Inventing Managerial Information:

Systems Men and the Computer 1957-67

Tom Haigh – thaigh@sas.upenn.edu

My Topic:

- Managerial Information
  - Basically means “facts about business”
  - Closely associated with computer
  - Ubiquitous in business culture
- Not a meaningful category in past
- Look at its origins, in context of
  - Changing technology
  - Shifting professional identities

“Managerial Information”...

- ...did not exist before 1958.
- ...was invented by an alliance of “systems men”
  - Technocratic corporate administrators
  - Computer vendors
  - Management Consultants
  - Ambitious computer programmers
- ...staked a claim to technical authority over core areas of management itself.

A Big Story!

- Also to be found in
  - 2 ½ chapters in dissertation
  - Journal length paper
- Focus here is on
  - Origins
  - Framework
  - Pretty Pictures
- And now, back to 1955...

Managing in the Atomic Age

- Automation
- Operations Research
  - Mathematical modeling
  - Statistical Analysis
- Organizational theory
  - Self-conscious examination of organizational form

AUTOMATION- the new technology

Rather than replacing human labor, automation will make it possible to render new, more comprehensive and more economical services.

By John Diebold

Automatic control gives every evidence of becoming one of the most important factors influencing industrial development during the second half of the twentieth century. While the source of power may be affected by developments in the atomic energy field, it is automatic control that will in large part determine the manner in which power is used and consequently the form of our industrial plant.

The "second industrial revolution," as the application of automatic control has been called, lacks the unifying symbol that James Watt's steam engine provided for the first industrial revolution, when power-driven machinery replaced hand labor. No single machine, no one piece of equipment — not even the digital computer — adequately represents the nature of the industrial change being wrought by automatic control. Thus the many different forms in which this emerging technology shows itself have been the main objects of attention — with much resulting confusion.

It is of the greatest importance that American businessmen should not be the victims of this confusion; that instead they should cut through the varied and often apparently contradictory manifestations of this new development to the key concepts that make it what it is — and thus master the second industrial revolution as they did the first. Think of all the implications of such an achievement for the future of the United States economy!

Key Concepts

In particular, what are the key concepts which top executives should understand in order to make intelligent decisions involving automation in their plants? Experts' opinions would certainly vary, but it seems to me that the following should be included on any list:

(1) The common denominator underlying the widely different forms of the new technology is the concept of *feedback* control, or self-correction. It is the use of electronic controls employing feedback that gives rise to an entirely new technology: automation.

(2) Electronic controls for automation can be used for special as well as general purposes — for performing a time study as well as for automating a complete plant.

(3) Processes, machines, and products must be redesigned, often along completely new lines, to make most effective use of such controls; otherwise technical progress will be slow.

(4) Although the potential uses for automation are tremendously varied, there are significant limiting factors of a nontechnical nature — for instance, consumer desires.

(5) The probable impact upon the economy has been greatly exaggerated. There will be no worker-

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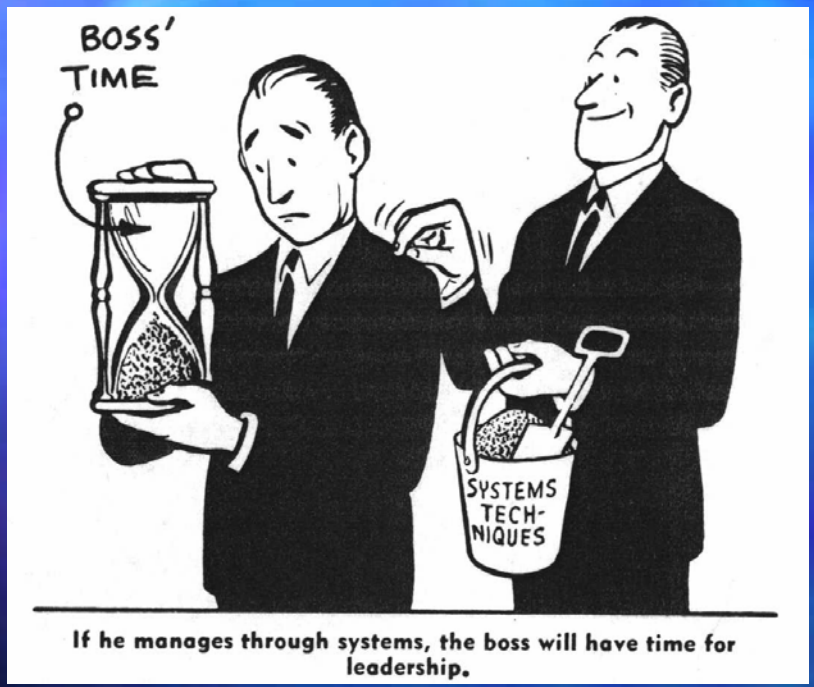
The “Systems Men”

- Systems and Procedures Association
  - Chartered 1947 (informally 1944)
  - Spread very rapidly in early 1950s
- Managerial Technicians
  - Distinguish from Office Management
  - Corporate
  - Staff role – advisory, not supervisory
  - Aspire to true managerial power

Who Were The Systems Men?

- World War II was genesis of movement
  - Administrative innovation for wartime production
  - Seek to apply rational, scientific, systems approach
- Thrive with shift to multidivisional organization
- Self-consciously modern group
  - Mostly originating in accounting departments
  - Apply new and exciting “systems engineering” ideas of Cold War to sleepy world of corporate administration
  - Mostly parallel but separate to industrial engineering.

Great dreams...

