation or through other channels. Furthermore, with the developing techniques of programed decision making, it may not even be possible to make a clear distinction between decision making and information processing. What procedures are assigned to the information system, and what are left for decision making will, therefore, remain a matter of significant judgment on the part of the top management of each organization.

Because of its distinctive features, the controlled information system has certain specialized requirements for a successful implementation and operation:

Mechanical requirements – (a) Computers, related devices, and communication facilities. (b) Other mechanical aids to be used in the manual processing of data.

Human requirements – Three groups of persons, one each with expertise in the following fields: (a) Computer operation—Persons who can program, maintain, and operate the computer and related devices, and who can manage the data base and the programs and routines library. (b) Operations research (OR)—Persons who can develop and improve information processing formulations. Though OR experts specialize primarily in mathematical and statistical techniques, this area is interdisciplinary in nature and help would be needed from various other experts also. (c) Information control—Persons who can control the input and output of the system, carry out manual processing of data, and receive and interpret the feedback. This is a new area of specialization and accountants may wish to prepare themselves to carry out these tasks.

Information controllers

Accountants traditionally have performed tasks similar to those included in information control, and they have developed skills in these areas. No other discipline seems to be better suited to assume the role of information controllers.

Accountants have extensive training and background in data collection. Both quantitative and qualitative data are used in accounting, and the preparation of financial statements must always leave a trail of competent evidence. Similarly, accountants historically have processed data manually, using compatible mechanical devices as and when they became available, and have to make frequent use of judgment in such processing. They also are used to combining various types of information, for example, supplementing financial information by legal or contractual information, or qualifying quantitative information with nonquantitative information. To control output, information supplied by the accounting system must meet certain standards (though there is no unanimity of opinion as to what precisely these standards are or should be). Furthermore, accountants are "accustomed to situations in which no specific requests for information are made, and in which responsibility for generalizations about the more important needs of users must be assumed jointly by the accountant and the entity whose activities are being reported upon."[10]

10—American Accounting Association, Committee to Prepare a Statement of Basic Accounting Theory, *A Statement of Basic Accounting Theory*, Evanston, American Accounting Association, 1966, p. 22.

The foregoing discussion is not intended to imply that present-day accountants already are well prepared to perform the role of information controllers. The principal limitation of accountants is the scope of accounting information. They would need to expand their interest from financial information to all types of data and information used in business organizations.

This would require a substantial change in the training and education of future accountants who aspire to work as information controllers. It is suggested, therefore, that "information control" be considered as an additional branch of accounting. It is expected that this branch would gain importance with the increasing use of computers for information processing.

New skills must be emphasized

To carry out this function successfully, accounting as a discipline of information control should include a study of the following:

(1) Information needs of decision makers and other users must be understood. This would involve a general familiarity with operations of the business, decision areas, decision-making processes, the effects of alternative methods of processing or presenting information on decisions, relationship of the reliability levels of information with its use, and the information required to be reported under various laws and authoritative rules and regulations.

(2) Data needed to develop various types of information should be learned. This would involve a general familiarity with techniques of processing data, knowledge of data sources within and outside the organization, and analysis of the reliability of various sources and of the data provided by them.

(3) Manual processing of data as it may be needed must be studied and combined with computer-processed information by manual input into the computer.

(4) Computers and operations research are necessary up to a level sufficient to understand their potential limitations, and possible applications.

On the other hand, training and education which presently help accountants to carry out other functions should be deemphasized in the discipline of information control. This would include the routine processing of quantitative data and the noninformational functions (such as handling of tax assessments) often carried out by accountants.

Conclusions

The adoption of the suggested model of the controlled information system may be expected to lead to a fuller utilization of information systems and related facilities. This model uses a combination of the talents presently found in accounting and management information systems, accountants performing the role of information controllers. But the training and education of future accountants who aspire to act in this role must be specifically aimed in that direction. Before a suitable program of study can be introduced in academic or professional curricula, however, considerable research needs to be made in several areas, such as the following:

(1) Development of concepts and techniques to determine reliability of data and information (including the effects of processing techniques thereon), and relating them to various uses and users.

(2) Development of techniques to ascertain informational needs, and study of the behavioral aspects of information.

(3) Development of verification and authorization techniques for data and information.

(4) Development of concepts and techniques for carrying out cost/benefit analysis of information systems.

(5) Development of concepts and techniques to determine the desirability of programing particular decision models.

Many MIS people have the attitude that the "world ends" at the door of the computer room.

Sometimes very high data processing speed can actually be a handicap to the company employing it. Obviously, very fast flow is important in an airlines reservation system, but that's not equally true of production scheduling—

THE FREQUENCY OF INFORMATION FLOWS: A MISUNDERSTOOD MANAGEMENT VARIABLE

by Robert L. Paretta
University of Delaware

THE ADVENT of electronic data processing machinery and its constant increase in speed of processing ever since have posed a problem to many businesses. Is all this speed necessary in every instance or has the capacity of the machines outstripped in many cases the ability of management to absorb and use the information generated?

Cost-benefit ratio

Accountants and systems analysts have been working together in recent years trying to provide managers with information relevant to their planning, operating, and control decisions in a form the users can understand. To service these decision needs they have developed management information systems to provide data in many forms geared to forecasting, measuring, and evaluating economic events. Assuming the content of the information transmitted to a decision maker at a given periodic rate is both relevant and comprehensible, a question they must often face is whether management performance can be significantly improved by increasing the frequency of reporting. Can the firm benefit, for instance, from information that flows through its decision centers weekly or monthly rather than quarterly or annually? Will these benefits exceed their costs? The exploration of these issues is the primary concern of this article.

Intuitively it might appear that more frequent information should always be preferred by the firm to less frequent. If for the moment it is assumed that increasing the frequency of information flows has a zero marginal cost, a plausible response to the questions posed above might be to increase reporting frequency in all decision centers to the maximum technically possible.

Unfortunately, however, this will not improve a decision maker's performance in every instance. An examination of three specific examples will make this point clearer.

1. *Decisions Improved*—There are some decisions where management performance can be improved by increasing the frequency of report-

ing to the maximum. The kinds of critical control processes found in the generation and transmission of electric power, the refining of oil, and the production of chemicals—where remedial action must be immediate, or nearly so, to prevent unpleasant consequences or avert a disaster—are good examples of how the firm can benefit from very rapid information flows. In addition, the installation of on-line-real-time systems for handling passenger reservations has often been cited as the major factor in allowing airlines to improve service to the public at lower cost with smaller fleets by permitting more efficient allocation of available aircraft space.

