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## Management Game Techniques and International NGOs

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### Introduction

Management games or simulation exercises have generated considerable interest among educators, training directors, operations research scientists, and among business executives. This article discusses some of the main features of these games: what they are, their usefulness, their limitations, etc. The purpose of the article is to indicate their potential value to international organizations.

### What is a management game ?

A management game is a dynamic training exercise utilizing a model of organizations in a workday environment. The organization could be a business, a library, a government department, a professional association or an NGO, in fact any organized social entity. The participants, executives or officers, are grouped together to represent the controlling bodies of the organizations. Each body is required to make the same operating and policy decisions as are made in real life. The decisions are made on the basis of periodical reports which may consist of press reports, financial and cost reports, membership reports, personnel reports, forecast, etc. The decisions and reports refer to a specific time period, which may be a day, a month or a year. Decisions are made for the next period. They are processed, new reports are returned, and the game proceeds. Time is thus compressed and many months or years of operational decisions may be made during the course of the game.

Games have varied in complexity from monsters which require 300 decisions by teams of 18 every decision. period, down to tiddlers which require only 3 decisions by one-man teams.

There are at least 100 management games in existence. Some are designed for competition between teams or individuals, in others a solitary player competes against a computer or a standard of performance. Some use a computer as umpire; others have human umpires who evaluate decisions manually. Games can be either competitive or non-competitive, aiming in the latter case at maximum co-operation.

### Why have management games ?

The main reason for using management games is that they provide the opportunity to learn from experience without paying the price in funds, morale or prestige, that would result from incorrect decisions in real life. Management games can be made very realistic and are used for quite serious purposes. They are exciting and are powerful educational tools which increase understanding and ability in decision making and problem solving. They create an awareness of the interrelatedness of the many factors that must be taken into account in any organizational situation.

### What are management games used for ?

Games were originally developed to simulate military and political decision making. They have acquired a degree of notoriety with such expressions as 'the Pentagon war games'. They have since been used to simulate decision making in telephone exchanges, banks, insurance companies, industries, government departments, and in many other spheres.

Games can be constructed to simulate decision making in non-profit organizations, hospitals, libraries, schools, professional associations and other such bodies.

Most games concentrate on general management principles, such as organization theory, human relations, long-range planning, decision making, communications and the effective utilization of time, men and materials. Other games aim at teaching very specific skills and techniques, particularly those built around the production planning and control function.

### How are games played in practice ?

Games have been designed for varying numbers of participants from one to about fifty. The latter are the more typical and are organized

as follows. The game generally begins with a briefing. The instructor describes the organizations and their objectives in the environment. He will explain the factors which will oppose those objectives and that the organization will only be successful if it correctly balances, its various decisions and plans at each stage of the game. The instructor then details the decisions that have to be made and the reports and other data on which these decisions must be based. All sorts of factors may be included in the game, such as: strikes, resignation of vital executives, loss of needed information, takeovers, Acts of God, etc.

Each controlling body then has to determine its specific objectives, evolve a structure (president, vice-president and other executive positions) and make decisions for the 'first period. These are usually recorded on pre-printed forms. At the end of the decision session the forms from each organization are collected and processed, either manually or, more commonly, by computer. New reports are distributed indicating the actual performance over the past period and new environmental factors to be taken into consideration. New decisions are made and the process is then repeated.

When a set number of periods have been played the results for the whole period are then displayed on graphs. The graphs are analyzed by the participants and the instructor to evaluate decisions and determine to what extent they led to the desired results. The game may have simulated a commercial situation, with, for example, four competing companies selling two products in three different markets. One company may have so balanced its decisions as to achieve the greatest return on the money invested.

## **How are games made- how much do they cost ?**

The first step in designing a game is to decide very clearly what the game is to be used for. This establishes the criterion by which irrelevant frills can subsequently be assessed and rejected to keep the game simple.

The second step is to list out the decisions that it is required that each player or team should make. These decisions should then be checked through carefully to determine whether each is absolutely necessary in terms of the criterion above.

