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HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

HANDBOOK FOR THE
ORGANIZATION AND
DESIGN OF COURSES

revised version

UNESCO
DIVISION OF ECOLOGICAL SCIENCES

MAN AND THE BIOSPHERE PROGRAMME
HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

HANDBOOK FOR THE DESIGN
AND ORGANIZATION OF
TRAINING COURSES

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REVISED VERSION

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PREFACE

When speaking of human settlements, the subject could be treated as a geographical area containing roads, landscapes, industries, fields, dwellings, business centres, shops, etc. - a set of physical realities which the town planner and the geographer are used to representing by means of their customary graphic tools.

Human settlements are however more than that; they are also groups of people whose homogeneity is only apparent. They are people with differing economic and political opinions and differing social and cultural values. Finally, they are people who use institutional and other mechanisms to improve the results of their strategies aimed at optimizing the positions specific to their social role.

It is evident that this diversity of interests brings to bear a series of divergent pressures on the behaviour of those who, at the legal and institutional level, are responsible for governing and managing what is conventionally called the public weal.

In this era of growing complexity, above all in developing countries where the scarcity of resources can make competition for their appropriation keener, the task of managing human settlements optimally can become overwhelming.

Further, the management of scarcity means achieving the potentialities present in the social, natural and physical environment, in other words, seeing and acting beyond the viewpoint and sectoral action to which bureaucracies and national public agencies are accustomed. Basically, what is involved is introducing fundamental innovations into the professional profile of those who are responsible for the management and administration of human settlements.

These managers and actors play a fundamental role in the optimization processes just mentioned, and it is well known that developing countries are particularly lacking in both number and quality of such operators. Which methods should be adopted to train the operators of these countries rapidly in a transectoral management, which would bring the available resources into action, while maintaining a level of public participation and consensus matching efforts aimed at keeping the quality of life of the populations at an acceptable level?

The present work based on Unesco's and its "Man and Biosphere" Programme field experience attempts to provide an updated answer to these problems and needs.

A Handbook, however, is just a didactic tool. It represents past experience and acquired knowledge. It should be stressed that Unesco considers its efforts as an open learning process to which trainers, colleagues and specialists of all countries are warmly invited to contribute for its future achievements.

It goes without saying that the ideas presented here have developed thanks to a long lasting collective effort. I would like to acknowledge these contributions from teachers, planning authorities, colleagues, workshop participants, the man in the street and all the other people of so many nations who have generously shared their thoughts with us.

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To the Reader: How to use this Handbook as a Course Planning Tool

This Handbook has been compiled to assist those working on the design, organisation and running of Human Settlement Management Training courses within UNESCO's Man and the Biosphere (MAB) programme and succeeds the 1977 Handbook produced for the same purpose. A simple, easy to follow approach has been adopted, in an attempt to communicate a clear sense of purpose and direction. The emphasis has been on providing a simple tool for trainers working in the field. This is not an all-encompassing work on training and development programmes, but rather something that has been put together for a very particular purpose: to guide those involved in the planning and design of human settlement management training courses in the months prior to the course, when there is everything to do, and little time left to do it.

Section 1 of the Handbook is mainly introductory and explanatory in nature and the main stages of guidance are embodied in Sections 2 - 5. Go through these sections one at a time and, using the illustrative examples for comparison and contrast, chart out the details of your course from the PROBLEM SET through to the COURSE TIMETABLE. A number of Course and Method Monographs, documenting training courses and methods have been prepared by UNESCO and these too may be used in conjunction with this Handbook for reference and illustration.

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1.   INTRODUCTION

Since the mid-1970's, UNESCO have been actively involved in the development of major training initiatives in the field of human settlement management, encompassing many different but related disciplines in various parts of the world.   The Human Settlement Managers Training Programme has been developed by UNESCO in conjunction with other agencies, notably the United Nations Environment Programme (UNEP) and the United Nations Centre for Human Settlements (UNCHS).   The original programme was based on a three phased process of implementation consisting of the development of pedagogical tools, the provision of training courses, and, finally, the transference of initiatives from UNESCO to local organisations.

The programme is now in its third phase of implementation and it is clear that over the total period there have been substantial changes in both the theory and techniques of settlement management. At the same time, much has been learnt from experience gained in the field on how training courses can best be designed and run, and this Handbook attempts to consolidate progress made to date and provide a viable framework for the design of subsequent courses.