Using the approach suggested by Bedford and Onsi for measuring the value of information by comparing the outcome of the actions of the decision maker before and after the receipt of a message,[1] the effects of information frequency on the profitability of the firm can be depicted graphically as in Exhibit 1, page 48. In Frame A of Exhibit 1, the curve shows the result to be expected in the case of the critical control processes outlined above; the value of information is highest when the reporting cycle (the time between an event taking place and the receipt of a report) is zero, and drops off sharply becoming valueless when the unpleasant consequences the system is designed to guard against occur.

2. *Decisions Unaffected*—Other kinds of decisions can be noted where increasing the frequency of reports will have *no effect* on the manager's performance and hence will produce no benefits to the firm. This is common when the decision maker is unable to act on more frequent data because of queuing, scheduling, or capacity constraints. For example, providing daily sales and inventory information to someone responsible for production scheduling would be meaningless if it were neither technically nor economically feasible to reschedule production runs daily.[2] Furthermore, with regard to variance analysis, problems of nonlinearity can make shortening the reporting cycle of little value. Dearden demonstrates this quite well:

"In the area of performance evaluation, real-time management information systems are particularly ridiculous. When a division manager agrees to earn, say, $360,000 in 1966, he does not agree to earn $1,000 a day or $1,000/24 per hour."[3]

In this situation the messages transmitted to the decision maker, at least at the high frequency discussed, have no rational basis for being supplied. In Frame B of Exhibit 1 it can then be seen that where reporting cycle is a shorter time period than that necessary to take action, the value of information (and therefore the effect on profitability) is zero. As the reporting cycle increases to a point consistent with the ability to act on information received, the value increases sharply to a maximum, then falls as the information gradually loses its usefulness to the decision maker.

3. *Decisions Hindered*—Finally, two conditions can be identified under which management performance and profitability can actually *suffer* when information frequency is too high. First, when dealing with data that is very unstable, increasing the frequency of information flows substantially enlarges the probability of introducing random variations in the reports received by a decision maker. A message containing data that is the result of a random fluctuation not representative of the events being observed, may transmit a false signal to the manager causing him to take action when none is appropriate. This can prove harmful to the firm when the cost of taking the wrong action is high, compared with the cost of not acting and waiting for more information.

Second, increasing the frequency of reporting can cause problems where the time necessary to evaluate information received is longer than the reporting cycle. A situation could develop where the manager is supplied new information before he has had the opportunity to fully evaluate information received in the prior period. Receiving the new information would make his analysis-in-process obsolete and he would very likely postpone a decision until the most recent information was evaluated. If the decision maker reacted in this way to every new piece of relevant information he received, a condition could develop in the extreme case where a decision would never be made. Evaluating, updating, and re-evaluating problems would be a continuous closed-loop process with no exit for positive action, unless the frequency was reduced to a rate in phase with the analytical time frame demanded by the decision. Though somewhat exaggerated, this example demonstrates that there is an opportunity cost associated with a manager being exposed to information too fre-

1—Bedford, Norton M. and Mohamed Onsi, "Measuring the Value of Information—An Information Theory Approach," *Management Services*, January-February, 1966.

2—This is not to imply that this data is intrinsically valueless, for it may have value at high frequency for some other kind of decision, or have value for this decision if it is gathered in the system and stored for later review. The point being made is that the value of information is a function of many variables including frequency.

3—Dearden, John, "Myth of Real-Time Management Information," *Harvard Business Review*, May-June, 1966, p. 126.

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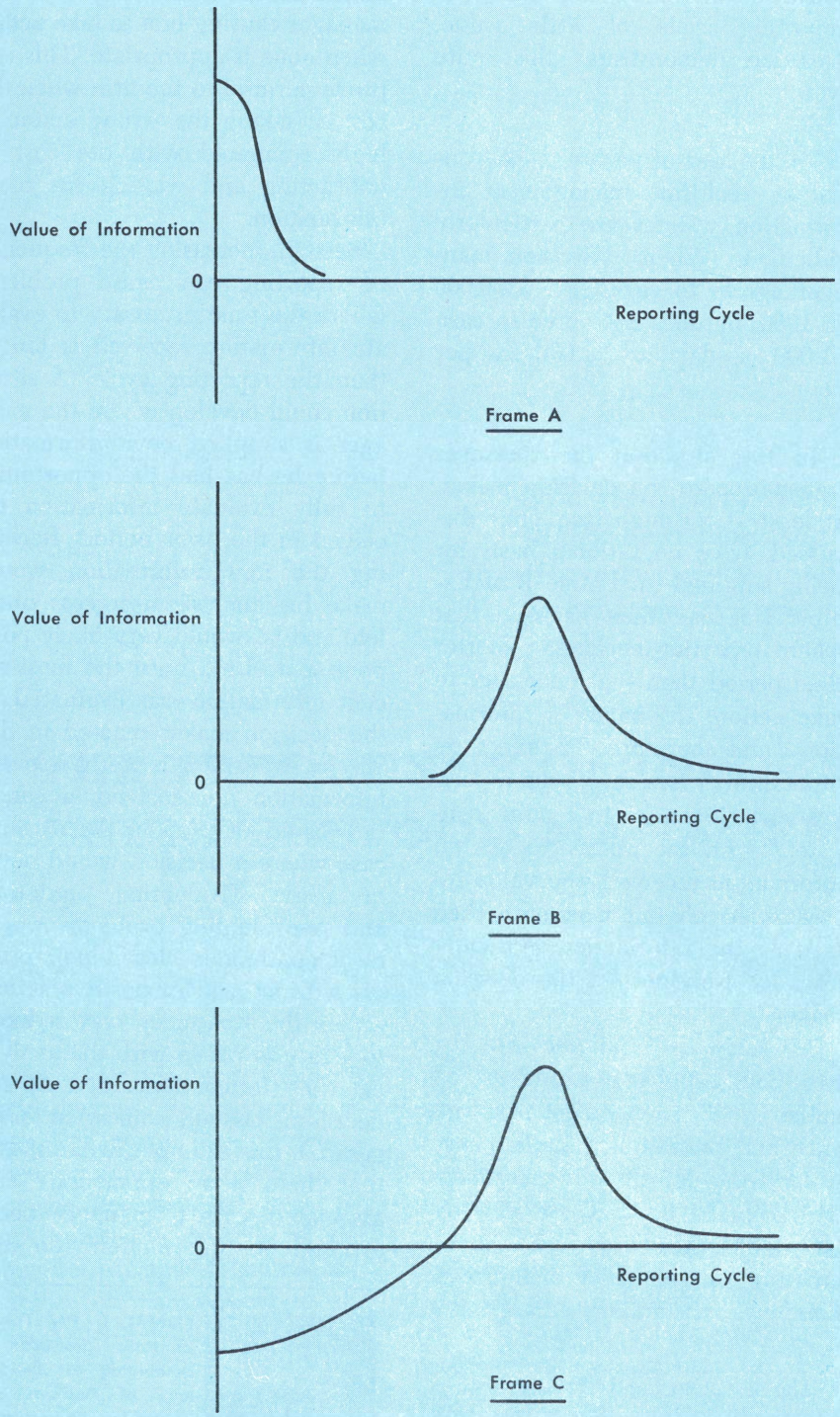
EXHIBIT 1

The Value of Information Expressed as a Function of Frequency



quently. Reinforced is the fact that a decision maker's time is a scarce resource that must be efficiently allocated by the firm.