The third step is to work out in detail the desired effect of each decision-the results it will have. The game becomes more sophisticated if several decisions interact (particularly those of all the teams in the game) to give a particular result e. g. quality, price, advertising may determine sales. The relationships between decision areas and results can be obtained from historical data for the organization. They can be summarized in graphs or tables.

The fourth step is to decide whether the game is to be a manual or computer game. In the first case preparation costs can be kept low (executives time plus clerical costs, simple materials, counters, etc.) but the game must then remain fairly simple or else processing of decisions becomes burdensome, slow and open to inaccuracy. It is difficult to run large games on manual systems. Using a computer involves costly program testing and it is costly to run the game- it is, however, much easier and much faster, and with good contacts it is generally possible to get free computer time. The computer, of course, allows many complexities to be introduced into the game-it also adds prestige to the game, which can be very important.

The fifth step is to test the game repeatedly to discover the flaws and decisions which produce peculiar results-these 'bugs' have to be removed. One existing computer game is so well balanced and flexible that it will react correctly to decisions to close down the factory, fire the workers and go bankrupt and will still prepare a valid balance sheet, income statement, etc.

A complete manual game could be prepared by anyone with limited mathematical knowledge -although, of course, the more sophisticated the game the more sophisticated the mathematics required. A computer game would have to pass from stage four into the hands of a computer service bureau with detailed written instructions as to what was required.

## **Limitations of management games ?**

Games have limitations. In general, they may cost more, both in money and personnel, than other educational tools. Questions have been raised as to the validity of games as training tools, but the enthusiasm of, and favourable comment from participants is certainly an indication of their value.

Another problem is the validity of the model. Obviously since the game model is an abstraction from reality the game can only aim to *appear* realistic to the player. An illusion of reality can, however, sometimes be more convincing than reality itself.

## **What use are games to international NGOs ?**

There are a number of possible uses of these games to international NGOs. Games could be developed to illustrate the decisions and problems in congress organizations, in the creation of an NGO and in the actual work of one or more international NGOs.

### **a) Congresses**

One of the problems for an individual in a national organization who is suddenly allocated the unfamiliar task of organizing an international congress is that he has no concept of or feel for the many problems with which he will have to deal. A game is ideally suited to the task of allowing him to go over his various decisions in a simulated environment without having to suffer the embarrassment of some of the disastrous results achieved in practice. The game plus information on the game 'environment'

could be sent to the organizer. He could make his decisions for the first phase of congress preparation on special forms and return these for processing. They could be evaluated manually (30-60 minutes) or by computer (about 1 minute) and the revised situation reports could be returned to the organizer for his decisions on the next phase, and so on. In this way the neophyte organizer could gain an awareness of the problems he will face, month by month, and an evaluation of the probability of success of his simulated congress.

Features could be introduced so that the organizer would have to cope with evaluating alternative congress halls and dates, organizing

accommodation, inviting participants, bargaining with airlines, keeping within budget limits, scheduling, etc. A game could be built up so that groups of organizers could simulate the competition for the best facilities. Such a game could perhaps be used at a congress of congress organizers. With computer processing, decisions on two years of congress preparation could be simulated during the course of one day or less of real time.

## b) Creating an NGO

It is often the case that national organization delegates can be brought together for an international congress but are extremely suspicious as to the value of going a step further and forming an NGO. Each organization suspects that it may be forced into implementing or supporting policies with which it is not in agreement. The problem here is a conceptual one. The national organizations do not know how the operations of an international organization would affect them. Clearly there is an argument for the use of specially designed games to simulate the interactions between members resulting from the creation of an international NGO.

How would this work ? Each national organization interested in the formation of the NGO could be given a set of decisions to make on the basis of a preliminary agreed game constitution. The decisions would be collected, processed and the resulting decisions and effects returned to the national bodies. This procedure could then be repeated with decisions, votes or proposals for activities by the NGO. Votes could be taken to modify the constitution if it proved unsatisfactory or favoured any particular group.

