Case study experimentation and some potential gaming simulation payoffs

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This paper discusses the role of case studies in relation to instructional simulation efforts to improve our environmental awareness and capability. The 'case method' as developed by the authors is outlined and various teaching strategies are discussed. It is suggested that no single 'case' model can be advocated as ideal and more attention might properly be focused on pedagogical relationships which might ensure greater manageability and realism. Gaming-Simulation is seen as one example of how the case study method can be advanced and more widely exploited.

The paper concludes with the view that simulation approaches have to be further tried and tested if environmental teaching is not to be intellectually fossilised.

1. Introduction

The case study, as a means of learning from the recorded experience of others, is a teaching technique as old as history. It owes its continuing appeal to the fact that it is based on a record founded in reality and expressed in terms of common currency which everyone can understand.

Its virtues have long been recognised by business schools as a management training technique which enables the apparently intangible aspects of decision making to be isolated and analysed. The value of such a technique has only more recently been acknowledged as an appropriate means of understanding the processes of change and of developing better techniques and procedures for the management of settlements.

Other professions are slowly becoming more outward looking and there has been a general change in the attitude towards training and a recognition of the need for professionals to continually up-date their knowledge and experience. As a part of this shift in attitude there has also been a general recognition of the benefits of the transference of experience at both national and international levels, particularly with regard to the third world and the need to assist in the development of adequate planning and management systems.

2. The Purpose and Potential of Case Studies

The term case study is now loosely used to describe almost any process involving the studying of a recorded series of events. For the system to have specific applicability to the management of settlements it is necessary to define its purpose more precisely. Clearly, a major purpose of case study work is to increase people's understanding of the processes of change. However, it is also concerned with delineating opportunities for change and the qualitative assessment of the effectiveness of the mechanisms managing change. Having arrived at such an assessment, the case study technique is then concerned to facilitate the transference of this experience to accelerate the process of learning.

The case study can therefore be considered as the systematic recording of an event or series of events with the objective of learning from that event. The case study is most likely to serve its purpose if has the following characteristics:

a) it allows the user to identify with specified persons or set role positions
b) it captures the affective moods and other dynamic properties of an unfolding situation
c) it separates the description from the conceptualisation and generalisation

As a learning technique the case study can be applied both as a research tool, to improve understanding of a particular event or situation, and as a means of transferring experience generated by that event to others. In this sense, the case study may be considered to be most useful in 'action research' context, in which research, training and action are clearly linked and interconnected.

For research purposes, the case study would seem to have much to recommend it. To date relatively little

systematic research has been applied the study of the operation of environmental management systems. One of the reasons is that the traditional deductive research techniques, whereby hypotheses are generated from an examination of theory and then subjected to testing and verification, are of limited value in handling complex development situations. The case study is essentially an inductive form of research which is dependent upon hypotheses being generated and tested during the course of the research, as specific features of the situation become apparent and generalizations can be made 'within', 'between' and 'from' a set of cases (Figure 1). It is therefore particularly useful where both the issues and participants may be numerous and subject to change as the process evolves. The outcome will be in the form of 'grounded theory' that will have both goodness of fit with the phenomena contemplated and implications for action (1). Such action is likely to be mainly process orientated, as one of the objectives of the study will be the need to gain a greater understanding of the actual operation of the management system, with a view to its possible modification and improvement.

