Reading 8–1

MANAGING THE EVOLUTION TO ADVANCED INFORMATION SYSTEMS

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SCOPE OF PAPER

It is quite clear that the first task in setting up an organization on a road leading to an advanced information system is to define precise organizational relationships.[1] This means that we must define the role of the information-systems function and those of other functional areas.

Except for occasional papers suggesting the importance of top executive involvement, or the absolute need for "user" participation in systems design, little information is available concerning the organizational dynamics of these relationships. Yet, interviews with programmers, systems analysts, and ex-corporate systems directors reveal that an extreme instability exists in relationships between them and the rest of the organization. An informal poll among four executive-placement consultants specializing in the systems area reveals that none of their placements have stayed more than four to five years in a particular organization.

When we talk to ex-systems managers, the conversation invariably centers on their feelings, their ego status, their perception of organizational conflict as the key variables determining their ability to manage their respective companies'

[1] P. D. Walker and S. D. Catalano, "Where Do We Go From Here With MIS?", *Computer Decisions*, September 1969.
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systems evolution. Technological problems are rarely seen as a blocking factor in achieving the objective of greater use of the computer technology.

It is quite safe, therefore, to conclude that organizational turmoil, behavioral changes in relationships, and rapid shifts in feelings and attitudes are the factors which are the greatest hindrances toward an orderly evolution of systems technologies that would yield to each organization the great benefits which computer technology is theoretically capable of producing.

For this reason, we will use this paper to focus exclusively on the subject of managing organizational relationships. The simple assumption is made that all other problems can be resolved with a more systematic and less biased investment of energies.

METHODOLOGY

In technical terms, organizational relationships can be described phenomenologically as a coherent system of feelings, and operationally as a set of coherent behavior patterns.[2]

In a given organization, the systems department may possess a certain set of behavior patterns corresponding to its perception of its role. At the same time,

[2] E. Berne, *Games People Play*, Grove Press 1964, p. 23.

the systems organization may exhibit other behavior patterns which may be clearly inconsistent with:

(a) its perceived role;
(b) its role as perceived by others.

Consequently, we can readily see how the internal and external contradictions will precipitate organizational conflict, a decrease in productivity, and, ultimately, organizational surgery.

In a search for a conceptual framework which would permit an operationally meaningful method for analyzing these relationships, it becomes apparent that the method of "transactional analysis," drawn from psychiatry, would offer significant insights into our complex problem. According to this method, every individual, or organization, has available a limited repertoire of its perceptions. This repertoire can be sorted into the following categories (see Figure 8–1.1):

Figure 8–1.1

ORGANIZATIONAL PERCEPTIONS

AUTHORITARIAN	=	P*
AUTONOMOUS	=	A
UNINHIBITED	=	C
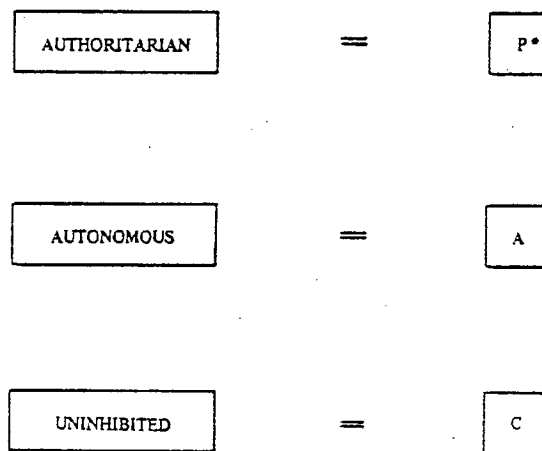
* For simplified notation the symbols P.A.C will be used in following figures.

1. *Authoritarian (P),* which resembles an organizational concept based on a conservative, hierarchical, stable, low-growth, low-technology, bureau-cratic, cost-minimized, monopolistic, high-profit environment. The "expert" posture is an important syndrome of this state.

2. *Autonomous (A),* which describes an organization oriented toward a thorough, massive, laborious, time-consuming and complex appraisal of reality, cost-effective use of resources, and tolerance of low risks with regard to innovation, untested ideas or unconventional people.

3. *Uninhibited (C),* which describes a state characterized by organizational megalomania, program optimism, utopian concepts of system design, a strong entrepreneurial orientation, low levels of interorganizational communication, and a high degree of creativity.

The position is, then, that at any time any systems organization or corporation can exhibit simultaneously Authoritarian, Autonomous, and Uninhibited states and can simultaneously shift among them as the situation warrants.

It is important to note that each of these states is normal and that each has a vital value for the corporation at a particular time. Some of these states are more effective and productive of results than others to cope with particular problems. Thus all three aspects of organizational perception have a positive contribution to make to a balanced evolution towards advanced information systems. Problems arise only when the various states of perception interact improperly.

Berne[3] defines appropriate and expected relationships that produce healthy human interactions as *complementary.* These can be represented graphically as indicated in Figure 8–1.2. The rule is that as long as relationships are comple-

[3] E. Berne, *Games People Play,* Grove Press 1964, p. 23.