Frame C of Exhibit 1 shows that in this case, where the reporting cycle is too short, the value of the information is negative until a point is reached beyond which randomness and the decision's analytical lead-time are no longer factors. As the reporting cycle increases, the value rises to a maximum level, then declines as the usefulness of the information to the manager fades with time.

Analysis of costs and benefits

By looking at the three classes of decisions above, it was quite easy to show that increasing the frequency of information flow can have a variety of effects on profitability—even when it was assumed to have been achieved free of additional cost. Relaxing this assumption introduces a new set of problems for *all* classes of decisions.

If the firm is to maximize the utilization of its scarce resources, the expected cost of providing information at a given frequency must be matched against the expected benefit of receiving more frequent reports. In a world of certainty, given a specific decision, the process of matching costs against benefits can be readily accomplished. In the real world, however, costs and benefits can be difficult to determine for several reasons.

First, not all costs and benefits readily lend themselves to measurement in monetary terms. Some may be of a behavioral nature. The organizational structure of the firm, the intensity of budgetary pressure within the firm, the degree of stability in the demand for the firm's products, and the trend of that demand, are just a few of the things that can influence the way some managers perceive their "needs" for information at given frequencies. A large part of these perceived needs may be emotional, and, in fact, may far exceed the frequency rates that are warranted

by the decisions involved. Nevertheless, to deny information at the frequencies managers feel they "need" may result in poor performance because of the resultant loss of confidence they surely will suffer.

Second, since decisions within the firm are interrelated, benefits and costs, even if measurable, may be difficult to isolate. In the examples cited above three classes of decisions were examined in a kind of vacuum, and it was easy to identify the consequences brought about by changes in the frequency of information flows. But in the real world this is neither possible nor appropriate because it ignores the fact that the firm is composed of a system of interrelated decisions where the decision output of one decision center often becomes the input for another decision center. The direction of the links between and among decisions can be vertical, horizontal, or even circular, all with numerous points of intersection. Separating the costs and benefits under these circumstances is not quite as simple as it might first appear.

Conclusions

There is a popular belief that increasing the frequency of information flows will improve a manager's performance. In this article, it has been explained why this is not always the case. Careful analysis must be made of (1) the frequency needs of given classes of decisions, and (2) the interaction effect of decisions made in one decision center on other decision centers. In order to achieve this, several factors must be kept in mind:

1. *The sensitivity of the decision process*—As an example, it was shown that where a process has the potential to produce serious consequences when permitted to go out of control, very frequent information (perhaps to the point of continous monitoring) might be needed to avert disaster.

2. *The flexibility of the decision process*—It was shown that certain kinds of processes (like production-run scheduling) which allow managers to take action only at specific intervals (after which the firm is committed to a course of events that does not readily lend itself to modification until a discrete point in the future), make it necessary for information to be supplied at frequencies in phase with the given interval. To supply it more often would result in a misallocation of the firm's scarce resources.

3. *The variability of decision input data*—It was shown that in cases where the decision input data is unstable, raising the rate of information flow tends to increase the probability that a message sent to a manager will contain data that is not representative of the events being observed. This could transmit a false signal to the manager causing him to take action where none is called for.

4. *The analytical lead-time required by the decision process*—Every decision process has associated with it what might be called "analytical lead-time"—that is a period of time before a decision can be made when information is evaluated and analyzed. If the information flow is more rapid than the analytical lead time, it was shown that the manager's performance could suffer as a result of being saturated with more information than that with which he can effectively deal.

5. *The cost of information vs. the benefits received*—If the firm is to efficiently allocate its scarce resources, the cost of providing information at a given frequency must be matched against the expected benefit of receiving it. It was shown how this matching is often very difficult in the real world.

Though the above list of factors does not purport to be exhaustive, it represents those which should be of immediate interest to individuals responsible for designing the firm's information system. If the frequency of information flows is to be a meaningful management variable, these factors must be considered.

If the firm is to maximize the utilization of its scarce resources, the expected cost of providing information at a given frequency must be matched against the expected benefit of receiving more frequent reports . . . In the real world . . . costs and benefits can be difficult to determine for several reasons . . .

What's wrong with this picture?

Photo by Van Bucher

Somebody forgot to include the women. Each day decisions are being made in all-male boardrooms, in city councils, on the boards of education, and elsewhere, that affect all of our lives. Intelligent, educated women — and they are legion these days — belong in this picture. They can help to build the kind of society we all want. What's wrong with this picture is that half the talent and brainpower of our country is missing... an important half—women.

Womanpower. It's much too good to waste.

For information: NOW Legal Defense and Education Fund Inc., 127 East 59th Street, Dept. K, New York, N.Y. 10022

what people are writing about

BOOKS

The Great Wall Street Scandal by RAYMOND L. DIRKS and LEONARD GROSS, McGraw-Hill Book Company, New York, 1974, 295 pages, $8.95.

Chutzpah—that Yiddish word meaning unprecedented gall—is what this book is all about. For the Equity Funding case, unlike many other scandals that have rocked the financial world, was primarily a triumph of deliberate deception by the company—deception on so vast and deliberate a scale that the SEC, state insurance commissions, other insurance companies, even honest individuals involved in the machinations, literally wouldn't believe what was going on.

Yet the deception took everyone in, wary and sophisticated underwriters as well as gullible individuals. Everyone relied on everyone else: the state insurance commissions, or the SEC, or honest and reputable auditing firms. The insurance protective agencies of the various states did not check to see that the policies really existed and covered actual people. Nor did the New York Stock Exchange. It was the Captain from Kopenick story all over again, the tale of the retiring German tailor who got an Army captain's uniform, assumed it and the manner of a pre-World War I Prussian officer, and very nearly took complete charge of a small German village. The facade of Equity Funding was so impressive that no one checked to see if there were adequate foundations or anything behind the facade.

If any of the supervisory agencies, private or public, had even checked the origins of Equity Funding anywhere along the line, the career of the company and the catastrophic losses it caused, might not have occurred. The company evolved from the schemes of a motley group of five promoters: Mike

Platt, Eugene Cuthbertson, Stanley Goldblum, Mike Riordan, and Gordon McCormick. McCormick, a Barnum and Bailey character more notable for high living than for any solid financial accomplishments, is generally acknowledged as the author of the idea that was to be the genesis of Equity Funding.

