SCIENCE & TECHNOLOGY
November, 1973
Vol. 22, No. 11

UNTIL DECEMBER 31, 1973

computers and automation

STARTING JANUARY 1, 1974

computers and people

WORKING TOGETHER

Here is the start of the most famous article that we ever published — excerpted from the May, 1970, issue of *Computers and Automation.* If you would like to read this article, and look at the eleven photographs it contains, send us $2 (prepayment is necessary). This issue is RETURNABLE IN 7 DAYS FOR FULL REFUND (IF IN SALABLE CONDITION). How can you lose?

Computers and Automation, 815 Washington St., Newtonville, Mass. 02160

THE ASSASSINATION OF PRESIDENT JOHN F. KENNEDY:

THE APPLICATION OF COMPUTERS TO THE PHOTOGRAPHIC EVIDENCE

by
Richard E. Sprague
Hartsdale, New York

Part 1. Introduction

Who Assassinated President Kennedy?

On November 22, 1963, in Dallas, Texas, President John F. Kennedy, while riding in an open limousine through Dealey Plaza and waving to the surrounding crowds, was shot to death. Lee Harvey Oswald, an ex-Marine, and former visitor to the Soviet Union, was arrested that afternoon in a movie theatre in another section of Dallas; that night he was charged with shooting President Kennedy from the sixth floor easternmost window of the Texas School Book Depository Building overlooking Dealey Plaza. This act Oswald denied steadily through two days of questioning (no record of questions and answers was ever preserved). Two days later while Oswald was being transferred from one jail to another, he was shot by Jack Ruby, a Dallas night-club owner, in the basement of the Dallas police station, while millions of Americans watched on television. The commission of investigation, appointed by President Lyndon B. Johnson, and headed by Chief Justice Earl Warren of the U. S. Supreme Court, published its report in September 1964, and concluded that Oswald was the sole assassin and that there was no conspiracy.

In view of the authority of the Warren Commission, that conclusion was accepted by many Americans for a long time. But the conclusion cannot be considered true by any person who carefully considers the crucial evidence — such as the physics of the shooting, the timing of a number of events, and other important and undeniable facts. In other words, Oswald was not the sole assassin, and there was a conspiracy.

This article will develop that thesis, prove it to be true on the basis of substantial, conclusive evidence, and in particular some analysis of the photographic evidence.

There was in fact a conspiracy. Oswald played a role in the conspiracy, although there is conclusive evidence that on November 22, 1963, he did no shooting at President Kennedy, and that, just as he claimed when he was in the Dallas jail, he was a "patsy." At least three gunmen (and probably four) — none of whom were in the sixth floor easternmost window of the Texas School Book Depository building where the Warren Commission placed Oswald — fired a total of six shots at President Kennedy.

One of these shots missed entirely; one hit Governor John B. Connally, Jr. of Texas, riding with Kennedy; and four hit President Kennedy, one in his throat, one in his back, and two in his head. (The bulk of the undeniable evidence for these statements about the shots consists of: (a) the physics of the motions of Kennedy and Connally shown in some 60 frames of the famous film by Abraham Zapruder; (b) the locations of the injuries in Kennedy and in Connally; and (c) more than 100 pictures, consisting of more than 30 still photographs and more than 70 frames of movies.)

More than 50 persons were involved in the conspiracy at the time of firing the shots. These persons included members of the Dallas police force (but not all of the Dallas police — and that ac-

(continued in the May 1970 issue of Computers and Automation)

Contents

THE PURSUIT OF IMPORTANT TRUTH

The magazine *Computers and Automation* has for more than three years followed an unusual publication policy:

– The pursuit of truth in input, output, and processing, for the benefit of people,

and an unusual belief:

– That computers are too important to be left to computer experts and must be integrated into a socially responsible profession of information engineering.

Where this policy has operated most is in publishing information, articles, and reports on subjects which a great many liberal and progressive newspapers and periodicals have left unexplored or unmentioned:

– The political conspiracies which have led to the assassination of President John F. Kennedy, Senator Robert Kennedy, Martin Luther King, and others – and their coverups

– The conspiracies, coverups, and lies in connection with the pursuit of war in Indochina and dictatorship by the Saigon regime

– The connections of President Richard M. Nixon with organized crime and the Mafia

– The Watergate crimes

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Edmund C. Berkeley

Edmund C. Berkeley, Editor

Unsettling, Disturbing, Critical . . .

Computers and Automation, established 1951 and therefore the oldest magazine in the field of computers and data processing, believes that the profession of information engineer includes not only competence in handling information using computers and other means, but also a broad responsibility, in a professional and engineering sense, for:

— The reliability and social significance of pertinent input data;

— The social value and truth of the output results.

In the same way, a bridge engineer takes a professional responsibility for the reliability and significance of the data he uses, and the safety and efficiency of the bridge he builds, for human beings to risk their lives on.

Accordingly, Computers and Automation publishes from time to time articles and other information related to socially useful input and output of data systems in a broad sense. To this end we seek to publish what is unsettling, disturbing, critical — but productive of thought and an improved and safer "house" for all humanity, an earth in which our children and later generations may have a future, instead of facing extinction.

The professional information engineer needs to relate his engineering to the most important and most serious problems in the world today: war, nuclear weapons, pollution, the population explosion, and many more.

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Vol. 22, No. 11
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617-332-5453

Advertising Contact The Publisher
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815 Washington St.
Newtonville, Mass. 02160
617-332-5453

"Computers and Automation" is published monthly, 12 issues per year, at 815 Washington St., Newtonville, Mass. 02160, by Berkeley Enterprises, Inc. Printed in U.S.A. Second Class Postage paid at Boston, Mass., and additional mailing points.

Subscription rates: United States, $11.50 for one year, $22.00 for two years. Canada: add $1 a year; foreign, add $6 a year.

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UNTIL DECEMBER 31, 1973

computers and automation

STARTING JANUARY 1, 1974 **computers and people**

The magazine of the design, applications, and implications of information processing systems — and the pursuit of truth in input, output, and processing, for the benefit of people.

World Affairs and Social Policy (continued)

The Profession of Information Engineer and the Pursuit of Truth

Computers, Puzzles, and Games

Corrections

For changes in "The Path to Championship Chess by Computer" by Professor Donald Michie published in the January 1973 issue of *Computers and Automation,* see page 23 of this issue, or page 24 of the July issue.

For changes in the reprinting and the indexing of "Communication — Three Way: Chimpanzee, Man, Computer", published in the July issue, see page 32 of this issue.

Front Cover Picture

Three eighth graders - each from a different continent - are working together to solve complex mathematics problems. They are at the new United Nations International School, and are Laurence Ling May, a Chinese-Thai American; Catharina Nilson of Stockholm, Sweden; and Arun Alagappan of India. The minicomputer system is a gift from Digital Equipment Corp. For more information, see page 43 of the July 1973 issue.

Departments

Key

[A] — Article
[C] — Monthly Column
[E] — Editorial
[F] — Forum
[NT] — Not Technical
[R] — Reference
[T] — Technical

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EDITORIAL

The Understanding of Natural Language by Computers

Proposition: Computers are making long strides towards understanding natural language as used by human beings, and will eventually understand such language as well as many human beings do.

What do we mean by: computers? understanding language? natural language? And what is the evidence for this proposition?

The word "computers" here refers to powerful computers that have appropriate programs written by human beings plus the programmed capacity to improve their programs by using experience. An example of such improvement is Dr. A. L. Samuels' famous checker-playing program, which can learn from experience, and which plays far better checkers than Dr. Samuels himself can play.

The experience may consist of the following at least:

- Answers from human beings to questions posed by the computer;
- Differences between computed results and *a priori* specified results;
- Signals from the environment, such as instrument readings;
- Information obtained by "looks" at the environment, as for example recognition of the character A, as in optical character recognition;
- The interpretation of words, as with FORTRAN expressions.

Probably there are even more categories of experience which a powerful computer program can use to modify itself to become even a better program.

In regard to "understanding language", there are over 500 languages which computers have been programmed to understand, when written precisely according to stated rules: among them, BASIC, FORTRAN, COBOL, many kinds of machine language, etc.

"Natural language" is the ordinary language used by human beings, subject to the requirement that for a computer implicit understandings must be stated. For example, when a speaker exclaims "Ouch!", a great deal of the meaning comes from the listener's observations of the speaker. But a computer, like a blind man, cannot "see" the situation, and must be told more than the ordinary listener.

With some definitions taken care of, let us consider evidence for the main proposition stated above. This evidence includes the information published in several recent articles in *Computers and Automation.*

The article "'Do What I Mean' – The Programmer's Assistant", by Warren Teitelman, in the April 1972 issue, described a "programmer's assistant", called "DWIM"; this was a "front end" or preprocessor to an interactive program for operating with LISP expressions. The front end was tolerant of the programmer's mistakes in typing, in low-level logic, etc.; it would catch misspellings, failures to have a balancing number of left and right parentheses, etc. If a mistake occurred, it would inquire of the human programmer what he meant, suggesting the correctly spelled alternative, and so on. In this way the human programmer was relieved of much of the burden of expressing himself exactly and correctly the first time, and his efficiency in using the LISP interactive program greatly increased.

The three articles "Computer Programming Using Natural Language" by Edmund C. Berkeley, Andy Langer, and Casper Otten, in the June, July, and August 1973 issues, demonstrated the understanding by a computer program called GENIE of at least some sets of instructions in ordinary natural language. The vocabulary though small was free, and there was unlimited freedom in putting the words together, with about a 90% chance of complete understanding. The computer program that did this could be called 15% GENIE, because, as the authors emphasized, it was still in an early stage of development.

The article "Latest Computers See, Hear, Speak, and Sing – and May Outthink Man" by David Brand, in the October 1973 issue, enumerated many instances of computers (and robots equipped with computers) which could deal with concepts expressed in natural language. One of the programs mentioned could for example decipher natural language commands dealing with the stacking of blocks of various shapes, sizes, and colors.

The main tasks for understanding natural language appear to be the following:

- Recognition of the framework of a sentence;
- Recognition of the common meaning of groups of synonyms, the collection of words that "say the same thing";
- Knowledge of context: the context is regularly specified to the computer, so that it does not have to deduce the context from "what is being said";
- Knowledge of a limited vocabulary consisting of perhaps 300 to 500 words – knowledge in the sense that the computer program can attach meaning to the words either by themselves or in phrases, as for example it may attach the meaning of doing something three times to the numeral 3;
- Capacity to accept variation in the way something is stated by a human programmer.

The three articles referred to above show instances of the achievement of all of these tasks separately. Combining all the achievements should not be too hard, especially since children as young as four years old show complete capacities to listen to many kinds of natural language, understand, and respond.

Edmund C. Berkeley

Edmund C. Berkeley
Editor

The Notebook on
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is devoted to development, exposition, and illustration of what may be the most important of all fields of knowledge:

WHAT IS GENERALLY TRUE AND IMPORTANT =

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TECHNIQUES FOR AVOIDING MISTAKES + SOME PARTS OF OPERATIONS RESEARCH + SOME PARTS OF SYSTEMS ANALYSIS + AVOIDANCE OF LOGICAL FALLACIES + ...

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to prevent mistakes before they happen
to display new paths around old obstacles
to point out new solutions to old problems
to stimulate your resourcefulness
to increase your accomplishments
to improve your capacities
to help you solve problems
to give you more tools to think with
. . . . .

Topic:
THE SYSTEMATIC PREVENTION OF MISTAKES

Already Published

Preventing Mistakes from:
- Failure to Understand
- Forgetting
- Unforeseen Hazards
- Placidity

To Come

Preventing Mistakes from:
- Bias
- Camouflage
- Interpretation
- Distraction
- Gullibility
- Failure to Observe
- Failure to Inspect
- Prejudice

. . . .

Topic:
SYSTEMATIC EXAMINATION OF GENERAL CONCEPTS

Already Published

The Concept of:
- Expert
- Rationalizing
- Feedback
- Model
- Black Box
- Evolution
- Niche

To Come

- Strategy
- Understanding
- Teachable Moment
- Indeterminacy
- System
- Operational Definition

. . . .

8 REASONS TO BE INTERESTED IN THE FIELD OF COMMON SENSE, WISDOM, AND GENERAL SCIENCE

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Cooperative Facilities to Obtain the Advantages of Computers

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"Because of general dissatisfaction, 30% of the surveyed service bureau clients planned to discontinue using service bureaus."

Computer Use

A recent study of 2,500 companies conducted by the Research Institute of America, revealed that 55% of the firms regularly use computers in conducting their business. Further breakdown of the study shows that an average of 32% own or lease their own computers, and 23% use an outside service bureau for processing data.[1]

While a majority of the companies surveyed do use computers in some form, a significant 45% of the respondents do not use any type of computerized data processing service. Those companies cited the following reasons for not using computers:[2]

	Per Cent
Operation too small	50
Too costly	35
Looked into and tabled for the present	31
Present methods satisfactory	21
Plan to install a computer within a year	8
Plan to begin using a service bureau within a year	8
Other	13
Total (multiple answers)	166%

Service Bureau Use

In addition to the non-users, another recent study revealed that most service bureau clients are not effectively using their service bureau and, as a result, are receiving few, if any, of the advantages of electronic data processing (EDP). Most of the surveyed service bureau clients were:[3]

1. Receiving routine services which do not save them money.
2. Not planning to expand into more sophisticated, higher-payoff applications.
3. Not receiving indirect benefits and savings, such as improved information for decision making.
4. Not satisfied with current services.

The study also disclosed that because of the general dissatisfaction, 30% of the surveyed service bureau clients planned to discontinue using service bureaus and purchase in-house computers.[4]

Cooperative Service Bureaus

Both non-users and dissatisfied service bureau clients, therefore, offer a ready market for a newer approach to obtaining the advantages of EDP — the formation of a cooperative service bureau. A cooperative service bureau consists of several sponsoring firms who jointly own a computer and share in its operating costs at a much lower expense than individual ownership of a computer. If carefully planned before operations begin, a cooperative service bureau will provide its sponsors with all the advantages of EDP plus many other advantages unique to jointly-shared facilities and personnel.

Among these additional advantages are:

1. The sponsors would purchase a computer tailored to their specific needs.
2. They would have exclusive use of the computer.
3. Their computer would be available for use at any time.
4. They could share the costs of any computer programs developed.
5. They could share the costs of any package or canned computer programs purchased.
6. They would have available for their exclusive use a staff of data processing experts and a computer — at a fraction of the cost of individual ownership.

Factors Insuring the Success of the Cooperative

The first step in forming a successful cooperative service bureau is to enroll an appropriate number of comapnies. Ideally the cooperative should be limited to five or six sponsoring firms. A larger number may create unmanageable problems involving operations, communications, control, scheduling of computer time, and so forth. A smaller number may make the venture economically unfeasible.

Lack of Interest

At the present time, widespread lack of interest in joining a cooperative is more of a problem to potential organizers than too much demand. The author contacted a number of public accounting firms about the feasibility of forming cooperatives and found that three firms who had already made such an attempt could not interest enough firms to join. Their comments were:

— We tried to organize one several years ago; the firms contacted were not interested.

— We would like to explore this possibility but we can't get anyone else interested.

— At present there appears to be a tragic lack of interest locally by other CPA firms.

Unquestionably, one reason for the lack of interest is a misunderstanding of the true nature of a cooperative. Interested companies must therefore be prepared to sell the idea to others. As more published material becomes available in the field, this problem should be alleviated.

Confidential Information

A second major reason for lack of interest is that companies fear for the control and security of their confidential or sensitive information. Such a concern is certainly legitimate and underscores the need for a cooperative that is to be successful, to devise an adequate system for quality control and security. A committee responsible for such a system should be established at the outset by the sponsoring firms.

Protection

One of its duties should be to adequately safeguard the sponsors' records and documents against fire, theft, water, and other hazards and disasters. Statistics compiled by the Safe Manufacturers National Association show that about one-half of companies whose important records and documents were destroyed through some catastrophe never resumed business or were permanently closed down within six months; an additional 13% suffered serious economic impairment and were able to remain in business only under severe operating handicaps.[5] For this reason the quality control and security committee must see that the cooperative service bureau maintains:

protective devices
fireproof vaults
a method of reconstructing any destroyed records
adequate insurance to cover loss of important client records or documents

The committee must also take measures to prevent one client's records from becoming commingled with another client's records — a not-unlikely occurrence in such an environment.

Preventing Disclosure

Finally, the committee should determine how to prevent disclosure of confidential information. For example, no member of any sponsoring company should be allowed in certain strategic parts of the computer center. Likewise, each company's records should be coded and the code number known only to key computer center personnel. In cases requiring utmost security, the actual processing of data should be monitored by a key employee of the computer center or possibly by a representative of a disinterested third party, such as a firm of independent public accountants.

Sharing of Expenses: Startup Costs

With an adequate number of sponsoring firms lined up and a sound security system worked out, the third necessity in establishing a successful cooperative is to determine methods of sharing the expenses. There are two categories of costs to consider:

1. Startup costs. These include all costs incurred prior to the time that the cooperative commences operations. Startup costs are either directly traceable to a particular firm or are joint or common to all firms. An example of a direct cost would be that of analyzing, modifying, and redesigning of systems prior to conversion to the computer. An example of a joint or common cost would be the cost of computer housing, including air conditioning, engineering supervision, false floors, ducts and pipes, tranformers or motor generators, cabling and wiring, and overhead racks and supports.

Each sponsoring firm should pay for its own direct costs. Joint costs should be shared equally or apportioned among the firms according to some equitable formula.

Operating Costs

2. Operating costs. These include the monthly hardware and software costs to operate the cooperative. Hardware costs refer to the periodic rental or purchase charge for the computer equipment. As a minimum the computer equipment consists of an input unit, a central processing unit, and an output unit. Software costs include personnel costs, programming costs, testing and debugging costs, magnetic tapes, disc packs, punched cards, paper, paper tapes, repair parts, power, telecommunication lines, and so on.

Operating costs that are directly traceable should be paid by the using firm. Joint or common costs can be shared equally or can be allocated to each firm based on the number of transactions processed or the actual computer processing time used during the period. In addition, if so desired, a sponsor could be required to pay a minimum or maximum monthly charge.

Management

Fourthly, the sponsoring companies should decide how to manage the venture. It is advisable to form a committee to oversee the management and operation of the cooperative. A decision must be made whether each member regardless of size should have one vote or whether another basis of voting should be used. This decision should assure participants that no one firm will dominate or control the cooperative.

Common Line of Business

A factor not to be overlooked when forming a cooperative, one which will avoid frustrations, complications, and extra expenses, is to see that each member is in the same industry or business category. Thus all sponsoring firms will have similar operating problems that can be simultaneously solved by the computer personnel, resulting in the allocation of smaller costs to each firm for each problem solved. Also computer programs developed or packaged programs purchased can be shared by all sponsors with minimum modifications, thus resulting in considerable programming cost savings.

(please turn to page 13)

Control in Time-Sharing Systems

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"A time-sharing installation (like every computer environment) is exposed to the seven major dangers: fire, water, theft, fraud, sabotage, equipment malfunctions, and human errors."

Introduction

This article has as its main objective to furnish and define some methods and provisions for control and security in a computer time-sharing environment.

It is evident that computer time-sharing has become very popular during recent years. More and more confidential information is being handled by these systems, creating an urgent need for strong measures of control and security.

Description of the System

The service provided by a single computer to many telecommunications terminals has been called "computer time-sharing". With this type of service each user shares simultaneously in the processing capabilities of the central processor. This new computer facility makes this service available to small companies and/or other users who have little need for their own computer.

Computing services that may go under the heading of time-sharing include:

> Commercial computing; text editing; databank information retrieval services; application services such as colleges' records, inventory control, payrolls of small companies, and account receivables; administrative messages; switching and collection services; and more.

Among the great number of time-sharing users are hospitals (Welch Hospital, one of the biggest in Europe, has acquired the large ICL 1904S computer with 7020 terminals), banks (Gosbank, the national bank of the USSR, has ordered two large-scale Honeywell series 600 with 100 terminals), schools and colleges (British schools and colleges have started using terminals), airlines (Continental Airlines uses the Sonic 360 reservation system with 550 on-line terminals).

Trends

The growth in computer time-sharing has been phenomenal in recent years in spite of a short business recession between 1970 and 1972. Time sharing was a broker's dream in the '60s; many companies realized its potential, entered the market, and failed because of: one, strong competitive pressure, and two, because of the countless thefts and violations suffered. The highly competitive situation benefited the user in regard to pricing, but the offsetting consequence of lower profits caused a high casualty rate among these companies. As a result, the number of time-sharing firms dropped from 150 to 50 between 1969 and 1972.

A few of the companies which survived and which account for most of today's time-sharing business are Rapidata Corporation, Teletype Corporation (a subsidiary of AT&T), Tymeshare Incorporated (the largest independent firm and second only in size to IBM and Honeywell time-sharing operations), and IBM.

Jerry Dreyer, executive president of ADAPSO, an association of data processing service organizations estimates that one time-sharing company out of three was profitable in 1971, two out of five in 1972, and probably three out of six in 1973. Nowadays, this computer facility is coming back to its original trend, and it is expected that the number of computers with terminals will grow from 32% at the end of 1971 to 45% at the end of 1975, with the average central processing unit driving 15 to 20 terminals.