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Figure 8–1.2

COMPLEMENTARY INTERACTIONS

EQUAL INTERACTIONS. (TYPE I)	P:P A:A C:C	UNEQUAL INTERACTIONS: (TYPE II)	P·C, C.P P·A, A.P A.C, C.A
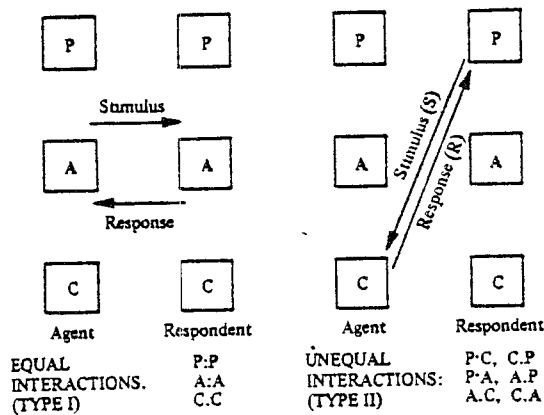
mentary, communication will proceed smoothly and organization conflict is suppressed.

As a corollary, communication is broken off when *crossed interactions* take place. These are represented graphically in Figure 8–1.3.

To explain both complementary and crossed interactions, let us take a few examples.

Case 1. The stimulus is A:A, that is, "Maybe we ought to cut back on programming expense for the inventory-management project until we find out if we can measure results achieved."

An A:A complementary response from the Operations Research Manager, who is responsible for this project, would be:

Figure 8–1.3

CROSSED INTERACTIONS
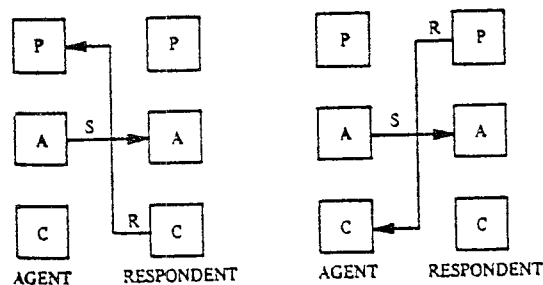
Crossed Interactions

"Maybe we ought to do this since I would like to measure results, too, provided you can tolerate a delay of the project for four months."

A C:P crossed response would involve the respondent flaring up: "You are bringing this issue up as a way of stopping me altogether. Considering the mess in your warehouses, I ought to push ahead without delays."

Case 2. The stimulus is A.C; that is, "Why are you giving me inconsistent results from your mathematical model?"

A C:P complementary response, would be: "I have not tested the model enough to know its behavior." Conversely, a C.P crossed response, would be: "Smith, the data center manager, has not given me enough test time; don't blame me for that!"
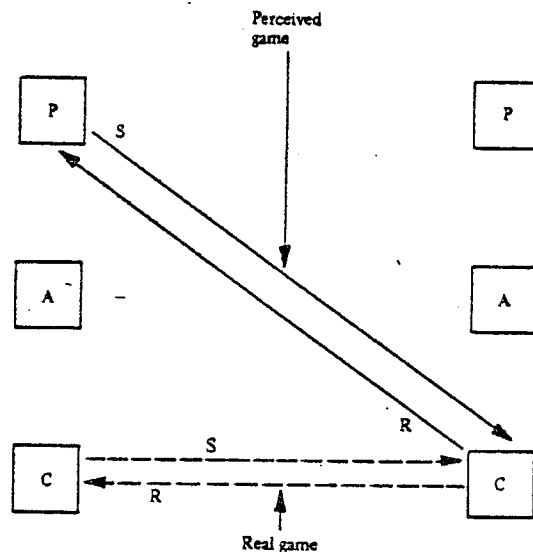
GAMES

A game is an ongoing series of dual complementary interactions which are used to mask crossed interactions. By a dual complementary interaction we mean the maintenance of two contradictory relationships at the same time. One of these is announced and discussed while the other one is really being executed. (See Figure 8–1.4 for explanation.)

Because crossed interactions are organizationally intolerable since they cut communications channels and lead to intramural warfare, games are invented as a way of protecting actions initiated by any part of an organization.

Games are clearly to be differentiated from other forms of organizational behavior on account of their basic dishonesty. The motivating forces behind every game in the systems field are the achievement of power, influence, "political posture," high-compensation levels for its members and a disproportionate share of the corporation's resources.

Figure 8–1.4

A GAME

The hypothesis of this paper is that the greatest single contribution to be made in improving the quality and effectiveness of systems work is the elimination of games. As a matter of fact, one can say that no cost-effective advanced information system involving a complex interaction of people, machines, technology, and multiple organizational units can be installed in a gaming environment.

The responsibility for creating the proper complementary interactions (whether Type I or Type II; see Figure 8–1.2) rests clearly with Executive Management, not with Systems Management. Executive Management must also consciously select (as can be seen from Figure 8–1.2, there are 9 sets of relationships from which to choose) the particular complementary relationship that fits the leadership style, pocketbook, personnel resources, and organizational structure of the entire corporation. How this is to be accomplished is discussed in the concluding sections of this paper. It

suffices to say here that in the absence of an ability to choose a particular complementary relationship creatively, the best Executive Management can hope for is the conversion of any game into a crossed interaction which will make evident to everyone how the relationship between the systems organization and the rest of the company is unproductive and self-defeating. The end result of so doing is clear. Key people will be dismissed, the system organization will be reshuffled, and a new set of players will receive a gambling license to try and create complementary interactions that, by sheer luck, may not end up in a game after all.