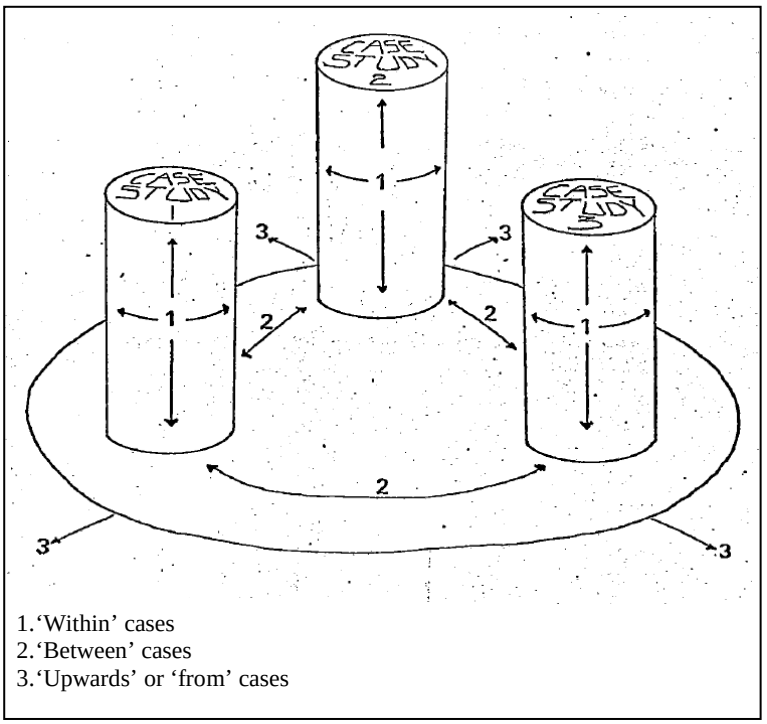

Figure 1 Case study types of generalization

The use of the case study, as a bottom up approach to the examination of settlement management systems (2), will ensure that any modifications proposed are more likely to respond to an established need than in a comparable top down situation, where problems are often set in the political context of an assumed need. Linking comparable case studies can demonstrate how general principles drawn from political theory operate in the real world of settlement management and can provide the essential evidence necessary to justify change or modification to the system.

Apart from their research potential, case studies may serve three major (and often overlapping) instructional purposes. Firstly, they can be used as a learning tool and serve as examples of practice, where the user can examine the substantive nature of the issues involved and gain a greater understanding of the operation of the settlement management system (3). Secondly, they can provide a basis for active training to enable the user to rehearse, re-live and analyse the way he would react in particular situations (4) and, finally, selected cases can be seen as models of good practice for the development of comparable methodologies and procedures (5).

Where the emphasis is on the training role, through the transference of learning and the development of experience, it may be applied at the individual, group, organisational or national level. In all instances the objective is to accelerate the learning process and short circuit the traditional and expensive experience of learning by trial and error on the job. More will be said about specific uses and applications of case studies for instructional purposes below.

3. Preparation of Case Studies

Although case studies are flexible teaching and learning devices, it is important that before the preparation of a study is commenced the objectives, application and target group for the case study are clearly defined. By this means it will be possible to ensure that the orientation of the case study reflects appropriate objectives and that due emphasis can be given to particular aspects concerning relevant issues, procedures and skills. At the same time, it is worth noting that the type of case study outlined here may serve both research and instructional objectives; it is then a flexible method which can be adapted according to requirements.

The core of the case study work is the collection and compilation of the data base covering the decisions and procedures involved. It is therefore important that at the earliest stage possible sources of information and documentation are identified and approval obtained from the various authorities, organisations, and individuals who will be expected to contribute material to the study. In practice, approvals are more likely to be forthcoming if, at the outset, potential contributors are guaranteed the right to receive draft copies of the case study before publication, and for any dissenting comments or interpretations they may wish to make to be included in the case study in the form of an appendix. It is equally important that contributors are not given the right to veto the inclusion of any material in the study as this would again obviously vitiate the integrity and comprehensiveness of the project.

Some initial research will be necessary to identify sources of information but it is likely that new sources will develop as the study proceeds. It is important to ensure that all aspects of the subject are covered and that differing points of view that may have arisen are included. Sources of information may include local government, central government, private organisations, residents' groups, trade associations, professional groups, interest and pressure groups, press cuttings and photographic archives.

The initial collection of raw data is only the starting point of the investigation. In parallel with the collection of data the researcher will need to be developing a series of theoretical interpretations of the reasons for certain actions and the interactions between different aspects of the study, as well as trying provisionally to identify key issues. This initial analysis of the material serves three functions. Firstly, it enables the researcher to ask the right questions and identify further sources of information. Secondly, it will assist in the provisional ordering and editing of the material and ensure that the ultimate study is comprehensive in its coverage. Thirdly, it may form the basis for an interpretive commentary on what the researcher considers were the key issues. This commentary may ultimately be included in the study or produced as a separate companion volume.