1.1. Origins and Development of the Programme

The Human Settlement Managers Training Programme was originally set up because of the clear need for appropriate training and retraining of public sector cadres, above all in the developing

nations.   Too often public sector intervention has been sectoral,
piecemeal and sub-standard (Figures 1.1. and 1.2.) and the fostering
of transectoral and environmentally sound action was seen as a
major objective of the training programme.   At the same time,
traditional teaching methods had often proved inappropriate,
ineffective and costly for the training of middle-level public
sector management, particularly on training courses lasting typically
one or two weeks (Figure 1.3.)   New ways have thus been sought
to train settlement managers to identify key problems and issues
relating to integrated settlement management and to take action
accordingly.   Experimentation with a variety of participative
training techniques has been tried, often building upon case study
data taken from the locale of any one course.

Figure 1.1.   Public Intervention in the Housing Sector in Spain

This state housing area was built in the mid-sixties at San Cosme
outside Barcelona.   Houses were sub-standard and much of the planned
infrastructure (at A,B,C & D) remained unbuilt by the mid-seventies
(Photo: Coporacion Metropolitana de Barcelona).

Figure 1.2.   San Cosme, Spain, in the mid-seventies

In many countries , in both the developed and developing worlds, public sector housing has too often been sub-standard. (Photo: M. Wynn)

The main target groups for such courses have generally been middle management professionals, technical experts and academic advisors who are concerned with developmental problems on a regular basis, where trade-offs between human needs, available resources and environmental impacts have to be made.   The scope of the courses has encompassed the wide range of developmental activities and professional perspectives relating to human settlement management -housing and infrastructure provision, tourist development, education, public health etc.

The Human Settlement Managers Training Programme was initially conceived on the basis of the ideas suggested by a group of experts from 15 countries present at a UNESCO-promoted seminar held in Vienna in December 1974.   This seminar reviewed recent simulation

techniques related to environmental questions. It concentrated its attention on innovative training methods, especially the use of gaming and simulation models as pedagogical tools applied to concrete case studies. Participants concluded that it was evident that an urgent response to the growing need for solutions to the practical problems of human settlement management was required. They also agreed on the priority of effectively introducing ecological and environmental considerations into policy formulation and development actions related to the satisfaction of basic human needs.

UNESCO and UNEP, together with the <u>Institut Africain de Developpement Economique et de Planification</u> (IDEP — particularly through its environmental training programme — ENDA), organized a second seminar in Dakar, in December 1975, in order to consider the question of the organisation of a training programme which could respond to the urgent need for training competent human settlement managers, capable of transectoral perception and action. To this effect, the experts proposed a series of experimental training seminars in which innovative training methods and techniques could be tested and analysed. These were to centre on case studies and the application of participative pedagogical techniques and simulation methods within different cultural and administrative contexts.

During late 1975 and 1976, UNESCO co-ordinated the implementation of six experimental courses in which 14 gaming-simulation exercises were applied on the basis of case studies chosen to reflect the management problems of selected human settlements.

Figure 1.3. Yesterday's Education - Tossing Out The Pearls Of Wisdom

We need to move towards more participative and cost-effective ways of designing and running courses, based on a rational assessment of needs and possibilities (Figure reproduced courtesy of Nigel Paige).

These training courses were held in Argentina (for countries of southern Latin America), Morocco (for neighbouring Arab-speaking countries), the Ivory Coast (for francophone Africans), Ghana (for anglophone Africans) and India and Indonesia (for Asian participants). All of these experimental courses were funded through UNEP's participation, and organised in the field on the basis of the infrastructure and staff of official and private institutions of the host countries, in some cases assisted through the participation of other institutions on a consultative basis. Consequently, these experimental courses not only provided a platform for evaluating new pedagogical methods, but they also served as a proving-ground for testing organisational and institutional arrangements.

To plan the next stage of the training programme, a UNESCO-UNEP sponsored evaluation seminar was held in Budapest in June-July 1976. The participating experts, governmental and institutional

representatives, agreed that experience to date had provided an important number of ideas, and confirmed the interest of participating regional and national institutions, teaching staff and trainees, in continuing and broadening the programme.   The seminar concluded with a recommendation for immediately proceeding with a follow-up to this initial examination of pedagogical methods, to provide more advanced training activities.   These were subsequently held in Latin America, the Arab-speaking countries, Africa, Asia and the Southern European Mediterranean region, and a training of trainers seminar was also held early in 1978 in the Mediterranean region.   In early 1979, a training course for participants from the Sudano-Sahelian countries was held in Senegal on the topic of the integrated rural development of the Casamance province of Senegal.   This seminar was held in co-operation with ENDA and the Senegalese Ministry of Planning.   Later the same year, a seminar in Mexico City attempted to evaluate the training programme in Latin America and draw up objectives for future courses there.