As in medicine, one of the best methods of keeping people healthy is by good diagnosis of symptoms or by preventive measures that attack diagnosed causes of the disease. To improve the health of systems organizations, we have accumulated a limited thesaurus of diagnosed games. This should be useful.

ORGANIZATION OF THESAURUS

The thesaurus is organized according to the situations where games most commonly occur. Hence we have:

(a) Executive Suite Games
(b) Computer Room Games
(c) Operations Research Games
(d) Methods and Procedures Games
(e) The Programming Game
(f) The Manufacturer Game
(g) The Line Executive (Non-Computer) Game
(h) The Clerical (Non-Computer) Game
(i) The Consultant Game

Following Berne's outline (footnote 2), the following method of recording a game is used:

1. *Title:* if the game has a long name, a convenient abbreviation is used.
2. *Thesis:* Describes the game.

3. *Aim:* Shows the overt and covert aims formed.
4. *Roles:* The role of the one who is "it," and from whose point of view the game is discussed.
5. *Dynamics:* Translates the complex interactions into the simplified notation defined in the Methodology portion of this paper.
6. *Anti-thesis:* A way of channelling the game into a complementary mode.

EXECUTIVE SUITE GAMES

Chief Bookkeeper

Thesis
This is a classic game and has been played in virtually every organization. Without doubt it is the earliest catalogued information-systems game.

The Chief Bookkeeper, also known as the Controller, Treasurer, Vice President—Finance, is a mild, elderly individual in charge of keeping the accounting records of his company. He is thoroughly distrustful of the other, obviously profligate, members of the Executive Suite, starting with the Chief of Marketing, Chief of Manufacturing, and not limited to the Chief of Personnel. Inasmuch as his principal orientation is to keeping good and clear historical records of the company, his department is rigidly organized and impervious to outside influence. As a corollary, his department has little influence beyond strictly accounting matters (such as receivables, payroll, etc.).

As the needs of the organization change, demanding budgeting, planning, cost control, and financial analysis, the Chief Bookkeeper seeks an easy way out which would not necessitate his involvement in a leadership role or his interaction with other members of the Executive Suite. He obtains a computer, a systems organization, and a systems plan which promises to deliver what the manufacturing, marketing and personnel people have demanded. He proceeds in the identical mode as under manual conditions. The systems shop is walled in against outside influence, as ever, and whatever is produced by the computer still does not meet the needs of the remaining organization.

Aim
To place the Chief Bookkeeper into an even more unassailable position of strength.

Roles
The Chief Bookkeeper views himself as the maintainer of all of the proper virtues, such as fiscal responsibility, thriftiness, and personal hard work. Since he does not see similar virtues practiced by other members of the Executive Suite, the Manufacturer's Salesman, with his great promise of prodigious statistical output at lesser clerical cost, finds the Chief Bookkeeper a particularly receptive gaming partner. The other members of the Executive Suite participate in the Chief Bookkeeper's game as a technique for bringing about a breaking up of the hitherto unassailable source of fiscal authority.

Dynamics
An A:A game originating from increased needs of the organization for better information is announced, whereas, in fact, a P:P (an authoritarian bookkeeper acting on comparable authoritarian reactions from other chiefs) game is played. This game is hardly ever played in a C:C environment such as in a research laboratory. The scientists know enough about experiments with a new technology not to be willing participants.

Anti-thesis

If the needs of the organization are mostly finance-based, a P:P game should be announced and kept. If the needs are operational, an initial A:A game followed by quick lowering of departmental barriers for the Systems Department will result in a productive relationship.

My Computer Is Bigger Than Your Computer

Thesis

MCBYC is for Chief-Executive hands only (Presidents and Board Chairmen). Its origin is traceable to places such as golf courses, industry conventions, and, in rare instances, to conferences with image-building public-relations consultants. By 1970, this game will have gone completely out of fashion with the top 500 corporations, only to shift to smaller companies newly blessed by the availability of smaller computers to fit their pocketbook.

The MCBYC has many similarities with a game played in international politics, recently known as the "De Gaulle syndrome of grandeur." In other words, the corporation suddenly owes it to its image to sport a computer, housed in a glass-enclosed portion of the company's headquarters and suitably mentioned in promotional literature as the Chief Executive's quest for a "total, integrated information system."

Since the computer is brought in by the Chief Executive and is generally sized far beyond the needs of the organization, drastic measures are taken to use the capacity provided.

Aim

To fulfill the Chief Executive's need for image and to demonstrate his frustration with his inadequate control over operating details.

Roles

MCBYC can have many players, including the "heir apparent" recently out of a graduate school of business. Standing by is the Chief Bookkeeper, who has not managed to start a game of his own and who welcomes an opportunity to acquire a significant increase in his budget. The Chief Executive quickly drops out of MCBYC when mundane details, like incorrect invoices, keep diverting his attention from the big picture.

Dynamics

MCBYC is a C:P or C:A game disguised as A:A or P:A. In its crossed interaction variant it has been particularly deadly to professional participants, as executive turnover figures may demonstrate. The only consolation about the crossed variant is the fact that the game is extremely quick, since it is almost impossible to keep it going longer than one year.