"Every dollar works twice"

Life insurance is good. Everyone needs it because of the certainty of death. Yet in a time of continued inflation, every dollar sunk in life insurance premiums is a dollar lost to diminishing purchasing power in the future. Why not buy a mutual fund in large quantities, then borrow against the value of the fund to invest in insurance? When the next fund policy payment fell due, pay it from the profits on the mutual funds. That way, every investor's dollar would work twice.

The holes in such a scheme should have been self-evident. The fact that they were not, to the thousands who invested in the scheme, speaks volumes about American naivete and greed. It speaks even more eloquently about the diligence of the regulating agencies that were supposed to be overseeing both the insurance and the mutual fund industries.

Finally, the conspirators who hatched the scheme fell out. Platt died of a heart attack in a New York bar. Riordan was buried in a California mudslide. Eventually, only Goldblum was left.

Goldblum was a cut above the others. Shrewd and intelligent, he could be impressive when the circumstances demanded it. He knew insurance and he also knew mutual fund sales.

And it was Goldblum who capped the first concept: every investor's money working twice; first to purchase mutual funds, then through loans on the funds to buy life insurance, with the final gimmick. That was to run up the profits of the conglomerate selling both funds and insurance to the point where it could afford to "purchase" other companies, and to add their profits to Equity Funding's, thus driving up the parent company's stock higher still.

But in 1969, with a general downturn in the stock market, Equity Funding's stock fell too. It no longer attracted enough eager individual buyers to run its stock to the point where it could be traded advantageously for another company's shares. Trouble was brewing in Paradise.

Strangely, the origin of this book was a visit paid to the author by a disgruntled employee of Equity Funding who had just been fired. The author, Ray Dirks, was a fairly well known insurance analyst on Wall Street. The ex-employee was Ron Secrist, a vice president for administration for Equity who had been working at an Equity subsidiary in New Jersey. He was suddenly summoned to Equity headquarters in Los Angeles to be informed that he was being fired as part of a general economy move.

What the company didn't realize was that Secrist had been suspicious of its way of doing business for a long time, had exchanged confidences with other employees who also thought something was very much amiss, and, at the very end, had actually been involved in some of the Equity machinations.

Together these scattered bits of knowledge amounted to a whole that was almost incredible. It looked very much as though the company were writing false insurance policies on non-existent people, recording them as legitimate sales, thus inflating their stock further, using the inflated stock to purchase legitimate companies, and then looting them.

To do this executives of the company would actually create false insurance papers by simply copying existing health records for one legitimate customer, combining them with financial information from another and, in effect creating an entirely new character. The work was done by a crew of not-very-bright clerks hired for this particular purpose who were told they were copying portions of existing records. Then company executives meeting secretly would use this cannibalized information to support new accounts on the company's computer records.

Equity's proudest boast

The proudest boast of the company was that its computer did not leave an audit trail—which it emphatically did not. The system had been deliberately designed so that it did not. The original records were there—assiduously assembled by the group of high school clerks. Entries had been made on the computer. These fake policies along with some real ones had been sold to reinsurers who, in most cases, didn't check on their authenticity any more than anyone else had.

Why hadn't Secrist, the ex-employee who finally went to Dirks, blown the whistle a long time earlier? He didn't think the insurance commissions of the various states would do anything. He didn't know too much about the SEC but he didn't put much faith in it either. When he finally went to Dirks it was in the thought of getting maximum publicity, since that would drive down the price of Equity stock, the surest way to destroy the company. Publicity also, he reasoned would force the state insurance commissions to investigate, which he wasn't at all sure would be the case if he went to see them privately.

Even Dirks was skeptical at first. It all seemed too impossible. But he talked to the head of one of the largest of Equity's five sales regions to find out how much business his salesmen had written during the year. He got an answer. Significantly it was far less than one fifth of Equity's reported earnings for the year.

Something was obviously wrong —in spite of the other insurance companies, the insurance commissions, and the SEC—with the financial reporting of the West Coast giant.

From that point on, it all unraveled—but not before Dirks was forced to change hotel rooms in Los Angeles three times on warnings that "the company" was out to get him. Perhaps the bitterest, most poignant note of all was struck by some unknown Equity Funding employee who penciled an anonymous note in a company facility:

"Thank God for Watergate!"

The Washington expose was breaking at the same time, and at least drew some attention away from the Equity Funding troubles.

In general, the atmosphere that produced both Watergate and Equity Funding seems to be the overwhelming note of this book. The sheer intricacy of the maneuverings in each case, the deviousness of many of the characters, the number of actors (this book has a cast of characters at the beginning reminiscent of a Russian novel)—all have more than a striking similarity to each other. The distrust of public institutions, the feeling that those charged with public responsibilities "wouldn't do anything about it," also characterizes both cases.

Product of its times

Dirks traces this to the atmosphere of the financial world at the time: an era of "go-go" funds, when a company's stock price was its most important asset, when corners could be cut and most often were, when "will it play in Peoria?" had become a national watchword denoting whether such and such an act could be gotten away with or not. Dirks himself was sued by various interested parties for divulging insider information because he had warned some friends and accounts to take it easy in investments in Equity Funding until his investigations—at that point purely informal – showed anything one way or the other.

This is a complicated but therapeutic book. Complicated because it is difficult to follow the involved machinations that Goldblum, McCormick, Platt, et al, devised to fleece their company's investors, therapeutic in the cathartic, Freudian sense. It shows us where we were just a short time ago—when whatever would sell was good, and honor, or honesty, was the last possible consideration.

Computer Crimes by GERALD MCKNIGHT, Walker and Company, New York, 1974, 221 pages, $6.95.

The growing relegation of power to the computer has made major crimes by the knowledgeable easier, this British reporter warns. He states the cases of some who have slipped and been caught and ponders how many crooks have gotten away leaving no traces.

If you are an expert in computer security, don't read this book because it adds much heat but little light. On the other hand, if you believe your installation can't possibly be the target of any evil force, this book may be for you. Its style is highly readable, if a bit sensational.

"The stakes, in the game of computer crime, are rising to a dangerous level. Anyone who now stands in the way of those determined to operate against the electronic world of data-processing is facing possible reprisals from criminal and hostile 'investors.' How easy it is to overstate this threat. Equally, it would be folly to ignore it," Mr. McKnight states.

He cites Alfonse Confessore as the "first electronic criminal to be murdered for his activities." Mr. Confessore was not a sinister systems analyst looking to rule the world, but a mechanic who managed to get hold of duplicate Diners Club cards and pass them on to gangsters.