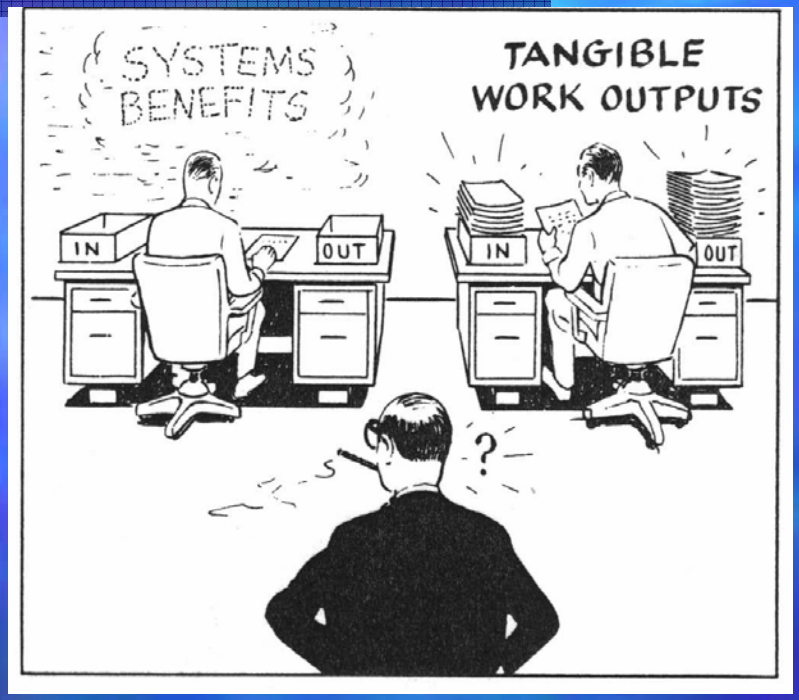


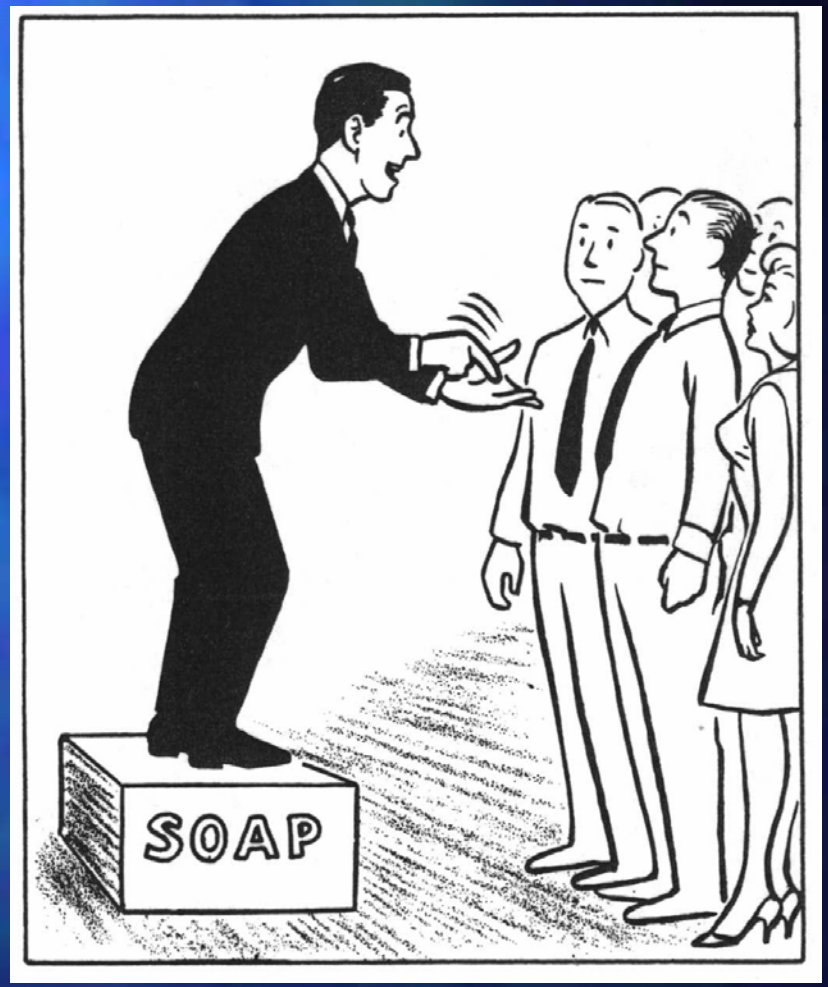
If he manages through systems, the boss will have time for leadership.

- Management Generalist
  - Technocratic mandate from top executive
  - Audit departmental effectiveness
  - Reorganize departmental structure to unlock efficiency, “re-engineering and replanning the entire system”

(1958 presidential address)

... but limited respect





- Write manuals
- Improve clerical procedures
- Design forms

Management Engineers

- Find a niche, but a constraining one.
- Boundaries between engineering and management set in Progressive era.
  - Authority of engineers clearly limited to “technical” sphere
- Systems men claim management itself as their technical sphere
  - Generalist case hard to make
  - Executives respect technologies, specialists more than managerial generalists

The Limits of Generalism

"he claims to be an expert in a subject which most other business people claim to be equally expert. What does the system man know that the office manager, or indeed, any other manager does not know?...

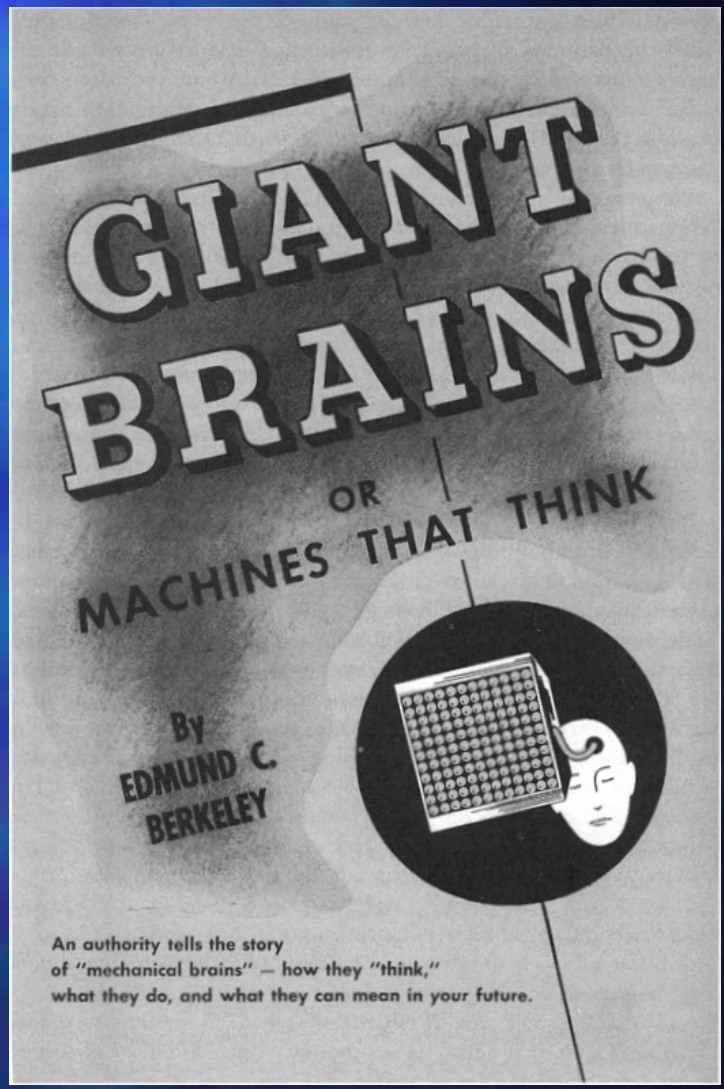
There are already growing up in the office field a number of other techniques which do not suffer from these disadvantages. There is the computer programmer who has learned a secret language. There is the operations research man who, as a mathematician, employs unassailable mathematical techniques…. Each has his esoteric techniques to sell.

But what has the systems man which is not the everyday currency of everyone else in business?”

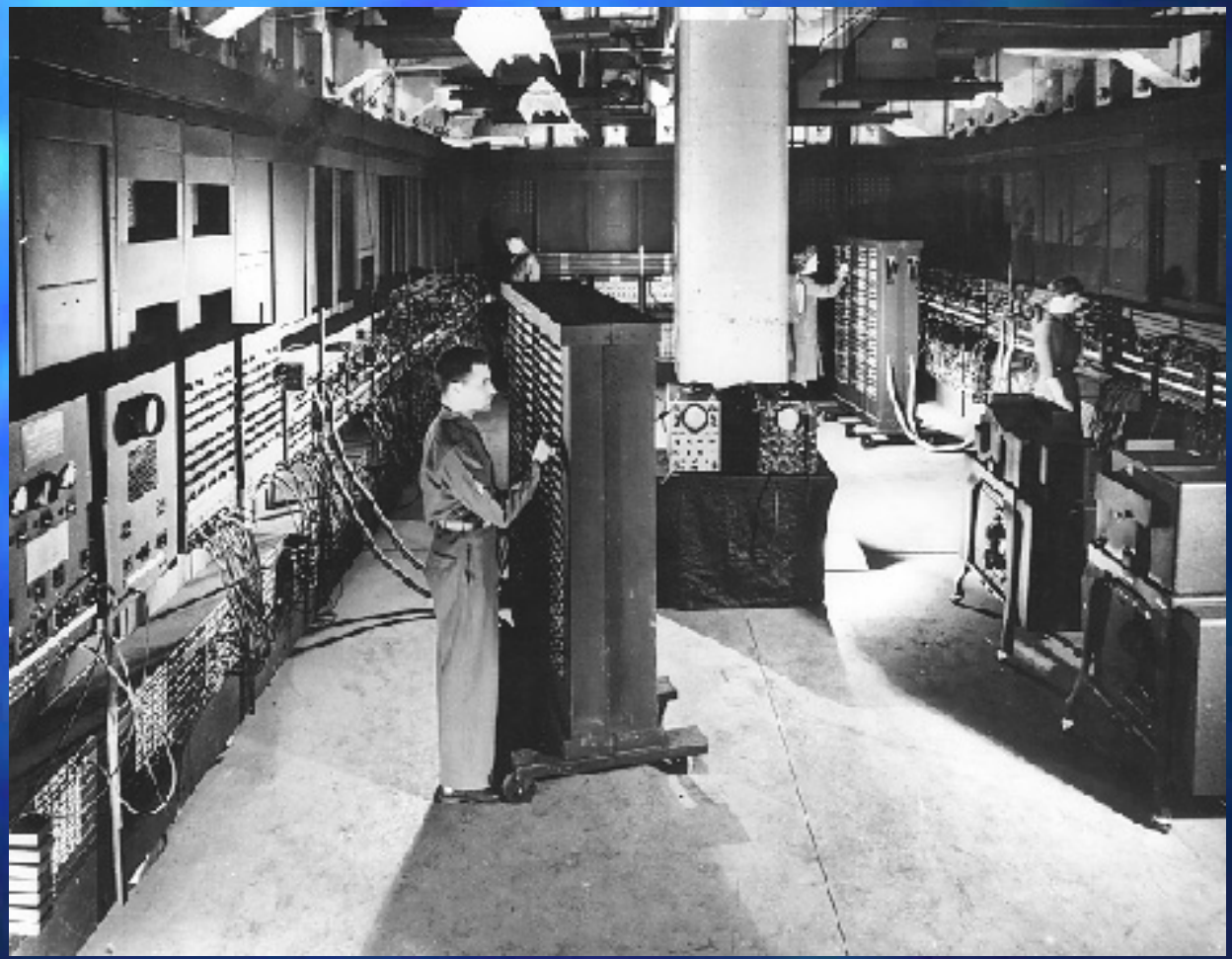
11th International Systems Meeting, 1959