One consultant, Creative Strategies of Palo Alto, California, predicts that time-sharing sales by 1976 will increase to 2 billion from 331 million last year. By 1975, says ADAPSO's Dreyer, time-sharing will account for 1/3 of the $4.5 billion computer services industry.

Technological Advances

Most important technological advances have been achieved recently on on-line terminals linked to central processors. Some of the improvements made include solid state keyboards, which have greater reliability and lower cost; visual display methods, which incorporate more capacity, economy, and aesthetic appeal; non-impact printing techniques, which provide faster, quieter and more reliable operations; improved lower cost memories; more powerful logic capability; and faster and more accurate modern techniques and improvements in central processor software.

This is only the beginning. It is foreseen that in the future the equipment itself will change in nature and will probably not be recognizable as terminals per se. Rather, terminals will be modular systems consisting of the required input/output functions for specific jobs, built around basic controller and communication interfaces; in many instances, terminals will become special purpose devices.

Hazards

A time-sharing installation, like every computer environment, is exposed to the seven major dangers of fire, water, theft, fraud, sabotage, EDP equipment malfunctions, and human errors. Fire is considered to be the greatest threat to magnetic tapes. Water does not constitute an important hazard to magnetic tapes, but it does to computer installa-

tions. Theft, fraud, sabotage, EDP equipment malfunctions, and human errors are considered the most common dangers.

On-line terminals connected to central processors from remote points are more exposed to violations and thefts. The increasing popularity of time-sharing systems among large corporations and service bureaus has given rise to even more potential security breaches. Data transmitted over a communication line could be subject to wire tapping and a number of other hazards such as piggyback entry, whereby the intruder intercepts and compromises communication between a terminal and the processor while a legitimate user is inactive but still holding the line open. The intruder can even cancel the user's sign-off signal and continue operating in his name. A knowledgeable person could enter program changes from a terminal and play havoc with the system.

Need for Protection

Due to the increasing popularity of computing services, the issue of control and security protection has become more important. It is evident that time-sharing systems present few obstacles to unauthorized parties. The security problem has been made much more critical by the growing number of people trained in computers and by the fading of the computer mystique. In addition, communication by means of time-sharing systems has no more protection than telephone conversations or Morse-coded methods, since the technological skills necessary to interpret computerized data are widespread. More and more companies are appointing security monitors from their EDP staffs to centralize security matters. Trade organizations such as the American Management Association and the Bank Administration Institute, computer firms, and research firms such as Advancement Management Research, Inc. find their seminars on computer security overcrowded by data processing managers and security officers from business and government.

Target of Attacks

Computers have become an important source of information and, as a result, the target of many attacks. Some of the general information targets for industrial espionage are sales and service information, market analysis strategies, bid prices, corporate finance, stockholder information, legal negotiations, planned policy changes, expansion plans, product developments, personnel changes, payroll data, general administrative matters; and the list could be expanded even more.

Threats

The case of an 18 year-old Cincinnati youth who used long distance telephone to tap the lines of a time-sharing system firm in Louisville, Kentucky, and extracted data from its ledgers, as well as records of its customers, is representative of the type of risk to which computer installations are exposed.

Accidents can have serious consequences such as the incident in which income tax return records for 1969 were erased by energy emitted from the radar of a nearby airport in Austin, Texas.

Safeguards

It is important to consider that too much control and too many security safeguards can become bothersome and costly. The measures to protect data from unauthorized access vary from one system to another. According to Richard F. Cross, Security Office for the Bank of New York, security systems should include each of the following segments: physical security; personnel security; procedural security; audit control; insurance; and any needed interfacing.

The quality and level of protection required depends on the sensitivity of the data handled. Nevertheless, control and security in a time-sharing environment should encompass the whole system, since it is well known that even the strongest control measures can be violated at the weakest point. These measures should be taken in the central processing unit, software, personnel, communication lines, the terminal, and its users.

Methods and Provisions — Central Processing Unit

The central processor is threatened mostly by sabotage, fire, water, theft, EDP equipment malfunctions, human accidental errors and environmental problems.

The computer center of any company is the heart of the organization, and protection of the equipment against these threats can be provided by a carefully planned computer room. Luis Scoma, President of Data Processing Security, Inc., recommends that the computer center be located out of the main traffic areas. It must be fireproof, dustfree, and waterproof and provided with temperature and humidity control and carbon dioxide fire extinguishers. Water lines should not run through the computer room. A separate, fireproof storage area should be provided for data files, documentation, and operating supplies. It should also have alarm devices sensitive to magnetism, humidity, heat, pressure, dust, theft, power blackout, etc. There should be strong access control including armed guards, fenced areas, TV monitors, personnel identification (visual, voice print, fingerprint, badge, passwords, etc.), well-performed maintenance service, and a number of extra provisions for protection.

Data Processing Security, Inc. has developed, for high security necessities, an electronically operated double door entry system for access control into the computer room. When a person enters the buffer zone, the door locks behind him while he is subjected to electronic search. If something is detected, the system freezes and automatically alerts the security guard. The second door can be opened only with a special badge key.

A carbon dioxide (CO_2) fire extinguishing system, such as the one installed at the Chase Manhattan Bank's New York City headquarters, has proved useful. Engineered by Walter Kidde & Co., Inc., this system uses a battery of remotely located cylinders containing the liquid gas. When activated by smoke detectors, the gas discharges and builds up an inert atmosphere in the immediately surrounding area, extinguishing the fire without damaging equipment or data files. Employees can go back to work within five minutes after the fire has been put out and the ventilation systems restarted.

Another fire-fighting system which has been developed by the Ansul Company uses Halon extinguishing agents which are discharged in the form of a colorless, odorless, and non-toxic gas. Since Halon agents do not work by diluting oxygen, they are well-suited for areas where humans are present.

The Guaranty Bank and Trust Co. of Worcester, Mass., has adopted another approach to fire-fighting, a system installed by Security Control Systems which detects fire, smoke and excessive temperatures and humidity fluctuations and causes a monitoring and

reporting device to alert four pre-selected phone numbers for help.

Software

Protection of data files, whether in the form of punch cards, magnetic tapes, or discs, is the key element in any computer facility.

Some specific examples of software security control measures are audit trails, access regulations, strong supervision of computer operators, the use and control of programs utilizing program documentation methods, the use of a log for all significant events (such as user identification, file use and attempts of unauthorized use), regulations to prevent unauthorized personnel from browsing through the files, and the use of a semi-automatic data inventory control system.

Personnel

Physical control as to who is allowed near the computer and the files is advisable. Note that this does not mean "employees only"; it implies a careful screening of employees, repairmen, and visitors to determine which of them should be allowed this proximity to the system. Intimately involved with time-sharing installations are three types of personnel: operators, programmers, and maintenance engineers.

According to Dennis Van Tassel, mathematician and head programmer at San Jose State College, all operators must understand that there exists a protection philosophy. If personnel are expected to help enforce and to comply with this protection philosophy, it must be clearly defined and specified.

It is advisable to use the following provisions for personnel control: control of logs and monitor, division of responsibilities, rotation of duties, adequate supervision to reduce the risk of losses caused by accident or error, careful handling of data files, cleanliness regulations, control access to private files, and appropriate instruction in case of disasters.

Terminals

Some of the most common pitfalls encountered when using terminals are frequent communication interruptions, risk of communication interception, difficult access control, and noisy lines.

Among the greatest disadvantages of time-sharing services are those in connection with the communication lines which link the terminals to the central processing unit. Telephone lines are designed for voice communication rather than data communication, and the results have been that such lines are too noisy and have too many interruptions for appropriate handling of data communication.

There have been some recent developments in the improvement of data transmissions. Bell System has developed its Digital Data Service (DDS), a data transmission system which has been introduced early this year in five cities (New York, Boston, Philadelphia, Washington, and Chicago); and, by the end of 1974, twenty-four cities are expected to have it. Bell further plans to provide continuous monitoring of their DDS channels. When errors of transmission are detected, DDS will notify the customer. Decision on retransmission will be the customer's responsibility. Another development in data communication is DUV (data under voice). By late 1973 this technique will be in service between New York and Chicago; consequently, communication problems should become virtually nonexistent within the near future, and this system will become even more popular.

Telephone lines are vulnerable to three types of security problems: wire tapping, piggyback, and user's sign-off signal cancellation. These common threats may be avoided by the use of a privacy transformation method (also called scramblers or cryptographic techniques). This is a non-singular (reversible) operation which conceals the original message either by the substitution of new characters, rearrangement of the characters, or by the adding of strings of digits to the original message.

Some new techniques for encrypting data have evolved, such as high speed transmission and signal scrambling. In spite of all of these new techniques, it is still possible to intercept and tap the information. According to Tuckerman, unauthorized users (intruders) who possess only limited material and information with which to work, can readily extract the original text of enciphered messages by making use of the speed, capacity, and computational abilities of the computer.

The greater the efficiency of the privacy transformation, the more difficult it becomes for unauthorized copying of files.

Access Control

Access to the system throughout the communication lines should be controlled by the central processing unit and by the user's own procedures. This is possible by cryptographic and scramble techniques, personnel regulations, user identification, appropriate terminal location, or by ciphering and deciphering hardware.

Computer software packages have been written to cipher data transmissions. Ciphering software is an attractive technique because it can be done automatically by the program which creates the data and at a very low cost. Only programs using the matching deciphering technique are able to use this data. These special hardware cipher devices can be located at the terminal and at the computer to protect transmitted data.

Scramblers or voice privacy devices are currently being used by people who readily acknowledge the insecurity of transmitted information. Scramblers are used by large corporations such as the oil industry as well as by union representatives during contract negotiation time. (Scramble phones are currently a 20 to 30 million-dollar business, excluding law enforcement and military purchases). Scramble devices are now being built for time-sharing operations. These devices offer protection similar to encryption. Scramblers convert data into something resembling channel noise or a malfunctioning circuit.

Other features for terminals include print inhibit, security keylock, operator identification card reader, and the use of a terminal identifier. With print inhibit the terminal operator can enter data, such as security passwords, without its being physically displayed. A physical keylock can be attached to the terminal which will not allow the entry of data. The operator identification card reader reads magnetically encoded information on a magnetic strip card. The card can be used to supply the user's password and/or name.

Direct access device security features include file mask, volume detection, and write-exhibit switch. The file mask controls or allows read-only

or read-write access to data sets. The volume detection switch alerts the control program when the volume is increased; this protects data from being written upon. This switch provides additional protection for read-only volumes.

Insurance

If data security measures fail, the use of EDP insurance can back-up or soften the blow. Every business or person who now has an in-house computer, operates or is a user of a service bureau, or transmits data to a data center should be computer-security conscious. Insurance is one of the back-up measures if prevention fails. However, not all business can afford or even need an elaborate and expensive security system; thus, evaluation of the information becomes necessary to determine those sections of the system which require this protection.

The subject matter of ordinary insurance coverage is physical damage to tangible property. In this case, software and data are not covered. Business interruption insurance protects you in the event of fire or other interruptions to normal business but does not cover the consequences. Boiler explosion policies which also insure other heating mishaps do not cover computer operations. Theft and employee dishonesty are also insured in terms of general risk. Valuable papers and records' coverage provides protection in the event of destruction of such intangibles as notes and account receivable records but does not include such computer media as valuable papers. Public liability insures the company for its acts or omission of acts which give rise to claims by outsiders against the company.

Insurance can prevent an unfortunate event from becoming a catastrophe. When a person buys an insurance policy, he knows that he will be indemnified if a loss does occur.

Some of the insurance companies which write EDP policies are the Saint Paul Fire and Marine Insurance Co., Insurance Company of North America, The Home Insurance Co., and Royal Assurance of America.

Insurance premiums generally correspond to the regular fire policy rates plus an added loading factor for the additional EDP perils.

Undoubtedly any computer installation, regardless of the quality and level of its security system, cannot approach the state of no risk of loss. Security is based on a "cost-benefit" concept; in other words the cost of violating the system should be greater than the gain derived therefrom.

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Cerullo — *Continued from page 9*

Procedure for Withdrawal

Sixth, a procedure should be established for withdrawal from the cooperative. If the withdrawing firm has not been a member for a predetermined time, perhaps one or two years, a sliding scale penalty fee for withdrawal should be established.

Procedure for Admission

Finally, procedures must be determined to govern the admission of new members into the cooperative. Perhaps a unanimous affirmative vote by current members should be required to admit a new member. The current members should also decide if a newly admitted member should be required to pay a predetermined portion of the cooperative's startup costs and if the cooperative should limit membership to firms of the same approximate size as current members.

Conclusion

With due care taken in following the above steps, establishing a successful cooperative service bureau should be relatively easy. Companies would be well advised to consider the idea seriously, for cooperative service bureaus offer a viable and in many ways superior alternative to the more costly inhouse computer and the less satisfactory outside service bureau.

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Alienation and the Systems Analyst

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"Systems analysts ... must be seen as full-fledged members of the firm."

A Wall of Managerial Attitudes

In most large organizations, the systems and data processing departments are separated from the rest of the firm by a wall of managerial attitudes. While employees in most jobs are encouraged to gain a wide variety of experience in various departments as they rise through various management levels, it is rare that a systems analyst or a programmer is given an equal opportunity. The general attitude is "He's a computer man, not a manager (or a businessman, or a banker). He wouldn't fit in. Besides, he's doing a good job where he is."

As a result, the analyst has exactly no motivation to think of himself as an insurance man or a businessman, or a banker, or an accountant. He is made to feel like a consultant. He can serve the organization, but he isn't free to move within it. To make matters worse, some firms rotate the people in their management development programs through a stint in the systems department. It is little wonder that there is a high turnover in systems analysts. The company does very little to make him feel like a member of the family.

Potential Source of Talent

But beyond the problems brought about by the personnel turbulence, the firm is ignoring a potential source of fine managerial talent. Many analysts joining major corporations hold degrees as Master, Business Administration. Their educational backgrounds, when combined with their ability to objectively define problems and see solutions, and the detailed working knowledge of the company gained in the system design process, should put them in the management spotlight. Instead, the system analyst finds that he has been given the indelible label of "computer person" and that his upward mobility is limited to the systems department. As a result, systems analysts leave the firm, and often leave the systems profession.

If companies hope to attract and hold talented personnel for their systems activities, they need to offer them an equal chance to develop to their full potential. They must be seen as full-fledged members of the firm — not as consultants who are here today, but who could move on tomorrow.

Experience in Systems

As businesses come more and more to depend upon data processing to support their operations, it will be desirable for a significant number of management team members to have experience in systems. Yet, by their actions, managements have forced many talented people to avoid beginning their careers in data processing for fear of becoming stereotyped.

So it would seem that a number of the problems that businesses face in their systems activities are a result of a regrettable but widespread management attitude.

Only when systems analysts are regarded as having a potential for advancement to positions in general management, and are given an equal chance to rise in the organization, will the systems man lose his alienation and see himself as a member of the company team. □

Strategy and Action on World Trade

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"What we [the United States] have is a little corner of the world, and we must find a way to live in it harmoniously with our neighbors, many of whom are every bit as good as we are at almost everything we do."

The theme of my remarks is the intensifying controversy over the conditions that influence our well-being here in the United States — particularly the threat of another unfortunate experience with protectionism.

I am well aware that I cannot go deeply into this subject in a short space. This I know because I was privileged to serve on the President's Commission on International Trade and Investment Policy. For over a year we studied every way in which this and other countries are affected by international trade and investment policies.

Protectionist Attitude

Let there be no doubt where I stand on the principal issue. I believe that the threat of the protectionist attitude in America is far more than an issue involving business and jobs. I sincerely believe that this issue embraces many powerful forces that will have an important bearing on whether or not all the peoples of the world make the most of their opportunities in the years to come.

I recognize that there are strong and honest differences of opinion on the proper direction of our nation's foreign trade policies. There are many persons and suppliers who have been adversely affected by foreign competition. It would be unrealistic not to acknowledge this fact of life.

Complexity

These differences of opinion, and these dislocations of people's lives, point up the complexities of the problem. Who among us can honestly say he understands all of the ramifications involved in the balance of trade? Where is there an unchallenged expert on monetary policy? What type of restraints, if any, could or should be made on the world-wide transfer of technology? What is the proper level of East-West trade relations, and are the national defense implications of yesterday still appropriate today? Should the United States government be supporting broad research and development to match the funds that foreign countries are investing in their industry? Can we preserve the rise in productivity that underlies the American miracle — which is the production of goods at low cost while wages, taxes and dividends all rise steadily?

These are just some of the questions which must be asked in the discussion now developing, particularly in the halls of Congress, but also at various other governmental and community levels.

Facing these and still other complexities, we know that Congressional hearings soon to begin could result in new laws and regulations which could be detrimental.

Action

Because this is so, it will not do for anyone with a qualified viewpoint backed by experience, to be simply an observer. I am convinced that this present controversy can be resolved positively, but it will require action.

What kind of action will be most effective? the kind of action which is in the public interest? — not special pleadings based on the experience of a single company, or a single industry, or even a single community.

It is, of course, important to gather this supporting information and be aware of all the facts that bear on our needs, our experience and the options that governments can take to effect them. But going beyond this, we must be prepared to discuss with everyone who will exert influence on our elected lawmakers the more important question — what do all these statistics and contentions mean to me?

The Concerns of U.S. Citizens

The concerns of the great body of United States citizens are how to assure and enhance their jobs and living conditions and be involved in what was once unashamedly described as "the pursuit of happiness".

Based on a talk before the Board of Governors of the Electronic Industries Association, Phoenix, Ariz., January, 1973.

Let's look at just one major concern: about 1.3 million new American families are formed every year. Approximately eight million people change their jobs every year. About 3.7 million people join the labor force and 2.1 million leave it. By 1980 full employment in the United States will require jobs for 100 million people, 18 million more than were employed at the end of 1972. These, quite clearly, are the priority considerations in the minds of millions who do not clearly understand how the enterprise system meets their needs.

If they and the representatives of large numbers of voters do not understand, how can we expect their support?

I would like to review the arguments for their support in as familiar terms as I can muster.

The Days of U.S. Preeminence are Gone

First, let's examine one portion of the real economic world we inhabit.

Of primary importance is the fact that the days of almost total U.S. preeminence since the close of World War II are gone.

We must learn to live and work in a world where forevermore we will be dependent on other portions of the globe for some of our more basic needs — and some portions will be dependent on us. The U.S. is not self-sufficient in materials, nor does it have a corner on the world's technology, the world's innovative ability, the world's marketing savvy, the world's production know-how. What we have is a little corner of the world, and we must find a way to live in it harmoniously with our neighbors, many of whom are every bit as good as we are at almost everything we do.

The Energy Crisis

I hesitate, somewhat, to use the energy crisis as an example of this dependency, because I recognize that there are those who question whether the crisis really exists, or who maintain that new technology will solve the problem before it reaches crisis stage. I can say at this point that there is an energy shortage, if not a crisis; for example, the fuel oil allotment for our Minneapolis operations has been cut by 25 per cent for January and February, and similar cutbacks have been imposed on other companies, our schools, our common carriers.

Let's look at the dependency which is developing in the oil industry. In the past, the repatriated earnings of oil companies have exceeded the value of imported oil and were a favorable factor in our international balance of payments. By 1985, however, our needs for oil and natural gas could create for us a trade deficit approaching twenty billion dollars a year.

As no doubt you know, we currently import 10 to 15 per cent of both crude oil and copper, 30 per cent of our iron ore, and more than 80 per cent of our bauxite needs. We must import all or most of our tin, natural rubber, nickel and chrome.

Trade with the World

We cannot go it alone. We must trade with the world — and to trade, you give something to get something, with the hope that both traders get what they want and need. Unfortunately, we have not yet been able to fully realize this goal, and much of the controversy over this nation's foreign-trade policies revolves around the best way to achieve it.

There is a strong and vocal body of opinion which believes that protectionist measures will achieve what is best for American workers and companies in the arena of world trade. One of their principal targets are companies like Honeywell — multinational companies with substantial investments, employees and sales outside the United States.

"Exporting Jobs"?

It is claimed that U.S. multinational corporations are "exporting jobs" overseas; that U.S. companies invest overseas to take advantage of lower wages; that imports from the overseas subsidiaries of U.S. companies cause unemployment here at home; that if U.S. companies were prevented from investing and manufacturing abroad these companies would be forced to expand their operations in the United States, creating more jobs here; that multinational companies invest abroad in order to avoid paying taxes; that American corporations are exporting U.S. technology and therefore are helping non-U.S. companies compete in our own and other countries.

The Burke-Hartke bill has been proposed as the solution to these problems; and protectionist sentiment also underlies other proposals which may emerge for the consideration of Congress.

At this point, there may be those who will accuse me of making a tactical blunder by even mentioning the allegations of our critics. But I'll go one step further. If someone could prove to me that these allegations are factual, I'd be one of the major supporters of moves to inhibit the growth of multinational companies.

The Opposite is True: Making Jobs

Thanks to various companies, government agencies and trade associations who have accumulated the facts and published them, I know otherwise.