Anti-thesis

MCBYC is a bad game, has only losers, and is a poor form for introducing organizational innovation. If the Chief Executive is concerned about the low level of his control over the company, he ought to change his organization accordingly and attain his objectives indirectly.

The Big Brother Is Watching

Thesis

This is strictly a science-fiction variant of MCBYC which has a fleeting life span of a few weeks, at best. The BBW game consists of a video display in the Chairman's office to make it possible for him to keep track of what's going on. A definitive description of this game has been produced by John Dearden of Harvard. It is only mentioned here for reference purposes since the BBW game is inserted

into the Manufacturer's game once in a while.

Anti-thesis
Ask the proponent of BBW to show you one situation in the world where BBW is useful.

COMPUTER ROOM GAMES

Who, Me? It Is the System That's Wrong!

Thesis
As a counter-move to the frequently discussed demise of the human factor in computer-room operations, the personnel engaged in running data centers have invented an ingenious game of their own: WMISTW. In this game, played destructively between the programming and the operating departments, little mercy is shown for the slightest infractions. The basic dishonesty of this game resides in the fact that both parties make sure that no rules of the game are ever agreed to, since this would allow a third party to referee and settle it forever.

The game is inherited as a matter of training bias by programmers who, as a matter of job prestige, prefer to know as little as possible about actual operating conditions when a job is run. Prevailing salary differentials between operating personnel and programming staffs provide us with complete assurances that this condition is going to continue, since promotions from the operating staff to the programming staff are becoming quite rare. Consequently, programmers are delighted to pass on to data centers jobs that are believed to be 99% "debugged." The programmers thereby avoid detection of their low level of understanding, and at the same time, shift laborious and time-consuming housekeeping details to a willing group of data-center semi-professionals frequently designated as "maintenance programmers." The programmer thereby becomes available for reassignment to another project, e.g., promotion with a hefty salary increase, and hence escapes full accountability for his actions.

The data-center personnel take the job, introduce multiple undocumented changes in the programs to make them truly useful, and commence on a road of becoming completely and personally indispensable for the continued existence of the job. In its most common form a particular program or series of runs become "Joe's runs."

Under these circumstances, when anything goes wrong, Joe can play WMISTW with relish and complete immunity from penalties.

Aim
WMISTW is played by security-conscious computer-room people who have been discouraged in their aspirations to attain better-paying programming and systems jobs.

Roles
The contributory role of programmers in playing WMISTW has been adequately noted. Participating in the game also are certain manufacturers who have a vested interest in inefficient use of their equipment. Since ordering of supplemental peripheral gear, memories, or features is initiated by data-center management, these manufacturers find it quite convenient to provide as little as possible in training, output-measurement aids, or analytic software in support of data-center operations. A good WMISTW player can always blame the request for additional core capacity on somebody else (e.g., system designers, programmers) even though the data-center program-

mers invariably trade data-center labor and convenience for machine capacity, while playing a smaller version of the ego-boosting MCBYC game. In any event, the predictable outcome of WMISTW is considerable capacity under-utilization, in people and in machines.

Dynamics
What is announced as an A:A game is played entirely in a P:P mode. Occasionally, a C-type interaction is attempted when management really does not understand computer operations.

Anti-thesis
WMISTW can be played effectively only as a complementary A:A game, all the way. To achieve this objective, tough-minded management must be willing to impose and enforce clearly understood interface definitions between Programming and Operations.

OPERATIONS RESEARCH GAMES

The Optimized Correct Solution

Thesis
New O/R graduates with Ph.D.'s from graduate schools dominated by mathematical statisticians will select this gaming style as a shortcut to Company Presidency. TOCS should be attempted only in organizations without prior O/R or Management Science experience.

The game begins by selecting a particularly promising young Ph.D. to head the newly established O/R Department. In the absence of any prior industrial experience the young man's claim to Department Head status is based on: a) an unusually high starting salary asked; b) a related undergraduate area of specialization followed by an appropriate graduate dissertation in the same field. For instance, a medium-size plywood manufacturing company would thus acquire as its O/R Director a Ph.D. whose undergraduate degree in botany was followed by a mathematical dissertation on the topology of oak leaves.

The plywood company's problems may be diverse and immediate. But the new Director sets his eye on solving "strategic" problems of the business by trying to outline a mathematical model which would optimize the company's discounted cash flow over a 30–40 year period, which is the appropriate planning horizon for growing timber prior to cutting it into plywood. Since the industry is harassed by price erosion, and the President is tired of incessant crises in the market, the TOCS is off to a good start on the assumption that "something good will surely come of it," or "we ought to try something new."

As work begins on the "MODEL," increasing complexities are discovered, necessitating the acquisition of additional supporting staffs. Encouraging staff reports get generated as contributory studies leading toward the ultimate objective. A conceptual paper outlining the over-all flow diagram of the model is actually discussed at a TIMS or ORSA meeting. A year or two later, a paper is published showing in detail the computational alogrithm for evaluating the minimum transportation costs in the event of a forest fire. Meanwhile, nothing actionable has been produced. However, there is ample evidence that feverish activity took place: files are voluminous, expenses for the activity are a significant percentage of reported profits, and the executives' shelves contain O/R books obtained while attending introductory courses to O/R.