Once the bulk of the data collection is completed it will be possible to proceed to the structuring, ordering and first editing. The data can be structured in a variety of ways: it can be grouped in terms of organisational responsibility; around specific issues; or into particular 'decision making areas' or blocks of information between procedural gates. The overall objective is to break down the information into small digestible blocks for the purpose of study and analysis. To ensure that events are related in the correct sequence, the material will then need to be arranged in chronological order. As the material is being provisionally structured and ordered, the main issues and key characters will start to appear and the process of editing can commence. The purpose of editing is to ensure that the main features of the case study are made apparent without a surfeit of irrelevant background information. The editing process may reveal gaps in the data base and a further round of data collection found to be necessary to balance the presentation of the material. Certainly-case study data collection and analysis is in many ways a cyclical, iterative process, as Figure 2 shows.

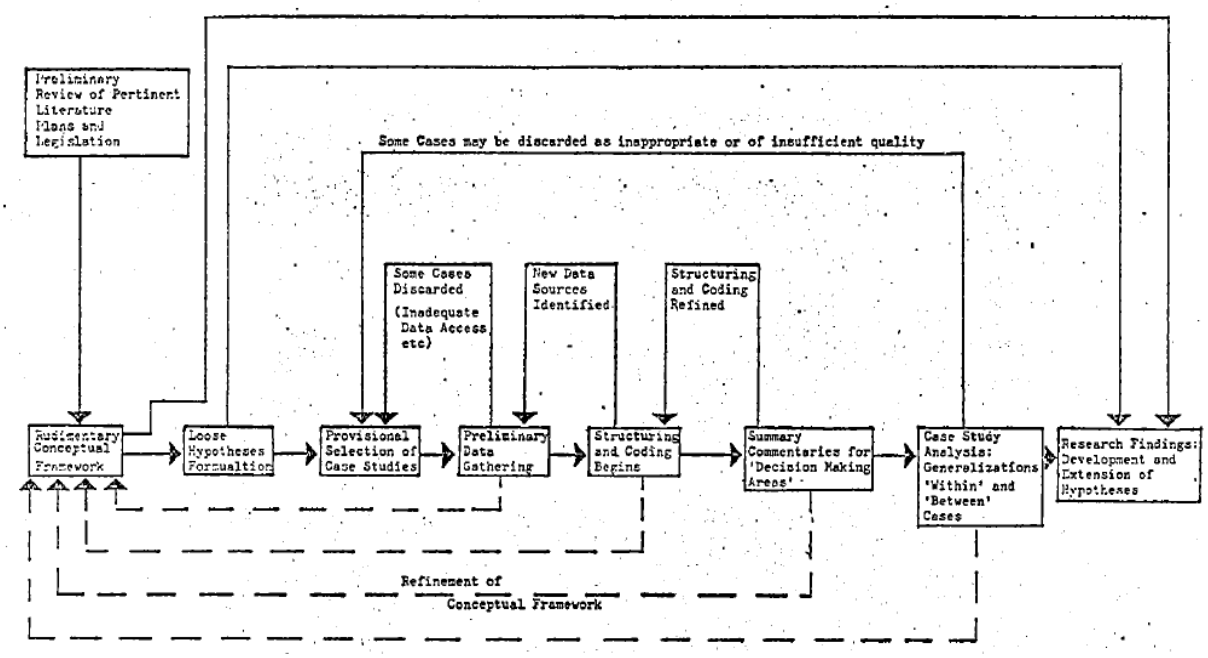

Figure 2 Case study data collection & analysis elements

As an aid to a quick understanding of the data base, it is useful to present the main features of the decision making process in the graphic form of a flow chart demonstrating the relationship between the separate but often overlapping sub-processes involved in the project (Figure 3). The role and significance of the main actors in the various decision