### EXHIBIT I: EXAMPLES OF REPORTS AND DECISIONS IN A POSSIBLE NGO GAME

| Reports received on performance in Period III (e. g. a period of 3 months)<br>(N.B. These reports are used as a basis for decisions for the next period, Period IV).   |
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| <ol style="list-style-type: none"> <li>1. Balance sheet.</li> <li>2. Income and expenditure statement : <ul style="list-style-type: none"> <li>• donations, legacies, etc.;</li> <li>• magazine revenue, advertising revenue.</li> </ul> </li> <li>3. Programs and activities successfully initiated (shortterm, long-term) : _ indicates a measure of effectiveness.</li> <li>4. Numbers of new and lapsed members : <ul style="list-style-type: none"> <li>• indicates long-term acceptability of policies.</li> </ul> </li> <li>5. Numbers of favourable and unfavourable letters received : <ul style="list-style-type: none"> <li>• indicates short-term acceptability of policies.</li> </ul> </li> <li>6. Number of paid personnel hired, fired, resigned. Number of voluntary personnel obtained.</li> <li>7. Magazine quality indicator.</li> <li>8. Indicator of comparable salary levels in commerce.</li> <li>9. Influence indicator : <ul style="list-style-type: none"> <li>• a figure computed from membership, donations, magazine quality and sales, etc. to indicate a level of performance for the period.</li> </ul> </li> <li>10. etc.</li> </ol> |

| Decisions made for Period IV<br>(N.B. These decisions are used as a basis for computing the information in the reports on performance for the period, Period IV).   |
|---|
| <ol style="list-style-type: none"> <li>1. Expenditure on programs to be initiated (short-term, long-term).</li> <li>2. Expenditure on office and other equipment : <ul style="list-style-type: none"> <li>• compensates for depreciation;</li> <li>• increases efficiency.</li> </ul> </li> <li>3. Expenditure on membership campaign.</li> <li>4. Bank loans to be obtained-if possible.</li> <li>5. Donations to be solicited : <ul style="list-style-type: none"> <li>• too much effort in this direction reduces the level of the Influence Indicator.</li> </ul> </li> <li>6. Magazine : <ul style="list-style-type: none"> <li>• pages of text;</li> <li>• pages of advertising to attempt to sell;</li> <li>• copies to be produced;</li> <li>• selling price.</li> </ul> </li> <li>7. Number of paid personnel to be taken on or fired. Number of voluntary personnel sought.</li> <li>8. Salaries of personnel.</li> </ol> |

All these decisions can be made to interact e. g. :

- 1) if salaries go below a certain percentage of commercial salaries there is a chance that personnel may resign;
- 2) if funds are not devoted to activities the rate of increase of membership may become negative.)

In this way, either by post or during a congress, a more real concept of the consequences of the creation of the NGO would be obtained by the members or delegates of each national organization. In addition, using game models allows the delegations to produce successive improvements to the constitution until it provides the basis for the formulation of a satisfactory final version for use in practice.

### c) Working NGO Simulation

A working NGO has a wide range of problems which include balancing the conflicting interests of members, scheduling programs in its field of activity, interaction with other NGOs, personnel, UN consultative status, relations with national governments, obtaining funds and controlling operational expenditure. Many of these could be included in a game. What for? Such a game could be used to simulate the consequences of suggested new policies to determine likely results. Naturally, it could only be a guide as it is difficult and expensive to build an accurate model.

The game could also be used to give an understanding of the operations of the NGO to potential members, new staff, or the Executive Council. A game has been used by the management of a commercial firm to explain operational problems to its Board, realistically and in a short space of time, prior to a critical decision.

The main use of these games in business is for training management. Although members of top management may be very familiar with their businesses and tend to resent the implication that they can learn anything from a game, participants soon become highly involved. This is particularly the case where the result of the game indicates some level of proficiency. A game is a good medium for introducing some new technique. It allows the treasurer to undertake the functions of the production manager and, consequently, to understand his problems and exorbitant demands in real life. NGOs could use games in the same way. Where the Secretariat of an NGO rotates between the HQ of national member organizations, a training game would very usefully orientate the new office holders to the problems with which they will be faced. An example of some of the reports and decisions that might be included is given in Exhibit I.