I am convinced, thanks to these studies, and my experience with Honeywell, that multinational companies do not export jobs, but create jobs in the United States faster than other U.S. companies. I am convinced that U.S. companies invest abroad to gain participation in markets in other countries, not to take advantage of lower wages or so-called tax loopholes. I am convinced by these studies that imports from the overseas subsidiaries of U.S. companies have not been a major factor in U.S. unemployment.

To be more specific, I'd like to give you some information taken from a survey conducted by the Emergency Committee on American Trade, of which I am a member. This committee researched the domestic and international operations of 74 U.S. corporations representing a broad group of large multinational corporations. This survey reveals that in the years between 1960 and 1970, when these companies were increasing their overseas operations, they also provided 900,000 new jobs in the United States. They also increased their sales from American facilities — work performed in this country — from $58 billion to $113 billion — nearly doubled, in fact. Their exports from the United States nearly tripled in this period, rising from $4.3 billion to $12.2 billion. In the all-important balance of payments category, they increased their net surplus of exports over imports from $3.2 billion to $6.6 billion — more than doubled.

International Investment Activities of Multinational Companies

These figures, and other results of the survey, lead to one major conclusion: That the international investment activities of these representative multinational companies played an important role in their rapid export growth and consequently made a major positive contribution to their domestic — and I emphasize the word domestic — sales, investment and employment growth.

Double Taxation

I have tried to speak in familiar language; so I have some misgivings about discussing the issue of taxes. But the tax issue is an important one, and I'd like to cover some specific areas which are coming more and more into public discussion.

At issue is the section of U.S. tax law which allows American corporations a tax credit for the income taxes they pay to foreign countries on income earned in such countries. The purpose of this tax credit is to avoid taxing the foreign earnings of U.S. corporations twice — once in a foreign country and again when the earnings are remitted to the United States.

Opponents of this tax credit argue that since domestic firms are not allowed a federal tax credit for the state taxes they pay, the current method of taxing income from foreign sources is inconsistent with the way domestic income is taxed.

Taxation by U.S. States

A major fallacy in this argument is that it is based on the incorrect assumption that the taxation of domestic income by city, state and the federal government is analogous to the United States taxing the foreign earnings of American subsidiaries which have already been taxed by the host country.

The proper analogy is between the way states treat corporate income earned in two or more states and the way the U.S. government treats income earned in two or more countries. Every state which has a state income tax provides a method of allocating the income of a multi-state company among the various states in order to avoid duplicate taxation of the same income. As a matter of fact, the constitution requires this. Thus the current methods of taxing foreign and domestic income are consistent.

Further, where one domestic corporation in the United States has an ownership position in another domestic corporation, the federal income tax law quite properly prevents duplication of corporate income taxes. The parent company is taxed on earnings of the owned company only when such earnings are distributed as a dividend — and then at no more than a nominal rate. What logic can there be in the Burke-Hartke proposal that earnings of an overseas subsidiary — in most cases earnings already taxed in the foreign country at rates comparable to or higher than U.S. rates — should be immediately re-taxed at full U.S. income tax rates?

International Competition by American Industry

Another fundamental element of the issue is the tax credit's relationship to the ability of American industry to compete internationally. According to a recent survey by the National Association of Manufacturers, if the United States were to repeal the tax credit for foreign taxes paid and tax all foreign subsidiary income before it is paid out in dividends to the parent company, U.S. firms with foreign operations would be forced to pay an average effective tax on their foreign earnings of over 70 per cent.

Given this added tax handicap, few American firms could continue to compete with foreign-controlled companies for world markets.

You can appreciate how useful it is to have these facts for presentation where contradictory allegations are being made. Let's keep the record straight!

Also useful to the undertaking on which we must all embark is the factual story of what imports and exports do, beneficially to create jobs.

Imports Produce One Million U.S. Jobs

Labor Department figures document the finding that one million jobs in the United States are dependent on imports — jobs for food processors, ship and dock workers, truck drivers and railroaders, warehouse employees and retail clerks. And it's equally impressive to consider that every billion dollars worth of exports creates 60-to-80,000 jobs in the United States.

As we assess the situation, let us not forget the dilemma our government faced in August 1971. As Mr. Peter Peterson wrote, the New Economic Policy announced that month was not, and I quote, "a one-shot reaction to a one-time crisis. It marked the beginning of a new era of more flexible, enduring, and viable economic relationships among nations. The years behind us were by and large an era of success, but an era based upon a system which had become outgrown, outworn — and increasingly crisis-prone."

Tariffs and Free Trade

Mr. Peterson was referring to the tremendous impact that international trade and monetary factors were having on our people. We have since come to learn the difficulty of achieving universally approved corrective action. And now we must reckon with this reality: U.S. negotiators are preparing to enter economic talks next fall that could shape future international relationships for many years to come. Our government can and should strive in these talks to put an end to present attitudes and trends that point ominously to another "balkanization" of world trade.

It can and should seek agreement to reduce, and if possible end, all tariffs on industrial trade by the end of this century.

It can and should try to create far freer trade conditions for farm products.

It can and should seek the harmonization among nations of the present hodgepodge of non-tariff trade barriers and preferences.

But these objectives will remain forlorn hopes unless our negotiators can go into these hard bargaining sessions with the clear backing of the American people and their Congress. We must give them that.

Spurring Internal Transition to Successful Competitive Enterprise

Meanwhile, we face and must do something about the undeniable tolls and grievances resulting from

(please turn to page 23)

Computer Art: The Search Beyond Manipulation

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"Computer arts are still in the highly experimental stage of emergence."

In present computer art, the naive onlooker could readily misconstrue that mathematical processing of data and manipulation of design represent the total modus operandi of this new form, rather than just the initial phases of exploration. A review of the varied computer arts reveals diverse input of patterns and subsequent manipulation or transformation, creating a series of new, perceptual audio or visual images. There appears a similarity of approaches and some variation of the techniques utilized by practitioners of the cybernetic arts: graphics, sculpture, film, dance, music, textile design, weaving, poetry, and architecture.

There is a tendency to forget that the computer arts are still in the highly experimental stages of emergence, and although some attractive and very pleasing works have been accomplished, this new medium has generally not progressed much beyond its mathematical and scientific origins. At times, in viewing or hearing the output of the computer arts, one would relegate the resultant art form to the category of interesting sound or visual patterns, experimental/initial exercises, or mathematical and scientific visualization, rather than as works of art per se. (This latter statement is equally true of contemporary manual experimental art.) There is, at the present time, a tendency for the computer arts to relate to an elite coterie, made up of scientists and intellectuals, rather than the public at large. However, as this new art medium is given greater space in the mass media, this audience should enlarge greatly, as exposure acquaints the general audience with the potential of this new art form.

This article is reprinted by permission from the *Proceedings of the Invitational International Exhibit of Computer Arts,* T-5, Zagreb, Yugoslavia, June-July 1973. Grace C. Hertlein is Assistant Professor in the Computer Science Department at California State University—Chico, Chico, Calif. 95926. Her computer art has been published for many years in *Computers and Automation* and currently some of her computer art is being exhibited at an art exhibition in Bordeaux, France.

Pattern Manipulation

Manipulation of design by the computer may be deliberate, (or at times highly experimental) as change or transformation of the original pattern is achieved via a host of techniques developed within the past twelve years. However, in attempting to see precedent in manipulation of design, one observes ample evidence of a growing interest by artists and critics in combining (manually) mathematics and art. Since the turn of the century, such techniques and philosophy have been practiced and even more verbally expressed by electronic and concrete musicians. Further, the concept of pattern manipulation is as old as man's art, and one finds ample evidence of this concept throughout art history. A few such examples are: Offset X/Y patterns in Persian sculptural reliefs; repetitions of design in serial imagery from early Greek vases; reversals of pattern in the compositions of Bach; mirror images and mathematical progressions of design in the Foundation Course exercises of the Bauhaus School; juxtaposition and superposition of musical patterns throughout musical history; and randomization of musical variations via throwing of dice, as practiced by Mozart. The world was quite ready philosophically and mathematically for further explorations in such transformation of pattern, yet it was not until the speed of the computer afforded this electronic manipulation, that it became feasible to such a degree. (Alteration, change, and transformation of pattern is revealed in other technological systems that may or may not use the computer as an aid in creation: synthesized video, sound, and the film.) In other words, science and technology now afford further exploration of ideas and techniques that have been practiced by experimental artists for years.

The philosophy and practice of twentieth century music shows a very great similarity between the manipulative techniques used by musicians since the early 1900's and the present-day computer procedures. Examination of the philosophy of the Bauhaus and study of the works emanating from this revolutionary school, also reveals great similarities in the approaches to creation, and in the final works of art of this school and present-day computer arts.

The computer artist is manipulating patterns, because this is an inherent potential of the computer medium. The manual artist (or scholar), by contrast, is bound to laborious manual processing of data and pattern, and thus generally discovers to a lesser degree, further sources of innovative and perceptual changes, i.e., manipulation as practiced in the computer arts is not feasible manually. When perceptual change is accomplished manually (many of the works in Graphis afford excellent examples), such change is not only excessively time-consuming, but represents a manual tour de force. It could be more readily accomplished via the computer.

The manual artist is generally not concerned with perceptual change or alteration of the original image. On the other hand, since the computer readily affords such changes, the cybernetic artist may literally exploit component designs, taking them through what may appear to be unlimited design changes. The more abstract the component design, the more readily it lends itself to mathematical variation and processing, termed design state variation.

Design State Variation

This is a term devised by the writer, adapted from given "state" variations used in printmaking, in which one may revise a plate or stone, and alter it by additions and/or changes of pattern, resulting in a series of new works. The term denotes known variations of pattern that are possible, which may be used as sub-routines or stored on the computer library and merely called by the user, who defines the values of the given parameters of the specific algorithms being utilized. One of the most provocative concepts emerging in computer art is that of being to literally predict innumerable design state variations, in which a basal component will be visually or auditorially pleasing. The artist may use only those design states that reflect personal expression of design. (One might compare design state variations to the many kinds of chisels the sculptor may use in execution of a work of art, each giving unique effects.) Further, this library of manipulative design state variations is constantly being enlarged by experimenters in the computer arts. A brief listing follows:

- Offsets of pattern on the X, Y, X/Y (progressions in music)
- Mirror images or reversals on the X, Y, X/Y
- Scalar variations or duration of pattern in superposition of form
- Rotation, in open or closed forms
- Irregular radiation of images and forms with growing scalar values
- Redundant serial imagery in closed form
- Polygon serial imagery, with circular, square, or varied final form
- Positive and negative variations of repeated or design-related patterns
- Disintegrating variants of images and sounds in redundant or transform pattern
- Metamorphic variations of images or sounds in predetermined sequences
- Transformations of pattern, in which one design becomes another
- Alterations of design by mathematical algorithms
- Pseudo-randomizations of patterns with artist-imposed parameters
- Overlays of images and sounds in dimensional forms
- Combinations of related patterns, using any of the above design states
- Multi-media combinations, using any of the aforementioned

Prior to design state variation, the artistic idea is stated in coherent, sequential steps. It may be flow-charted before translation into a computer program. Thus the art idea is transformed into analyzed data, using synthetic machine languages, and is then subject to processing and manipulation via the computer using design state variations, revealing innumerable new, final works. Examples include:

- The warp and weft patterns in weaving
- Classical ballet positions, with designations of the head, arms, and feet
- Structural modules in sculpture and architecture
- Derivations of design from art or musical history, including the archaic, the classical, or the contemporary
- Formulae and transformations from science or mathematics
- Stylistic analysis of a given artist's style, with designation and statement of a specific set of definitions describing the style
- Artistic composition of a given musical era, with parameters of such rules

Thus the art idea is initially expressed in the manner of science, but it does not end there. The choice of the art idea or problem should express the personal philosophy of the originator, whether it is mathematical formulae, natural derivations from the environment, or analyses of prior styles of artists. The personal focus of the original idea, ensuing variation and execution cannot be too strongly stressed! The design state variations allow the artist to choose the given direction of psychic expression. Further, selection of specific computer systems and art materials affords a highly individual element within cybernetic creation. And lastly, the varying techniques of execution, which may be preplanned or participant, add a unique and personal opportunity to spontaneously participate within the formation of the work of art, or to maximize the capacities of the computer in artistic execution, using preplanned or heuristic modes.

Diverse Philosophies of Computer Art

Stylistic analysis and resultant design derivation are highly visible in the computer arts and possess decided benefits: these techniques allow one to analyze more thoroughly the subject under study, and in addition, they allow the artist to gain perceptual variations and permutations of the original source not obtainable by manual methods. (The writer and many others have often found these new departures from the design source to be as or more aesthetic than the original input source.) There is, however, a great tendency among humanists to concern themselves with past styles and subject matter, as being more "pure" aesthetically than the present. On the other hand, there is an equal tendency among scientists to exploit mathematical manipulation, disregard art totally, and to have the computer and its peripheral devices accomplish the work of art, without intervention by man. Here one finds two extremes, with beginning dogmatic statements by artists of varying capacities and philosophies. The insightful computer artist, however, seeks to unite personal philosophy and expression with the highest level of computer usage in a statement of artistic unity. However, one is conscious of new visions emerging throughout history, which are subsequently categorized and "cast in bronze," as "the way." Computer art appears to be no exception to this great

(please turn to page 31)

Computers in Science Fiction — II

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"In science fiction writing, non-specialists attempt to involve other non-specialists in the human questions arising from computer use."

In "The Computer and the Poet," Norman Cousins emphasizes that the role of poets, "those who have respect for and speak to the human spirit," becomes even more important as computer usage increases (32). Science fiction writers should indeed be included as poets in our technological age. All too often in our society, problems arising from technology are left to technologists because others are too unsure of their own knowledge to question or criticize. The science fiction writings directly involving computers are one of the few places where non-specialists attempt to involve other non-specialists in the human questions arising from computer use.

Emphasis on Man

Perhaps the most recurrent science fiction theme is the difference between computers and man. These raise the question of the proper role for machines versus the proper role for humans or emphasize the aspects that make man unique. In one story (Asimov, "Someday") children in a society where reading and writing are no longer needed form a secret society to learn just for the joy of it; in another (Weir, "What Happened to the Teaching Machine") where all learning is by machine, only uneducated children still know how to pose questions. A super-computer is defeated by a human because he can bluff or "lose to win" and it cannot (Caiden, The God Machine); another super-computer is robbed of its control because of a group of humans whose main desire is freedom (Pohl, Starchild); and to others (Dick, "The Variable Man"; Sheckley, "Fool's Mate") human unpredictability continues to be a problem. This distinctive aspect of man is very directly stated by the computer builder in a French science fiction story (Boulie, "The Perfect Robot"). In trying to make the computer more like man, he progressively adds to its ability to deal with data, the ability to play chess, language, concepts of love, the ability to engender new machines, concepts of good and evil, and finally what he considers to be the crucial missing element — "I have unhinged them". Mike, a super-computer capable of running an entire revolution (Heinlein, The Moon is a Harsh Mistress), cannot understand why a joke is funny, and the computer AM (Ellison, "I Have No Mouth and I Must Scream") hates people because unlike them "he could not wander, he could not wonder, he could not belong, he could merely be".

Science fiction writers persist in confronting their readers with a question that receives little direct discussion but is of current concern. As expressed by the historian Bruce Mazelish (33), just as continuities were established with the material universe, the animal kingdom, and our subconscious, we are faced with transcending the 4th discontinuity — of harmonizing our existence and those of machines in a technological society. Or, as expressed by Weizenbaum ("On the Impact of the Computer on Society") the insights of science such as those provided earlier by the work of Galileo, Darwin, and Freud, and now provoked by the advent of the computer, shake man's self-esteem because, when viewed superficially, they seem to diminish man.

Mechanistic View of Man

We diminish man and in our anxiety grow more disdainful of ourselves and ambivalent towards computers if computer usage is predicated on a mechanistic view of man and this mechanistic view becomes our self-image. Too many statements made by systems analysts or computer scientists display that a computer-usable view of man is being substituted for the whole man. Keep in mind the above list of human attributes contrasted to computers by science-fiction writers as you read the following statement from the widely read and much discussed book Limits of Growth written by well-motivated systems analysts:

> Some considered the model too 'technocratic' observing that it did not include critical social factors, such as the effects of adoption of different value systems. The chairman of the Moscow meeting summed up this point when he said, 'Man is no mere biocybernetic device'. This criticism is readily admitted. The present model considers man only in his material system because valid social elements simply

could not be devised and introduced in this first effort. Yet, despite the model's material orientation, the conclusions of the study point to the need for fundamental changes in the values of society. (34, p. 191)

Admission that the world model has a minor flaw of omitting "critical social factors" followed so blithely by conclusions about fundamental value changes surely conveys to the reader that the factors that have been dealt with are the more essential and more significant.

Again recall the human attributes as you read:

> By the same token since the thinking human being is also an information processor, it should be possible to study his processes and their organization independently of the details of the biological mechanisms — the 'hardware' — that implement them. (Simon and Newell, "Information-Processing in Computers and Man", p. 256)

That the theories

> . . . are mechanistic — that they postulate only the processes capable of being effected by mechanism — is guaranteed by simulating the behavior predicated by ordinary digital computers. (ibid. p. 258)

To reemphasize the contribution of science fiction, let us trace through one well-written and popular book, Stand on Zanzibar (Brunner). In the 21st century over-populated world, there is a very advanced computer Shalmaneser owned by General Technic, a company large enough to be contemplating the subsidization, modernization, and management of a small underdeveloped country Beninia. Beninia is unique since it alone has retained peacefulness and trust and humane behavior. Computer analysis is undertaken of the feasibility of the G.T. project and for alternative plans of carrying it out. With regard to the possibility of computer analysis of what makes Beninia attractive, one sensitive character in the book says " ... when they get love down to a bunch of factors you can analyze with a computer, there'll be nothing left of whatever makes it worth being human". Shalmaneser eventually rejects the data on Beninia because it is inconsistant with reality. Mulligan, a cynical sociologist, gets the computer to process the data by adding the additional assumption that an unknown force is active in that population. Mulligan points out that the scientists who have been working toward consciousness for the super-computer have been successful because the rejection of the data was a display of its first human characteristic — "orneriness" or "bloody-mindedness". When faced with something different, it chose to reject it instead of broadening its view of the possible. Mulligan sets out to find what makes Beninia different and traces it to a genetic mutation which produces a body odour that surpresses in others the territorial-aggression reaction. Mulligan's hope is that a world-renowned biologist who is working on modification of human genetic maps can use this to better mankind. His hope is shattered when he learns that this biologist has been murdered for political reasons. The decision is that the machine will work on finding an external synthetic spray. Mulligan is led away crying for lost humanity " ... what in God's name is it worth to be human, if we have to be saved from ourselves by a machine?" The now conscious machine has the last word and the last sentence of the book "Christ, what an imagination I've got". The irony of the book is that Mulligan, who represents and speaks for those characteristics which are human, falls into another part of the prevalent mechanistic trap — aggression is in our genes; the solution to our problems will be via a specific scientific breakthrough.

Superstates and Sypersystems

A concern for the use of computers in politics and government is seen in numerous stories. Opinion polling in a political campaign is involved in The 480 (Burdick), and the writing of campaign literature in The Novel Computer (Escarpit). The prediction of elections is carried to an extreme in "Franchise" (Asimov) where only one vote is needed to determine the election, and Counterfeit World (Galouye) describes an entire synthetic society (an "electromathematical model") made up for purposes of opinion surveying. Of greater concern, however, are the super-states dependent on or replaced by super-computer systems. Many of these stories describe the process by which men gradually gave away self-determination in exchange for material well-being, or in the belief that a larger something was needed to protect them from each other (Anderson, "Sam Hall"; Cole, The Funco File; Dick, Vulcan's Hammer; Fairman, I, the Machine; Mason, Matrix; Pohl, Starchild). Often, no one really understands any longer how the system works (Cameron, Cybernia; Cole, The Funco File; Delany, The Fall of the Towers; Dick, Vulcan's Hammer; Fairman, I, the Machine; Mason, Matrix). In most cases, the vast destructive power of the system is realized when, for some reason, it is no longer serving human ends. One computer overemphasizes the goal of protecting itself (Dick, Vulcan's Hammer), one gets carried away by its goal of avoiding thermo-nuclear war (Cardin, The God Machine), two become lonely and hence mad (Fairman, I, the Machine; Pohl, Starchild), another becomes psychotic because of what it learns from men's minds (Delany, The Fall of the Towers), others are under the control of selfish people (Cameron, Cybernia; Sladek, The Reproductive System). Most of these systems are destroyed by man's more flexible intelligence. However, in one story (Miller, "Dumb Waiter"), the system goes on even after there are no more people, and in another (Dick, "Autofac"), without the knowledge of the people.