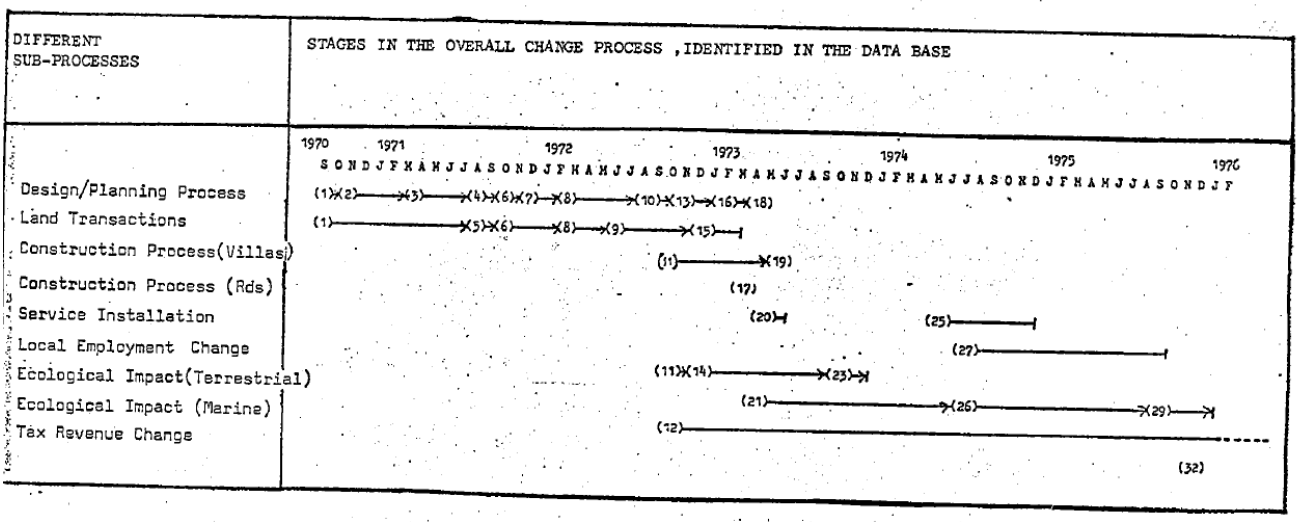

Figure 3 Flow chart of major case study sub-processes

making stages can also be identified in a simple table. referenced back to the structuring of the data base, or through more complex decision stage charts (Figure 4). The next stage of the process is. to develop a commentary which will link the various stages of the data base. The purpose of the commentary is to provide an element of continuity by briefly explaining and summarising the significance of the administrative and other processes illustrated by the documentation. It is not intended, at this stage, to provide an interpretive element with regard to the merit of the various actions or events taking place, although this may be added subsequently in the analysis stage.

Having assembled the main elements of the case study, it is often useful to add a two part introductory section. This comprises firstly a brief summary of the case study, to enable users to familiarise themselves with the main characteristics of the project. The second part sets the context of the case study by explaining the terminology used and the legal, administrative, political and spatial frameworks within which the case study takes place. Original documents or sections from them may be included and should be supplemented with plans, diagrams and photographs as appropriate to ensure that the reader understands fully the significance of the particular actions. The introductory section is of especial importance where the case study may be used by readers from another country or different background.

The case study draft will then contain the following sections:

i. summary of min characteristics and action
ii. introductory explanation of terms and context
iii. the structured data base
iv. a process flow chart identifying the separate but overlapping processes of the project
v. a decision stage table and/or chart in which the role and significance of the main actors are identified and related back to the data base

Having completed the draft of the case study it can then be circulated to all parties represented in the case study with requests that each one give their views on the basis of the evidence presented and their own involvement. They can, in addition, be asked to identify the key issues underlying the success or failure of the case study and the nature of such success or failure as they see it. Whilst this stage often proves to be the most difficult, with some participants not willing to contribute, it is an important step in the process in that it provides an opportunity for decision makers and participants to comment on the case study before it is finalised. Even if all parties do not avail themselves of the opportunity to comment, this stage can be viewed as a proofing process likely to comb out errors and forestall needless further debate.

From the researcher's point of view the invitation to- the contributors to comment on the case study is invaluable, as it will provide him with a number of perspectives on the interpretation of the basic data and help in his own assessment of the value of the material he has collected. These final comments and revisions, along with those of the editorial panel, are then incorporated into the case study and colour coded accordingly. Final drafts of the data base and group reports can then be circulated as a further stage in the continuous self-learning and refinement process.