But the author does tell some interesting stories without as much ballyhoo. The managing director of a big and successful British drug firm was one day approached by a representative of his EDP department and told, "I happen to know, sir, that if some of the men in the computer room don't see rises —double what we're getting now—right across the board, in the near future, then your invoices are going to suffer."

If the raises were not forthcoming, the men proposed to reduce all the invoices about 5 per cent. The manager called in a computer security expert. It would be cheaper to double the men's salaries than to suffer the markdown, and to bring the matter to the authorities would risk public confidence in the firm's computer-based operations. To do the invoices manually would also cost more than the raises and since the accounts would have to come out of the computer, they could be tampered with at that stage too.

The security expert advised that the raises be given, the invoices be sent out, and then the whole group fired. That was done. But Mr. McKnight questions what would happen if a similar sort of action took place once computer personnel are unionized.

"There will not, one imagines, be the need then for vulgar blackmail. For what corporation executive would be able to resist the demands of a deputation from his computer room if it not only possessed all power over the heartbeats of the business, but also was backed by closed-shop solidarity? It would be like a strike of iron-lung operators against polio victims."

No charges

Mr. McKnight tells of some hardware manufacturer's maintenance people who, allegedly, to twist management's arm in local union negotiations, tampered with a client's (a life insurance company) automated weather service. No charges were preferred against the suspects.

"From all of this, it may seem that if one is going to sabotage a computer for any reason, it is as well to be a paid-up member of a powerful union before attempting

to do it," the author wryly observes.

Just as charges were not pressed by either of these two harmed companies, other large corporations have kept silent about crimes committed against their computer operations.

"Because of what competitors, shareholders and loan-providers such as banks, might do if they found out that the company's costly computer had been broached, those in-the-know hush up scandal after scandal. How large a slice of the whole it represents one can only sense, but security experts with sealed lips and long memories talk of 'many more than get to be known about,'" Mr. McKnight states.

Rewards for corruption

An EDP-knowledgeable executive defrauded one company and, to prevent a scandal, left only after receiving additional compensation and a letter of recommendation. With that letter he went on to a second company and defrauded it too via its computer. His trail would have continued to a third company had he not broken the camel's back by asking for too much as a going away present, the journalist reports.

Mr. McKnight does offer some comfort to his readers, "In order to carry on a lasting, productive and systematic robbery of credit cards, or any other computerized sphere, criminals would need a well-run, well-managed operation, and this rarely exists in their society. It would have to be built on efficient, corporate lines. The likelihood of lesser, essentially hit-and-run, attacks is therefore very much greater."

Which group will win?

The author believes while some are busily employed in making systems more secure, the more greedy individuals in our society are looking for ways of getting to the computerized information. It is a question of which group will reach its goal first.

Security Procedures for Computer Systems by CHARLES F. HEMPHILL, JR., and JOHN M. HEMPHILL, Dow Jones-Irwin, Inc., Homewood, Ill., 1973, 251 pages.

If an institution is unable to afford an adequate computer security system, it is unable to afford a computer operation, these authors state. However, before making an investment in such a system, management should first avail itself of those basic deterrents and procedures that have proved effective in actual practice, the Hemphills say and give examples.

The Hemphills are an interesting team. Charles F. Hemphill, Jr., has been an FBI agent, worked on the investigative staff of the Attorney General of Utah, and is presently senior consultant in the Loss Prevention Division, the Wackenhut Corporation, Los Angeles. John M. Hemphill holds a Ph.D. in electrical engineering and has been involved in the management and operations of several large remote access computing systems. They seem to be the perfect pair for writing a book on computer security.

The book they have produced is far from technical. It provides many examples of what not to do and several common sense activities that can keep your installation from making the same mistakes. A few of the sensational newspaper stories about the destruction of data centers by students are repeated here. Checklists are included at the end of each chapter that can help management rate its own security program. The book may not give you startling new insights into data security, but perhaps a few of the hints will be useful.

For instance, don't plan your computer facility to be located near the firm's safe.

"There is frequently an unusual potential for explosion or fire in the area of business safes. This is because professional burglars sometimes utilize nitroglycerine or dynamite to blow open the safe, or cut into it with an acetylene-burning torch. Since these burglary techniques increase the possibilities of computer damage by explosion or fire, it is recommended that the computer be located at some distance from a company money safe. Since the acetylene torch is an unusual fire hazard under any circumstances, it is considered dangerous to allow welding in the vicinity of the computer."

The great magnet hoax

What about magnets? Remember the *Wall Street Journal* story that told of a group of boy scouts touring a computer center and unintentionally erasing company data because they were carrying magnets in their pockets? The authors point to the Stanford Research Institute study made in 1972 that found tape libraries are not as vulnerable to magnetic damage as some had claimed. Almost any magnet can be dangerous to computer data if brought into direct contact with magnetized data, but waving a magnet in the air in the direction of the tape library is not harmful. However, they point out that a tape does not have to be completely erased to be useless, just the destruction of a number of spots can cause it to have a "read error."

"In spite of the known dangers of all magnetic materials, recent business periodicals and computer magazines still contain advertisements of bulletin boards and wall charts with magnetic attachments, for use in computer areas. These devices utilize colorful markings and indicators, held in place on wallboards by magnetism. They are described as 'being helpful in flowcharting, book diagramming, Pert networks, and in charting business procedures and sales programs.' While these devices are undoubtedly of business value, if properly controlled, they should be looked on with skepticism in the computer center," the authors advise.

As an appendix, sample insurance policy forms are reproduced.

"In the final analysis, management has little choice but to utilize

whatever security seems reasonable, limited only by practical application and cost. To do otherwise is to jeopardize the very existence of the business or institution that relies on the computer," the authors conclude.

The Conscious Communicator by JOHN BRENNAN, Addison-Wesley Publishing Co., Reading, Mass., 1974, 191 pages, $7.50.

The author's basic idea—very sensible—is that good communications are based on good personal relationships, and that working relationships should in most respects, therefore, resemble personal relationships. Unfortunately, the author has drowned this good idea in a welter of overly discursive and unorganized thoughts on communicating and on supervising.

Books on communicating of late years have become progressively concerned with the human aspect of communicating as a reaction against the overconcern with technique, and this has been all to the good. After all, all of us spend most of our lives "communicating" and the kinds of communicating called for in the business or professional worlds are only one and not always the most complex of the aspects of communicating we human beings must master to get through life.