The dynamics of the TOCS game slowly becomes revealed. First, a strong formal orientation in natural sciences

makes our young theoretician emotionally unfit to cope with the irrationalities of the market. He can therefore endow himself with a messianistic idea of brilliantly pulling off the coup of the century wherein his firm will acquire rational and scientific capabilities unsurpassed by bumbling competitors. The essential ingredient of TOCS is the utopian notion that there must be a shortcut to wisdom in an obviously confused environment. When combined with the magic of a computer and the ability to demonstrate optimality of carefully selected textbook cases, our young man has a plausible story to tell. As a matter of fact, our O/R man has no other role open to him in the absence of relevant industry experience.

The O/R Director is not, however, as innocent a victim of circumstances as one would be led to believe. Early model formulations can early reveal that data for the stated variables either is not, or cannot become, available. A sensitive individual can also easily detect the increased alienation of the O/R staff from other operating executives and from most of the functional staff groups.

The game then evolves to its unhappy ending because it is fueled by the professional community eagerly looking for spectacular news, by a job market that stimulates the grandiose strategic involvements rather than the tangible results, and by the mesmerizing effects which technology, computers, Ph.D.'s and new concepts can cause in an environment which has not been innovative.

Aims
TOCS is played by a relative newcomer to the Operations Research and Management Science scene who will use every conceivable method for placing himself in a favorable posture, using standards and yardsticks which apply in the academic world. Since the measures of accomplishment in the industrial world are different and almost diametrically opposite, TOCS is used as a camouflage to cover up deeply ingrained patterns of thinking.

Roles
For TOCS to flourish without any restraint, it requires the presence of an executive sponsor. In some respects, TOCS is a much subtler version of the MCBYC, since it need not be as conspicuous and is hardly ever as expensive.

TOCS also requires the presence of equally anesthetized line executives who will tolerate presentations by the O/R staff without voicing plainly spoken words of protest. If this passive element is prevalent across the board, TOCS can also be better comprehended in its well-known fairy-tale version as the TEC (The Emperor's Clothes) game.

Dynamics
TOCS is obviously a C:P game disguised as C:A. In other words, it is positioned as an innovative catalyst which will use its superior know-how to inspire and motivate the organization. In fact, it is used as an innovative discipline transplanted from the academic world. Furthermore, an attempt is made to impose it as an authoritative source of wisdom hitherto undiscovered and uncomprehended by anyone in the company or perhaps in the entire industry.

Anti-thesis
TOCS games should be declared illegal until an O/R or M/S practitioner has delivered a small number of reasonably successful (if not optimized) projects. Another interesting way for completely eradicating TOCS would involve a conspiracy by all TIMS, ORSA, SIAM, etc., editors and program chairmen which

would require submission of independently audited certification that:

(a) Models presented actually function as described.

(b) Actions recommended by the model were actually executed by line personnel.

The Double TOCS Game

Thesis

The Double TOCS Game (DTOCS) is played exactly as the single hand except for the complication that the inexperienced O/R Director is used and manipulated by his executive sponsor, and both know it. The Operations Research team behaves exactly as in the single-game case except that the frequency and lavishness of presentations at professional meetings are much greater. A recent and verified case of DTOCS became suspect for the first time on account of the unusually high quality of colored slides, accompanied by a professionally recorded, synchronized narrative.

Aim

DTOCS is used if the executive sponsor wishes to achieve a particularly risky or unpalatable change without exposing himself fully to ensuing consequences.

Roles

DTOCS can get very complex because of unpredictable human reactions and the presence of too much formal documentation. For this reason, particularly abstruse, voluminous, mathematically complex and segmented studies are encouraged. The respective roles in DTOCS can also be replicated into infinity. That is, an executive potentially affected by DTOCS will anticipate its outcome by finding a competing DTOCS game. This, in turn, creates a counter

move on the part of the first DTOCS team, and so forth ad infinitum.

Replicated DTOCS games do not exist in the industrial world except within the largest corporations because the costs of such replication escalate exponentially with each move and counter move. DTOCS is the most popular game on the Washington scene. Government information-systems games are so different from the industrial ones that this characteristic of our largest corporation is noted only parenthetically.

Dynamics
Same as TOCS.

Anti-thesis

In a chain of players, the game is broken if anyone in the chain refuses to behave as expected. Current student unrest and substantially increased executive mobility make DTOCS players more unpredictable than ever before. A particularly Machiavellian executive must always count on the possibility that one of the players may suddenly drop out and thereby interrupt the play sequence.

Since DTOCS is clearly associated with large and unwieldy organizations, it can be positively eliminated by decentralization of decision-making into smaller, self-contained units.

METHODS AND PROCEDURES GAMES

Let's Computerize It

Thesis

Corporate bureaucracy emerges out of an organization's need for order and precision. The mainstay of this bureaucracy has always been the Methods and Procedures Analyst—the Generator of Marketing, Personnel, Budgeting, Main-

tenance or Customer Relations Manuals, Instructions, and Policies.