The analysis of this material for research purposes involves the search for generalizations ‘within’ and ‘between’ cases, and the development and extension of research hypotheses. The ‘decision stage’ and ‘process flow charts’ can be refined, revised and compared as conceptualizations of the overall ‘change process’. These portrayals often act as invaluable graphic aids providing synoptic views in which bottlenecks, conflicts and critical points may be identified. Similarly, the link commentaries and reports from interested parties may be used to highlight key issues and changing sectoral perspectives through time. In this way hypotheses can be formulated and extended, and summary findings

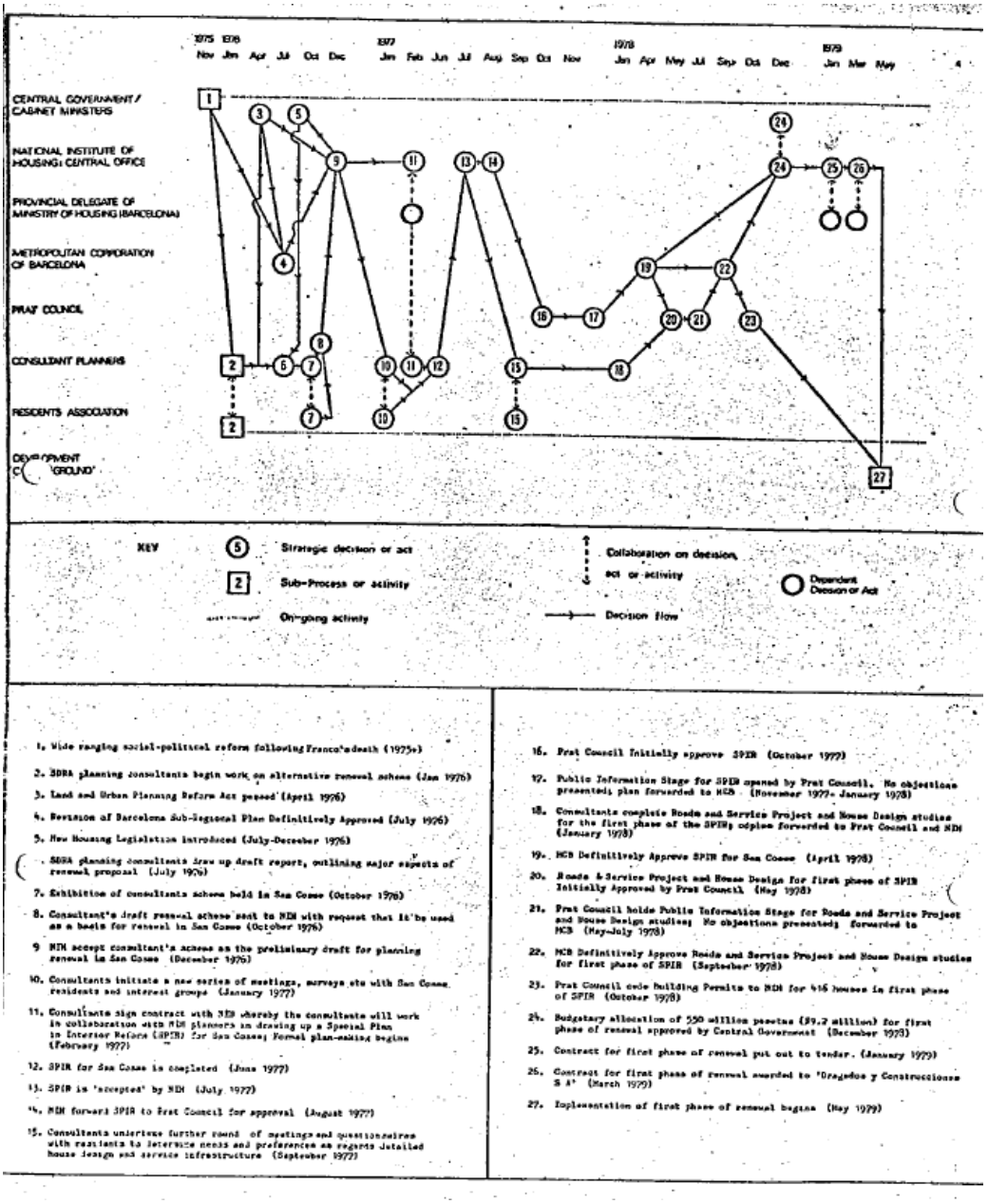

Figure 4 Decision stage charts

may merit a separate ‘research report’ as well as constituting an integral part of the full case study documentation.