## What is the potential of management games in international relations ?

Games have great potential as research and training tools in all areas involving administration and decision-making. For example, one game has been developed to attempt to simulate the problems and interactions during United Nations peace negotiations, in this case the nuclear disarmament treaty (ref. 4). In the past few years, ILO experts in management development have used business games in various countries, adapting the game to the conditions of each particular country, usually in a simplified form to be used without the need of a computer. On the business side, the University of Chicago Graduate School of Business has developed the first major business simulation exercise oriented toward the specific problems of international trade and cooperation by multi-national corporations. The game covers problems in four areas (U.S.A., E.E.C., Brazil, Liechtenstein), whose inhabitants represent three different cultures. The corporations may choose to become members of a fictive World Federation of Appliance Manufacturers and can then, if they pay their dues, receive this NGO's magazine, which contains information on changes in the international market (see ref. 7). Efforts have also been made to simulate the behaviour of particular countries. Two projects are of special interest to international organizations.

The first is an international relations game developed as part of the International Relations Program at Northwestern University, U. S. A. (for an analysis of some other international relations games, see ref. 1; for a bibliography on simulation *in* international relations, see ref. 9). The game operates at a number of levels, with humans serving as 'decision-makers,' who are assembled into 'nations', which in turn interrelate with each other, as well as with surrogate 'governments' acting for 'international organizations,' forming an 'international system.' These components are interlaced with each other through interaction of the decision-makers, both within their nations and between the nations, as well as through a set of computed programs, which helps to provide the capabilities and restraints of the simulation. The game involves 5-7 teams of 3-7 persons each. Each team represents a nation which has one member as ruler. The rulers make decisions on political,

economic, and other factors. The decision-makers of each nation can freely develop relations between their states as their circumstances dictate. Each ruler must satisfy his voters but may follow policies of any shade from capitalist to totalitarian. International governmental organizations may be formed. The game is manually scored by an umpire staff. It has been used by college students and professional diplomats and is now available commercially as a kit for educational and research purposes (see ref. 10). During one run, as an example (ref. 5) :

'two large powers established an international grant-in-aid corporation to which the dissident smaller powers, flirting with aggressive national policies, might apply for grants-in-aid. The external ministers who manned the corporation, however, squabbled so much among themselves that, before the terms of the grants were formulated, the smaller countries experienced internal disorders, with many changes in their decision-makers. The disagreements among the great powers and the disorders within the smaller powers eventuated in a world war. It was interesting to note that the postwar peace treaty provided, among other things, for reestablishment of an international grant-in-aid corporation, this time with a worldwide membership on its board.'

The game as it stands has only 5-7 teams. Many theories in international relations can be built and tested with such a limited number of nations. In order to simulate situations in the real world more accurately, however, the effects of many new social entities must be

brought into the model. The more that are introduced, the more fruitful and representative the model becomes, and the more difficult it is to check. It is to be hoped that future computer and mathematical techniques will enable researchers to represent, within the same model, the effects of relations between all the different social entities mentioned in the following passage on model checking by Prof. H. Guetzkow (ref. 9, pp. 262-3) :

'Once one abandons the level of the total system and begins to work with large social groupings, such as nations and international organizations, one has many entities available for validation studies. The world contains approximately 120 countries. There are about 200 intergovernmental organizations (IGO's).

Add to these roughly 2,000 international organizations of the non-governmental variety (NGO's), along with 1,000 to 1,500 international businesses. One then has a universe of almost 5,000 entities, counting such quasiunits as alliances among the states. If one were to work with the interest groups related to external matters in each of the 120 countries, one would have a population of at least another 5,000 entities.

Moving to the level of the person: were one to check the validity of the simulate decision-makers against the political leaders themselves, those making and executing policy in the foreign ministries throughout the world (about 35,000), the international civil servants who operate the official and non-governmental international organizations (an additional 10,000), and the international business executives (another 5,000), one would have a universe of approximately 50,000 individuals.'