So these books suggesting a solution to our business communicating problems through a series of techniques are often quite misleading. Mr. Brennan's book is generally sensible about the issues and problems of communicating and supervising in a business environment, and his chapter heads and units are intriguing. He also has some amusing analogies and turns of thought as when he considers Adam's fall from the Garden of Eden as described in Genesis as an example of lack of communication between Adam and the Boss and the result: a typical Manager over-reaction. Part One of the book is entitled "Anyone Can Communicate Because Everyone is a Communicator." Part Two is entitled "Organization Climate: Mysteries, Myths and Models." Under Part One, we have some intriguing titles: "In the beginning was The Word . . . but no communication," "Retreat from Reality," "The Truth About Harry," and "A Personal Approach to Personnel Relations" and under Part Two: "Mysteries" and "Myths." But, alas, the intriguing titles and the sound idea are not borne out in the discursive and rather commonplace thoughts which follow, and it is not clear most of the time exactly to whom the author is speaking, though it appears that he is addressing middle management mostly.

Mr. Brennan is a consultant in communication and formerly manager-communication and public affairs at General Electric's Reentry and Environmental Systems Division in Philadelphia.

GEORGE DEMARE
Communications Adviser
AICPA

Measuring Corporate Strategy by CHARLES R. FERGUSON, Dow Jones-Irwin, Inc., Homewood, Ill., 1974, 120 pages, $9.95.

This book by a consultant hammers home the consultant's eternal theme: Problems involving techniques develop at a technological level and can best be solved there. Many serious problems, though, lie in the basic conceptual design of the company and are the fundamental responsibility of top management and its advisers. The basic problem is not how to improve a process but whether or not the process should be performed at all, what its true purpose is, what are its relationships to other areas of the corporation.

The author states his underlying theme on the second page of his book:

"A well-designed corporate conceptual framework provides the basis around which detailed and technical systems may be built. This framework must be very sound if the systems are to be sound. The framework also produces designs of organization structure, systems, facilities, and management which are complementary to each other in carrying out the work of the corporation. Because the conceptual framework is so basic to an effectively operating corporation, it seems obvious that managers should give careful attention to reexamining their company's conceptual design *before* shifting personnel and *before* installing advanced technology. That they do not is evident from the frequent instances of efforts to increase the efficiency of functions that should never have existed in the first place: programs to train managers in skills they will never need and compensation plans paying for executive qualities that have no value to the corporation."

The book, which is addressed to managers within the company rather than consultants, suggests that every manager consider conceptual design as a means of carrying out corporate strategy. "Strategy" Mr. Ferguson defines as the scheme or plan for achieving critical goals. For example, cost reduction might be a critical goal for a company. Strategies capable of achieving this might be building an automated plant, redesigning the product, reorganizing the plant management structure, or any combination of these. The point is that the critical goal must be established first, then the overall strategy for achieving that goal. Then the systems designer can come in to flesh out the concept, to work out the detailed plan by which it can be made real.

Review for consultant

The author, although addressing a hypothetical member of the management team, in effect gives a very brief overview of what every management consultant should ask himself when called on to do a corporate concept audit of his client.

Such a project may prove valu-

able even though the first approach to implementing a strategy may not work out. Mr. Ferguson gives as an example:

"A manufacturer of refinery equipment felt that in order to reach its goals for its share of a market it had to deal more with the design engineers and less with purchasing agents of its major oil company customers. The method used in carrying out this strategy was quite simply: to be more aggressive in making direct contact with the engineers and to get to know them better. Instead of improving the company's position, it worsened it by alienating both the purchasing agents and the engineers. The strategy was made to work by creating a highly specialized engineering and research group inside the company which could aid the customer design engineers in refinery design. The customer engineers recognized the value of the specialized design assistance they were able to get and requested assistance from the company's personnel, providing the contact needed at a critical stage in the competition for individual jobs."

Good strategy, poor tactics

Here the critical goal, gaining a larger share of the market, and the strategy for achieving it, getting a closer working relationship with customer engineers, proved valid. Only the first system developed, direct contact with company engineers, was at fault. The creation of an engineering and research group inside the manufacturing company which could aid customer engineers, and the overall strategy worked out well.

After defining his interpretation of a concept audit, Mr. Ferguson shows how such an audit might be conducted in five major areas of concern to management: the organization structure, management itself, management compensation, resource allocation and management, and, finally, the total corporation.

This book will reveal nothing new to experienced management consultants, but it may give them a few good ideas and it certainly gives them some convenient check lists. Perhaps its greatest value may lie in its potential as a gift to reluctant clients who are quite sure they don't have any problems a computer installation can't solve.

Affirmative Action for Women: A Practical Guide by DOROTHY JONGEWARD, DRU SCOTT, and Contributors, Addison-Wesley Publishing Co., Reading, Mass., 1973, 334 pages, $8.95.

A practical "how to" guide, this book is on target in showing how managers and employees, of both sexes, can better utilize the talents of the 51 per cent of our population who are women.

Women are beginning to take new roles in many organizations—including stepping into jobs traditionally labeled "men's work." It is no longer a question of should women work or will women work but what can organizations do to provide equal opportunities for women. More and more women are entering the labor market and, in light of recently passed Federal and state laws dealing with discrimination in employment, most larger organizations are faced with the problem of establishing affirmative action programs to provide equal employment opportunities for women.

The book is a well-written, practical, and to-the-point collection of facts, workable concepts, comments, programs, and articles giving some insight and guidelines as to what useful courses of action organizations can take in implementing affirmative action plans. Practical steps for positive change are stressed. Specifically, it outlines what organizations need to do and are able to do in their Equal Employment Opportunity programs and also tells what they can do to assure corporate rights according to the new legislation. It is also a book for individual women now working or planning to work in organizations and offers original contributions from people actively involved in successful affirmative action programs.

In addition to describing how to organize and present affirmative action seminars for managers and supervisors and counseling seminars for career women, included is: (1) a clear interpretation of the laws affecting organizations and women, (2) the current place of women in government service and in organized religion, and (3) the unique problems of black women in organizations.

The seminar program developed and implemented by the Bank of America is described in detail.

The book, as was the intent in its design, should be a helpful reference source rather than a cover-to-cover reader.

Give & Take: The Complete Guide to Negotiating Strategies and Tactics by CHESTER L. KARRASS, Thomas Y. Crowell Company, New York, 1974, 280 pages, $8.95.

This is a handbook, a set of rules to follow when in the process of negotiating an agreement, whether it be for the sale of a used car or a delicate diplomatic agreement between Israelis and Arabs.

According to the author, whose book jacket proclaims that he has "more than twenty years of major company buying and selling experience," the same techniques of playing from strength apply in each negotiating situation. There is always something someone wants and someone else wants—or at least is willing—to sell. How to find the common meeting ground?

This book considers almost every possible combination of circumstances that might arise in bargaining sessions and gives advice on how to deal with each. Some of the possible circumstances that

might arise are so simplistic they sound ludicrous; anyone with ordinary common sense should be able to foresee them and cope with them on his own. Others are more subtle and the advice given, though rudimentary in nature, is sensible.