Following further courses in 1980, a major seminar on training methods and skills was held in Gouvieux, France, involving some thirty trainers of wide-ranging background and experience.   From this seminar came detailed recommendations for the design and organisation of subsequent courses, necessitating a revision of the existing training handbook dating from 1977.   These ideas and concepts have been developed and extended in some of the large number of courses run since then (currently over 50) as the training programme has gained momentum and local organisations have come

to play a greater role in the planning and running of courses. This revised handbook, then, attempts to consolidate this process by providing a common framework for further courses, through which the continuing training effort may be systematically improved, adapted and monitored.

1.2.   Training Objectives and Philosophy

UNESCO's Human Settlement Management Training Programme centres on relatively short courses which attempt to give human settlement managers the capacity for transectoral perception of problems, and enable them to systematically formulate and apply environmentally sound solutions. Within this frame of reference, an appropriate solution is seen as one which satisfies the objectives of a range of sectors within the socio-economic system and balances environmental and technological considerations with the need to fulfill specific consumer requirements.

There are, of course, a range of constraints and factors which condition the implementation of such training objectives. Human settlement managers are socially and professionaly engaged in practical planning and implementation activities and this necessarily imposes very special characteristics upon training procedures and tools.   Managers will have to be provided with a solid conceptual frame of reference to understand and solve problems with an integrating attitude, yet, at the same time,

care must be taken to reduce the distance between theory and practice if training is to have practical value. It is also necessary to minimise the disruption of managers from their day-to-day activities; therefore, courses have to be of short duration and closely tied to the kind of problem these managers are involved in. Furthermore, it is desirable that the people trained should be capable of transmitting their knowledge to others, either in formal courses for managers, in which they might act as trainers in their turn, or in their daily contacts with technicians, other public officers,and the population at large.

It must also be remembered that human settlement managers are engaged in a diversity of responsibilities which accounts for the heterogeneity of the type of decisions to be taken over a wide variety of social and geographical issues. These decisions can, in effect, range from the formulation of human settlement policies at national level to the implementation of specific human settlement projects through applied technology. Training patterns must be able to take account of these varying conditions and different subject matters, and guidelines for the organisation of courses have thus had to be sufficiently open-ended and flexible. At the same time, it must be stressed that integrated management of human settlements should not be considered as a ready-to-use knowledge, to be exported without concern for national realities. This programme should be considered as a continuing learning process where new pedagogical tools, didactic methods, and field experiences can come together in reaching all those institutions,

public officers, and researchers engaged in solving human settlement problems.

Regarding other UN agencies, the Human Settlement Managers Training Programme is envisaged as bearing strong relationship to other educational efforts related to human settlements and the environment. This relationship is conceived in terms of complementarity, where the particular parameters of this training programme can be of use to other short duration training efforts envisaged for those engaged in sectoral management activities. The training programme for human settlement managers is at present in a position to expand and diversify its activities within the MAB programme on a wider range of questions than those envisaged in the original training programme.

A survey of present levels of commitment by all institutions and organisations concerned with the problems of environment and development (not only in the planning and management stages, but also in that of implementation through the necessary medium of public participation and applied technology) clearly points to an increasing demand for the kind of short-term integrative and participative training that has developed since early 1974.

Future initiatives will be set within a wider framework in which training is part and parcel of an integrated and co-ordinated programme of intervention. Training can be viewed as a positive form of action that influences and periodically reflects developmental decisions and activities, and can therefore be seen as a powerful management tool to instigate environmentally

sound planning and development.   Such initiatives might encompass:

- Transectoral human settlement environmental and technol-
ogical management, at a general level, and also focusing
on particular themes and issues (e.g. tourism develop-
ment, squatter upgrading).

- Sectoral   environmental   and   technological   management
problems in human settlements (such as forest management
of water and soil, and management of housing and infras-
tructure projects, including their legal and financial
aspects etc.).

- Environmental   technology   resulting   from   development
projects   implemented   within   human   settlements   and
natural or man-transformed ecosystems (such as agricult-
ural development projects, urban technology projects,
energy-related projects etc).

On   the   basis   of   present   knowledge   of   possible   demand
for   the   kind   of   information   and   experience   already   accumulated
in   the   Man   and   the   Biosphere   Programme,   the   following
organisations are considered as potential users and collaborators:

- Other UN agencies engaged in development actions (UNDP,World
Bank etc), relevant at human settlement level, or those
engaged   in   training   programmes   related   to   more   sectoral
environmental questions (WHO, FAO, UNEP, UNCHS, UNHSHF,etc).
There could also be an especially interesting collaboration with
regional bodies such as ECLA or regional UNEP programmes,
such as those for the Caribbean and Mediterranean.   In   these
cases, the input of the experience acquired in human settlement
manager training could be of use when implementation procedures

begin and information has to be transferred to interested governments and institutions within the study regions.