Eyeing The Computer

- Prominent
- Well-funded
- Emblematic of modernity
  - The ultimate form of automation



ENIAC – The First Computer

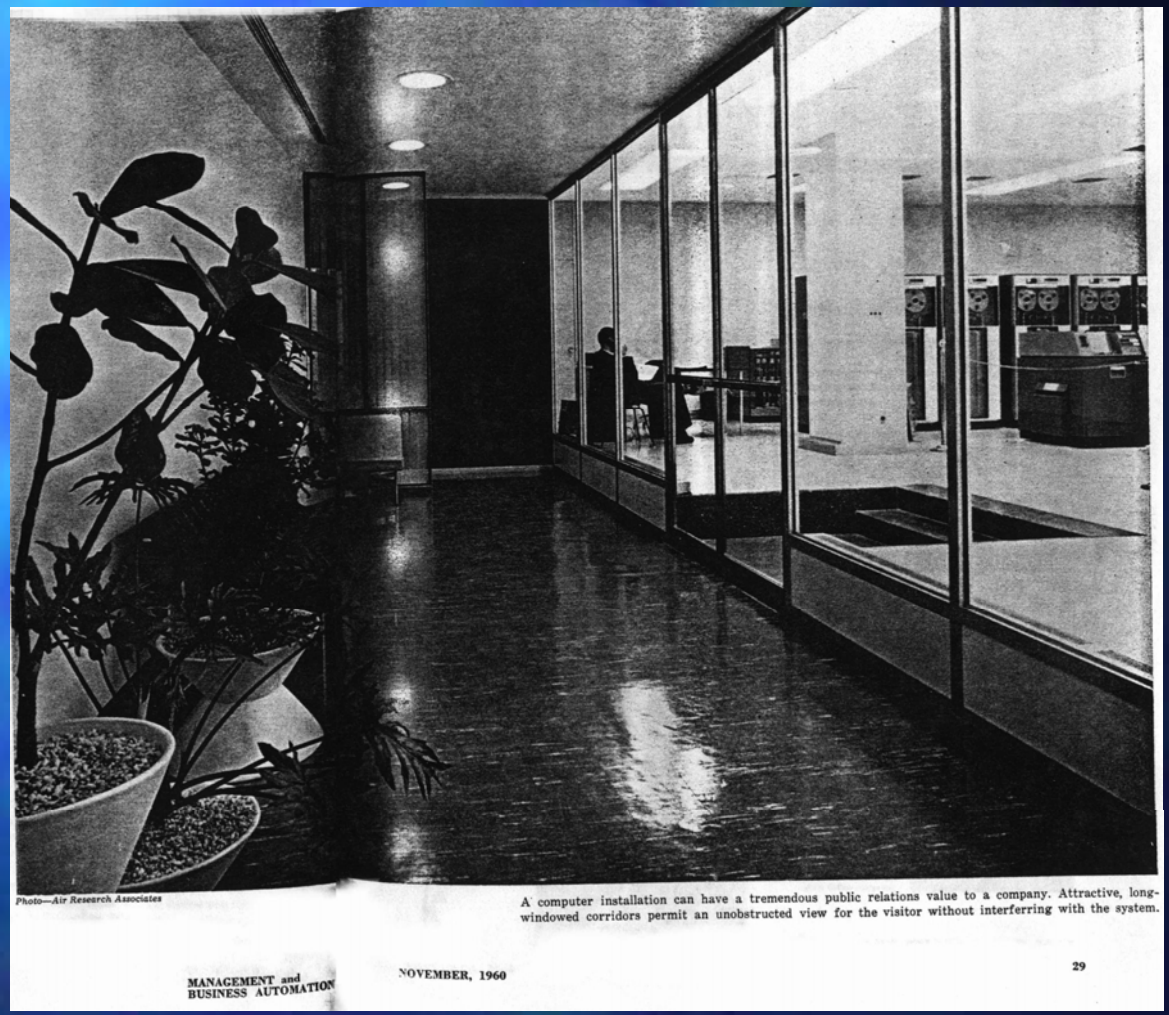


A Rapid Transition to Business

The Computer as Showpiece

"a computer installation can have tremendous public relations value for a company"

Management and Business Automation - 1960



Photo—Air Research Associates

A computer installation can have a tremendous public relations value to a company. Attractive, long-windowed corridors permit an unobstructed view for the visitor without interferring with the system.

MANAGEMENT and BUSINESS AUTOMATION NOVEMBER, 1960 29

Its work was quite mundane

- Payroll, accounting, invoicing
  - Taking over jobs from existing punched card machines
  - Slow evolution hardware of hardware, practice
- Intended to automate clerical work
  - Success means replacing clerks
  - Justified on basis of lower operating costs
- Guarded by…

The Machine Accountants

The first in a new series of articles on associations in the data processing industry is this profile of the DPMA.

Toward a New Profession

To its members, the Data Processing Management Assn. holds a promise of professional status in a vital new career field, not yet fully defined.

Comprised of data processing department managers from thousands of large and small installations across the nation, the DPMA originally was founded in 1951 as the National Machine Accountants Assn. Its chapters started as local meetings between those with a mutual interest in data processing, its techniques, its equipment and its advancement as a management science. Chapters now number 190, including thoses in Anchorage, Alaska; Honolulu, Hawaii; Baldrich,

spur our nation's schools to adopt a badly needed data processing curriculum at all levels of education.

Future projects include the publication of a manual showing "how to teach data processing instructors to teach," plus a course for corporate management on how to understand the functions of data processing and get the most out of them.

DPMA international conferences and trade shows are held each year during the month of June. The next such meeting will be held June 25-28 in Cobo Hall, Detroit. This, too, will be the occasion for the association's annual directors' meeting and election of officers.

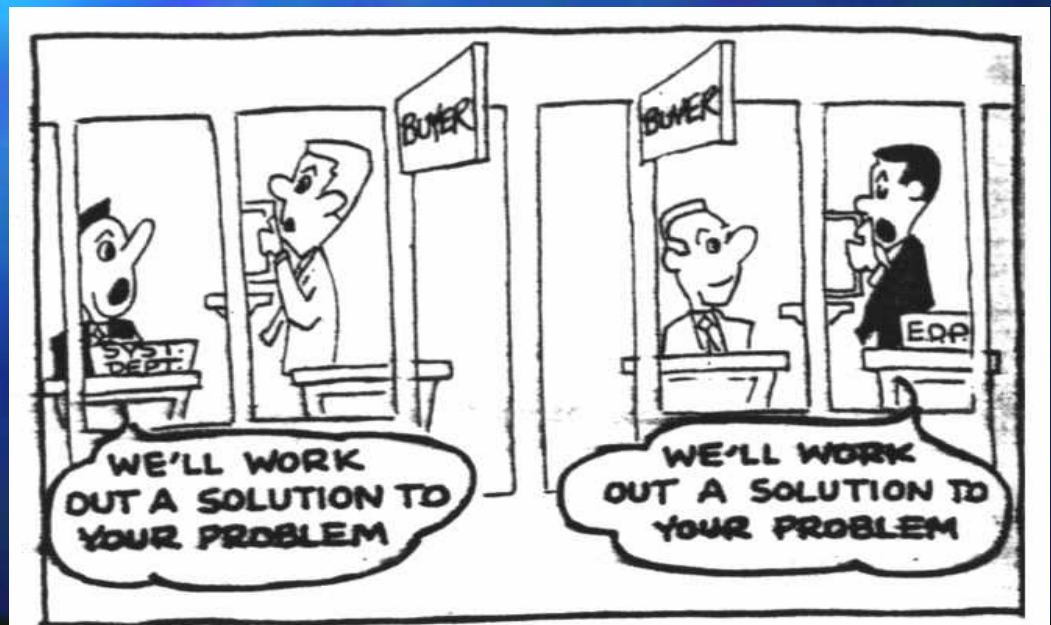
The DPMA Executive Committee includes (front row, left to right) Charles Prince, vice president; Robert Goliwas, vice president; Robert Gilmore, executive vice president; Elmer Judge, president; Billy Fields, vice president; Clyde DuVall, treasurer; John Drew, vice president—1963 Conference; (second row) Carroll Parry, vice president; Daniel Will, vice president; John Swearingen, vice president; R. Calvin Elliott, executive director, headquarters staff; Alfonso Pia, immediate past president; Marge Rafferty, office manager, headquarters staff; James Adams, education director, headquarters staff; Vic Lota—1964 Conference director.