The other project has been initiated by Southern Illinois University as part of R. Buckminster Fuller's World Design Science Decade 1965-75. The proposal by Fuller is concerned with the development of a large-scale, computerized, world display and game facility. It is to be part of the University's Centennial celebrations. The World Game, as it is called, will be the first attempt to set up a physical facility directed towards the solution of world problems on a scale now only available for war games. Though similar to the World Game, and extremely ad-

vanced technically, the large military command and control installations are limited by their purpose. The World Game facility would treat a whole world map complex as a dynamic display surface capable of showing a comprehensive inventory of the planet's raw and organized resources, together with the history and patterns of world people's movements and needs. The facility will be used for educational and research purposes.

These are clearly only the first steps. In time it will be possible to simulate the complete network of relations between national and international organizations. The value and effect of planned changes will then be assessed, clashes anticipated to some extent, and communication improved. More important is that this would provide a realistic model for the concept of the interdependence of organizations, businesses and governments which represent individuals throughout the world.

## Conclusion

Games have been used successfully in all types of organization except international NGOs. It is hoped that this article has shown that management games could be of considerable use to NGOs. Cost may be a limiting factor but groups of NGOs with similar problems could use a similar game. Development costs could be spread between them. Many satisfactory manual games have been built at reasonable cost.

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### Les Techniques du "Management Game" et les ONGs Internationales

#### *Résumé de l'article en anglais*

Le "management game" est un exercice auquel peuvent se livrer entreprises industrielles et commerciales, départements ministériels, ONG, etc...

Les participants groupés pour représenter les organes de contrôle des entreprises, doivent prendre sur la conduite des affaires les décisions à caractère opératoire tout comme dans la vie courante. Ces décisions sont prises sur la base de rapports périodiques de toute nature. Décisions et rapports portent sur une période déterminée, que ce soit un jour, un mois ou une année. Les décisions sont prises toujours pour la période suivante. Elles sont enregistrées, de nouveaux rapports sont remis et le jeu continue. Le temps est ainsi compressé et les décisions opératoires dont l'élaboration prend normalement plusieurs mois ou années peuvent être concentrées pendant la durée du jeu.

Les jeux varient en complexité de 300 décisions pour une équipe de 18, à 3 décisions pour un seul homme. Il existe au moins 100 "management games": compétition entre équipes et individus, entre joueur isolé et ordinateur... certains utilisent l'ordinateur comme arbitre, d'autres préfèrent les arbitres humains.

Le "management game" fournit une occasion de profiter des enseignements de l'expérience. Ce sont des instruments éducatifs qui augmentent la clairvoyance et l'habileté à prendre les décisions.

A l'origine ils ont été utilisés dans le domaine militaire et politique, mais depuis, dans bien d'autres sphères. Ils sont pour la plupart concentrés sur les principes d'organisation. Pour préparer le jeu, il faut d'abord répondre à 4 questions: dans quel but le jeu va-t-il être utilisé ? - Quelles sont les décisions à prendre ? - Quel est dans le détail l'effet recherché de chacune des décisions ? - Se servira-t-on de moyens manuels ou d'ordinateur ? Enfin il faut essayer le jeu pour découvrir ses défauts en même temps que les décisions qui amènent des résultats particuliers.

Les jeux ont leurs limitations. Ils peuvent coûter davantage que d'autres auxiliaires éducatifs. Ils sont aussi, ne l'oublions pas, une abstraction de la réalité.

Ils peuvent avoir leur utilisation dans plusieurs aspects de l'activité des organisations internationales non gouvernementales, par exemple: la préparation d'un congrès, la création d'une ONG, l'établissement d'un programme, la solution des conflits d'intérêts, etc... Pour l'organisation d'un congrès les données introduites peuvent être: . plusieurs dates et lieu de congrès possibles, le logement, les invitations, les limites budgétaires. Un tel jeu pourrait être utilisé à un congrès d'organisateur de congrès. Le jeu peut aussi aider les associations nationales qui préparent la création d'une organisation internationale à se rendre compte plus exactement des conséquences de leur démarche.

L'auteur cite plusieurs expériences de "jeu" dans le domaine des relations internationales, mais regrette que celles-ci n'aient jamais été encore tentées chez les ONG internationales. M. Judge pense que malgré le coût de ces opérations, le "management game" devrait être essayé par les ONG, éventuellement en groupant celles qui travaillent dans le même domaine.

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