Loss of Control

Some ten years ago when discussing views of computers in science fiction, I pointed out that few contemporary stories could be viewed simply as man's worries about his machines getting beyond his control. I noted that most of the stories focused on extensions of specific current uses and emphasized man's responsibilities as technology advanced (30, 31). While there are some stories in which computers turn on their makers (Dnieprov, "Siema"), the stories just cited have two significantly different characteristics. The stories do not begin with the construction of a machine motivated by curiosity or scientific naivetée, but instead, they begin with the populace agreeing to control by the machine. We read, for example, that in 1993 after a large world war, all nations agree to "subordinate themselves in a realistic manner ... to a common supranational authority ..." which is a machine so that it won't put "interest over reason, emotion over logic" (Dick, Vulcan's Hammer p. 19); or that another machine is built to control the world because with stone axes men could be free as they could do only limited damage before they were stopped but with advanced technology men could do damage so much more quickly they cannot be free to start (Pohl, Starchild). In A Tale of the Big Computer (Johannesson), a history of life until the "computer age," we learn that man

is a part of the evolution leading up to computers and that the basic cause of his failure was the inability to organize a complex society. In the very enjoyable Funco File (Cole), when the question is raised, "Has it become your ruler, your god ..."?, the response is, "Well, no. Not exactly. It's more like where our technology triumphs have finally got us to. I guess you might say our real ruler was always an idea of what's normal or not. Conformity, I guess you'd call it ... I suppose the Machine — plus the F.D.I. — working together — have sort of externalized it once and for all." In the stories where there is a struggle between man and the computer, it is not a struggle to retain control but to get it back once it has knowingly been given away or unwillingly allowed to slip away.

Consequences of Bigness

The persistent theme in these stories is that of bigness — big states and big computer systems — and its consequences. This bigness is well described in an article by Weizenbaum. This article is important because it is one of the few expository statements of this serious theme.

> These often gigantic systems are put together by teams of programmers, often working over a time span of many years. By the time the systems come into use, most of the original programmers have left or turned their attention to other pursuits. It is precisely when gigantic systems begin to be used that their inner workings can no longer be understood by any single person or by a small team of individuals. ... This situation, which is now upon us, has two consequences: first that decisions are made on the basis of rules and criteria no one knows explicitly, and second that the system of rules and criteria becomes immune to change. ("On the Impact of the Computer on Society," pp. 612-613).

What is the effect of this situation on individuals and on society? Two side effects are discussed by Weizenbaum.

> First of course, there is the psychological impact on individuals living in a society in which anonymous, hence irresponsible, forces formulate the large questions of the day and circumscribe the range of possible answers. ... But even worse, since computer-based knowledge systems become essentially unmodifiable except in that they can grow, and since they induce dependence and cannot, after a certain threshold is crossed, be abandoned, there is an enormous risk that they will be passed from one generation to another, always growing. (Ibid., p. 613)

Computers Are Not Gadgets

The reader may argue the degree to which these side effects are already present in our society, but, if he reads sicence-fiction, he cannot ignore them. While the first theme of the differences of man and machines may be the most repeated, this second theme is probably the most important. The science-fiction writers maintain their importance as poets of the "computer revolution" by redirecting our attention from the computer as "gadget" to the computer as an integral part of the modern configuration of government-academe-industry-management which shares skills, resources, techniques, personnel, and goals. Just as our image of the scientist has changed from the man standing lonely vigil over a bubbling retort to prove his scorned hypothesis, the isolated computer with a programmed quirk, asked the wrong question or fed the wrong data, is no longer hero. Frankenstein's monster, or the more recent, Karl, Emmy, and Siema, for example, are very limited creations with identifiable creators, circumscribed environments, and restricted effects. We now have instead Shalmaneser, Project 79, Vulcan 3, Allied Mastercomputer, or simply, The Machine. The new computer-hero has remote access, varied input and output devices, processes large amounts of data supplied by different agencies, works in real-time, makes policy decisions based on quasi-mathematics, commands vast resources, and affects large numbers of people.

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Binger — *Continued from page 17*

our world trade. These weights must be removed and this need must be attended to by Congress and ourselves. We must endorse, broaden and actively support the steps that adjustment assistance can take to alleviate human distress, cushion the impact of change and spur internal transition to successful competitive enterprise.

When we become more familiar with the great influence wielded by exports and the creative capabilities of companies that operate in many lands, we will do a lot more to overcome, where they exist, the penalties we pay for the benefits we enjoy. I firmly believe this.

If I have reminded you of both the pluses and minuses that world trade produces, ask yourself how much of this your family knows and understands. See how skillful you can be in finding ways to make this vital topic really interesting to your family, your neighbors, your associates and the other thinkers, teachers and decision-makers in your community.

This we will do, wherever we have Honeywell people who have built their careers on unraveling knotty problems in research, production, distribution, legislation and public affairs.

We mean to do the things which will make the ordering of a sound world trade policy in the United States the logical and popular response to a broad and informed public petition.

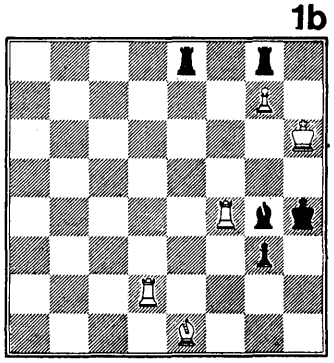
We intend to urge businessmen, labor leaders, and government officials to work for a system of world business that will create jobs all over the world — not in one country to the disadvantage of another. □

CORRECTION

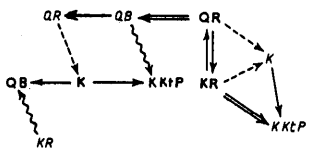
In the article "The Path to Championship Chess by Computer" by Professor Donald Michie published in the January 1973 issue of "Computers and Automation," the following corrections should be made:

Page 7, second column, third paragraph, lines 1 and 2: replace "the Rand Corporation mathematician" by "the professional philosopher".

Page 8, the chess position for Figure 1B should be:



Page 9, the graph in Figure 2 should be as follows (containing one more connecting link):



Page 1

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"RIDE THE EAST WIND:
Parables of Yesterday and Today"

Table of Contents

The Fox of Mt. Etna and the Grapes

Once there was a Fox who lived on the lower slopes of Mt. Etna, the great volcano in Sicily. These slopes are extremely fertile; the grapes that grow there may well be the most delicious in the world; and of all the farmers there, Farmer Mario was probably the best. And this Fox longed and longed for some of Farmer Mario's grapes. But they grew very high on arbors, and all the arbors were inside a vineyard with high walls, and the Fox had a problem. Of course, the Fox of Mt Etna had utterly no use for his famous ancestor, who leaping for grapes that he could not reach, called them sour, and went away.

The Fox decided that what he needed was Engineering Technology. So he went to a retired Engineer who lived on the slopes of Mt. Etna, because he liked the balmy climate and the view of the Mediterranean Sea and the excitement of watching his instruments that measured the degree of sleeping or waking of Mt. Etna. The Fox put his problem before the Engineer. . . .

To be published in November 1973 by Quadrangle / The New York Times Book Co., hard cover, $6.95

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(You can read it all in 7 days — and keep it only if you think it is worth keeping.)

---------- (may be copied on any piece of paper) ----------

To: Computers and Automation
815 Washington St., Dept. CA11, Newtonville, Mass. 02160

( ) Please send me when published (November publication expected) _____copy(ies) of *Ride the East Wind: Parables of Yesterday and Today* by Edmund C. Berkeley, Author and Anthologist. I enclose $7.25 (Publication price + Postage and Handling) per copy.

Total enclosed _____ (Prepayment is necessary)

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My name and address are attached.

Burying Facts and Rewriting History - II

One of the efforts of this magazine is to pursue truth.

One of the ways in which truth is pursued is not to let statements of the utmost importance be buried and forgotten in the pages of daily newspapers, nor unreported and lost because they are no longer well covered in national news magazines.

Among those statements are two of permanent interest in connection with the Watergate Caper (this phrase is establishmentese for "the Watergate Crime").

- The statement by Bernard L. Barker, one of the convicted operatives, which explains his motivation and background (see November 1972, *Computers and Automation*).
- The statement by Alfred Baldwin, 3rd, ex-FBI agent, an employee of the Republican Committee to Reelect the President, telling what he did and saw while five men burglarized the Watergate offices of the Democratic National Committee on June 17, 1972, about 2:30 a.m. (see December 1972, *C&A*).

In addition, we have published seven installments of reports on the Watergate Crime by our contributing editor, Richard E. Sprague (a computer professional of 25 years standing) who as an avocation has studied for many years dirty political operations in the United States, including the assassinations by conspiracies (not "lone assassins") of President John F. Kennedy, Senator Robert Kennedy, and Reverend Martin Luther King.

Three years ago in May 1970, when we began to publish this type of article, we could not have spoken confidently of "the assassination by conspiracies" of two Kennedys and one King. But the articles we have published – which are listed and characterized on the following pages – have together a remarkable impact.

Taken together, the information published May 1970 to October 1973 in *Computers and Automation* effectively destroys a large segment of the beliefs, the rewritten history, that the establishment in the United States has arranged for people in the United States to believe. I do not assert that the establishment is a conscious organism or organization; perhaps the best description is this: a loose confederation of overt conspiracies, silent conspiracies, and biased wealthy persons, with very intelligent orchestration stemming from the Pentagon, the Central Intelligence Agency and the Presidency, and with assists from organized crime and the Mafia.

We challenge any fairminded person to read this collection of articles (back copies of *Computers and Automation* should be available in many large public libraries and may be ordered from us), and after reading them, to still believe that the assassinations are actually the actions of "lone psychopaths," instead of fitting together into a plan to install a certain kind of autocracy in the United States.

This kind of autocracy claims to be democratic, to stand up for "national security," "executive privilege," "separation of Constitutional powers," etc. It offers appearances of democracy, but it seizes the realities of money and power. It cuts programs of social benefit; but it allocates $80 billion a year to be paid to the military-industrial-Pentagon complex.

In the 1940's there was a name for this kind of autocracy. Its name was "fascism," effectively a dictatorship in the interests of big business. What is now appearing in the U.S. is "fascism" in the form of a dictatorship by the military-industrial complex.

Here in a nutshell is an example of the present uneven contest: it takes the form of two sentences in a report by E. Drake Lundell, Jr., in *Computerworld* for April 22, 1973:

- The Antitrust Division of the Justice Department is "outmanned and outgunned" when it comes to prosecuting cases like the current action against IBM, Senate investigators were told last week.
- In addition, witnesses before the Senate Antitrust and Monopoly Subcommittee stated that often the division cannot do its job properly because of political pressure from the White House. ...

These two statements contain a world of implications.

Essentially, the Department of the United States Government which is charged with enforcing certain U.S. laws against monopoly, can no longer properly function because of (1) the enormous power of just one business, IBM, and (2) political pressure from the White House (this phrase is establishmentese for "President Richard M. Nixon").

We must dig up facts, remember them, and write history the way it is.

We must take action to compel the persons who deceive us and lie to us to leave the government of the United States, such as Spiro Agnew, former Vice President.

Edmund C. Berkeley

Edmund C. Berkeley
Editor

The Watergate Crime

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by Richard E. Sprague, Hartsdale, N.Y.
A report on five men who have numerous connections with the Republican Party, the White House, the Central Intelligence Agency, anti-Castro Cubans, and plans for the assassination of President John F. Kennedy, and who were arrested seeking to bug Democratic National Headquarters at 2:30 a.m., June 17, 1972.

October 1972

18 **The Raid on Democratic Party Headquarters (The Watergate Incident) — Part 2**
by Richard E. Sprague, Hartsdale, N.Y.
A report on further developments in the June 1972 raid by James McCord, Bernard Barker, and others, on National Democratic Party Headquarters, and implications affecting a number of Republican leaders and President Richard M. Nixon.

November 1972

26 **Bernard L. Barker: Portrait of a Watergate Burglar**
by Edmund C. Berkeley, Editor, *Computers and Automation*
How a cloak and dagger operative and right-wing activist, who was caught as a burglar in the Watergate Hotel offices of the Democratic National Headquarters, looks at himself and his line of work.

29 **Walter Sheridan — Democrats' Investigator? or Republicans' Countermeasure?**
by Richard E. Sprague, Hartsdale, N.Y.
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by Richard E. Sprague, Hartsdale, N.Y.
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26 **Martha Mitchell and the Watergate Incident**
by Martha Mitchell, the magazine *Parade,* and Richard E. Sprague
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27 **The Watergate Crime: An Eye-Witness Account**
by Alfred Baldwin, 3rd
A round-by-round account by an ex-FBI agent, an employee of the Republican Committee to Re-elect the President, of what went on while five men burglarized the Watergate offices, June 17, 2:30 a.m. Baldwin's main assignment was listening to bugged calls to the Democratic National Committee.

January 1973

33 **President Richard M. Nixon, the Bay of Pigs, and the Watergate Incident — Part 4**
by Richard E. Sprague, Hartsdale, N.Y.
How President Nixon lied in 1960 about the plans for the Bay of Pigs Invasion, and is suppressing in 1972 the investigations of the Watergate Incident.

March 1973

26 **The Watergate Crime and the Cover-Up Strategy — Part 5**
by Richard E. Sprague, Hartsdale, N.Y.
A report on the trial of E. Howard Hunt, James McCord, Bernard Barker, and four other persons for their raid on Democratic National Committee Headquarters in June 1972 using funds of the Republican Committee for the Re-Election of the President; and the strategies of cover-up that have been employed.

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26 **Watergate: What More is There to Hide? — Part 6**
by Richard E. Sprague, Hartsdale, N.Y.
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by Richard E. Sprague, Hartsdale, N.Y.
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by Samuel F. Thurston, Newton, Mass.
The issue of systematic suppression of questions about the assassination of President John F. Kennedy, and a hypothesis.

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37 **Jim Garrison, District Attorney, Orleans Parish, vs. the Federal Government**
by Bernard Fensterwald, Attorney, Executive Director, National Committee to Investigate Assassinations
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26 **The Federal Bureau of Investigation and the Assassination of President Kennedy**
by Bernard Fensterwald, Attorney
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41 **The Assassination of President Kennedy — Declassification of Relevant Documents from the National Archives**
by Richard E. Sprague
The titles of the documents and other evidence indicate convincingly that Lee Harvey Oswald was trained in spy work by the CIA before his visit to Russia; etc. Like the Pentagon Papers, these documents should be declassified.

November 1971

24 **The Assassination of President Kennedy: The Pattern of Coup d'Etat and Public Deception**
by Edmund C. Berkeley, Editor, *Computers and Automation*
Five significant, eye-opening events from May 1970 to October 1971, showing patterns of coup d'etat, assassination, and concealment; and some predictions.

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32 **The Assassination of President John F. Kennedy: A Model for Explanation**
by Vincent J. Salandria, Attorney, Philadelphia, Pa.
A study of the reasons why a great deal of the Federal government's own evidence in the assassination of President John F. Kennedy declared "conspiracy" — and a hypothesis, supported by considerable evidence, about why the President was assassinated and how the implications of that action were to be signaled to those who could read the signals.

6 **The Strategy of Truth-Telling**
by Edmund C. Berkeley
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57 **Spotlight on McGeorge Bundy and the White House Situation Room**
by Robert B. Cutler, Manchester, Mass.
An argument that the "lone assassin — no conspiracy" announcement from the White House Situation Room could have resulted from information available in Dallas and Washington prior to the announcement — and thus does not actually demonstrate that someone there had a guilty foreknowledge of the shooting.

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43 **Who Shot President Kennedy? — Or Fact and Fable in History**
by Gareth Jenkins, Weston, Mass.
How the physical evidence actually published by the Warren Commission relating to the assassination of President John F. Kennedy shows conclusively that more than one man was responsible for the shooting — contrary to the Commission's own report.

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28 **Dallas: Who, How, Why?** (in four parts)
by Mikhail Sagatelyan, Moscow, USSR
A long report published in Leningrad, USSR, by an ace Soviet reporter about the circumstances of the assassination of President John F. Kennedy, and their significance from a Soviet point of view.

July 1972

32 **The Shooting of Presidential Candidate George C. Wallace: A Systems-Analysis Discussion**
by Thomas Stamm, Bronx, N.Y., and Edmund C. Berkeley, Editor
An analysis of the shooting of Governor Wallace of Alabama; and a discussion of systematic methods for protecting American leaders from violent attacks.

10 **The Shooting of Governor George C. Wallace, Candidate for President**
by Edmund C. Berkeley, Editor
Editorial

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24 **The Assassination of Senator Robert F. Kennedy: Proofs of Conspiracy and of Two Persons Firing**
by Richard E. Sprague, Hartsdale, N.Y.
A review and summary of the evidence showing conclusively the fact of conspiracy and the presence of two guns firing, at the time of the assassination of Senator Robert F. Kennedy.

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32 **The Central Intelligence Agency: A Short History to Mid-1963 — Part 1**
by James Hepburn, author of *Farewell America*
The unverified, but probably largely true, secret history of the Central Intelligence Agency of the U.S. — as a preliminary to its involvement in the assassination of President John F. Kennedy.

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34 **The Central Intelligence Agency: A Short History to Mid-1963 — Part 2**

38 **Le Francais Qui Devait Tuer Kennedy (The Frenchman Who Was To Kill Kennedy)**
by Philippe Bernert and Camille Gilles, Paris, France

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37 **The Frenchman Who Was To Kill Kennedy**
by Philippe Bernert and Camille Gilles, *L'Aurore,* Paris, France; translated by Ann K. Bradley
English translation of the French newspaper report on José Luis Romero, which was reprinted in French in the December issue.

40 **Why I Distrust the Romero Story**
by Robert P. Smith, Director of Research, Committee to Investigate Assassinations, Washington, D.C.
The Romero report reprinted from *L'Aurore* has many earmarks indicating that it is very difficult to believe.

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26 **Analysis of the Autopsy on President John F. Kennedy, and the Impossibility of the Warren Commission's "Lone Assassin" Conclusion**
by Cyril H. Wecht, M.D., Institute of Forensic Sciences, Pittsburgh, Pa.
The coroner of Allegheny County, Pa., reports on his examination of the evidence that still remains (some of it is missing) locked up in the National Archives of the United States, not accessible to ordinary investigators.

30 **U.S. Electronic Espionage: A Memoir — Part 1**
by *Ramparts,* Berkeley, Calif.
How the U.S. National Security Agency intercepts, decodes, and understands almost all secret and top secret electronic communications and signals of all nations all over the world.

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31 **U. S. Electronic Espionage: A Memoir — Part 2**
by *Ramparts,* Berkeley, Calif.
How the National Security Agency intercepted and decoded enemy messages in order to direct bombing strikes in Viet Nam, and often failed; and how the hideousness of what the American military forces were doing in Southeast Asia finally led this interviewee to resigning and terminating.

April, May 1973

34 **The New Orleans Portion of the Conspiracy to Assassinate President John F. Kennedy — Four Articles:**
(1) by Edmund C. Berkeley, in the April issue; (2) by Jim Garrison, in the April issue; (3) by F. Irving Dymond, in the May issue; (4) by Jim Garrison, in the May issue
On November 20, 1972, the Supreme Court of the United States refused to permit Jim Garrison, District Attorney, New Orleans, to prosecute Clay Shaw for perjury. On November 21, Jim Garrison issued a statement commenting on this refusal, which is Article 4 of this set; Article 1 is an introduction; Articles 2 and 3 are opening statements to the trial jury, by Jim Garrison, Prosecutor, and

F. Irving Dymond, attorney for the defendant, in the February 1969 trial of Clay Shaw in New Orleans; Clay Shaw was charged by the grand jury with "having conspired with David W. Ferrie and Lee Harvey Oswald to murder President John F. Kennedy" – in regard to which the trial jury found Clay Shaw "not guilty".

May 1973

6 **Burying Facts and Rewriting History**
by Edmund C. Berkeley, Editor, *Computers and Automation*
Taken together, the information published May 1970 to May 1973 in *Computers and Automation* effectively destroys a large segment of the beliefs, the rewritten history, that the establishment in the United States has arranged for the people in the United States to believe.

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36 **The American News Media and the Assassination of President John F. Kennedy: Accessories After the Fact** (in two parts)
by Richard E. Sprague, Hartsdale, N.Y.
An examination of what happened in many important American news organizations, to cover up and hide the facts about how President John F. Kennedy was actually assassinated in Dallas.

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6 **Establishments and Truth**
by Edmund C. Berkeley, Editor, *Computers and Automation*
The nature of an establishment as a system

38 **A Parallel of 1963**
by Marguerite C. Oswald, Ft. Worth, Texas
The ignoring of evidence of conspiracy regarding Lee Harvey Oswald – a parallel to the Watergate cover-up.

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21 **The Framing of Lee Harvey Oswald**
by Richard E. Sprague, Hartsdale, N.Y.
When Lee Harvey Oswald was arrested, Nov. 22, 1963, for the assassination of President John F. Kennedy, he said to his captors in the Dallas jail cell, "I'm a patsy". A review of the evidence (including 18 photographs) proves that Oswald was a patsy, and that he was "framed" for the murder of President Kennedy – although "establishmentese" American history denies it.

Hertlein – *Continued from page 19*

human failing. Even the most broad-minded practitioner is bound by his or her capacities and philosophy, and it requires a deliberate and concerted effort to remain open-minded, and to appreciate varied approaches that are not in accord with one's own temporary aesthetic parameters. One discerns computer artists who prefer natural or man-made patterns and sounds, vs. those who desire only mathematics, electronic and computer sounds, sans the human touch. There are those who exploit two or three-dimensional static images, vs. the creators who prefer moving permutations in flux, declaiming that the computer is a perceptual medium, and therefore should not be imprisoned in static form, i.e., cybernetic art is "pure idea," ad infinitum. Ironically, even the newest of the arts appears destined to hardening within specific schools of thought, with separatist camps warring in "vs." expression and debate.