- Not Really Accountants
  - Tabulating machine Technicians & Supervisors
- Shift to Data Processing
  - Program as well as operate machines

Systems vs. Data Processing

who does what
for whom?

- Systems and DP often different departments, mandates unclear
- DP grows very rapidly
- Both groups usually under the Controller – focus on accounting



Systems Men Look Down...

Is the analyst turning into an artisan making application of punched card and magnetic tape equipment?

Systems and Procedures Journal, 1960

but “Two Paths Diverge”

The individual systems man must take a position--he is betting his future on it. The time for decision is here

Systems and Procedures Journal, 1963

Having One's Cake & Eating It

- Embrace the computer
  - But redefine it!
- Centerpiece of a new kind of management system
  - Process **information**, not data
  - For **management decisions**, not payroll slips
  - Integrate **everything (yes, everything)**

Information in the 50s

- "Information Theory" – fashionable & novel during late 1940s, early 1950s

The authors of information theory

Norbert Wiener of M.I.T., ex-child prodigy and one of the world's foremost mathematicians, was the first to grasp clearly that communication of information is a problem in statistics.

Claude Shannon of Bell Laboratories, a thirty-seven-year-old engineer and mathematician, published his brilliant work, *A Mathematical Theory of Communication*, in 1948.

Information

- Debut of "Information" in business culture
  - Fortune, December 1953

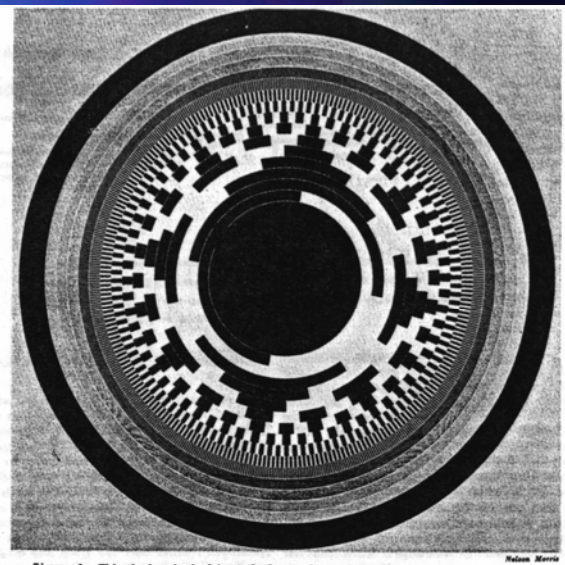


Figure 1. This checkered wheel is at the heart of experimental communication systems of high reliability being studied by the Army Signal Corps. As explained in this article, it converts information into a starkly simple code symbolic of communication's new era.

The Information Theory

by Francis Bello

Great scientific theories, like great symphonies and great novels, are among man's proudest—and rarest—creations. What sets the scientific theory apart from and, in a sense, above the other creations is that it may profoundly and rapidly alter man's view of his world.

In this century man's views, not to say his life, have already been deeply altered by such scientific insights as relativity theory and quantum theory. Within the last five years a new theory has appeared that seems to bear some of the same hallmarks of greatness. The new theory, still almost unknown to the general public, goes under either of two names: communication theory or information theory. Whether or not it will ultimately rank with the enduring great is a question now being resolved in a score of major laboratories here and abroad.

The central teachings of the theory are directed at electrical engineers. It gives them, for the first time, a comprehensive understanding of their trade. It tells them how to measure the commodity they are called upon to transmit—the commodity called "information"—and how to measure the efficiency of their machinery for transmitting it. Thus the theory applies directly to telegraph, telephone, radio, television, and radar systems; to electronic computers and to automatic controls for factories as well as for weapons.

It may be no exaggeration to say that man's progress in peace, and security in war, depend more on fruitful applications of information theory than on physical demonstrations, either in bombs or in power plants, that Einstein's famous equation works. As might be expected, military applications are coming first. For example: The recently disclosed "Distant Early Warning Line" of automatic radar stations, stretching from Alaska to Greenland, almost certainly incorporates more of the lessons of information theory than any other communication system yet devised. The warning line was designed by the two organizations that should know more about the theory than anyone else: Massachusetts Institute of Technology (working through its Lincoln Laboratory) and Bell Telephone Laboratories.

The Idea of Information

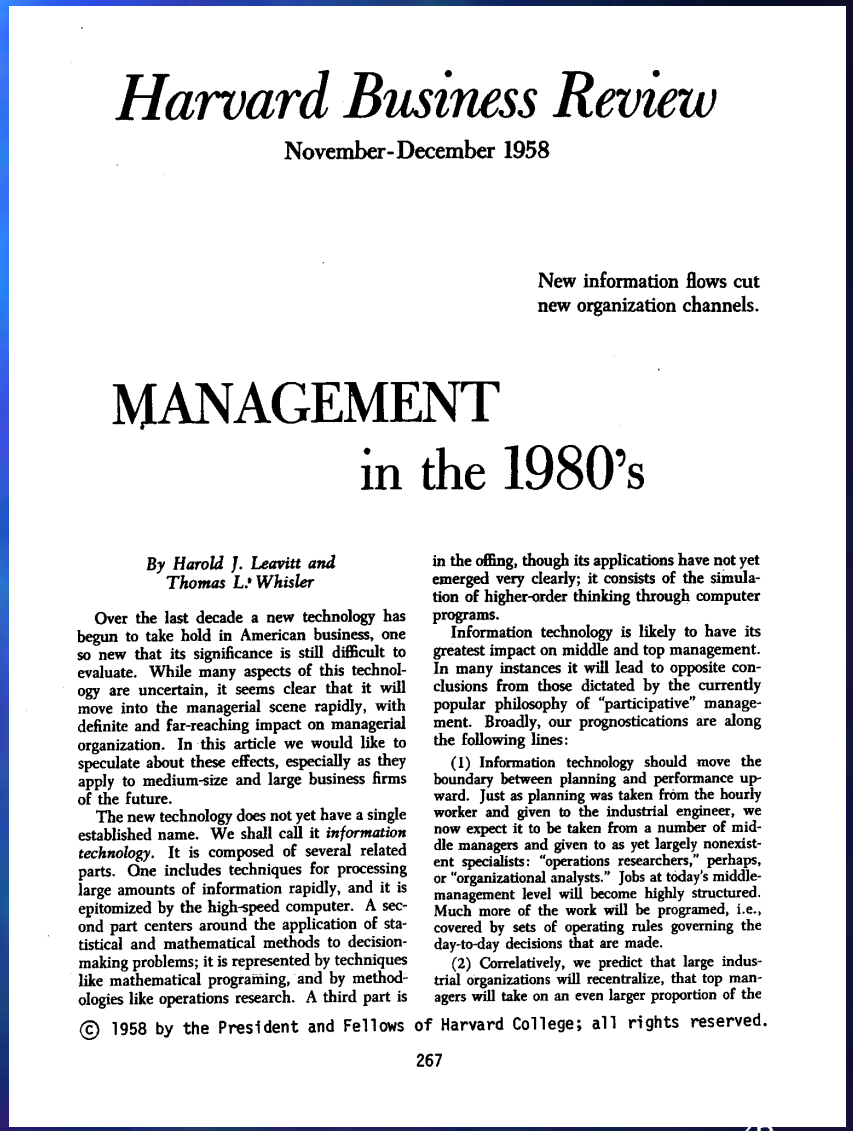
- 19th century – more likely to be an verb
- Early 20th century – process of one human informing another of something
  - "Information Officer"
- With information theory becomes a measurable quantity
  - Original formulation involves transmitter informing receiver of something

Information Science

- "Information" has scientific connotations
  - Used mostly for technical results
  - Information becomes a noun
- Phrase adopted by technical librarians
  - Seeking to rise above low status niche
  - Tied to Cold War– "Information Explosion"
- But also linked with computers
  - Technical origins of theory relate to storage, transmission of symbols down a wire.