Finally, it is perhaps worth stressing that the preparation of a full case study is a time consuming process, very much dependent upon the skills of the researcher for the success of the results. It requires a perceptive and inquiring mind combined with a certain tenacity, good literary skills and an understanding of the subject matter.

In some situations it may not be possible to find a suitable researcher or it may not be considered worthwhile devoting so much time to the study. In other situations it may be impossible, for political or procedural reasons, to collect original documents or, where they are available, it may be considered imprudent to publish them. In such circumstances an alternative to the authentic case study is the development of an anonymous and hypothetical case study consisting of a re-constitution of events, popularly known in television parlance as ‘fraction’ - a combination of fact and fiction to heighten the communication impact of the study or presentation. Such fictitious narratives rely on a selective use of facts and are assembled in a form which will not be directly identifiable with either specific events or people, but will nevertheless be based on an analysis of real events or on a prediction or assessment of likely chronological developments. Such cases are particularly useful when the case is intended solely for training purposes, rather than for researching the dynamics and mechanics of change.

The case study in this sense will still contain the same components of introductory material, data base and a commentary. Whilst the basic data lacks the veracity of an authentic case study, it can be constructed to bring together the essential aspects of number of different situations to provide a. more diverse and. Challenging teaching tool.

4. **Action-Research Applications**·

As previously noted, the case study method may constitute a powerful tool for fulfilling the interrelated objectives of applied research and training. Here, then, we are moving into the realm of 'action research' as defined by Kurt Lewin, whose workshops were conducted jointly by practitioners, scientists and trainers, and had the triple function of action research and training "as a triangle that should be kept together for the sake of any of the corners" (6). Thus, where a case study (or set of studies) is being used to evaluate past performance, and the participants in the actual event of the case study also participate in the evaluation stage, training sessions will often build on research perspectives discussed above. Such training sessions, then, may consist of the following events:

Firstly there will be an examination of the case study summary and analysis to ensure familiarity with its overall aspects. Study will then turn to an examination of the actual data base, with specific questions being raised by the instructor to promote relevant questioning and discussion and possibly to elucidate further points of information.

The second stage of analysis will be by reference to the process flow chart to define within the scheme the role played by different individuals and institutions. Typical aspects which will need to be considered are, for example, what degree of overlap existed between parallel processes and what possibilities may exist for increasing overlap and reducing the overall process time. Conversely, there may be considerations of duplication of activity and the need to reduce such areas. Analysis may also help to identify bottlenecks in the process of management and indicate areas where other improvements may be possible.

The third stage will be concerned to analyse the decision stage chart in an endeavour to pinpoint the key decisions or gates in the management process which lead to either success or failure in the project. At this stage participants may be asked to comment on both the role played by different individuals and institutions and the decision which they arrived at. In the ensuing discussion the implications of alternative actions and strategies can then be explored again as a process of refinement of the overall management system.

Emphasis given to the discussion will obviously be dependent upon whether the participants in the learning exercise were involved in the actual case study situation or not. Where the participants were involved, then the motivation and reasons for certain actions can be explored further and new information may come to light. Participants can also be asked to review their performance, in the light of the eventual outcome, to assess whether their actions could be improved upon.

The design and running of simulations, based on particular case studies, is a further action-research application with great potential in several ways (7). It is worth bearing in mind that a difficulty with case studies is that they often contain a lot of essential basic data which it is difficult to condense without losing the essential realism. Hardened professionals and practitioners are unlikely to be particularly impressed or convinced by the alternative of factual descriptions of the process. The case study data bases provide a valuable starting point for the development of alternative training techniques, with the emphasis on the participation of the audience in the learning and evaluation process, with participants drawing their own conclusions through the interesting and convincing presentation of material drawn from the data base.

Simulation techniques are a means of understanding and evaluating the operation of theory in practice. As Taylor has shown their use in training related to the built environment is far from new (8). Early pioneering work in the 1960's was followed by the advanced development of environmental games in which the dynamics and growth of urban systems were simulated. Simplified representations of reality provide test beds for students to experience something of the real world dilemmas of decision making.