Until about 10 years ago, the scope, influence, and effectiveness of Methods and Procedures people were severely limited, as witnessed by their low organizational visibility. They were further constrained by the medium of their "message," e.g., the pages inserted in the Manual. McLuhan's concept of "the medium is the message" is applicable to organizational order as communicated by a latest revision page to a Manual: it is untimely; it does not reveal anything about the human environment; it cannot cope with implementation and thus is quite irrelevant to the real issues facing the organization. Once a Procedure is issued, the Analyst cannot monitor the conformity of the organization with it. He drops out of the feedback loop and must idly observe the conduct of the organization. Consequently, the Manual (and Methods, Procedures) staff is delegated to tackling annoying trivialities of the corporate life such as forms design, simplifying the routing of purchase requisitions, and publishing the latest version of the Chart of Accounts. Thus, even some of the simplest clerical jobs escape the quest for "order and precision."

Then the computer appears on the scene. It offers a startling revolution in the Methods and Procedures Analyst's perception of himself and of new potentialities of his job. The new technology makes it theoretically possible to:

1. Tightly spell out the concept of order and precision in the form of computer programs.
2. Perform a 100% audit of conformity with procedures.
3. Control discipline with a limited amount of manpower, thus potentially removing the extremely low

funding-levels limits with which M & P people always had to live.

No wonder, then, that M & P embraces computers and an intense LCI game is off and running.

As a shortcut, highly disciplined and ordered procedures are computerized first. It invariably turns out that very few procedures (if any) are sufficiently precise to stand computerization without a major change.

Early attempts to move LCI into a less structured environment result in failure. The human environment that has evolved over the years to cope with real problems such as inventory, production scheduling, procurement, and personnel administration has devised thousands of subtle and personalized adaptations to problem solving which completely escape the M & P analyst and his simple paper-flow-oriented image of the industrial decision-making processes.

Instead of modifying the LCI game, the M & P Analyst redoubles his efforts. The payoff from pursuing the first rounds of LCI is too obvious to cause any revision in the rules or any backtracking. In pursuit of organizational rewards of status and increased job marketability, LCI results in a heightened pressure to convert more and more clerical functions to computers. Despite the fact that increased evidence indicates that new severe problems are being created, the LCI approach is pushed into hitherto unexplored functions. For instance, a previously decentralized billing system suddenly becomes centralized as a way of introducing greater economy and discipline. To minimize the need for re-thinking the entire job and to avoid the M & P Analyst's involvement with the human environment previously enveloping a reasonably operational system, a shortcut is taken and billing is transferred to a computer

without too much worry as to the effect on local management. To make sure that local management does not disable the LCI game, the rules call for introduction of a large and complex manual of forms and codes governing every conceivable form of clerical behavior and every possible condition. As a result:

(a) Extremely rare cases previously handled on an exception basis now constitute the bulk of the Manual. Thus, the Manual is incomprehensible and unteachable.

(b) The Manual causes streamlined overspecialization as contrasted with prior emphasis on diversity and local adaptation. Consequently, job satisfaction goes down and turnover up.

(c) Exaggerated claims of results to be obtained from playing LCI do not allow for a sufficient time which would permit re-thinking of the authority-responsibility relationships. As a result, an LCI-conceived billing system is inserted into an unchanged environment which proceeds to react as any organism behaves when a surgical transplant takes place.

Aim

The aim of LCI is to convert large segments of the corporation's decision-making environment into a more systematic, less costly, more adaptive and faster-responding environment. The obvious technological capability of a computer performing the work of 10,000 makes this aim plausible and easily explainable.

LCI acquires its dishonesty when a radically new technological device of awesome powers as a systems tool is not matched by a collateral change in systems methodology. When a corporation's

Methods and Procedures staff takes over a computer and then consistently disregards evidence such as increased costs, lowered productivity, higher error rates, customer dissatisfaction, excessive employee turnover, and questionable reliability of results in functions that were subjected to LCI, then such a staff cannot claim that it pursues unselfish aims.

Roles

LCI thrives in the presence of other games. Just about any other game in the repertoire will do except NIH (not invented here) and WNANW (who needs a new way). Both NIH and WNANW, once the mainstay of industrial statesmanship in extraction industries and in Europe, are becoming quite unfashionable. Any attempt to use them as a healthy antidote for LCI has been quickly repulsed by the combined powers of other players. It is safe to say, however, that an excessive preoccupation with LCI is almost surely going to bring out new and more retaliation-resistant versions of NIH and WNANW during the coming decade.

Dynamics

The M & P function has always operated in a P:A mode. It has been used as an authoritarian method for constraining autonomous organizational units. It has never learned to operate in the P:C channels, since those portions of the company that have been uninhibited, such as marketing, advertising, and research (C), have always managed to ignore the M & P function and get away with it. Suddenly, M & P declares itself to be in charge of a C:A game (LCI), which is highly innovative and requires a flexible and creative role, except in special cases such as in life insurance companies and the government fiscal departments. LCI is, in fact, played in a P:A mode, which is in contradiction with

the uninhibited requirements of the situation and hence is bound to blow up in the face of an unsuspecting participant.

Anti-thesis.