Information Technology

- 1958 – Harvard Business Review – "Management in the 1980s".
  - First use of phrase "Information Technology" for computers.
  - Extremely influential
- Business school professors and computers as new managerial elite



Harvard Business Review

November-December 1958

New information flows cut new organization channels.

MANAGEMENT in the 1980's

By Harold J. Leavitt and Thomas L. Whisler

Over the last decade a new technology has begun to take hold in American business, one so new that its significance is still difficult to evaluate. While many aspects of this technology are uncertain, it seems clear that it will move into the managerial scene rapidly, with definite and far-reaching impact on managerial organization. In this article we would like to speculate about these effects, especially as they apply to medium-size and large business firms of the future.

The new technology does not yet have a single established name. We shall call it *information technology*. It is composed of several related parts. One includes techniques for processing large amounts of information rapidly, and it is epitomized by the high-speed computer. A second part centers around the application of statistical and mathematical methods to decision-making problems; it is represented by techniques like mathematical programing, and by methodologies like operations research. A third part is in the offing, though its applications have not yet emerged very clearly; it consists of the simulation of higher-order thinking through computer programs.

Information technology is likely to have its greatest impact on middle and top management. In many instances it will lead to opposite conclusions from those dictated by the currently popular philosophy of "participative" management. Broadly, our prognostications are along the following lines:

(1) Information technology should move the boundary between planning and performance upward. Just as planning was taken from the hourly worker and given to the industrial engineer, we now expect it to be taken from a number of middle managers and given to as yet largely nonexistent specialists: "operations researchers," perhaps, or "organizational analysts." Jobs at today's middle-management level will become highly structured. Much more of the work will be programed, i.e., covered by sets of operating rules governing the day-to-day decisions that are made.

(2) Correlatively, we predict that large industrial organizations will recentralize, that top managers will take on an even larger proportion of the

Information, not Data Processing

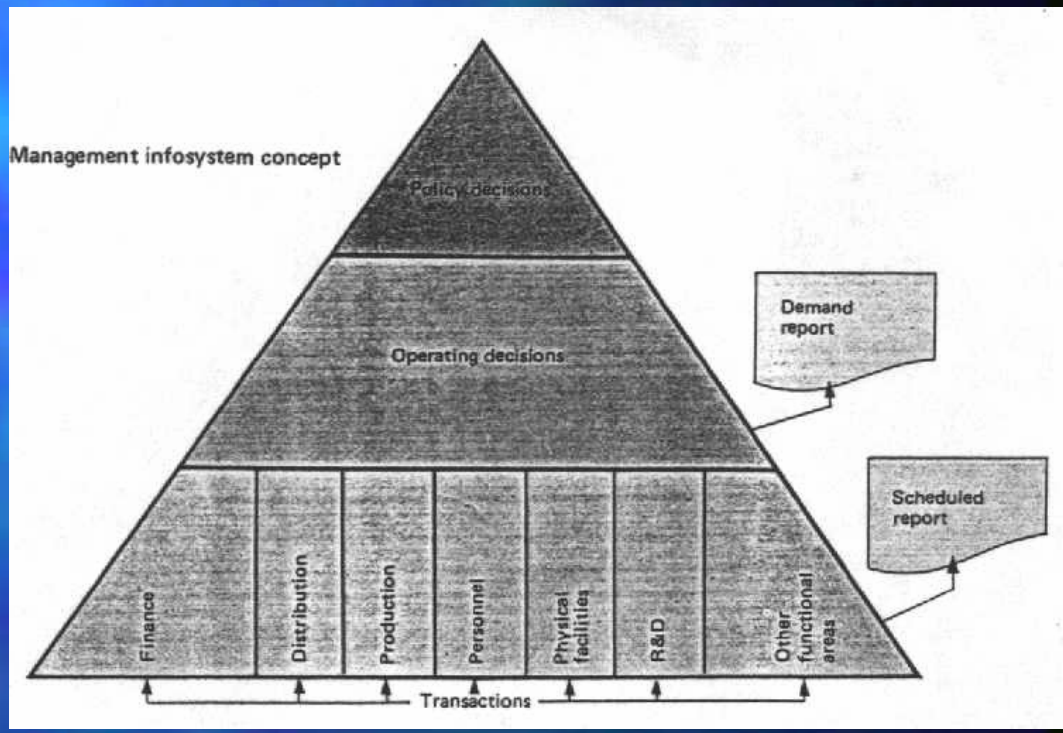
- Even successful data processing squanders potential of computer
- Don’t automate clerks, automate managers!
  - Bigger savings because bigger activity
  - High status, closer to power
  - Results can’t be measured because apply to whole company

Management Information Systems

- Coined in 1959 by American Management Association group
  - "The Continuing Seminar on Management Information Systems"
  - Elites of the "systems", management consulting and computer vending communities
- "Totally Integrated Management Information System"
  - All information, instantly, all managers, whole firm
  - System include models, forecasts, projections
  - Used directly by top executives

The Information Pyramid

- "Information" turns control of low-level administration into a claim to strategic centrality in a new vision of management
- The whole pyramid must be tackled together!

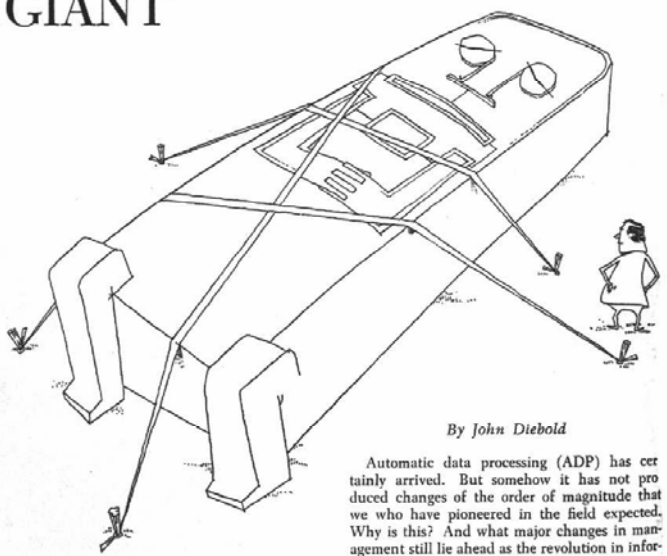


From Elites To Masses

- From academic and business elites
- Transition very rapid to rank and file
  - By 1961, MIS and “Total Systems” are ubiquitous part of discourse
- Appeal to diverse technical and managerial communities
  - Becomes a unifying belief between disparate interest groups
  - Promises something for everyone

MIS Will Realize Potential of computer...

ADP – THE STILL-SLEEPING GIANT



By John Diebold

Automatic data processing (ADP) has certainly arrived. But somehow it has not produced changes of the order of magnitude that we who have pioneered in the field expected. Why is this? And what major changes in management still lie ahead as the revolution in information technology gathers momentum?

Speedy and Spotty

Let's take a quick look at the record since ENIAC and Mark I made their appearance 19 years ago. In that brief period five distinct phases may be discerned:

(1) First, there was the coldness of potential users in the early 1950's. Typical of this period is the controller who quoted me Pope's "Be not the first by whom the new is tried, nor yet the last to lay the old aside." Everyone was from Missouri and had to be shown.

(2) Next came the status "kick" of 1956–1957 when corporate presidents decided they had to keep up with the Joneses. Four-color photos of walnut paneled, deep-carpeted, "showcase" installations graced corporate annual reports, and yet-to-be-realized savings by computers were what the presidents bragged about to one another out on the golf course.

(3) Then, with the onset of the 1957 recession, came disillusion as the initial installations failed to live up to expectations. Naive early projections of big payoffs changed in a matter of months to an attitude reminiscent of Damon Runyon's character, Harry the Horse, on his way to the track: "I hope I break even today — I need the money."