. Other intergovernmental bodies such as the OAU, OAS or OECD, for example, engaged in activities similar to those mentioned above.

. Non-governmental agencies of a regional or wider international nature engaged in research and training activities, such as, for example, the Latin American Social Science Faculty (FLASCO), the International Union of Local Authorities (IULA) etc.

. Interested governments that might be engaging in training and project activities related to problems of human settlements and the environment within their national development plans.

. Universities or international training institutes, such as CIFCA and IEAL in Madrid, engaged in activities related to development and human settlements.

The programme is therefore envisaged as developing on a regional basis in southern Europe, the Arab States, Africa, Asia and Latin America. Owing to the evident socio-cultural and economic heterogeneity of these regions, the programme proposes to promote, in association with the appropriate regional agencies and governments, a system of sub-regional centres. These centres for training trainers would cover the substantive human settlement environmental and technological management problems of the regions concerned.

When requirements for training managers acquire sufficient specificity, similar sub-regional facilities could be set up. These training centres would, of course, be backed up by national training systems such as the one being developed in Argentina. By horizontally connecting these national facilities to the sub-regional centres, a self-reliant system for exchanging training staff and information should be consolidated.

The actual implementation of the proposed training policy will largely depend on the interest, intentions, and commitments that potential counter-part agencies, governments and non-governmental institutions express and assume. However, two main organisational forms can be expected. In regions with strong governmental or non-governmental organisations, capable of assuming a co-ordinating role, ad hoc programmes could be set up to cover regional and sub-regional demands for training trainers and managers. In this case, UNESCO's role will mainly be confined to sponsorship actions. In regions where the above conditions are lacking, training programmes will most likely develop on the basis of national institutions which can slowly build up into horizontally integrated regional and sub-regional activities. In this case, UNESCO's role can be seen as going beyond sponsorship and becoming engaged in organisational and pedagogical assistance. The viability of this latter strategy has, in fact, been confirmed through experience in the southern sub-region of Latin America, where UNESCO'S and UNEP's training activities were positively connected to the objectives and resources of interested governments and institutions.

1.3. Course Design: A Step by Step Process

The main purpose of this Handbook is to provide a simple tool for course design and monitoring for those responsible for organising and running the type of human settlement management training courses discussed above.   This is presented in the form of a simple, flexible step-by-step process which will help course designers to identify constraints, shape course objectives and realistically move towards deciding upon the content of their courses and the training methods they plan to employ.

The approach to course design and structuring outlined in this Handbook is based on the assumption that there is no universally applicable ideal course structure.   Rather, the overall objective of course planning should be to find the optimum blend, mix and variety of learning experiences to best match the requirements of any one course.   Nevertheless, there are certain training goals and learning objectives which are generally relevant to training in the human settlement management field, even if their exact weighting will differ from course to course. Similarly the use of certain training methods and techniques will be more appropriate than others in the realization of specific goals and objectives.   It is thus possible to conceptualize the initial stages of course planning as a process of selection and elimination in which resources and constraints (the 'problem set') combine with training goals and learning objectives to suggest which particular combinations of training methods and techniques might best be used on any one course.

It is also important to realise that course planning and design is a process of adaptation and compromise between the realities and objectives of the situation as perceived by the different individuals and agencies involved (often working hundreds or thousands of miles apart). In other words, whilst the trainer can pursue the course design process as outlined here, other international, national and local agencies will undoubtedly be making decisions based on their perceptions of course objectives, which will have an influence on the eventual outcome of the course. The provision of finance, course member selection, public relations and publicity are obvious aspects of a course that can be influenced in this way, and the trainer must constantly bear in mind that he is but one force amongst several which are rarely pulling in the same direction.

It is clear, therefore, that this document cannot pretend to supply all the answers. It is an open-ended document, providing a structure for course design into which each trainer must provide his own particular inputs. Some suggestions are made here as to what this input could be in certain circumstances, but the emphasis is on the individual to shape his course within the guidelines provided here. This course design tool, then, is perhaps best thought of as a honeycombe, or a row of empty houses, into which data and information particular to the circum-stances of any one course are input. Each step in this process provides a basis for the next, whilst there is also likely to be a cyclical reassessment of original intentions, constraints, methods etc., as the course takes shape. (Figure 1.4.)