Summary

It is obvious that the concept of manipulation and processing via the computer is merely the first stage of cybernetic creation. Even now, far beyond the statements of the artistic problem and aesthetic, personal variation, is a vast, open territory that is being explored by questioning, hardy intellectual pioneers, as they seek to perceive the inner anatomy of art and philosophy:

What is style?
What constitutes the aesthetic? How may this be accomplished?
What is art? Music? Sculpture? Dance? Poetry?
What is science? Mathematics?
Is art purely the man-made: The sound of the human voice, or playing music upon man-made instruments? The painting and sculpting of man with hand-held tools?
Is art a part of life, embracing: The ordinary, the animal and natural sounds? The patterns carved by the winds, sands, and the water?
Is art perceptual, a mere fleeting moment or experience in time, or is it permanent, enduring?
What is the optimum role of man in a cybernetic society?
What is the role of art in a technology-oriented world?
What is the symbiosis of man-and-the-machine?
What is thinking?
What is creativity?
Is man the measure of all things?

When man uses the computer as an aid in creation, or when he attempts to create heuristic art, his mind finds new questions to explore and to answer. It appears highly possible that a renewed perception of life and the arts awaits present and future generations of man, and that this may be partially accomplished by eliminating the boundaries of compartmentalized disciplines, and by walking freely between art and science, by combining interdisciplinary practices and materials, to hopefully bring forth the ideal of an open, growing, and dimensional perception of art/life for the human race. □

Editor's Note: This paper is published in accordance with a new editorial policy of allowing writers freer expression, with no editing by the editors, in the hope that greater variety of expression and ideas will result for the benefit of readers.

CORRECTION

In the July 1973 issue of Computers and Automation, a single article entitled "Communication — Three-Way: Chimpanzee, Man, Computer" was published. Part 1 was authored by Larry B. Dendy of the Public Relations Office of the University of Georgia and Part 2 was authored by Ernst von Glasersfeld et al of the University of Georgia and the Yerkes Regional Primate Research Center of Emory University.

In compliance with the authors' wishes, the two parts of that article have been reprinted as two separate articles. The first article is authored solely by Larry B. Dendy and is titled, "Communication — Three Way: Chimpanzee, Man, Computer." The second article is authored by Ernst von Glasersfeld and his colleagues from the Yerkes Primate Research Center and Georgia State University and is titled, "A Computer Mediates Communication with a Chimpanzee." Also, and in compliance with the authors' wishes, all figures and tables of the article as published in the July 1973 issue have been included in the second of these articles.

In the 1973 annual index Computers and Automation will enter the two articles in this manner, which serves to separate a regular article from a formal scientific and technical report.

Virtue, in Spite of Erroneous Conceptions

J. P. Frankel
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"We think of knowledge as knowing how-to-do-it, wisdom as knowing whether-to-do-it, and virtue (if the answer is yes) as doing-it."

In this article, I mean virtue in a much narrower sense than the theologians, and I mean erroneous conceptions in a much broader sense than planners of parenthood.

Let me first speak of virtue.

We think of knowledge as knowing how-to-do-it, wisdom as knowing whether-to-do-it, and virtue as doing it. In this sense, at least in the universities, we think of scientists as knowing, the humanists as wise, and the engineers and other technicians (doctors, nurses, social workers and the like) as virtuous, that is, the do-ers.

The World is Full of Problems

Now the world is full of problems where we need to know how to do it, whether to do it, and (if the answer is yes) to do it. Each of us can make his own list of pressing social problems: pollution, arms limitation, or population growth. Fortunately we are reasonably well supplied with scientists, humanists, and technicians. To understand why we still have these urgent problems, let us turn to erroneous conceptions.

The erroneous conceptions I wish to deal with here are:

That it is within the power of scientists and engineers to choose to work only on projects "in the public interest," and
That the market place is where one discovers the public interest.

Choice of Projects to Work on

Critics seem to assume that scientists and engineers are free to choose their projects, and complain that they fail to consider the real public interest. Scientists may be free to choose their work, but they have no more to say about how their discoveries are used than Christopher Columbus did.

As for the engineers, they have more to say about the uses of science, since they are the ones who choose which of science's ideas will be applied, but they in turn have almost no way, at present, of identifying the public interest, and even less in determining which products or processes should be produced to serve it.

A Moratorium on Science?

We will return to this matter of choice, but first let's eliminate from the list of reasonable alternatives facing society, the silly and dangerous notion of a moratorium on science.

The key notion in the moratorium idea is that if you can't control it, you shouldn't do it. Therefore, we are urged, don't do any more science until (presumably) the humanists devise suitable controls. The trouble with this kind of conceptual contraception is two-fold. In the first place, as Paul Saltman has pointed out eloquently, you can't forbid knowing any more than you can forbid writing poetry. Science can be slowed down, of course, by driving it underground, but even if we slowed it way down, there is no evidence that we have either knowledge or wisdom enough to control its application, unless we change some of our habits.

Ignorance and Fear Lead to Irrationality

One habit that needs correction has to do with the thinking and feeling processes of the humanists — the philosophers, if you will — who presumably are to show us how to behave. Too often they are ignorant or fearful of science and engineering. What one is ignorant or fearful of, he cannot deal with in a rational way. There is no possibility that we can learn to control what we do by some non-rational process, such as satori, using mystically-fashioned playing cards, etc. Control over what we do will

Based on remarks delivered on Joseph C. Wilson Day, November 10, 1972, at the University of Rochester, Rochester, N.Y.

have to be done rationally. I also believe that it will have to be done by humanists, and that before they can do it, we have somehow to lower, or at least make more permeable, the barrier that separates the Two Cultures. We will come back to this point later. Before that, let us return to the notion that engineers choose what they will work on.

The Choices of Engineers

Most engineers do not make cosmic choices. They do not decide that this product will be built and that one won't be. Practically all engineers, I suspect, work for other engineers, who work for others, who work in companies where the products are determined not by science or philosophy, but by market analysis. Now market analysis has come a long way since the days of the Edsel, and it often guesses accurately, although not always so, what the public is interested in buying. But what the public buys is not necessarily what it needs.

The Market-Place Guessing Game

We buy those things that are offered for sale that are better (in some vague way) than the alternatives available to us. Except for advertising or other ways of influencing public opinion, the basic mechanism of the market-place is a guessing game. Try this product, see if it sells. If it does, figure out what it was about it that sold, and push a little harder. If this one does not sell, retrench a little, or gamble on another change — and so on. Advertising and public opinion do play important roles — how else explain so many different labels on the same bar of soap, the same automobile? — but the decision as to how the engineers' skills will be used has, in the past, been largely determined by the instantaneous outcome of the market game.

Major Civil Problems

Now please do not misunderstand me. The market-place mechanisms are important for determining soap or automobile styles. I believe that criteria of risk-and-return of investment are elements of our decision-making processes that we could discard only at great peril to our society. What I am saying is that the major civil problems: pollution, poverty, and population density, for examples, are not likely to be defined by market analysis.

These problems, for which acceptable solutions are needed, share these characteristics:

First, they cross product classification lines, and involve more than one sector of the economy. They are not just problems of the auto industry, or the mining companies, or manufacturing-but-not-service-industries — they involve all of these. All the skills that all these sectors employ may have to be applied to these problems. The cement plants in the country and the transport companies in the city have pollution problems that differ only in detail. To expect them to do the necessary research and development separately, each with his eye on his own segment of the market, is to postpone until much too late, if not forever, solving even the smaller parts of our problems. The problems, so to speak, are too big.

These Problems are Hardly Separable

In the same way, the major civil problems are not readily separable. One can reduce the amount of air pollution caused by internal combustion engines by using electric autos, for example. If so, we may replace polluted air in the cities with polluted streams out in the country where the new massive power plants are. Or we can replace with solar energy the fissionable materials or fossil fuels we now use for power; however, at least in the near future, we would then have either much less energy or much more costly energy, and fewer jobs and more poverty. (Some among us tend to paint even blacker pictures. They point out that our society gave up slavery only when our technology developed to the point where machines were cheaper than slaves. Is it possible that we could deliberately reverse this process and end up with clean air, but with slaves?)

This characteristic of tight linkage, or inseparability of the big problems, also suggests that we cannot rely upon the ordinary market-place mechanisms to determine how we employ our technology to solve our problems.

Very Difficult Problems

The third characteristic of our problems that forces us to reconsider the mechanisms of choice, is that our problems are so very difficult. The technical solutions do not exist outside of social considerations. The social costs outweigh such usual factor costs as materials, labor, and capital. Our cities present much tougher problems than putting man on the moon. As someone smarter than but unknown to me, has said, "We couldn't have put a man on the moon if the moon had been inhabited".

World-wide and Nation-wide Problems

All these characteristics, and others that I've left out, such as geographical diversity — some problems are not local, nor even regional or national, but world-wide — suggest that the organizations needed for these new problem-solving teams differ considerably from those of even our biggest, most diversified companies, or else that we need some super-industrial team of coordinators, who are to be responsive not to the elements of the market-place, but rather to the public interest. Whether that public is regional, or national or world-wide, someone who has thought this problem further through must tell. My own thoughts, tempered by a certain sourly pragmatic view of the interactions of various national governments, suggests that the approach most likely to succeed in the near future is the national one.

The National Science Policy and Priorities Act

The essentials of a first step in a national plan are contained in the National Science Policy and Priorities Act, which, among other things, sets up procedures for contracting out to universities, companies and other organizations, the research and development necessary for solution of the major civil problems, including the design of civil science systems. Whether an agency like NASA should be set up, as the Act says, or whether an existing agency should supervise new programs, is a matter of debate. The importance to our discussion is that some federal funding agency, not the various product market-places, should establish the priorities and fund the solutions to our civil problems.

As you see, this bill or Act or plan makes a first approach to nationalizing the solution to national problems. At the same time it utilizes local

collections of scientific, humanistic and engineering talent, that either already exist in the aerospace companies, universities and think tanks, or can be collected there. In essence, this bill solves one aspect of the problem. It replaces small or local or single-commodity market-places with a national market-place based on national needs. I suspect that the new agency will find that big aerospace companies usually do not have the necessary mix of talents, although they probably do have the necessary organization. The universities, on the other hand, probably do have the necessary mix of talents, but probably do not have the proper organization. It seems, however, to be a logical first step, and the sooner the bill becomes law, the sooner we can begin to solve our problems.

International Institute of Applied Systems Analysis

An example of the international approach is the recently established International Institute of Applied Systems Analysis in Vienna as a joint venture of our National Academy of Sciences and the Soviet Academy, among others. Since they will operate on about three-and-a-half million dollars a year (the Civil Science part of the National Science Policy and Priorities Act allots an average of 270 million per year for three years) it is unreasonable to expect anything more than papers for publication to come out of Vienna. The international effort will result in more knowledge and wisdom; on the proposed national budget we could become virtuous as well.

In Order to be Virtuous One Must be Wise and Knowing

One final caution. I hope you have not heard me suggest that only scientists and engineers are capable of leading us out of the thicket of difficulties we are in. I am not advocating technocracy, that totalitarian philosophy which says that only engineers can lead us. I do not believe that for one moment, nor does anyone who knows enough engineers and scientists. There is no reason to believe that they, as a class, are any more capable of leading our people than, say, the lawyers.

I would rather that you heard me say that no longer is it virtue merely to do it, but rather that in order to be virtuous one must also be wise and also knowing.

Our Leaders Must Be Part Scientist, Part Humanist, and Part Engineer

We will need new kinds of agencies and organizations to define "the public interest" and to find ways of organizing the talents that may solve some of our problems. But organizations — universities and corporations and public agencies — are built by people, led by other people. So our leaders must be part scientist, part humanist, and part engineer, and they must use what they have, not in response to some particular market-place, but in the true public interest. Not nearly enough people will be born with these characteristics. They will have to be educated.

If this sounds like a very tall order to put to an education system — it is.

But we should be encouraged to redesign our education systems to help produce such people, not only because we have to (God knows we do) if mankind is too survive — but also because we know it is possible. □

NUMBLES

Neil Macdonald
Assistant Editor
Computers and Automation

A "numble" is an arithmetical problem in which: digits have been replaced by capital letters; and there are two messages, one which can be read right away and a second one in the digit cipher. The problem is to solve for the digits.

Each capital letter in the arithmetical problem stands for just one digit 0 to 9. A digit may be represented by more than one letter. The second message, which is expressed in numerical digits, is to be translated (using the same key) into letters so that it may be read; but the spelling uses puns or is otherwise irregular, to discourage cryptanalytic methods of deciphering.

We invite our readers to send us solutions, together with human programs or computer programs which will produce the solutions.

NUMBLE 7311

```
          I F Y O U
        x   G I V E
      -------------
        Y L U Y I T
      Y O T R U O        GV = CU
    E U E U U E
  T Y C U O R
-------------------
= C T U I O U O V T      327897972
```

Solution to Numble 7310

In Numble 7310 in the October issue, the digits O through 9 are represented by letters as follows:

O = 0	W = 5
I = 1	P = 6
E = 2	T = 7
S = 3	R = 8
H = 4	A = 9

The message is: Eat what is ripe.

Our thanks to the following individuals for submitting their solutions — **to Numble 7310:** Edward A. Bruno, N. Bergen, N.J. — **to Numble 739:** Edward A. Bruno, N. Bergen, N.J.; T. P. Finn, Indianapolis, Ind. — **to Numble 738:** Nihan Lloyd-Thurston, S. Nutfield, Surrey, England.

Nixon and the Mafia — Conclusion

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"Organized crime will put a man in the White House someday, and he won't even know it until they hand him the bill."

— Ralph Salerno

Part 1 of "Nixon and the Mafia" was published in the September issue of "Computers and Automation"; Part 2, in the October issue. Part 3 begins here with further information about the relation of President-to-be Richard M. Nixon with shady transactions in the Bahamas.

Shakeup in the Bahamas

By the middle Sixties there was a storm brewing. Internal friction had forced out a few people like Lou Chesler, while a wave of public investigations were blaring the role of underworld figures like Meyer Lansky. The 1967 Royal Commission of Inquiry also dredged up another familiar name — Richard Nixon.

Testimony before the Royal Commission by Max Courteney, a Lansky lieutenant, detailed a long bookmaking career and brought out the names of a large clientele, including the then ex-Vice President Richard Nixon.

Mary Carter Paint

The Royal Commission also bared a deal which implicated Richard Nixon far more deeply than passing mention by an underground bookie.

In 1967 Lyndon Pindling became the first black premier ever to serve the almost one hundred percent black citizenry of the island. Pindling was hardly a revolutionary, however, for among the people instrumental in putting him in office was a gambler close to Lansky named Mike McLaney. The Royal Commission branded McLaney a "thoroughly dangerous person" and accused him of maneuvering Pindling into at least one deal involving a questionable gambling concession.

Part of the post-election controversy was a company based in Tampa which bore the innocuous name of "Mary Carter Paint Company".

In 1965 Lansky's front-man (and former Key Biscayne landowner) Wallace Groves, filed a joint application with the Mary Carter Company to open a casino on Paradise Island in the Bahamas. The ubiquitous Sir Stafford Sands handled the legalities. Knowledgeable observers looked for the mystery man, and a Justice Department memo, dated January 18, 1966, predicted that "the atmosphere seems ripe for a Lansky skim".

After Pindling's election, Groves was forced out and the Mary Carter Paint Company had itself two new casinos. At the 1967 opening of one of them — the Nassau Bay Club — the honored guest was Richard Nixon.

The following year — 1968 — the other Mary Carter Club, the Paradise Island Casino, opened for business. The owners felt close enough to Nixon to offer him use of their facilities during the 1968 Republican Convention. Nixon felt more comfortable at Key Biscayne, but some of his staff took up the offer.

Mary Carter Becomes Resorts International

In 1969 Mary Carter — now called Resorts International — reluctantly "released" one Dino Cellini, claiming that while he "had a relatively unsavory background, he had no criminal record, no criminal associates". Cellini hopped across the water to Miami, where, according to Dade County Sheriff Intelligence Reports, he continued to work in conjunction with Paradise Island Casino. The reports allege that Cellini was an almost daily visitor to Resorts International's Miami office, where he checked credits and worked with a company booking junkets to the Paradise Island Casino.

There are those who maintain that Cellini's connections with Resorts International symbolize the influence of Lansky. In a 1971 editorial, the Las Vegas Sun concluded an eleven part series on organized crime — some of which centered on Resorts International — by charging that "however cloaked and cleverly concealed by the guardians, gambling in the Bahamas is controlled by Meyer Lansky and it has been established in police intelligence reports that the fee is fifteen percent of the gross income". The now defunct Toronto Telegram reported in 1970 that "observers believe that the resourceful Lansky is still managing to get his cut from the Bahamas".

Resorts International, through its ninety-one percent owned subsidiary, Intertel, has denied all allegations of involvement with organized crime. It

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was Intertel that ITT hired in 1972 to snoop on columnist Jack Anderson.

The latest and possibly most damaging charge in the Resorts International battle came in June 1972 in an IRS inspired indictment of Meyer Lansky and Dino Cellini. The indictment reads in part:

> On or about May 17, 1968, unindicted co-conspirator Vincent Teresa met with defendants Meyer Lansky and Dino Cellini in Miami and had a discussion wherein defendants Lansky and Cellini gave Teresa permission to conduct gambling junkets to the Paradise Island Casino.

Thus government agents allege that in 1968 Lansky maintained at least some control in running junkets to Resorts International's Paradise Island Casino. The junket racket is an integral part of the casino operation, and as recently as 1971 Lansky's cohort Eddie Cellini was reportedly still arranging junkets for the Paradise Island Casino.

Enter Nixon and Rebozo

It was in 1967 — with Lansky still okaying junkets and Cellini still running the Paradise Island Casino — that Richard Nixon and Bebe Rebozo became friends with the head of Resorts International.

It should be no surprise that James Golden, the recently (1969) hired "deputy director of security" for Resorts International is a good friend of Nixon's. As a Secret Service guard for Nixon when he was Vice President, Golden made a good enough impression to be appointed staff security chief for Nixon in 1968. Golden was also security director of Nixon's convention headquarters in Miami that year, and was security director for his subsequent inauguration. Later that year he moved to Resorts International. Golden is just one of a long string of interesting Nixon security appointees, among them Watergate indictees James McCord, Gordon Liddy, and Howard Hunt.

There are rumors, some of which have been aired in the press, that Richard Nixon owns stock in Resorts International. Former Republican Presidential candidate Thomas E. Dewey does own stock in the company, and, according to organized crime investigator Hank Messick among others, there are reports of Lansky buying stock as well. Nobody has proved anything one way or another about the stock connections, but that Nixon is connected to Resorts International, at least through Golden, is indisputable.

Perhaps more disquieting than rumors of Nixon stock ownership in an underworld holding company for Bahamian casinos are the reports of his meddling in Bahamian affairs. In 1969 a proposed tax increase on gambling profits to provide money for Bahamian schools was slashed in half by the Minister of Finance. The Minister refused to explain the cut, and told opposition members to "use your imagination" for an explanation.

The advice was taken literally by some Bahamian papers who speculated that pressure came from "outside sources connected with casinos". One Bahamian paper asked openly if "a telephone call from the White House was not responsible?"

Whereas our investigation into Cuban politics brought evidence to light possible violations of the Neutrality Act, we now have the possibility of an American President who has spent a significant amount of his vacation time in the Bahamas also meddling in the affairs of that country.

Richard Nixon, a man with both visible and invisible links to the underworld and politics of pre-Castro Cuba, turns up in the Bahamas with very similar links, bringing some big names along with him.

Enter William Rogers

Two men with histories both in Bahamian politics and in the finances of organized crime have made frequent use of the legal services of a firm whose most prominent partner is Richard Nixon's old friend William P. Rogers, one-time Secretary of State.

The two men are Mike McLaney, charged by the Royal Commission in 1967, and a business cohort of his named William Colusardo. McLaney and Colusardo were investigated in 1967 by the Securities and Exchange Commission in connection with a blueberry plantation that McLaney sold to a company controlled by Colusardo. The subsequent corporate jugglings implicated (among others) newly elected Bahamian Premier Lyndon Pindling. Among Colusardo's "favors" for Pindling were the use of his airplane during the election campaign, and a $127,000 contribution in the form of an "interest payment". The law firm that defended McLaney and Colusardo against the SEC was that of William P. Rogers. Rogers had been a close friend and political associate of Nixon's for twenty-five years. He accompanied Nixon on many of his Bahamian jaunts and also made frequent stops with him at the Key Biscayne Inn and Villas. In addition to being an "R & R" sidekick, Rogers was the man Nixon turned to for counsel amidst his personal crises in the Checkers affair and Eisenhower's serious heart attack.

Rogers served the Eisenhower/Nixon team for eight years in the Department of Justice, first as Deputy Attorney General, and then, by 1957, as Attorney General. The Justice Department's record against organized crime in the years following the Kefauver Commission was lackluster, to say the least. It was Rogers who personally rejected the recommendations of the specially constituted Wessell Committee on organized crime set up in the wake of the infamous Appalachian raid in upstate New York that revealed a Mafia summit conference. The Committee's proposals for a concentrated and coordinated war on organized crime were only implemented some years later by Attorney General Robert Kennedy.