LCI turns out to be an elegant, productive, and worthwhile complementary relationship if the authoritarian mode is carefully suppressed by the M & P people and converted into an autonomous staff-support function available as a service, at competitive rates. For this relationship to work, it requires that the user of LCI acquire the initiative and dominant posture as well as a healthy respect for insights generated by behavioral scientists with regard to motivation of clerical personnel.

THE PROGRAMMING GAME

The Invented Here Game

Thesis

Even though the NIH (Not Invented Here) game is widely known and discussed, it does not necessarily give rise to its complementary form, the IH game (Invented Here). Thus, a new way of blasting rocks or building an apartment house is rejected on account of NIH, but rarely leads to developing new techniques. NIH is essentially a status quo reinforcement play.

Programmers, on the other hand, thrive on IH and use it as a method for subsequently arguing a NIH defense.

IH has been with us as long as computers. As soon as machines acquired a capability of being addressed in terms other than machine code, the IH game began thriving on dialects, versions, macros, assemblers, sorts, input/output routines, compilers, sifters, translators and symbolic languages. A true programming professional feels honor (and resumé) bound to attempt the creation of

a personal variant, a special modification, or a peculiar convention which will sufficiently depart from standard software supplied by the manufacturer so as to make most code written in his company incomprehensible for use by anyone who dispenses with his services.

In recent years, the computer and assembler categories of the IH game have become too expensive to play on account of increased costs and better performance of standard software. The manufacturer has, however, gladly obliged the programmer by opening infinitely sized playgrounds in Operating Systems, Data Management, teleprocessing handlers, and a special classification called "unsupported hardware."

There are many ways for IH to get started. One large corporation announced the commitment to a TIMIS (Total Integrated Management Information System) game which had highly sophisticated objectives never tried before. To gain time and to figure out how to cut the project down to manageable size, the programming staff studied and concluded that the supplied software would not do the job. It followed that a special-purpose Operating System had to be devised at great cost. Three years later, when a substantially smaller version of the initial TIMIS was finally implemented with a homemade Operating System, standard software became available, in no way detracting from the programmer's fun of having engaged in a three-year IH play.

A special case of IH is called the "bit-diddler" amusement. A unique, pre-production model of an avant-garde device becomes available from the basement shop set up by three engineers who have just left the R & D Division of one of the large manufacturers. Mr. X, an IH gamesman of great repute, happens to be searching for a new state-of-the-art

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project and discovers that the promised specifications of the avant-garde device uniquely match his needs. He orders the device, and proceeds to devise a special non-standard handler to make it compatible with the Operating System of one of his large machines. On account of the experimental nature of the connected device, he is also forced to design the support software promised by the fellows in the basement shop. A few man-years later, the device finally operates as expected and becomes the "bit-diddler's" monument to IH gamesmanship: everything about the device and its environment is guaranteed to be completely unique! When the device is demonstrated, no mention is ever made of the standard hardware that has become available meanwhile.

Another form of IH is the production of many thousands of lines of code without any documentation except for cryptic notations contained in one of many program listings which are in the programmer's exclusive possession. The IH game degrades into a form which defines the "Invented Here" mode as something contained exclusively in the head of one man. In this respect, IH acquires the same dynamics as WMISTW.

Aim
The overt purpose of IH is technological advancement; the covert aim is the acquisition of a monopoly position.

Roles
The ego satisfaction derived from making a unique contribution in the face of opposition and in light of technical problems is a driving force within the individual choosing to play IH. As contrasted with mountain climbing, it is: a) carried on at somebody else's expense; b) conducted on the basis of expert opinion that it is essential, whereas no such claim has ever been made for any adventurous sport.

Obviously, the key role in IH is held by a MCBYC player.

Dynamics
A C:P game is declared by noting the need for creativity and innovation as essential to the attainment of reasonable objectives.

In fact, a C:C (uninhibited:uninhibited) relation is demonstrated, which often leads to positive accomplishments. However, the brilliant concepts of C:C cannot result in anything that would be of lasting value to the organization since IH is allowed to proceed with no prudent restraint or control. A surprisingly large number of recently created small software and hardware companies have their origins in a carefully executed IH game. The great incentive for continuing the practice of IH gaming lies in the well-advertised fact that its foremost practitioners have become rich men.

Anti-thesis
IH should be placed where it belongs: in the Research and Development laboratory where administrative practices are supposed to exist to cope with the peculiarities of C:C behavior.

Reprogram into New Language

Thesis
The advent of the "third generation" of computers has opened a vast challenge to the accumulated programming labor estimated at about 4,000 man-centuries (a new unit of energy). The new equipment has greatly enhanced capabilities to process applications that previously were not economically feasible. Some members of the programming profession

rose to the new potential opportunities. A large number chose instead to perfect their RINL scores.

The perfect script for staging RINL calls for a programmer to sit in his partitioned cubicle on the Nth floor of the "Z" Corporation's central headquarters. His table, shelves, and cabinets are full of manuals just received from the computer manufacturer. In less than 75 lbs. of documents, the manufacturer has demonstrated how powerful and easy it is to program the new equipment. A closer examination of the programmer's office reveals that it contains no reports, letters, comments, memoranda, or follow-up reminders from anybody belonging to the "outside world," meaning factories, branch offices, marketing departments or personnel people. As a matter of fact, his last communication concerning a real operating problem occurred many months ago.