(4) The fourth era was ushered in during the early 1960's. It was characterized by a growing sophistication on the part of business regarding at least the obvious data-processing applications (as more programmers and other trained personnel became available). Of especial importance, there was a growing appreciation by computer manufacturers of business data-processing problems, which affected computer design.

(5) Finally, today, we have routine acceptance of the electronic computer as an everyday tool of business. Almost 15,000 computer systems are now installed in this country alone. And, of even greater significance, more computers are now on order than have been built in the past 15 years.

"BE NOT THE FIRST BY WHOM THE NEW IS TRIED, NOR YET THE LAST TO LAY THE OLD ASIDE!"

"OF COURSE OUR INSTALLATION IS A SUCCESS – FOUR-COLOR PICTURE SPREAD IN LAST MONTH'S OFFICE INTERIORS – NEXT MONTH, HOUSE BEAUTIFUL!"

"I HOPE WE BREAK EVEN TODAY – WE NEED THE MONEY!"

Unrealized Potential

Of course, many of the 15,000 ADP systems in use are more than paying their way, and some are performing tasks that were not possible before. But even in the best applications we have not come close to realizing the computer's true potential. Let me hazard some reasons why.

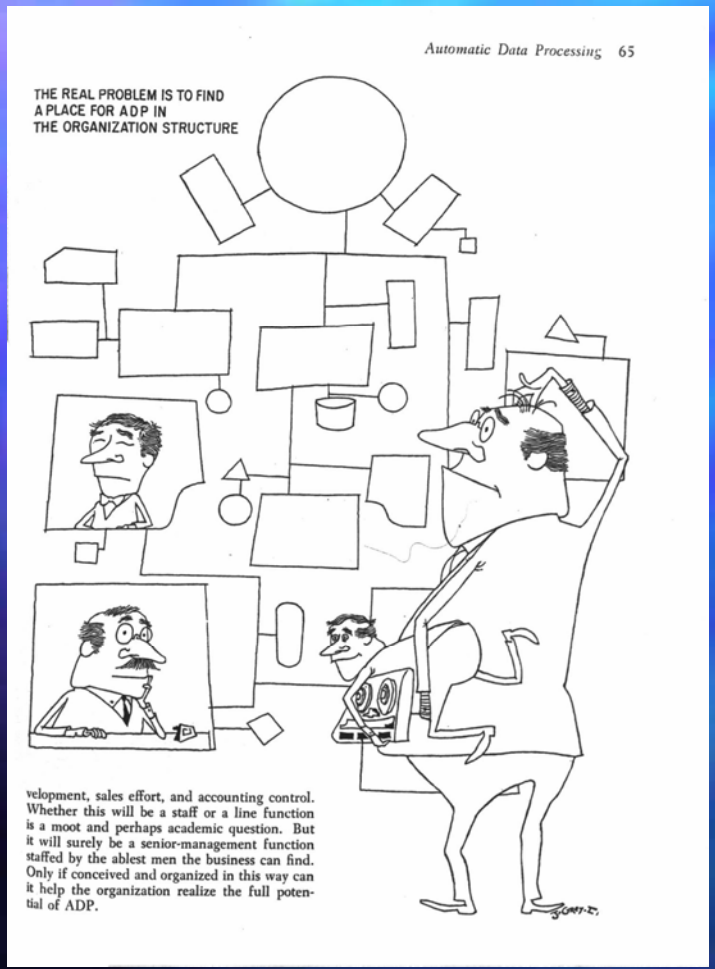
Deterring factors differ from installation to installation. Sometimes — but rarely now — the equipment is at fault. In most cases the problem can be laid right on management's doorstep:

- Inadequate planning, mostly parochial rather than corporate-wide in scope.
- Not enough fresh thinking, and too much reliance on canned approaches.
- Selection of the wrong people to plan the installation — i.e., technical specialists who fail to acknowledge or even appreciate their limited understanding of business practice.
- Overemphasis on hardware and underemphasis on the design of comprehensive systems.

These are serious faults. But the basic problem lies deeper. It is far more subtle, yet in a

Harvard Business Review - 1964

...while elevating systems men

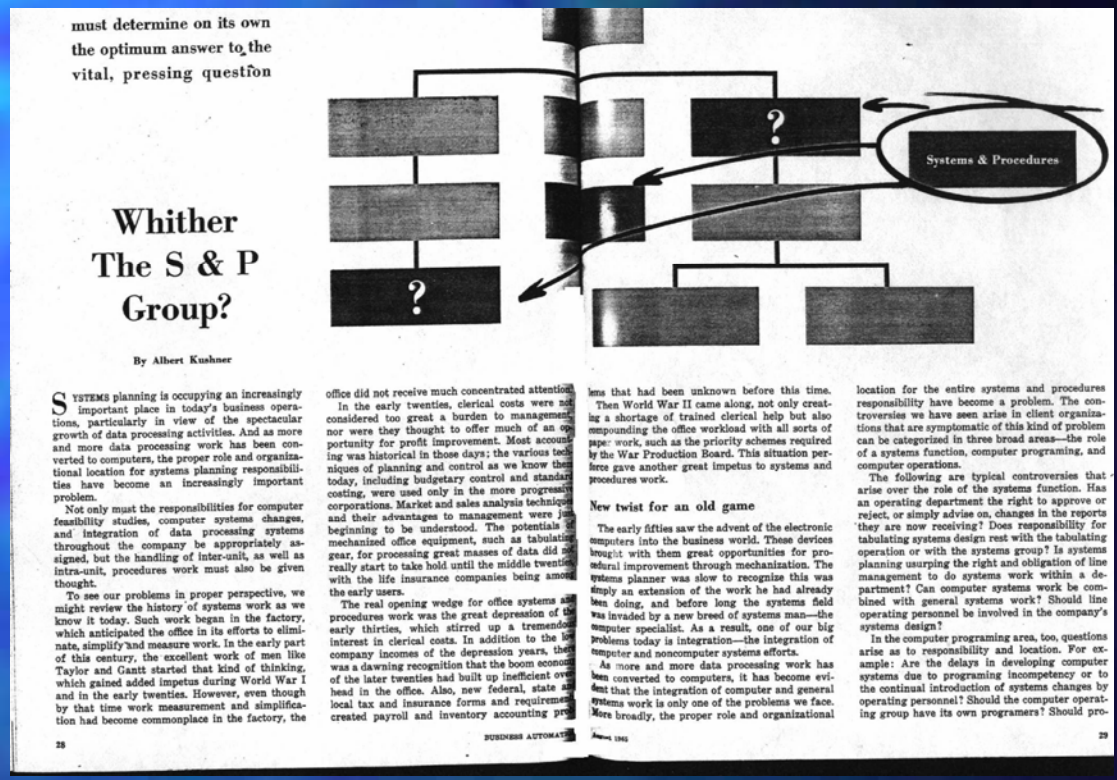


Automatic Data Processing 65

THE REAL PROBLEM IS TO FIND A PLACE FOR ADP IN THE ORGANIZATION STRUCTURE

velopment, sales effort, and accounting control. Whether this will be a staff or a line function is a moot and perhaps academic question. But it will surely be a senior-management function staffed by the ablest men the business can find. Only if conceived and organized in this way can it help the organization realize the full potential of ADP.

Harvard Business Review



must determine on its own the optimum answer to the vital, pressing question

Whither The S & P Group?

By Albert Kushner

SYSTEMS planning is occupying an increasingly important place in today's business operations, particularly in view of the spectacular growth of data processing activities. And as more and more data processing work has been converted to computers, the proper role and organizational location for systems planning responsibilities have become an increasingly important problem.

Not only must the responsibilities for computer feasibility studies, computer systems changes, and integration of data processing systems throughout the company be appropriately assigned, but the handling of inter-unit, as well as intra-unit, procedures work must also be given thought.

To see our problems in proper perspective, we might review the history of systems work as we know it today. Such work began in the factory, which anticipated the office in its efforts to eliminate, simplify and measure work. In the early part of this century, the excellent work of men like Taylor and Gantt started that kind of thinking, which gained added impetus during World War I and in the early twenties. However, even though by that time work measurement and simplification had become commonplace in the factory, the office did not receive much concentrated attention.