The great advantage of the book is precisely its nature as a handbook. Each possible situation is encompassed in one brief example, usually no more than a page in length. Look up the situation you anticipate facing before your meeting and you go prepared for whatever the opposition may face you with.

Except, perhaps, the most intangible of all: Knowledge of the subject and all its nuances. The author pays lip service to this idea and in no case discounts knowing everything possible about the subject. But the idea of anyone entering diplomatic negotiations armed with only the advice rendered by this book is a little chilling. Better try it out on selling your car first.

Briefly listed

Guide to Corporations: A Social Perspective by the COUNCIL ON ECONOMIC PRIORITIES, The Swallow Press Incorporated, Chicago, 1974, 395 pages, $4.95.

How 43 corporations (in the chemical, automobile, steel, oil, paper, and airline industries) deal with the environment, equal opportunity, military contracting, and investment in Southern Africa.

MAGAZINES

Computer Models for Investment Analysis by HOWARD F. BLASCH, DONALD L. STRUVE, and NARAIN D. BHATIA, *Management Controls*, December, 1973.

As companies become more involved in investment activities, there is an increasing need for analysts to be able to make rapid and accurate comparisons and evaluations as a basis for management de-

cisions. This article describes how this need can be met by the use of a time-shared computer model known as PACE—Project Analysis by Computer Evaluation. The model substantially overcomes many of the limitations of traditional methods of analyzing the financial aspects of investment proposals.

A typical analysis of an investment or project involves simultaneous consideration of several sets of factors such as financing alternatives, tax implications, cash flows, and measures of project performance. All of these items are incorporated within the PACE model.

General steps

The usual steps to be taken when the PACE model is adopted include the following:

1. A description of the project is put together. The uncertain revenues, expenses, interest rates, salvage values, etc., are identified and a range of values established where possible.
2. The project is discussed with a PACE model specialist to determine the most effective way of formulating the problem to minimize the cost of collecting raw data and conducting the analysis.
3. The data are collected and critical assumptions are reviewed.
4. The data are entered and set up on the project file. Initial reports are then produced on-line and tested for reasonableness.
5. A sensitivity analysis is conducted wherein "what if" questions are asked. At this stage, the thrust of analysis moves away from computation to generation and evaluation of new alternatives as well as quantification exposure under different assumptions.

Time-phased cash flows

The investment project itself is completely specified by time-phased cash flows into and out of the project, taking into account various financial, accounting, and tax parameters. PACE model inputs include operating cash flows (revenues, expenses, and working capital), asset purchase cash flows, depreciation policies, types of financing, and tax information. These project data are entered into the model by responding at the time-sharing terminal to a sequence of requests from the program.

Model outputs

The outputs of the model include cash flow statements, income statements, depreciation schedules, financial repayments, and project evaluators such as net present value, yield, cumulative cash flow, and return on investment.

The flexibility of the PACE model makes it applicable to a wide variety of situations such as the evaluation of venture capital and loans, real estate promotion, syndication alternatives, financing alternatives, and lease vs. buy decisions. It allows for sound business judgment backed by speed and accuracy in quantitative analysis.

RICHARD BOES
Michigan State University

In Praise of Those Who Leave
by SAUL W. GELLERMAN, *The Conference Board Record*, March, 1974.

Personnel turnover is usually considered a headache to most organizations, but is it the monster it appears?

A number of distinct advantages accrue to the business with high turnover rates, the author points out. When a vacancy arises, management may fill it with a better trained, better qualified person while offering an opportunity for dissatisfied, and often under-productive, employees to find work elsewhere.

Turnover also offers financial advantages. Ordinarily, the longer an employee remains with the organization, the smaller his increases in productivity. Thus, management may be paying more and more for less and less. A high turnover rate alleviates this problem by encouraging employees to leave before their salary begins to rise faster than their productivity. High turnover also reduces pension fund costs when the benefits do not vest in the employee. The additional funds created when an employee leaves could be used to increase benefits for the more productive employees, or effect a cost savings to the company.

Turnover benefits

High turnover may enhance a company's "employment image." To increase their marketability, graduates often seek the employer who offers the best training program. After they have gained the necessary expertise, these employees may look for employment elsewhere at a higher salary. But both parties will have benefited—management gets to examine the new talent while the employee receives his desired training.

Finally, high turnover is economically beneficial since it promotes a more efficient allocation of labor resources. In a labor market with fewer obstacles, men can more easily shift to positions where their productivity is greatest.

Groups with greatest turnover

Employee turnover is concentrated in two groups: young people (under age 30) and middle-aged people (age 35-45). High voluntary turnover among youths is primarily attributed to the qualities of youth itself—the wanderlust, no permanent commitments, and the fact that youths usually get the least desired assignments. Turnover in this group can be expected to remain relatively stable since these conditions will most likely remain unchanged.

But higher turnover among the middle-aged is a different matter.

As the average age of the population increases, more employees will enter this age group causing even higher turnover.

Three "stable" groups

Who, then, are the employees who remain? Generally, they can be divided into three groups: (1) the "umbilical" types who will never leave before retirement; (2) the contented person who could become discontented; and (3) the reluctant type who really would like to leave, but hasn't a better offer. Of these three, the "reluctants" are the most important to management since they could most easily become defectors.

Identifying "reluctants"

Management should attempt to identify reluctants and classify them into one of the following three categories: replaceable, unclear, or irreplaceable. Most personnel are "replaceables" and should be allowed to leave. Only when the company is failing to recover training costs should it attempt to reduce turnover of "replaceables." The second category, the "unclear" group, should include those with conflicting evidence in their performance report. But the third group, the "irreplaceables," is the one where management should concentrate its efforts. "Irreplaceables" should be actively recruited. After an "irreplaceable" defects, informal ties should be maintained to determine his progress in his new position, and if he becomes dissatisfied with his new job, the company may wish to reacquire his talents.

A high turnover rate is here to stay: for this reason, companies should manage it as effectively as possible. The system in use today discourages turnover. Instead of enticing many lackadaisical, "replaceables" to stay, management should encourage employees to examine their future with the organization. When the employment arrangement becomes unsatisfactory to either party, the employee should be encouraged to look for work elsewhere.

Management should actively promote policies which support this point of view. Fully-vested, portable pensions should be considered. Salaries should be tied to productivity with only the "irreplaceable" receiving more than the going pay rate. Voluntary turnover should be carefully managed, departures timed to coincide with the termination dates of large contracts and replacements recruited to fill the vacancy. Perhaps even a placement service could be maintained to relocate dissatisfied personnel.

All of these policies help create a healthy attitude toward turnover. Employees dissatisfied with their work should not be enticed to remain. Why burden the organization with disgruntled, underproductive workers when talented, enthusiastic workers may be recruited to fill their places? Turnover can be managed effectively, Mr. Gellerman concludes.