Although the development of urban gaming has suffered from a lack of evaluation, one generally accepted criticism has been that urban games are poor in their definition and description of the planning environment. This is largely because such games usually try to simulate development at the city or metropolitan level. As a result, games tend to be either extremely complex in their design or execution, or else over simplified to such a degree that whilst they help the student to appreciate theoretical principles, at a high level of generality, they are in many respects remote from the contexts within which real life decision makers operate. One means therefore of ensuring manageability and realism in the simulation process, is to build the game around a tightly defined case study. Ideally the simulation should be designed by the research team who prepared the case study and it may include a simplified re-enactment of part or all of the case study, depending on the time available and the complexity of the case study.

The decision making context would be taken from the case study and presented to role playing teams representing the major interest groups in the case study. Some participants may be playing their own real-life role in the simulation, although educationally there are advantages in playing other people's roles and rotating through re-runs of the game.

Constraints are introduced to recreate the immediate and more external influences that shaped the decision making course of the case study. It may be that the simulation will closely follow the real case study. If not the simulation can be stopped at selected points and compared with the decision making course of the real development. All the gaming tool kit may be used including a game board, representative pieces, role play descriptions and game rounds based on the decision making stages of the data base.

The game should conclude with a de-briefing session which could include debate on the game model, how it related to the actual outcome of the real case study situation and what insights the various participants gained into the decision making process in general. Discussion may attempt to link lessons learnt in this case study to a more general functioning of the administrative process and the deployment of personal skills with the aim of defining areas of possible improvement.

This comparative aspect can be extremely valuable in stimulating discussion both about the participants performance in the gaming situation and also the operation of the real world management system and its political, economic and social context. It has clearly to be considered as a two way interactive process which may in itself contribute to the further development of both the simulation exercise and the case study.

Gaming simulation, however, is not an end in itself but must form a part of a larger pedagogical process. This may include traditional training techniques to provide the student with an understanding of the operation of the management process, within the national, po1itical and administrative context. The case study then provides an authentic structure which defines the role of each participant and his capacity for action. An appropriate simulation exercise will therefore need to clearly define the parameters within which each role is played, yet leave each actor with scope for individual initiative to pursue the particular goals he has been given. By acting out these roles, the participant becomes aware of the constraints, dilemmas and opportunities that confront the key personnel who influence the processes of managing environmental change.

5. Concluding Remarks

The application of case study techniques to the study of the built environment and the development process is in its infancy. Experience to date would, however, indicate that it is an important contribution to the development of pedagogical techniques worthy of further consideration and development. Given the current climate of criticism of professional performance in the management of urban systems, it is apparent that there is an urgent need both to improve performance at the individual and corporate level and to look for new techniques and processes of urban management. The contribution of the case study technique is that it has immediate relevance through being based on real life material which can be readily comprehended. and analysed. More particularly the case study technique can be seen to have four main areas of specific value.

Firstly, case studies help focus on the critical gates and levers of the management process and indicate areas where the system may be ineffective or inefficient and improvement will need to be made. Secondly, it exposes the role of individuals and agencies in a dynamic situation where their relationship to the decision making process can be examined. It can thus speed learning and improvement through exploitation of this synoptic view. Thirdly, the case study represents a flexible technique which can involve a great many people at a variety of levels and at different speeds of learning. It therefore has an essential role to play in fostering inter-disciplinary learning and working. Fourthly, the case study is of prime importance in its ability to generate and foster a continuing interest: in self learning. Once an approach and a methodological framework have been established the case study can be used as a simple technique for an individual, group or organisation to undertake continual monitoring of their own progress and assessment of their performance, as a part of an action orientated programme of learning and research.

Although case studies can be useful tools in the improvement of professional performance, it is important to emphasise that they are not new and that there is a considerable need to benefit from the experience of others in settlement management and related fields. In particular there is a need for further progress to be made on the development of appropriate and agreed methodologies so that the comparative aspects of case study work can be developed and the transference of experience occur at a broader level. There is an obvious need to speed the learning process and to short circuit the expensive experience of learning through the direct experience of trial and error only. This is particularly true in the context of the increasing awareness of the magnitude of the problems the third world faces and the need to speed their processes of development and. stabilisation. Further work and experimentation combining case study and· simulation as described above are vital if advances are to be achieved and if our learning and teaching is not.to become intellectually fossilised.

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