In the early twenties, clerical costs were not considered too great a burden to management, nor were they thought to offer much of an opportunity for profit improvement. Most accounting was historical in those days; the various techniques of planning and control as we know them today, including budgetary control and standard costing, were used only in the more progressive corporations. Market and sales analysis techniques and their advantages to management were just beginning to be understood. The potentials of mechanized office equipment, such as tabulating gear, for processing great masses of data did not really start to take hold until the middle twenties, with the life insurance companies being among the early users.

The real opening wedge for office systems and procedures work was the great depression of the early thirties, which stirred up a tremendous interest in clerical costs. In addition to the low company incomes of the depression years, there was a dawning recognition that the boom economy of the later twenties had built up inefficient overhead in the office. Also, new federal, state and local tax and insurance forms and requirements created payroll and inventory accounting problems that had been unknown before this time.

Then World War II came along, not only creating a shortage of trained clerical help but also compounding the office workload with all sorts of paper work, such as the priority schemes required by the War Production Board. This situation perforce gave another great impetus to systems and procedures work.

New twist for an old game

The early fifties saw the advent of the electronic computers into the business world. These devices brought with them great opportunities for procedural improvement through mechanization. The systems planner was slow to recognize this was simply an extension of the work he had already been doing, and before long the systems field was invaded by a new breed of systems man—the computer specialist. As a result, one of our big problems today is integration—the integration of computer and noncomputer systems efforts.

As more and more data processing work has been converted to computers, it has become evident that the integration of computer and general systems work is only one of the problems we face. More broadly, the proper role and organizational location for the entire systems and procedures responsibility have become a problem. The controversies we have seen arise in client organizations that are symptomatic of this kind of problem can be categorized in three broad areas—the role of a systems function, computer programing, and computer operations.

The following are typical controversies that arise over the role of the systems function. Has an operating department the right to approve or reject, or simply advise on, changes in the reports they are now receiving? Does responsibility for tabulating systems design rest with the tabulating operation or with the systems group? Is systems planning usurping the right and obligation of line management to do systems work within a department? Can computer systems work be combined with general systems work? Should line operating personnel be involved in the company's systems design?

In the computer programing area, too, questions arise as to responsibility and location. For example: Are the delays in developing computer systems due to programing incompetency or to the continual introduction of systems changes by operating personnel? Should the computer operating group have its own programers? Should pro-

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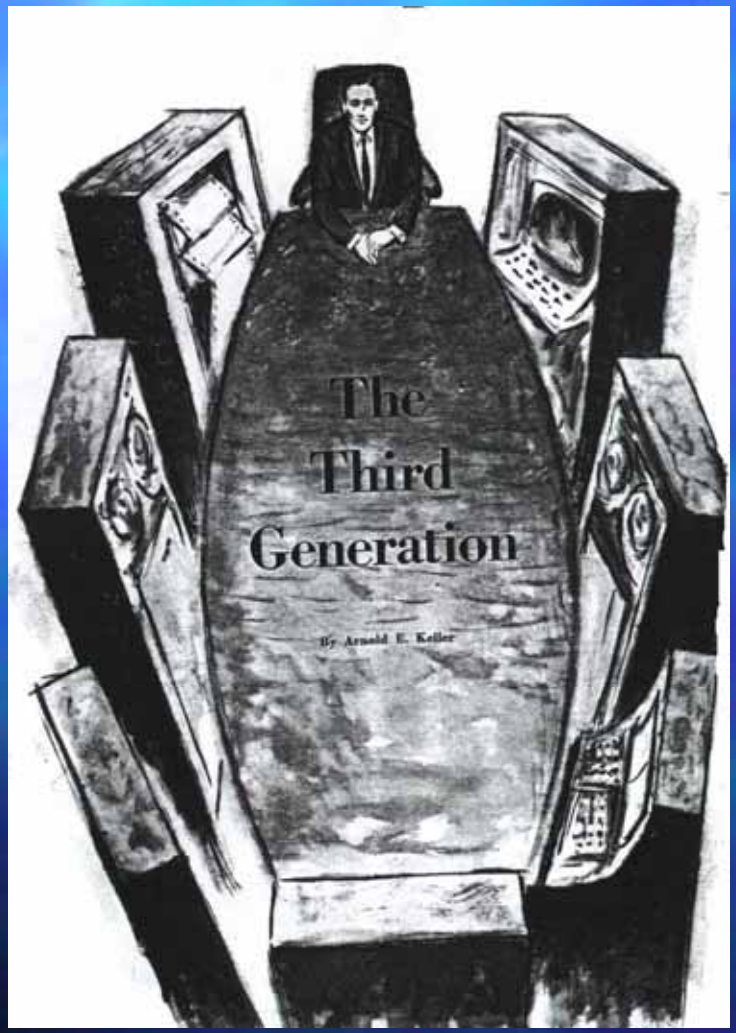
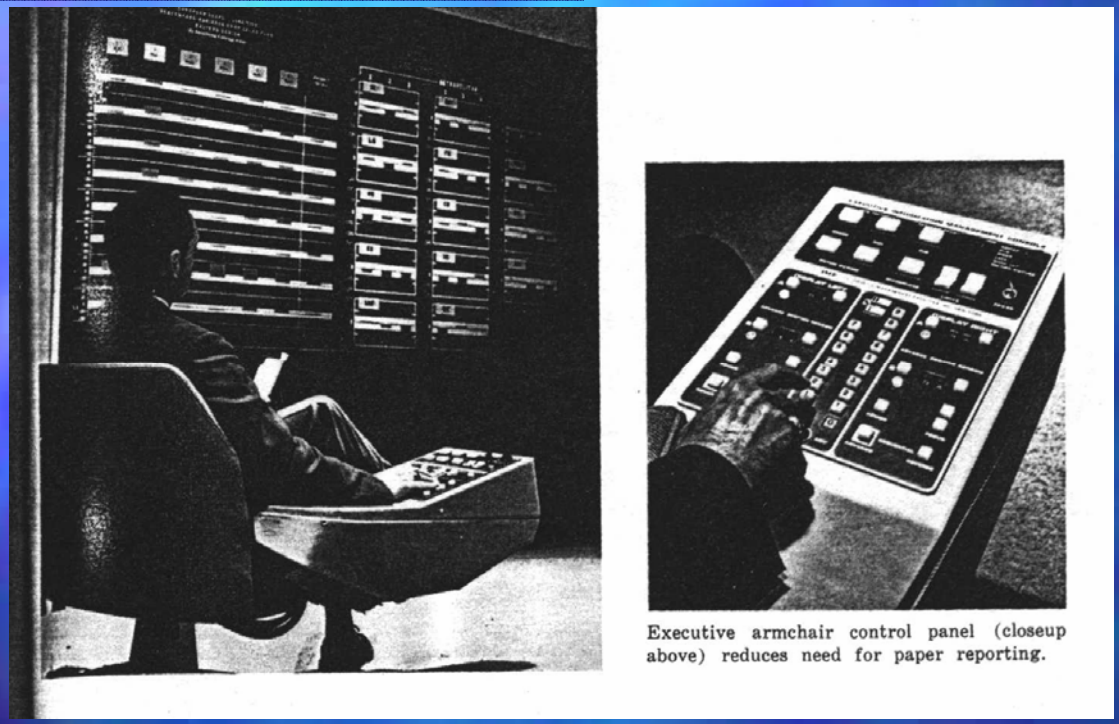
Systems and Procedures - 1965

You Need a New Computer...



- "third generation" hardware
  - Terminals
  - Random Access Storage (hard disk drive)
  - Sold as key to MIS

... and a lot of consultants



Executive armchair control panel (closeup above) reduces need for paper reporting.