DON DOZIER
University of Missouri

Foreign Markets—Another and Closer Look by J. RUSSELL DOWNEY, *Management Controls*, June, 1973.

Many companies are capable of exploiting the opportunities available in foreign markets, but hold back in the mistaken belief that such operations are beyond their capabilities. This article notes specific credit services available through the Export-Import Bank of the United States (Eximbank) and outlines other considerations relevant to entering foreign markets.

Eximbank has a broad range of programs designed to promote foreign operations. It operates a direct lending program in cooperation with private financial institutions whereby the buyer may finance up to 90 per cent of the purchase through Eximbank and a commercial bank. Eximbank will usually take the later maturities, thus enabling the commercial bank to be repaid first; because Eximbank's interest rates are generally lower, the overall cost to the borrower is reduced. This direct lending program is intended mainly for financing large capital equipment sales with long-term repayment schedules.

Guarantees foreign notes

Under the Exporter Guarantee Program, Eximbank will guarantee the repayment of foreign purchasers' notes to commercial banks which have financed foreign sales of U.S. suppliers. The Eximbank guarantee covers both commercial and political risks, thereby enabling the American supplier to enjoy the benefit of cash sales. The Exporter Insurance Program provides similar protection against nonpayment for the exporter who wishes to supply his own credit.

Financing exports is facilitated by the Discount Loan Program under which Eximbank lends commercial banks up to 100 per cent of the value of their export paper. This program assures commercial banks that export financing will not adversely affect their liquidity even during periods of high interest rates and liquidity shortages.

The Cooperative Financing Facility Program provides credit financing primarily for small- and medium-size firms which may lack experience in foreign credit financing. Through this program, Eximbank will arrange with private foreign financial institutions to jointly finance purchases from U.S. firms.

For the firm contemplating its financing needs pursuant to making foreign sales, Eximbank will at no cost specify the nature, the amount, the terms, and the conditions of support it will provide. To add flexibility this service is offered with no binding commitment on the part of the firm; Eximbank's commitment can be used in total, in part, or not at all.

In addition to credit serviced

through Eximbank, the Department of Commerce provides information on exports by commodity and product lines through its Bureau of International Commerce. Similar statistics on population, industry growth rates, and exports and imports are available through government ministries of most foreign countries seeking American technology and other products.

Prerequisite for investments

Mr. Downey notes that foreign operations should be undertaken only after comprehensive market studies by analysts familiar with the environment. For those firms contemplating direct foreign investment, familiarity with labor and other laws and U.S. and foreign taxes is particularly important. The Foreign Trade and Investment Act, the Office of Foreign Direct Investments of the Commerce Department, and the Sherman Anti-Trust Act also apply to U.S. companies operating abroad. And because foreign financing markets vary considerably, knowledge of relevant practices is needed with regard to interest rates, utilization of overdrafts, and other financial practices.

Although the considerations are many and complex, the opportunities seem to outweigh the obstacles as evidenced by the continued growth of foreign operations.

TOM HARRISON
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Accounting and Behavioral Science: Some Interrelationships by CLARK E. CHASTAIN, *Michigan CPA*, November-December, 1972.

In recent years, interest has grown in the implications of the behavioral sciences for accounting. This article provides a survey of the area, including definitions of terms and topics of current interest.

Clark Chastain has provided us with a very intelligible and provocative discussion of the relationship between accounting and the behavioral sciences. He has examined some of the key issues involving accounting and the behavioral sciences, and has concluded that accounting researchers and practitioners must be acquainted with, use, and incorporate findings from the behavioral sciences.

The remarkable correspondence between the history of accounting and the behavioral sciences is brought out in the first section of the article. The initial writings on human behavior and the initial practice of accounting concurrently occurred around 5,000 B.C. Both accounting and the behavioral sciences became formal disciplines in the nineteenth century. But despite their parallel development, accounting benefited little from the behavioral sciences until the twentieth century.

Following the lead of the management profession, in the 1950's the accounting profession began to recognize the impact of human and social factors on accounting. Interest accelerated throughout the 1950's and 1960's and included research on the behavioral consequences of accounting actions (such as budgets and audits) and calls for the training of accountants in the behavioral disciplines.

Natures of various sciences

The natures and interrelationships of science in general, the social sciences, the behavioral sciences, and accounting are discussed in the next section. Science is defined as a body of systematic knowledge while the social sciences are sciences concerned with the activities of man. The behavioral sciences are those social sciences concerned with the behavior of man and are usually limited to the core disciplines of anthropology, psychology, and sociology. Whether management is a behavioral science and whether accounting is a social science are issues in much dispute, but the need for the application of the core behavioral sciences to both management and accounting is unquestionable.

The behavioral sciences are relevant to accounting on both the input and output sides. On the input side, accountants measure aspects of human behavior. Individual transactions are the result of human actions, and overall performance measures, such as income, are the measures of the cumulative behavior of individuals or groups. On the output side, accounting measures, such as those found in financial statements, influence behavior in both anticipated and unanticipated ways. Thus far, the major implications of the behavioral sciences for accounting have been to discover these unanticipated consequences and modify accounting measures to better achieve organization goals.

Clinging to obsolete

Chastain discusses many of the implications of the behavioral sciences for accounting. Because of the behavioral impact of accounting, he argues that accounting should extend its scope to the communication of nonfinancial as well as financial information. Much of the literature on behavioral science applications to accounting concerns the failure of accounting controls to effectively motivate employees to accomplish organization goals. Accountants and designers of accounting control systems are accused of making obsolete assumptions about the behavioral consequences of accounting measures or even failing to consider these consequences. Such failures have resulted in much hostility directed towards accountants. In addition, the failure to produce accounting measures which facilitate adjustment of organizations to changing environmental conditions results from accountants' clinging to the obsolete closed-system concept of organizations.

All of the above lead to Chastain's conclusion that accountants must be knowledgeable in and utilize behavioral science findings.

KENNETH ROSENZWEIG
Michigan State University

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Don't let another train station reach the end of the line.

Apathy and neglect are about to blow the whistle on old train stations and other landmarks that mark important places in American history. The National Trust for Historic Preservation has found viable alternatives to the reckless destruction of historic buildings. Many of them can be converted to libraries, stores, theaters, apartment buildings and community centers. Or they can be restored to their original condition and function.

The National Trust is a private organization funded primarily by contributions. Your membership in it will help fight the demolition of fine buildings that could be used and enjoyed again.

History pulled into this train station. Let's push to save it, and all the other landmarks reminding us of our heritage. Lend your support to the historic preservation programs in your community. Join The National Trust for Historic Preservation and save part of America for later.

Send your $15 membership contribution to

The National Trust for Historic Preservation

Decatur House, Rm 104, 740-748 Jackson Place, N.W., Washington, D.C. 20006