A footnote in the Justice Department files was a report by IRS Special Agent Josph Delfine, dated October 19, 1953. The IRS recommended to the Justice Department that "criminal proceedings be instituted against Meyer Lansky in the Southern Judicial District of New York for the willful attempt to defeat and evade a large portion of his income taxes for the years 1945 and 1947 under section 145b of the Internal Revenue Code". The Justice Department — with William Rogers second in command at the time — respectfully declined to prosecute.

Lums Hot Dogs

Upon leaving his post as Attorney General in 1960, Rogers became a member of the New York firm of Royal, Koegel and Wells. In 1969, with its leading partner about to become Secretary of State, Royal, etc. moved with its clients wholeheartedly into the world of gambling casinos and organized crime.

A year later Royal took on the account of the Miami-based hot dog chain, Lums Inc. What did a hot dog chain have to offer a prestigious New York law firm? The answer may lie in where the firm took its client.

In 1969 Lums purchased the Ceasar's Palace Hotel and Casino in Las Vegas for $60,000,000. A month later the Nevada state gambling authorities were looking into the hotels' "catering to twelve underworld figures from Kansas City".

A few months after the purchase the SEC filed suit charging Lums and Ceasar's Palace with "false and misleading" statements. The SEC wondered how Ceasar's managed to lose $1,000,000 in five months when the previous year (before Lums bought in) there was a $2,200,000 profit for a comparable time period.

The SEC also questioned Lums concerning the $3,500,000 Lums paid one Jerome Zarowitz, a convicted professional sports fixer who wasn't even listed as an owner of the casino. Top officials in both Ceasar's and Lums have been under investigation by IRS intelligence in Miami and by Nevada gaming authorities in cases involving organized crime ever since Rogers' firm took on the Lums account.

There is also the question of the 1971 Lums acquisition of a North Miami housing resort development called Sky Lakes. Both Sky Lakes and Ceasar's Palace have received large sums of money from the Teamsters — $12,000,000 for the Miami project and more than $16,000,000 for Ceasar's Palace.

With things going slowly, Lums announced plans for a new $22,000,000 casino next door to Ceasar's Palace. In December of 1971 the company decided that the whole restaurant idea was no longer worth the trouble. In a classic climax to a classic American success they changed their name to Ceasar's World Inc. and sold their hot dog stands.

Meanwhile the Secretary of State's old law firm reaped a bundle with their new-found involvement in the Las Vegas underworld. With such stunning successes at home, one wonders what a firm with a link to the Secretary of State could do abroad, in places like the Bahamas or Vietnam, for example.

Nor do the underworld implications of big names surrounding Nixon end with the Secretary of State. Murray Chotiner, a long-time Nixon aide and architect of his early smear campaigns, has past links to the underworld. In 1962 Drew Pearson and Jack Anderson wrote that "Chotiner ... besides representing the top gangster of Philadelphia, Marco Reginelli, represented a long and amazing list of hoods, concession peddlers, income tax violators and others needing influence in high places ..." It was Chotiner who brought Frank Vitale, "once involved in the biggest bootlegging conspiracy on the West Coast," onto Nixon's special plane to Moscow in 1959.

Nixon's recent appointment of Walter Annenberg as Ambassador to England also echoes the themes of underworld involvement. Annenberg and his father were indicted in 1939 for "aiding and abetting" in connection with their wire service operation in Chicago, an operation run with the protection of Al Capone, for which the Annenbergs paid $1,000,000. The Annenberg family was also a major contributor to Nixon's 1968 election campaign.

Further back in the Nixon saga, and closer to his southern California birthplace, lies San Diego financier, C. Arnholdt Smith and his bookmaker partner John Alessio. In 1946 Alessio and Smith introduced Nixon to another bookmaker named Lew Lipinsky. Lipinsky, who was convicted for bookmaking in 1938, served for three decades as a go-between for the Smith/Alessio interests to their syndicate connections.

Some of the dealings of the Smith/Alessio combine were brought to national prominence by a recent LIFE magazine article which accused Attorney General Richard Kleindienst of "tampering with justice" in a case involving Alessio. According to the Wall Street Journal, Smith raised $1,000,000 for Nixon's 1968 campaign. He and his wife took the first position on the receiving line behind the President at the White House inauguration.

More of the Same in California

Nixon's other favorite resting place besides Key Biscayne is the area near his birthplace in southern California. Here the underworld pattern of his Florida involvements repeats itself — in a strikingly similar pattern.

One story there involves Nixon's multi-millionaire backer, C. Arnholdt Smith, and the Del Charro Hotel in La Jolla, just north of San Diego.

The Del Charro was a favorite stopover for Nixon in the Fifties. Owned by the Murchison brothers, who also owned the nearby Del Mar race track, the hotel played host to numerous Detroit and Las Vegas gangsters. Alan Witwer, a former manager of the hotel, has alleged in statements to this reporter and others that the hotel served as a secret meeting place for politicians and assorted business interests, some of them from the underworld. Witwer specifically cited a 1954 meeting attended by Nixon and chaired by a leading member of ITT. He also claimed that there was a bookmaking operation at the hotel, but has offered no documented proof.

Mrs. C. Arnholdt Smith is a permanent resident of the Del Charro, and the hotel's visitors have included John Connally, Barry Goldwater, and J. Edgar Hoover. Hoover's $15,000-a-year bills were picked up by the stockholders of the Murchison interests.

The fact that certain of Hoover's good friends rubbed elbows, rather warmly, with Meyer Lansky, and the fact that the nation's leading crime fighting agency — the FBI — has come up almost blank in its fight against organized crime may not prove anything about Hoover. On the other hand, these facts don't make it any easier to dismiss questions which might arise about the influence of organized crime at the highest levels of government.

North of the Del Charro and thirty miles south of the San Clemente White House, lies the mammoth La Costa land resort development. The development is tied to both Smith (his daughter is a director) and to the Teamsters.

LaCosta was originally developed by Cleveland syndicate reliables Allard Roen and Moe Dalitz. The development was reorganized in 1968 to bring Teamster control more in line with their investments, which already exceeded $18,000,000. Like Sky Lakes, its Florida counterpart, La Costa attracts a whole range of figures from organized crime. La Costa visitors have included Willie "Ice Pick" Alderman, a St. Louis mob cohort Morris Shenker, and Wallace Groves and Lou Chesler of Bahamas fame.

According to eyewitnesses, when Groves' helicopter sets down, the red carpet is rolled out. It may be because Groves bought a home in La Costa, but more likely it's because, as government agents put it, "where Groves appears, Meyer Lansky will not be far behind".

Another mob frequenter of the La Costa development is Jake Arvey, an organizer of the Republic

National Bank in Miami, the bank through which Bernard Barker channeled funds for the Watergate crime.

The Teamsters Again

A recent visitor to La Costa was Frank Fitzsimmons, a key to Nixon's new-found support in organized labor. Fitzsimmons is president of the Teamsters Union. This summer he stopped in La Costa on his way to see Nixon at San Clemente. Fitzsimmons had just come from dinner in Detroit with a local Mafia figure and soon after his Detroit-La Costa-San Clemente excursion, Fitzsimmons announced his support for Nixon. One wonders whether the Teamster decision to stay on the Pay Board and to support Nixon is somehow related to what the Detroit Free Press has been hinting strongly as of late: that the administration has stopped prosecution of Frank's son Richard Fitzsimmons — the business partner of a Detroit mobster — on charges of missing union funds, in exchange for Teamster support of the Republican President.

Whatever deals Nixon and Fitzsimmons did make, the Teamsters have a long working relationship with organized crime. Their marriage goes back over twenty years, where Jimmy Hoffa was introduced to the Detroit underworld by Paul Dorfman, in exchange for some multi-million dollar insurance business. Dorfman's son, Paul, has residences at both Sky Lakes and La Costa and was recently convicted of taking kickbacks on a Teamster loan.

The Teamster tradition of labor racketeering and corruption made for a ready alliance with the mob. Early government investigations of the Teamsters, such as the Bobby Kennedy-led McClellan Permanent Committee on Investigations, centered on labor racketeering. As Attorney General, Kennedy continued his pursuit of the Teamsters and their boss, Jimmy Hoffa. At one point Kennedy had twenty-nine grand juries simultaneously investigating Hoffa's activity — one of which led to a conviction for mail fraud and jury tampering.

In 1969, two Oakland Tribune reporters concluded a six-month investigation with the charge that "the $628,000,000 Teamsters Central States, Southeast and Southwest Pension Fund headquartered in Chicago, has become a bankroll for some of America's most sinister underground figure".

Nowhere does the relationship between this fund and the mob surface more dramatically than in Las Vegas, where Teamster trustees have approved loans between $50 and $70,000,000, some shakily secured by second mortgages and subordinated notes. A high-ranking Federal official has commented that "the Teamster fund is a sort of open bank to people well-connected in Las Vegas and well-connected to organized crime".

It was Hoffa's desire "to have [his] own bank in every city" that brought on the Teamster takeover of the Miami National Bank. The Bank in turn is just one of a long list of ventures, such as Ceasar's Palace, Sky Lakes, La Costa, Worldwide Realty, International Airport Hotel Systems, Truesdale Estates, in which Teamster money amounting to over $60,000,000 figures prominently alongside the social and business partners of Richard M. Nixon — a line of investments that leads from Nixon's three White Houses to a Federal clemency for Jimmy Hoffa and back to organized crime.

The current head of the Justice Department's Criminal Division saw enough evidence in 1967 to say that he "knew for a moral certainty [that] in the upper echelons there is an amalgamation between the Cosa Nostra and the Teamsters Union". In 1971, when a Federal Grand Jury probing the activities of Meyer Lansky questioned Jimmy Hoffa, many wondered whether the links between the two giants were more direct than the numerous transactions between mutual friends.

A few months after his testimony, Hoffa was granted clemency after serving less than five years of his thirteen-year sentence. The freeing of Hoffa and three co-defendents of the 1963 wire fraud pension case is the latest and most crucial event in Nixon's longstanding friendship, a friendship with some clear public benefits for both. Jack Anderson documents, for example, that as early as 1960, then Vice-President Nixon and Attorney General Rogers intervened to halt an indictment against Hoffa in exchange for Hoffa's support in the 1960 election.

ANICO — More of the Same in Texas

In recent years the Teamster fund has been superseded by a giant Texas insurance company as a major source of finance for Las Vegas casinos tied to the mob. The company is the American National Insurance Company (ANICO) of Galveston, Texas. ANICO is close to the heart and pocketbook of the two ranking Texans in the Nixon administration — former Treasury Secretary John Connally and former Assistant Attorney General Will Wilson.

As well as floating more than $40,000,000 to Las Vegas casinos and $13,000,000 to premier mob attorney Morris Shanker, ANICO has made loans to two Florida companies close to Richard Nixon — $1,750,000 in 1966 to the Mary Carter Paint Company, and $3,000,000 in 1970 to a subsidiary of Worldwide Realty.

That year a group of disenchanted stockholders filed a multi-million-dollar suit, charging ANICO officials with having taken control of the company and using it as a private preserve as well as a source of funds for the mob.

The defendants in the suit hired Nixon's New York firm to handle the case. Connally's Houston law firm has also been used by ANICO. The First National Bank of Houston, of which Connally was a director and in which some of his law partners were officers, has provided an interest-free account of more than $1,000,000 for ANICO. Connally was also a director of a savings association which was purchased recently by ANICO.

Will Wilson was "general" of the Justice Department's "war" on crime from 1969-1971. He was head of the Criminal Division until October 1971, when his resignation was forced by disclosures tying him to the scandal-rocked financial empire of Texas wheeler-dealer Frank Sharp. Wilson has been charged by dissident ANICO stockholders of helping to drag ANICO into the twilight zones of finance with such deals as the 1963 absorption of a defaulted $450,000 mortgage held by Sharp. Sharp's attorney and "financial advisor" on the deal was Will Wilson.

While Attorney General of Texas, Wilson sued the foundation which controlled ANICO to bring three new trustees onto the foundation's board of directors. Wilson has no visible ties to the new trustees, whose votes were instrumental in shaping the company's new financial course. But dissident stockholders have charged that the "negotiations" that

brought on the shift of control in the foundations were handled by a Galveston law firm linked to the mob. The stockholders also claim that John Connally played a role in these negotiations, albeit a "backstage" role. The ANICO case is part of a long history of Wilson's involvement with the Galveston underworld.

When he came to the Justice Department in Washington, Wilson discovered the organized crime division looking into the affairs of ANICO. Since then there have been no indictments in the case and there are reports that Wilson had the ANICO files locked safely in his personal office. One source of those reports is Stewart Hopps, a former Justice Department investigator.

Some serious conflict-of-interest charges concerning ANICO remain:

- The officers of ANICO who were later represented by Nixon's law firm, made a loan to a company whose top officers are long-time friends of Nixon.
- The criminal division of the Justice Department has been headed by a man with direct links in a company the division is supposedly investigating.
- The company also has clear ties to Nixon's former Treasury Secretary, a man mentioned for the Vice-Presidency, the national chairman of Democrats for Nixon, and a key figure in the President's re-election scheme.

Whose Justice Department?

The ANICO case takes us to a fitting endpoint to the story of Richard Nixon's involvement with the underworld — the Department of Justice. It is an old saw that criminal and criminal-chaser eventually become involved in the same business, but in Richard Nixon that old saw has become more of a reality than perhaps ever before in American history. For Richard Nixon is a man whose name has been synonymous with "law and order" in America for three decades.

Yet the four-year "war" on organized crime by the Nixon administration bears more resemblance to the "peace" in Vietnam than a sincere effort to get at the mob.

In a recent interview in U.S. News and World Report (September 11, 1972), Attorney General Richard Kleindienst hailed "about 1600" indictments of underworld figures brought by the Nixon administration in the past three and half years. The Justice Department claims that many of these indictments involve top mobsters.

Those outside the Nixon administration, however, have charged that the government's prosecution has been both partisan and selective, aimed exclusively at mobsters linked to big-city Democrats such as in Newark, and at the "little fish" who are always in abundance and who make little difference in conducting mob business. Time has reported that quotas have been established (i.e. one hundred hoodlums a month for New York City) and that arrests are "being delayed so that future quotas can be filled". The New York Times has editorialized about the ease with which petty gamblers can and have been rounded up, and wondered aloud if the Justice Department isn't conducting more a publicity war than one on organized crime. A Times report this year found the government was building up a backlog of gambling indictments, saving them for a crucial time during the election campaign.

Indeed, while the Nixon-Agnew-Mitchell team has used the spectre of "CRIME" to keep the fear level high and to guarantee large budgets and expanded powers for their Justice Department, the actual "attempts" of the Nixon administration to cope with organized crime have resembled a somewhat sinister update of the Keystone Cops.

For example, up to 1,000 of Kleindienst's vaunted 1600 indictees in gambling and organized crime may have their cases thrown out for somewhat dubious "improper procedures" technicalities. A Miami attorney named James Hogan has "discovered" irregularities on signatures required for electronic surveillance authorizations. Court-approved wiretaps require written authorization by the Attorney General of a designated representative, in this case Will Wilson. Instead of being signed by John Mitchell or by Wilson, the authorizations in question were signed by aides, thus rendering thousands of wiretap authorizations — and the indictments based on them — useless.

Hogan himself is a long-time syndicate attorney and a partner of Ben Cohen, a former political boss of Miami Beach who figures prominently in the Forties' takeover of Miami by organized crime. The case in which Hogan made his discovery involved the busting of the largest heroin/cocaine ring in Miami, many of whose members were Cuban refugees. Inspection of various court papers, including wiretap authorizations, confirmed "irregularities" in the signature — Will Wilson's signature. While resembling his actual handwriting, the signatures appeared as "Wil" instead of "Will".

While it may seem strange for an aide to misspell his boss' name, it seems even stranger that Hogan took the case. His normal fees start in five figures but he has been working on behalf of his court-declared indigent client for more than two years with minimal compensation. While Hogan is known as a "very thorough" attorney, it would be interesting to find out more about the circumstances in which he discovered the "irregularities".

Even more interesting, perhaps, are the circumstances under which Richard Kleindienst was offered a bribe of $100,000 to quash several mob indictments In sworn testimony in November 1971, Kleindienst admitted to being offered the $100,000 bribe (which would be paid in the form of a contribution to Nixon's 1972 campaign) in exchange for stopping prosecution against several underworld figures caught in a stock fraud case. The bribe was offered by an aide of Senator Hiram Fong, a Republican from Hawaii. The aide had worked previously with Kelindienst through Fong's position on the Senate Judiciary Committee. Kleindienst said he refused the offer but he also said he did not realize it was a bribe for an entire week!

In cross examination, the prosecutor asked Kleindienst, "If you had regarded the conversation as something regarding a bribe offer you would have immediately report it, would you not?"

"Yes sir," replied Kleindienst, "I would have."

Kleindienst admitted he reported the bribe a full week later, upon learning from J. Edgar Hoover that Federal agents were investigating the case.

One would expect the Attorney General of the United States to be more alert. But what is more troubling are reports aired in the Washington Post

shortly after the indictments in the stock fraud case in question (and ten months before Kleindienst's testimony on the bribe). Those reports quoted "sources at the U.S. Attorney's office in New York" and indicated that after the meeting between Kleindienst and Fong's aide, "Kleindienst immediately contacted Justice's Criminal Division [then headed by Will Wilson] and ... an FBI agent was assigned to infiltrate the group of alleged conspirators".

Do we now believe Kleindienst's story that he "didn't realize" he had been offered a bribe, or do we believe the U.S. Attorney's office in New York? Did Will Wilson and the Justice Department hold off a week while Kleindienst "made up his mind" that he had been offered a bribe, or was the decision whether or not to take it? And did Hoover and the FBI somehow interfere?

Perhaps the answer comes in the final outcome of the actual prosecution involved. The defendants in the stock-fraud case included Meyer Lansky's son-in-law, a former director of the Bank of Miami Beach and Johnny Dio, a notorious racketeer long associated with Jimmy Hoffa. They were acquitted, while the messengers who offered the bribe were convicted. One wonders if that $100,000 did not find its way into the Republican secret treasury after all.

The Tip of the Iceberg

> "The organized criminal relies on physical terror and psychological intimidation, on economic retaliation and political bribery, on citizen's indifference and government acquiescence. He corrupts our governing institutions and subverts our democratic processes."
>
> — Richard Nixon, April 24, 1969

Someone should tell President Nixon that resisting the power of organized crime demands, above all, a President with a clean slate.

Nixon's life is like a complex jigsaw puzzle, the pieces of which have been shuffled so as to defy complete reconstruction. Some of the crucial pieces have been removed, so a full picture cannot be achieved. It is no accident that no other politician has been so much written about, yet so little understood.

Indeed, much has been made of the "enigma" of Richard Nixon, his tight-lipped bearing in relation to his personal life, his unwillingness to divulge what's really on his mind.

But maybe the answer to the enigma lies in his old poker-playing instincts, in the unfailing ability to keep quiet when he's sitting on cards best hidden from the table.

For there is one indisputable fact about Richard Nixon's career — his ascendancy to the pinnacle of American power has required twenty-five years of care and feeding by some very wealthy and very reactionary men, and an extraordinary number of them have maintained connections with the world of organized crime.

During Nixon's years in office the underworld empire in the United States has prospered almost unrestricted by the Federal government. From its base in the gigantic resources of heroin traffic, gambling, prostitution, "protection," and a host of other enterprises of violence against society, organized crime has moved like a bulldozer into the world of legal, "respectable" business.

Every link between Richard Nixon and organized crime, however marginal, is of significance, if for no other reason because he is President. And there are people all over America, from government intelligence agents to hotel waiters, who have Nixon stories to tell. He covers his tracks well, but not well enough.

The full extent of Nixon's involvement with organized crime is just beginning to surface. The evidence in this article is merely the top of a dirty iceberg that will slowly become visible over the coming years.

The milieu in which he has traveled for three decades, and in which so many of his friends, associates, and appointees have been related to the mob, throw a long and permanent shadow over everything Richard Nixon the "public servant" has ever said, and over everything his political life has ever meant.

For in light of his career, both past and present, Richard M. Nixon seems to be the factual embodiment of Ralph Salerno's prediction that organized crime would someday put its own man in the White House. □

The information in this article was gathered during a six-month investigation carried out in many cities, primarily Miami, New York, Washington, D.C., Los Angeles, San Diego, Las Vegas, Dallas, Austin, Galveston, Tallahassee, and San Francisco. Sources included interviews with over a hundred people; court documents (including deeds, mortgages, etc.); research in the National Archives, Washington, D.C.; organized crime intelligence files (both private and government); and newspaper clippings.

ACROSS THE EDITOR'S DESK

Computing and Data Processing Newsletter

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APPLICATIONS

NATIONAL AMERICAN BANK INSTALLS COMPUTER-BASED SECURITY SYSTEM

Tom Burbank
National American Bank
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New Orleans, La. 70130

A computer-based system designed to prevent unauthorized access to high security areas has gone into operation at National American Bank here — one of the first U.S. banks to install such a system. The IBM Controlled Access System (CAS) at National American is based on the use of magnetically encoded, wallet-sized identification cards similar to bank credit cards.