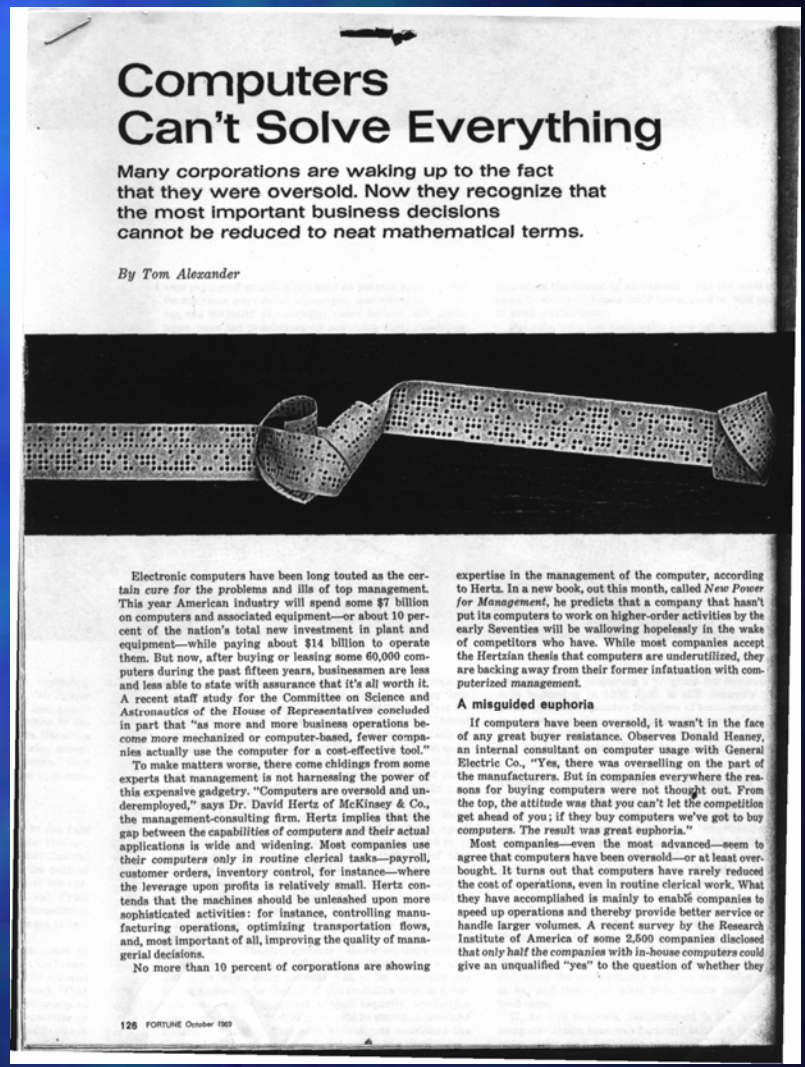
a more relaxed, leisurely management environment. The uneasiness will be replaced by a feeling of confidence in the completeness and timeliness of information and in the decisions based on that information....

Early MIS in Practice

- Many boasts through early and mid-60s of great systems under construction
  - “Phase I here already”
  - SAGE, SABRE as proof of principle
- Hardware, techniques hopelessly inadequate
  - Storage capacity
  - Processing power
  - Analyst time and skill
  - “MIS” more of a goal than a plan for many firms
- Word of disasters leaks out circa 1968

Backlash Begins: 1968

- Idea of “total system” loses credibility
- Controllers, accountants begin to fight back –
  - Claim “information” as what they did all along



Computers Can't Solve Everything

Many corporations are waking up to the fact that they were oversold. Now they recognize that the most important business decisions cannot be reduced to neat mathematical terms.

By Tom Alexander

Electronic computers have been long touted as the certain *cure* for the problems and ills of top management. This year American industry will spend some $7 billion on computers and associated equipment—or about 10 percent of the nation's total new investment in plant and equipment—while paying about $14 billion to operate them. But now, after buying or leasing some 60,000 computers during the past fifteen years, businessmen are less and less able to state with assurance that it's all worth it. A recent staff study for the Committee on Science and Astronautics of the *House of Representatives* concluded in part that "as more and more business operations become more mechanized or computer-based, fewer companies actually use the computer for a cost-effective tool."

To make matters worse, there come chidings from some experts that management is not harnessing the power of this expensive gadgetry. "Computers are oversold and underemployed," says Dr. David Hertz of McKinsey & Co., the management-consulting firm. Hertz implies that the gap between the capabilities of computers and their actual applications is wide and widening. Most companies use their computers *only* in routine clerical tasks—payroll, customer orders, inventory control, for instance—where the leverage upon profits is relatively small. Hertz contends that the machines should be unleashed upon more sophisticated activities: for instance, controlling manufacturing operations, optimizing transportation flows, and, most important of all, improving the quality of managerial decisions.

No more than 10 percent of corporations are showing expertise in the management of the computer, according to Hertz. In a new book, out this month, called *New Power for Management*, he predicts that a company that hasn't put its computers to work on higher-order activities by the early Seventies will be wallowing hopelessly in the wake of competitors who have. While most companies accept the Hertzian thesis that computers are underutilized, they are backing away from their former infatuation with *computerized management*.

A misguided euphoria

If computers have been oversold, it wasn't in the face of any great buyer resistance. Observes Donald Heaney, an internal consultant on computer usage with General Electric Co., "Yes, there was overselling on the part of the manufacturers. But in companies everywhere the reasons for buying computers were not thought out. From the top, the attitude was that you can't let the competition get ahead of you; if they buy computers we've got to buy computers. The result was great euphoria."

Most companies—even the most advanced—seem to agree that computers have been oversold—or at least overbought. It turns out that computers have rarely reduced the cost of operations, even in routine clerical work. What they have accomplished is mainly to enable companies to speed up operations and thereby provide better service or handle larger volumes. A recent survey by the Research Institute of America of some 2,500 companies disclosed that *only half the companies with in-house computers could* give an unqualified "yes" to the question of whether they

The Fate of MIS

- MIS redefined by late 60s
  - "total" part downplayed
- But "management information" has huge enduring power
- MIS is dominant term for computer dept. in 70s, early 1980s
  - Reflects continuing aspirations

MANAGEMENT INFORMATION SYSTEMS

Some dreams have turned to nightmares

RIDLEY RHIND

Mr. Rhind is an associate of McKinsey & Company, Inc. of San Francisco.

It is common knowledge that an executive is dependent on the quality of information he receives—both official and unofficial. Recently many systems men have urged the use of computers in creating management information systems (MIS). In this article Ridley Rhind explores the value of such systems. He begins by citing some limitations of comupter-based MIS in providing the information needed by managers for making decisions. Even though the author illustrates that on certain levels of management a computer-based information system can be of great value, he nevertheless contends that many claims for computers are unfounded. In addition, Rhind feels that despite great strides made in perfecting computer information systems, the responsibility for judgment still remains with management.

An executive's dependence on information has long been recognized. Speaking of President Franklin D. Roosevelt as he approached his new office in the 1930's, Arthur Schlesinger has reported that "the first task of an executive, as he [F.D.R.] evidently saw it, was to guarantee himself an effective flow of information and ideas. . . ."[1]

Schlesinger goes on to discuss the very great efforts that President Roosevelt made to ensure that he received information—as often from unofficial as from official sources. Although it has not always been so explicitly recognized, the need for information in business is as great as it is in politics, and business executives now universally acknowledge that their sources are very imperfect. But it is only recently that it has become the height of fashion to look to computers to meet executives' information needs.

COMPUTER-BASED MIS

Because the computer seems to promise an improvement in the availability and quality of information—which would meet a universal need—computer-based management information systems (MIS) are much discussed in management journals today, but many of the hopes now pinned to such systems seem to be derived from the acuteness of the need rather than the real likelihood of success.

The concept of a computer-based MIS

[1]Quoted in Richard E. Neustadt, *Presidential Power* (New York: John Wiley & Sons, Inc., 1960), p. 149.

Struggling for Manageriality

How to turn technical expertise in administrative methods and machines into a claim to managerial authority?

- Challenge from 20s through 90s
- Sought through a redefinition of management itself
- Never altogether succeed
- “Information” just comes to mean “computer”

Managerial Class Formation

- Must take serious the different social groups and castes **within** corporate management.
- Hybrid Identities
  - Trad: Class, Race, Gender, Ethnicity
  - Here: Employee of Firm, would be Professional, technical artisan, member of Managerial caste
- "Management" itself is a constructed, overarching category
  - Group mobility, realignment of managerial castes
  - Class consciousness, ideology crucial

In this story

- Terms like “management”, “information”, “system”
  - are claimed and redefined by many groups
  - Work like “Republicanism” or “Progress”
  - Highly charged categories, can’t take for granted or use for neutral analysis
- “Information” is a central ideology of present day
  - We don’t have a great handle on its historical nature

Contact Me

thaigh@sas.upenn.edu