When confronted, on one hand, with the prospect of searching for new applications in areas previously not exposed to mechanization (and hence unstructured) and, on the other hand, with the intriguing complexity of new techniques, the personal goals of a programmer will always lead him to choose the latter. His dilemma lies in his "Company vs. Profession" loyalties. The programmer knows that, in the short run, his marketability is largely influenced by his readiness to speak the latest buzz-words. Hence, he avidly embraces RINL and uses his influence with Systems, Procedures, and Executive Management to demonstrate why no new applications can be touched until the old ones are re-programmed.

Aim
The purpose of RINL is to perpetuate the status quo and/or to channel energies along the path of least resistance. In some instances, RINL may also be a way of satisfying perfectionist tendencies because it permits re-doing systems which were put together under severely trying circumstances.

Roles
The supporting cast for RINL can be very extensive. The principal coalition of RINL gamesmen consists of the players of MCBYC, since the possession of the latest device continues to be viewed as a status symbol.

Dynamics
It has every pattern associated with disguised C:P games; a technical advance triggers new opportunities which are advertised initially as a constructive means for achieving new P:A objectives such as cost reduction, performance improvement or increased reliability. In this respect, RINL players act exactly as their Operations Research counterparts in TOCS. The underlying reason for ineffectual use of this expensive talent, in both cases, is the organizational and communications isolation of potential innovations from the places where real operating problems go begging for solution.

Anti-thesis
RINL games can be stopped effectively either through strong centralization or through extensive decentralization of the programming roles. By placing programmers into a clear-cut service orientation that is necessary in either event, the relation between the cost of reprogramming and the resultant economic benefit becomes quite visible. RINL playing is then quite inhibited because programming for re-programming's sake is not knowingly supported by anyone who must pay the bill.

Figure 8–1.5

GAME INDEX

Category	Name	Acronym
Executive	The Chief Bookkeeper	CHB
	My Computer is Bigger than Your Computer	MCBYC
	Big Brother is Watching	BBW
Computer Room	Who, Me? It is the System That's Wrong	WMISTW
Operations Research	The Optimized Correct Solution	TOCS
	The Double TOCS	DTOCS
Methods & Procedures	Let's Computerize It	LCI
Programming	Invented Here	IH
	Reprogram Into New Language	RINL

CONCLUSION

As indicated in Section IV of this paper, there are many known categories of games which can be continually expanded and modified as new situations arise. The nine games catalogued as an initial inventory (see Figure 8–1.5 for Game Index), for which two thesauri could be built, are presented solely as an inducement for further research and classification activity by people engaged in information-systems activities. It is hoped that some day the subject of information-systems-games cataloguing will become a respectable professional activity and recognized as a significant source of know-how for any manager who wishes to master the interactions between the human and machine environments. The advantages of equipping newcomers to the information-systems activity with a properly indexed thesaurus are manifold and clearly worth the time and effort. The cost of human waste, lost talent, and sheer human anguish is just too frightful to allow the present gaming ways to continue. Until now, business has been willing to fund much of the computer games under the notion of progress and innovation. It is unlikely that this "open purse" policy will continue much longer, particularly since information-systems expenses are reaching significantly high levels.

Modern science has liberated man from most of the oppressions and constrictions of ignorance and superstition which for centuries have mentally and physically debilitated his economic progress. Yet our complex modern society, of which the computerized industrial corporation is its pinnacle of achievement, has created new forms of mental constraint which inhibit the capabilities for further growth and achievement. The presumably rational computer technology and its rapid advances have created unique opportunities for imposing on its participants mental frustrations which hitherto would not have been dreamt of as being even possible. Just consider the human condition in which the most complex and powerful condensation of intellect ever produced by the human brain—the computer—has brought not a great measure of control, but a higher level of instability into our industrial environment.

As shown in this brief paper, the inhibiting influence on achieving the full potential of the information-systems technology has been largely the acceptance of games as a dominant mode for coping with the new complex world. In other words, the human actor in the in-

dustrial world reacts to the unknown, the inexperienced, and the fearful elements in the information-system technologies with the same behavioral forms as children or adults have always applied when confronted with a difficult situation. The antidote for this reaction must be an increased awareness of the various forms in which human reactions can reveal themselves. By recognizing these forms,[4] destructive games lasting many years are quickly convertible into constructive and autonomous forms. It has also been noted that the outcome of unmasking a game need not always lead to a happy ending. Success can also be scored by chipping away some of the pretensions and re-

[4] Also sometimes known as psychological maneuvers and strategems (see A. H. Chapman, *Put-offs & Come-ons*. New York: G. P. Putnam 1968.

solving legitimate differences in the form of "crossed interactions" wherein one or more of the players rapidly conclude that they are not contributing to the welfare of their organizations. In that event, job mobility facilitates a legitimate search for another group where a man can contribute according to his best capabilities.

Would it not be delightful if you could someday walk into somebody's office and say: "Charlie, what you are proposing looks like a first move in a DTOCS game," and Charlie would reply, "Yeah, John, you seem to have spotted this inclination of mine! I guess we'd better sit down and really decide what to do next." Would not such an attitude among your fellow professionals hold such a great promise that you could finally get down to the business of building your organization's Advanced Information System?