Each person authorized to enter a security area is assigned a card coded with his own security number. Employees seeking entry to an area covered by the system simply insert their cards into compact reading devices on entrance doors, and the information is transmitted to an IBM System/7 computer for identification.

Stored in the computer's memory is a list of employee numbers and building areas these numbers are designated for. If the number of the card entitles the bearer access to that area, the computer signals the door to unlock. If the person is unauthorized to enter, the door remains closed and a security guard is notified. The elapsed time is approximately one second.

If a card is lost or stolen, a new card (with a new number) is issued and the system is alerted to deny entry to the original card. If the old card is used, the guard is alerted.

As an additional safeguard, the system can automatically log all entrance activity by individual security code, door number, date and time of day. This helps track who is where and for how long. National American can now analyze the number of times an individual enters and at what time of day or night this activity occurs. The system also has built-in failsafe mechanisms which insure security in the event of a power failure.

"Unfortunately, we are doing business in a time when public and private institutions are increasingly vulnerable to lawless elements," said National American President Louie J. Roussel III. "By adding the IBM Controlled Access System to our current security procedures, we are taking a major step to insure that our customers and employees are protected. And, by controlling access to the collateral instrument storage areas, we can make it very difficult for unauthorized people to gain access to valuable assets stored in the bank."

NOVA COMPUTER CHECKS STRENGTH OF ROOF IN COAL MINE

Edgar E. Geithner
Data General Corp.
Southboro, Mass. 01772

Data General's minicomputers track hurricanes from airplanes for the U.S. Air Force; the Army has mounted them in helicopters; Scripps Oceanographic Institute has one on a ship; a scientist bounces over Canadian glaciers with one mounted in his tracked vehicle; and an oil company uses one of the computers to control an oilfield in the Libyan desert. Now engineers at the University of Texas (Austin) have a minicomputer in the bottom of a mine.

Dr. A. L. Podio, an assistant professor in the university's Department of Petroleum Engineering, and a team of researchers from the Center for Earth Sciences and Engineering, use a Nova 820 computer to detect possible weak spots in the roofs of mines. The computer system, developed for the U.S. Bureau of Mines, has been on the job on the floor of Kaiser Corporation's York Canyon coal mine in New Mexico. "One of the most frequent causes of mine accidents is roof collapse," Dr. Podio said. "This system was designed to use the principles of seismic explorations to identify failure planes and fracture zones in the rocks overlaying the mine roof. If tests

show the area around a roof is weakening, it can be supported by beams or roof bolts."

In seismic exploration, a high energy explosion is set off, and sensitive instruments determine the structure and makeup of surrounding land by recording how fast the shock waves travel through the ground. The waveforms can be interpreted to pinpoint probable deposits of oil, and to describe rock formations. "Using a large energy souce like an explosion in a mine is out of the question," Dr. Podio said, "so a manually controlled impact device was designed to generate the shock waves." The impact device, which works like a BB gun, uses air pressure to shoot a round projectile at a striker plate mounted at the end of the barrel.

When the striker plate is pressed against the wall or roof of the mine and the device is triggered, shock waves are sent through the surrounding rock. The shock waves are picked up by wideband transducers, digitized by a fast transient recorder, and processed through the Nova 820 for waveform enhancement. The waveform is then displayed on an oscilloscope, with the results of velocity and depth calculations. Permanent records of the waveform can be made on paper tape, or by transmitting the data to a large scale remote computer.

"A mine could make daily checks with the system to detect changes in rock strata as the working face of the mine advances," Dr. Podio said, "or the system could be transported throughout the mine to make daily checks on the condition of roofs at predetermined key locations." Dr. Podio noted that similar systems could be used to predict the quality of rock in rapid excavation projects or could be used in nondestructive tests of large concrete structures.

PHONE BOOKS BY COMPUTER

Peter A. Cassels
Bell Telephone Laboratories
Mountain Ave.
Murray Hill, N.J. 07974

The Bell System is using computer technology to modernize production of the White Pages telephone books. A system designed to improve customer service, control costs and streamline massive record-keeping operations is now being implemented. The system — called DIR/ECT (for DIRectory projECT) — was developed by Bell Laboratories, the research and development unit of the Bell System. Michigan Bell Telephone Company recently issued its first directory containing listings produced by the system. Michigan Bell also is using the system to produce some of its directory assistance records.

DIR/ECT is a more sophisticated outgrowth of its prototype, PHOTAC, a similar process developed by the New York Telephone Company under sponsorship of the nationwide Bell System. The first directory produced by the PHOTAC system was distributed in 1966. Since then, New York Telephone has converted some 4.5 million listings to the process. Currently the 12 major downstate White Pages directories are produced by PHOTAC.

The DIR/ECT system stores in a computer memory directory information such as the customer's name, address, telephone number — even telephone book delivery instructions. The information in the computer memory then is fed into a device called a photocomposer, which provides ready-to-print listings for White Pages. Besides the annual White Pages directories, DIR/ECT produces daily updates of new listings and monthly reprints for the telephone companies' directory assistance operators.

Although customers may see no obvious differences in the computer-produced directory, listings are easier to read and pages cleaner looking. The directories also have uniform abbreviations. The system has built-in cross-checks for consistent spelling of street names and for obvious errors in street and telephone numbers. There also is provision for massive directory listing changes, caused by renaming of streets and buildings.

Today, listings for phone directories are generally set line-by-line in metal type. Changes in listings must be reset and inserted by hand. With the new system, changes can be made quickly (because information is stored on magnetic computer tape and not metal type), the need to store tons of lead type will end, and the growing cost of publishing directories will be lessened.

EDUCATION NEWS

M.I.T. MUSIC PROJECT USES DEC COMPUTER

News Office
Massachusetts Institute of Technology
Cambridge, Mass. 02139

The Massachusetts Institute of Technology has begun work on a project aimed at making the Institute a major center for the study and composition of electronic music. Barry Vercoe, assistant professor of music, working with a computer given to the Department of Humanities' music section by Digital Equipment Corp. of Maynard, is in the early stages of developing a major electronic music production facility at the Institute.

Professor Vercoe said the computer facility "will be a tool both in the hands of the teacher and the composer that will greatly aid the development of creativity. The facility also will provide an excellent tool in the teaching of musical composition for conventional instruments.

"This is definitely not a scientific project. I'm not interested in merely getting a computer to sound exactly like a trumpet. The technological application, however, will interest some students who might not approach music otherwise and some of these will be drawn into its aesthetic considerations, through the back door as it were," Professor Vercoe said.

Why compose music for a machine at all?

"I suppose someone asked that very question when man first composed music for what are now traditional instruments, instead of for the human voice alone," Professor Vercoe said. "Electronic music merely expands the forces available to the practicing composer."

The PDP-11/45 computer — coupled with music input — also will lend itself to other forms of music research, such as syntactic analysis of music structures.

Professor Vercoe is the author of the widely used Music 360 language for digital sound synthesis. He has taught at M.I.T. for two years and is director of the Experimental Music Studio. His work, "Metamorphoses for Orchestra," was given its Boston premier early this year by the M.I.T. Symphony and was performed by the orchestra on its subsequent nation-

wide tour. Working with Professor Vercoe on the project are Richard J. Steiger, a graduate student, and Stephen Haflich, a recent M.I.T. graduate.

COMPOSING BY COMPUTER AT ISU

Information Service
Iowa State University of Science and Technology
Ames, Iowa 50010

Music composers at Iowa State University may turn from their piano keyboards and hand-written scores to a more efficient instrument for composing music — a computer. ISU faculty members are building a computerized electronic music studio — a system that will technologically simplify composing electronic music. The studio is being designed and built by an interdisciplinary group from Iowa State's music, computer science, and electrical engineering departments, under the direction of Stefan Silverston, assistant professor of computer science, Terry Smay, professor of electrical engineering, and Gary White, associate professor of music.

Electronic music is produced by purely electronic means and the Iowa State Computerized Music System (ISMUS) will be doing just that — generating music with computer equipment. A composer will sit at the computer and write a musical composition using an electronic keyboard.

The new system, which was expected to be operable this fall, should be an easier method of modifying and editing a musical piece. The normal hand operations of changing notations on a printed score or splicing tapes of recorded music are "more time-consuming and inaccurate" processes for correcting a composition, according to Gary White.

The computer composing process begins when the composer inserts introductory instructions into a teletype machine. On an electronic keyboard he then begins to compose his piece. The computer records all musical instructions which are transformed through a digital-to-analog sound converter and loudspeaker into sound. This immediate feedback system enables the composer to hear what he is composing simultaneously. The computer also allows the composer to automatically play back and edit what he has written simply by striking another key.

The musician has now completed one "layer" of music. If he wants to add further musical instructions to the composition, he repeats the entire process again. All layers merge together to obtain the product — a completed electronic composition.

The music instructions which the composer inserts into the system are a special electronic music notation — a "computer language." The English words it uses can be compared to musical notation found on a conventional score — treble and bass clefs, notes, rests, and the like.

Electronic music has been used in commercial recordings, and as background music for television, radio and film. The Iowa State system will be sophisticated enough for use in serious compositional study, the production of background music for various media, and for the demonstration of sound properties.

The ISMUS presently being built is a protytype of a full-scale model. If the "test-system" proves satisfactory, "we will look for funding to build a full-scale model," says White. The project is presently supported by a $1,170 grant from Western Electric and a National Science Foundation institutional grant of $8,698. The prototype employs a mini-computer that is owned by Iowa State.

The studio will be used as a teaching tool for the ISU music program. Computer software, the programs (sequences of operations to be performed by the computer) written for the system, will be developed so a composer can use the studio equipment without having prior knowledge of computer programming. Students will be able to learn basic acoustical concepts and principles of electronic music synthesis and to develop sensitivity to timbre with the ISMUS. Also contributing to introductory computer science courses, the system will be a novel example of computer application in a non-scientific field.

STUDENT PROGRAMS COMPUTER FOR REMEDIAL INSTRUCTION

Edward J. Canty
Digital Equipment Corp.
Maynard, Mass. 01754

Using programs developed by a local high school student, School District 91 in Idaho Falls, has put its newly-acquired computer to work as a "super tutor" in remedial studies for disadvantaged children in this southeastern Idaho community. Designed to improve the arithmetic and language arts skills of children in grades 2 through 6, the project was introduced by director of curriculum Dr. Wallace Manning with federal Title 1 aid during the district's 1973 summer session for children largely from rural farm families. According to John A. Christensen, computer sciences coordinator, the project proved so successful in its initial application that it has been continued in the fall semester.

The student programmer is Robert Huntsman, 18, a June graduate of Idaho Falls' Skyline High School. Using the district's PDP-11/20 timesharing computer system installed last December by Digital Equipment Corporation, Huntsman developed programs for arithmetic and language drill to serve between 40 and 50 pupils on each of two teletypewriter terminals situated in local elementary schools.

In a typical arithmetic routine, the computer types a problem and waits for the pupil's response — ten seconds if the problem is a memory exercise, longer if it involves several columns for addition or several digits for multiplication. If the student's answer is correct, Huntsman's program directs the terminal to ring a bell in congratulation; if incorrect, the computer supplies a hint on where the mistake occurred and encourages him to try again.

Answers to English and social studies workbook questions have been entered in the computer memory, allowing students to do their homework at a terminal and receive immediate response. The computer keeps score of right and wrong answers to produce reports for teacher guidance. Spelling-recognition exercises are also in use and Huntsman has undertaken development of an arithmetic program involving fractions

"One of the computer's major advantages is its ability to pay attention to individual children," Christensen said. "Every child enrolled in the regular summer session was able to get experience at a terminal and benefit from these interactive programs." He said high school laboratory assistants will continue to write instructional programs for elementary and junior high levels, expanding the library begun by Huntsman. For future summer ses-

sions, he added, the district hopes to make such computer assistance available at a nearby rural elementary school attended by children of migrant farm workers.

RESEARCH FRONTIER

"TALKING" BALLPOINT PEN UNDER DEVELOPMENT

Ronald I. Deutsch
Stanford Research Institute
Menlo Park, Calif. 94025

A prototype model of a simple, inexpensive "talking" ballpoint pen, under development at Stanford Research Institute (SRI), could reduce massive paperwork and delay in routine business transactions. The pen is similar to an ordinary pen in size and shape except that it is wired to a computer system. The computer is programmed to receive signals generated instantaneously as a person hand-prints characters with the pen to record information.

"Such instantaneous and remote processing of data might be invaluable to large businesses engaged in daily consumer-oriented services, such as banks, insurance companies and utilities," says staff scientist Dr. Hewitt D. Crane, the inventor. For example, the pen could be used by a bank teller crediting a savings or checking account. In this case, according to Dr. Crane, the data would not have to be retranscribed from a piece of paper by another employee, or the paper itself put through expensive automatic reading equipment. Thus, costs and delays could be reduced in crediting accounts or establishing cash requirements.

In another case, a meter reader making his rounds for a utility could use the pen in combination with a cassette recorder. When he returned to his office, the cassette tape would be programmed into the system, thus eliminating the need for manual retranscription of a day's worth of data.

In the present laboratory version, the pen is hooked to an audio unit as well as a teleprinter, so that as a person writes, the characters appear on the teleprinter and are spoken by the audio unit.

SRI holds a patent on the pen and is currently seeking financial support for further development, Dr. Crane says. He estimates that the pen itself might cost about $25 to $50. A central computer unit would be extra but could serve many pens.

MISCELLANEOUS

ICCP NAMES DIRECTORS AND OFFICERS

Paul M. Pair, Secretary & Chairman
Institute for Certification of Computer Professionals
P.O. Box 1442
Chicago, Ill. 60690

At a meeting in late September, the incorporators of the Institute for Certification of Computer Professionals, Chicago, Ill., adopted bylaws for the newly-formed organization and named a board of directors which, in turn, held its first meeting and elected officers. The ICCP is the outgrowth of over two years of intensive preparation and study by representatives of major computing societies. Its primary focus is the enhancement of certification activities in the computing industry. It was incorporated August 13, 1973.

Elected as officers by the board of directors were:

President — John K. Swearingen, Computer Sciences Corp., Las Vegas, Nev., representing Data Processing Management Association (DPMA).

Vice President — Fred H. Harris, University of Chicago, Association for Computing Machinery.

Treasurer — William S. Eick, Alexander Grant & Co., Chicago, Association of Computer Programmers and Analysts.

Secretary — Paul M. Pair, Control Data Institute, Chicago, Association for Educational Data Systems.

Ten professional societies participated in the organization of ICCP and are eligible for charter membership. Of these, seven have exercised their right to such membership, and are entitled to two members on the ICCP board. The seven charter members are: Association of Computer Programmers and Analysts; Society of Certified Data Processors; Association for Computing Machinery; Association for Educational Data Systems; Society of Professional Data Processors; Data Processing Management Association; and Automation 1 Association.

The other three associations eligible for charter membership are: Canadian Information Processing Society, the Computer Society of the Institute of Electrical and Electronics Engineers and the Society of Data Educators. They are expected to act before the end of 1973.

(please turn to page 47)

NEW CONTRACTS

TO	FROM	FOR	AMOUNT
Sanders Associates, Inc., Nashua, N.H.	CAE Electronics, Montreal, Canada	Display system segment of Canadian Joint Enroute Terminal System (JETS) Program; first phase consists of seven Enroute and two Terminal Systems for air traffic control	18.6 million
ITT Creed Limited, Great Britain	British Post Office	6000 machines — teleprinters and associated equipment — to be used mainly for Telex customer-to-customer teleprinter system	$11 million
Univac Div., Sperry Rand Corp., Blue Bell, Pa.	Auto Tell Services, Inc., Villanova, Pa.	1100 Univac DCT-515 Data Communications Terminals to be used by automobile dealers who subscribe to ATS services on-line computerized services	$7 million
Computer Sciences Corp., El Segundo, Calif.	National Aeronautics and Space Administration (NASA)	Computer services support to Simulator Computer System Branch at Ames Research Center, Mountain View, Calif.	$6.7 million
Honeywell, Inc., Wellesley Hills, Mass.	State of Arizona, Phoenix, Ariz.	A Honeywell Multics (Multiplexed Information and Computing Service) system, for use by 13 state agencies	$5+ million
Computer Sciences Corp., El Segundo, Calif.	National Aeronautics and Space Administration (NASA)	Engineering and related services to NASA's Wallops Station, Wallops Island, Va.	$5 million (approximate)
Philco-Ford Corp. Willow Grove, Pa.	U.S. Army Electronics Command, Fort Monmouth, N.J.	Improving computerized communications network, identified as '73 AEP for AUTODIN Enhancement Program, at 10 overseas AUTODIN sites, Ft. Monmouth, N.J., and Fort Detrick, Md.	$4.6 million
Raytheon Data Systems, Norwood, Mass.	Eastern Air Lines, Miami, Fla.	Data display terminals and associated equipment as part of expansion of EAL's Automated Passenger Processing and Reservation System	$2+ million
National Cash Register Co., Dayton, Ohio	Publix Super Markets, Inc., Lakeland, Fla.	30 NCR 255 supermarket checkout systems involving a total of 357 NCR 255 terminals and 30 NCR 726 in-store minicomputers plus 120 NCR 250 free-standing electronic cash registers	$2 million (approximate)
Computer Sciences Corp., El Segundo, Calif.	National Aeronautics and Space Administration (NASA)	Analysis and programming services to Langley Research Center, Hampton, Va.	$1.2 million
Interdata, Inc., Oceanport, N.J.	DATRAN (Data Transmission Co.), Vienna, Va.	Dual processor Model 55 data communications concentrators, with software and technical support, for an information network DATRAN is designed and installing on a turnkey basis for International Brotherhood of Teamsters	$1+ million
McDonnell Douglas Automation Co. (MCAUTO), St. Louis, Mo.	Buffums' Southern California	Computer processing of all company data; includes accounts payable, receivables, sales analyses, payroll, inventory control and statistics	$725,000 (approximate)
Informatics Inc., Western Div., Canoga Park, Calif.	Illinois Bell Telephone Co., Chicago, Ill.	Design and applications programming support for a new payroll/personnel system	$500,000+
Logicon, Inc., Torrance, Calif.	U.S. Air Force	Verifying and validating (V&V) critical missile flight safety (MFS) software used on western test range of Space and Missile Test Center (SAMTEC), Vandenberg AFB, Calif.	$365,000
TRW Inc., Redondo Beach, Calif.	Los Angeles County Road Department (LACRD), Calif.	Designing Integrated Information Management (IIMS); 10 subsystems cover accounting; billing; budgets; management of contracts, and projects, inventory control, production and performance, and road inventory information	$365,000
Systems Engineering Laboratories, Inc., Ft. Lauderdale, Fla.	Singer Simulation Products, Div. of Singer Co.	Central control and simulation element of a Nuclear Plant Simulator for Carolina Power & Light Co., Raleigh, N.C.	$330,000
Boeing Commercial Airplane Co., Renton, Wash.	Manufacturing Technology Div., A.F. Materials Labs., Wright Patterson AFB, Ohio	Developing Air Force Computer Aided Manufacturing (AFCAM) master plan	$251,000
Atlantic Research Corp., Alexandria, Va.	Arkansas State Educational Television Commission	Engineering studies and detailed plans for four new ETC (Educational Television) stations, and an interconnecting microwave network	$37,000
Bunker Ramo Corp., Trumbull, Conn.	Reliance Federal Savings & Loan Asso. of New York, Jamaica, N.Y.	31 BR 2001 Universal Teller Terminals for equipping teller stations in all nine Reliance offices; terminals will be tied by highspeed communications circuits to a Univac 9480 computer	——
Collins Radio Co., Dallas, Texas	U.S. Air Force	Continuing development of systems and equipment for the U.S. Air Force Satellite Communication System (AFSATCOM); eventual production awards, depending upon Air Force requirements, could total more than $125 million	——
Diablo Systems, Inc., Subsidiary of Xerox Corp. Hayward, Calif.	Wang Laboratories, Tewksbury, Mass.	Series 40 disk drives to be incorporated into Wang's new line of mini computer systems	——
MRI Systems Corp., Austin, Texas	U.S. Dept. of Agriculture, Washington, D.C. and New Orleans, La.	Lease of SYSTEM 2000 for Farm management applications; at least nine SYSTEM 2000 data bases are planned for implementation this year	——

NEW INSTALLATIONS

OF	AT	FOR
Burroughs B 4700 system	Computer Management Group (CMG) Ltd., North-west London, England	The first of two B4700 systems (which are included in a five-system order) to be installed at CMG's North-west London, England center (entire 5 computer system order valued at $4.3 million)
	Walter E. Heller & Co., Chicago, Ill. (2 systems)	Providing internal processing speed to keep pace with continued growth of data processing operations; system will allow expansion without reprogramming or recompiling; replaces two Burroughs B3500 systems
Control Data CYBER 70 Model 74 system	Century Research Center Corp. (CRC), Tokyo, Japan	Increasing CRC's processing capabilities to include remote batch data processing services via high speed communication line control devices, and offer a wide range of services to various types of users; system will be connected to a previously installed CDC 6600 computer (system valued at $3 million)
Control Data CYBER 70 Model 76 system	Atmospheric Environment Service of Canada, Montreal, Canada	Upgrading weather forecasting facilities throughout the country; system installed at Canadian Meteorological Center in Montreal, Canada (system valued at $6.3 million)
Control Data 3150 system	Ingalls Iron Works Co., Birmingham, Ala.	Expanding automated design activities; system will operate in conjunction with a previously installed CDC 3150 to support CONSTRUCTS, an automated engineering design software package
IBM System/370 Model 155 system	Educational Information Services (EIS), Princeton University, Princeton, N.J.	Linking with university's IBM System/360 Model 91 to significantly expand a variety of data processing services
IBM System/370 Model 168 system	Datacrown Limited, Willowdale, Ontario, Canada	The first of two systems that will more than double current batch processing capacity and increase its capability to provide for transaction-oriented terminals; replaces Model 165 currently in use (systems valued at $12 million)
Interdata Model 70 systems	U.S. Army Electronics Command, Fort Monmouth, N.J. (2 systems)	Use in experiments involving automated tactical surveillance and target acquisition
NCR Century 101 system	Radyne Limited, Great Britain	An advanced inventory management and control system (system valued at $6.3 million)
NCR Century 200 system	Green Shield Trading Stamp Company of Edgware, Colindale, England	Expansion of automated stock control system for its gift houses and new Argos chain of catalog showrooms
NCR Century 251 system	Columbia EDP Centers, Inc., Columbia, Mo.	General data processing services to a variety of customers including several banks
Univac 1106 system	British Gas Corp., Hinckley, England	Assistance in controlling National Grid pipeline by performing forward simulations on a real-time, round-the-clock-basis; in addition, system will act as a service bureau to scientific and engineering departments within the Corporation
	University of Connecticut Medical Center, Farmington, Conn.	All aspects of Medical Center's work including patient admissions, monitoring patient care, scheduling outpatient appointments, support of library information and research statistical programs, and general accounting and payroll processing chores (system valued at $1.3 million)
Univac 1110 system	Pacific International Computing Corp., Gaithersburg, Md.	The first of two systems whose primary applications include project management, engineering and business data processing; the system will also include time-sharing capability as well as remote job entry from terminals in the field
Univac 9480 system	Reliance Federal Savings & Loan Asso. of New York, Jamaica, N.Y.	Faster customer service at any bank branch

Across the Editor's Desk — *Continued from page 45*

IFIP CONGRESS '74 TRAVEL GRANTS

P. E. Welch
U.S. Committee for IFIP Congress '74
Box 426
New Canaan, Conn. 06840

The National Science Foundation will support a travel grant program for attendance at IFIP Congress 74 to be held August 5-10, 1974, in Stockholm. The triennial IFIP (International Federation for Information Processing) Congresses have become the major international media for exchange of information among developers and users of information processing techniques and technology.

The Division of Mathematical Sciences of the National Research Council will administer the program and award grants to qualified people from the United States whose accomplishments in and potential contributions to the field of information processing are most noteworthy, regardless of the formal labels for their specialties.

Younger members of the information science community are urged to apply. William F. Atchison of the University of Maryland, Financial Support Chairman of the U.S. Committee for IFIP, said that special efforts will be made to support their attendance.

Applications may be obtained through the Math Division, National Research Council, Washington, D.C. 20418. Applications must be received on or before December 31, 1973.

MONTHLY COMPUTER CENSUS

Neil Macdonald
Survey Editor
COMPUTERS AND AUTOMATION

The following is a summary made by COMPUTERS AND AUTOMATION of reports and estimates of the number of general purpose digital computers manufactured and installed, or to be manufactured and on order. These figures are mailed to individual computer manufacturers quarterly for their information and review, and for any updating or comments they may care to provide. Please note the variation in dates and reliability of the information. A few manufacturers refuse to give out, confirm, or comment on any figures.

Part 1 of the Monthly Computer Census contains reports for United States manufacturers, A to H, and is published in January, April, July, and October. Part 2 contains reports for United States manufacturers, I to Z, and is published in February, May, August, and November. Part 3 contains reports for manufacturers outside of the United States and is published in March, June, September, and December.

Our census seeks to include all digital computers manufactured anywhere. We invite all manufacturers located anywhere to submit infor- that would help make these figures as accurate and complete as possible.

The following abbreviations apply:

(A) -- authoritative figures, derived essentially from information sent by the manufacturer directly to COMPUTERS AND AUTOMATION
C -- figure is combined in a total
(D) -- acknowledgment is given to DP Focus, Marlboro, Mass., for their help in estimating many of these figures
E -- figure estimated by COMPUTERS AND AUTOMATION
(N) -- manufacturer refuses to give any figures on number of installations or of orders, and refuses to comment in any way on those numbers stated here
(R) -- figures derived all or in part from information released indirectly by the manufacturer, or from reports by other sources likely to be informed
(S) -- sale only, and sale (not rental) price is stated
X -- no longer in production
\- -- information not obtained at press time and/or not released by manufacturer

SUMMARY AS OF OCTOBER 15, 1973

NAME OF MANUFACTURER	NAME OF COMPUTER	DATE OF FIRST INSTALLATION	AVERAGE OR RANGE OF MONTHLY RENTAL $(000)	NUMBER OF INSTALLATIONS In U.S.A.	Outside U.S.A.	In World	NUMBER OF UNFILLED ORDERS
Part 2. United States Manufacturers I-Z							
IBM	305	12/57	3.6	40	15	55	-
White Plains, N.Y.	650	10/67	4.8	50	18	68	-
(N) (D) (Oct. 1973)	1130	2/66	1.5	2580	1227	3807	-
	1401	9/60	5.4	2210	1836	4046	-
	1401-G	5/64	2.3	420	450	870	-
	1401-H	6/67	1.3	180	140	320	-
	1410	11/61	17.0	156	116	272	-
	1440	4/63	4.1	1690	1174	2864	-
	1460	10/63	10.0	194	63	257	-
	1620 I, II	9/60	4.1	285	186	471	-
	1800	1/66	5.1	416	148	564	-
	7010	10/63	26.0	67	17	84	-
	7030	5/61	160.0	4	1	5	-
	704	12/55	32.0	12	1	13	-
	7040	6/63	25.0	35	27	62	-
	7044	6/63	36.5	28	13	41	-
	705	11/55	38.0	18	3	21	-
	7020, 2	3/60	27.0	10	3	13	-
	7074	3/60	35.0	44	26	70	-
	7080	8/61	60.0	13	2	15	-
	7090	11/59	63.5	4	2	6	-
	7094-I	9/62	75.0	10	4	14	-
	7094-II	4/64	83.0	6	4	10	-
	System/3 Model 6	3/71	1.0	8	-	-	-
	System/3 Model 10	1/70	1.1	5	-	-	-
	System/3 Model 15	-	-	-	-	-	-
	System/7	11/71	0.35 and up	15	-	-	-
	360/20	12/65	2.7	7161	6075	13236	1780
	360/25	1/68	5.1	1112	759	1871	1287
	360/30	5/65	10.3	5487	2535	8022	-
	360/40	4/65	19.3	2454	1524	3978	1363
	360/44	7/66	11.8	109	57	166	39
	360/50	8/65	29.1	1135	445	1580	662
	360/65	11/65	57.2	604	144	748	562
	360/67	10/65	133.8	65	6	71	99
	360/75	2/66	66.9	50	17	67	12
	360/85	12/69	150.3	11	1	12	55
	360/90	11/67	-	5	-	-	-
	360/91	-	-	1	-	-	-
	360/190	-	-	13	2	15	-
	360/195	4/71	232.0	-	-	9	48
	370/115	-	-	-	-	-	-
	370/125	4/73	8.2-13.8	1	-	-	-
	370/135	5/72	14.4	13	-	-	-
	370/145	9/71	23.3	2	-	-	-
	370/155	2/71	48.0	2	-	-	-
	370/158	-/73	49.5-85.0	1	-	-	-
	370/165	5/71	98.7	3	-	-	-
	370/168	-/73	93.0-170.0	1	3	-	-
	370/195	6/73	190.0-270.0	-	-	-	-
Interdata	Model 1	12/70	3.7	244	75	319	-
Oceanport, N.J.	Model 3	5/67	13.1	-	-	200	X
(A) (Oct. 1973)	Model 4	8/68	8.5	274	115	389	32
	Model 5	11/70	X	70	20	90	X
	Model 7/16	-/74	-	-	-	-	-
	Model 7/32	-/74	-	-	-	-	-
	Model 15	1/69	20.0	40	24	64	X
	Model 16	5/71	X	1	6	7	X
	Model 18	6/71	X	2	7	9	X
	Model 50/55	5/72	-	75	10	85	115
	Model 70	10/71	-	466	116	582	107
	Model 74	2/73	-	41	8	49	126
	Model 80	10/72	-	15	3	18	20
	Model 85	6/73	-	1	-	-	-

NAME OF MANUFACTURER	NAME OF COMPUTER	DATE OF FIRST INSTALLATION	AVERAGE OR RANGE OF MONTHLY RENTAL $(000)	NUMBER OF INSTALLATIONS In U.S.A.	Outside U.S.A.	In World	NUMBER OF UNFILLED ORDERS
Microdata Corp.	Micro 400/10	12/70	0.1-0.5	139	0	139	-
Irvine, Calif.	Micro 800	12/68	0.2-3.0	2927	810	3737	-
(A) (Sept. 1973)	Micro 1600	12/71	0.2-3.0	914	95	1009	-
NCR	304	1/60	X	5	2	7	X
Dayton, Ohio	310	5/61	X	8	0	8	X
(N) (R) (Oct. 1973)	315	5/62	7.0	255	200	455	-
	315 RMC	9/65	9.0	55	35	90	-
	390	5/61	0.7	160	325	485	-
	500	10/65	1.0	1100	1750	2850	-
	251	-	-	1	-	-	-
	Century 50	2/71	1.6	580	0	580	-
	Century 100	9/68	2.6	1175	783	1958	-
	Century 101	12/72	3.7	50	1	51	-
	Century 200	6/69	7.0	575	335	910	-
	Century 300	2/72	21.0	5	5	10	-
Philco	1000	6/63	X	16	-	-	X
Willow Grove, Pa.	200-210,211	10/58	X	16	-	-	X
(N) (Jan. 1969)	2000-212	1/63	X	12	-	-	X
Raytheon Data Systems Co.	250	12/60	X	115	20	135	X
Norwood, Mass.	440	3/64	X	20	-	-	X
(A) (July 1973)	520	10/65	X	26	1	27	X
	703	10/67	12.5 (S)	179	33	212	0
	704	3/70	7.2 (S)	300	100	400	40
	706	5/69	19.0 (S)	75	17	92	1
Standard Computer Corp.	IC 4000	12/68	9.0	9	0	9	2
Los Angeles, Calif.	IC 6000-6000/E	5/67	16.0	3	0	3	-
(A) (June 1972)	IC 7000	8/70	17.0	4	0	4	1
	IC-9000	5/71	400.0 (S)	1	0	1	-
Systems Engineering Laboratories	SYSTEMS 810A/810B	6-66/9-68	1.8/2.6	382	30	412	-
Ft. Lauderdale, Fla.	SYSTEMS 71/72	8-72/9-71	0.9/1.0	19	5	24	-
(A) (Sept. 1973)	SYSTEMS 85/86	7-72/6-70	6.0/10.0	47	3	50	-
Texas Instruments Inc.	960	6/70	X	-	-	-	X
Houston, Tex.	960A	11/71	0.2-2.7	-	-	-	-
(A) (June 1973)	980	5/68	X	-	-	-	X
	980A	8/72	0.3-2.7	-	-	-	-
UNIVAC Div. of Sperry Rand	9200	6/67	1.5	1360	616	1976	-
Blue Bell, Pa.	9300/9380	9/67	3.4	795	675	1470	-
(A) (Aug. 1973)	9400/9480	5/69	7.0	212	228	440	-
	9700	-	-	3	11	14	-
	418 III	6/63	11.0	40	77	117	-
	494	-	-	62	46	108	-
	1106	-	-	61	143	204	-
	1108	9/65	68.0	163	92	255	-
	1110	-	-	11	17	28	-
	I & II	3/51 & 11/57	X	23	-	-	X
	File Computers	8/56	X	13	-	-	X
	LARC	5/60	135.0	2	0	2	-
	1107, UIII, 490/1/2, 418II, 1004/5, 1050, SS80/90	-	X	2063	1442	3505	X
UNIVAC - Series 70	301	2/61	7.0	143	-	-	-
Blue Bell, Pa.	501	6/59	14.0-18.0	17	-	-	-
(A) (Feb. 1973)	601	11/62	14.0-35.0	0	-	-	-
	3301	7/64	17.0-35.0	74	-	-	-
	Spectra 70/15, 25	9/65	4.3	18	-	-	-
	Spectra 70/35	1/67	9.2	95	-	-	-
	Spectra 70/45	11/65	22.5	265	-	-	-
	Spectra 70/46	11/68	33.5	30	-	-	-
	Spectra 70/55	11/66	34.0	10	-	-	-
	Spectra 70/60	11/70	32.0	18	-	-	-
	Spectra 70/61	4/70	42.0	7	-	-	-
	70/2	5/71	16.0	63	-	-	-
	70/3	9/71	25.0	7	-	-	-
	70/6	9/71	25.0	24	-	-	-
	70/7	12/71	35.0	7	-	-	-
	EMR 6020	4/65	5.4	15	1	16	0
	EMR 6040	7/65	6.6	6	0	6	0
	EMR 6050	2/66	9.0	15	2	17	0
	EMR 6070	10/66	15.0	7	8	15	0
	EMR 6130	8/67	5.0	34	13	47	0
	EMR 6135	-	2.6	36	5	41	4
	EMR 6145	-	7.2	-	-	-	8
	EMR 6140	-	-	-	-	-	0
Varian Data Machines	620	11/65	X	-	-	75	X
Newport Beach, Calif.	620i	6/67	X	-	-	1300	X
(A) (Mar. 1973)	R-620i	4/69	-	-	-	80	-
	520/DC, 520i	12/69;10/68	-	-	-	500	150
	620/f	11/70	X	-	-	207	X
	620/L, 620/L-00C	4/71;9/72	-	-	-	740	101
	620/f-100	6/72	-	-	-	100	43
	620/L-100	5/72	-	-	-	200	235
	Varian 73	11/72	-	-	-	40	39
Xerox Data Systems	XDS-92	4/65	1.5	43	4	47	-
El Segundo, Calif.	XDS-910	8/62	2.0	170	10	180	-
(N) (R) (Oct. 1973)	XDS-920	9/62	2.9	120	12	132	-
	XDS-930	6/64	3.4	159	14	173	-
	XDS-940	4/66	14.0	33	3	36	-
	XDS-9300	11/64	8.5	25-30	4	29-34	-
	XDS-530	8/73	7.6	-	-	-	-
	Sigma 2	12/66	1.8	163	36	199	-
	Sigma 3	12/69	2.0	21	1	22	-
	Sigma 5	8/67	6.0	32	14	46	-
	Sigma 6	6/70	12.0	3	-	-	-
	Sigma 7	12/66	12.0	31	7	38	-
	Sigma 8	2/72	-	5	-	-	-
	Sigma 9	-	35.0	7	-	-	-

CALENDAR OF COMING EVENTS

Nov. 28-30, 1973: 1st Annual Systems Engineering Conference, Statler-Hilton Hotel, New York, N.Y. / contact: Technical Services, AIIE, 25 Technology Park/Atlanta, Norcross, GA 30071

Dec. 4-5, 1973: 1973 Vehicular Technology Conference, Sheraton-Cleveland, Cleveland, Ohio / contact: Robert Wylie, Motorola Communications, Inc., 12955 Snow Rd., Cleveland, OH 44130

Dec. 6-8, 1973: National Symposium on Computer Applications in the Juvenile Justice System, Marriott Motor Hotel, Atlanta, Ga. / contact: Lawrence A. Boxerman, Project Dir., National Council of Juvenile Court Judges, Univ. of Nevada, Box 8000, Reno, NV 89507

Dec. 9-11, 1973: Computer Architecture, Flagler Inn & Reitz Union, Gainesville, Fla. / contact: G. Jack Lipovski, 229 Larsen Hall, Univ. of Florida, Gainesville, FL 32601

Jan. 16-18, 1974: 3rd Annual AIIE-MHI Seminar, Marriott Motor Hotel, Philadelphia, Pa. / contact: Technical Services, AIIE, 25 Technology Park/Atlanta, Norcross, GA 30071

Jan. 16-19, 1974: Internepcon/Japan '74, Harumi Convention Center, Tokyo, Japan / contact: Industrial & Scientific Conf. Mgmt., Inc., 222 W. Adams St., Chicago, IL 60606

Feb. 12-14, 1974: Computer Science Conference, Detroit Hilton, Detroit, Mich. / contact: Seymour J. Wolfson, Computer Science Section, Wayne State Univ., Detroit, MI 48202

Feb. 13-15, 1974: International Solid State Circuits Conference, Univ. of Penna., Marriott Hotel, Philadelphia, Pa. / contact: Virgil Johannes, Bell Labs., Room 3E331, Holmdel, NJ 07733

Feb. 19-22, 1974: 3rd Annual National Communications Week Convention, Chase-Park Plaza Hotel, St. Louis, Mo. / contact: David C. Brotemarkle, Communications Systems Management Assoc., 1102 West St., Suite 1003, Wilmington, DE 19801

Feb. 26-28, 1974: Computer Conference (COMPCON), Jack Tar Hotel, San Francisco, Calif. / contact: Jack Kuehler, IBM Corp., P 35, Bldg. 025, Monterey & Cottle Rds., San Jose, CA 95114

Mar. 25-29, 1974: IEEE International Convention (INTERCON), Coliseum & Statler Hilton Hotel, New York, N.Y. / contact: J. H. Schumacher, IEEE, 345 E. 47th St., New York, NY 10017

April 3, 1974: Minicomputers — Trends and Applications, Nat'l Bureau of Standards, Gaithersburg, Md. / contact: Harry Hayman, 738 Whitaker Ter., Silver Spring, MD 20901

April 8-11, 1974: Computer Aided Design, Int'l Conference & Exhibition, Univ. of Southampton, Southampton, England / contact: Inst. of Civil Engrs., Great George St., Westminster, London SW1, England

April 9-11, 1974: Optical Computing Symposium, Zurich, Switzerland / contact: Samuel Horvitz, Box 274, Waterford, CT 06385

April 21-24, 1974: International Circuits & Systems Symposium, Sir Francis Drake Hotel, San Francisco, Calif. / contact: L. O. Chua, Dept. of EE, Univ. of Calif., Berkeley, CA 94720

April 21-24, 1974: 1974 Annual Assoc. for Systems Management Conf., Dallas Convention Center, Dallas, Tex. / contact: R. B. McCaffrey, ASM, 24587 Bagley Rd., Cleveland, OH 44138

May 5-8, 1974: Offshore Technology Conference, Astrohall, Houston, Tex. / contact: Offshore Tech. Conf., 6200 N. Central Expressway, Dallas, TX 75206

May 6-10, 1974: 1974 National Computer Conference & Exposition, McCormick Place, Chicago, Ill. / contact: Dr. Stephen S. Yau, Computer Sciences Dept., Northwestern University, Evanston, IL 60201

May 13-17, 1974: European Computing Congress (EUROCOMP), Brunel Univ., Uxbridge, Middlesex, England / contact: Online, Brunel Univ., Uxbridge, Middlesex, England

May 13-17, 1974: International Instruments, Electronic and Automation Exhibition, Olympia, London, England / contact: Industrial Exhibitions Ltd., Commonwealth House, New Oxford St., London, WC1A 1PB, England

June 24-26, 1974: Design Automation Workshop, Brown Palace Hotel, Denver, Colo. / contact: ACM, 1133 Ave. of the Americas, New York, NY 10036

June 25-28, 1974: 1974 Annual International Conference & Business Exposition, Minneapolis, Minn. / contact: Data Processing Management Assoc., 505 Busse Highway, Park Ridge, IL 60068

July 15-19, 1974: 1974 Conference on Frontiers in Education, City University, London, England / contact: Conf. Dept., Institution of Electrical Engineers, Savoy Place, London, England WC2R 0BL

July 23-26, 1974: Circuit Theory & Design, IEE, London, England / contact: IEE, Savoy Pl., London WC2R OBL, England

Aug. 5-10, 1974: IFIP Congress 74, St. Erik's Fairgrounds, Stockholm, Sweden / contact: U.S. Committee for IFIP Congress 74, Box 426, New Canaan, CT 06840

Aug. 5-10, 1974: Medinfo 74, St. Erik's Fairgrounds, Stockholm, Sweden / contact: Frank E. Heart, Bolt Beranek and Newman, Inc., 50 Moulton St., Cambridge, MA 02138

Aug. 21-23, 1974: Engineering in the Ocean Environment International Conf., Nova Scotian Hotel, Halifax, Nova Scotia / contact: O. K. Gashus, EE Dept., Nova Scotia Tech. Coll., POB 100, Halifax, N.S., Canada

ADVERTISING INDEX

Following is the index of advertisements. Each item contains: product / name and address of the advertiser / name of the agency, if any / page number where the advertisement appears.

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The Information Revolution and the Bill of Rights, by Dr. Jerome B. Wiesner, M.I.T. (May 1971)
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