1.   IDENTIFY PROBLEM SET FACTORS

2.   CLARIFY TRAINING GOALS

3.   SPECIFY LEARNING OBJECTIVES

4.   DRAW-UP A TOPIC LIST

5.   SELECT APPROPRIATE TRAINING METHODS

6.   UNDERTAKE FINAL DETAILED COURSE
       PREPARATION

Figure 1.4. Course Design: A Cyclical Step by Step Process

Sections 2 - 5 of the Handbook look at each of these steps in turn - the empty cells in the honeycombe - with examples being used to illustrate the sort of inputs that might be appropriate in certain training contexts.   The 'Problem Set' comprises all those factors and circumstances which condition the setting-up and running of any course, and Section 2 presents

an overview of some of the major issues and factors that are
likely to feature in early course planning. Section 3 looks
at training goals and the more specific learning objectives
which will derive from the former. The technical and thematic
content of a course and the selection of training methods are
examined in Section 4., and Section 5 covers detailed course
preparation and course monitoring. Simplified summary check
lists for trainers are provided at the end of each of these
chapters for quick reference and checking. Finally, in Section
6, some concluding remarks are made concerning the context
and future direction of UNESCO's Human Settlement Management
Training Programme.

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2.   THE PROBLEM SET (RESOURCES AND CONSTRAINTS)

2.1. An Overview of Problem Set Factors

The Problem Set for any training course is the mix
of inter-related factors that concern the resources for, and
potential of a course, and will inevitably have a major impact
on the final shape of the course.   The Problem Set, then, is
the point of departure for a training course, and encompasses
all aspects of financial, technical resource and logistical
planning.   It is thus important to try to determine the major
constraints and possibilities for any course as early as possible,
as they effect subsequent stages in course planning and design.

The availability of finance is clearly going to be
a key factor in the planning of most courses.   Local, regional
or national organisations in the fields of government, planning
development and education are often involved in instigating
such courses, and may provide part or all of the required finance.
The United Nations and other international agencies mentioned
in Section 1.2. above, have provided finance for courses in
the past and can always be approached.   Experience to date
has shown that imagination and an entrepreneurial attitude are
likely to be helpful in 'selling' a course to would-be financial
contributors.

In courses held in Sicily (Italy) for example, a television
company provided some of the required finance, and were allowed

to film the course and use the material in an educational television programme.   In Skopelos, a small Greek island, the local council allowed UNESCO to use the town hall as a training centre for a two-week course, which centred on the island's tourist development problems.   Apart from the prestige associated with having such an international gathering within a small local community, course recommendations had a direct bearing on local island development issues.   It is this type of trade-off that should always be looked for in the initial planning of courses when the availability of finance is being explored.

The questions of course location, accommodation, course length and participant list, will to some extent depend on financial availability.   Hotel accommodation can often be combined with the provision of seminar rooms, offering the advantages of keeping the group together in their social as well as working environment. In such circumstances, the location of the hotel can be important. An out-of-town hotel is likely to provide fewer distractions, whilst proximity to physical areas (e.g. of housing or tourist development) may also be a factor if these are to be studied within a course.   Course length will depend also on financial availability as well as on training objectives.   UNESCO-sponsored courses spanned several months in one or two instances in the early stages of the development of the programme, but the typical length for courses is one to two weeks.   Course participants must be carefully selected to enable the required cross-fertilization of ideas to take place and to engender contrast and comparison

between different professional and national perspectives and experiences. As the travel expenses of participants can be a major item of expenditure in an overall course budget, there is clearly the need to balance the pros and cons of inviting long distance candidates, and some final reshuffling may be necessary. For example, the Khartoum (Sudan) course held in 1984 was originally planned to have ten Sudanese participants and ten from other countries in the East African sub-region, but changing financial constraints meant that the ratio had to be changed to fifteen Sudanese to five non-Sudanese. This, in fact, was perfectly acceptable given the nature of the course (Human Settlement Management in Hot Dry Climates) and meant that the planned hotel accommodation could be retained, rather than housing participants scattered throughout Khartoum in a number of bed/breakfast lodgings (See Fig. 2.1).

The effect of the course participants on the final outcome of the course needs emphasising. A tenet of the UNESCO training philosophy is that the achievement of the course will reflect the collective exchange and refinement of ideas, conceptions and views of the participants. Although the trainer can rightfully be seen as one participant, he is no more than this, and his major contribution must be that of starting off, organising and managing mutual learning and exchange of professional perspectives that feature in a course.

Thus course participant <u>selection</u> is of vital importance. It is not a question of putting a selection of trainees through a pre-planned training programme, the outcome of which will be more or less the same in all cases. Rather course members are the ingredients that make up the course 'mixture' that will be unique in each case. Thus trainers must carefully consider who is to be on the course and what their contribution is likely to be; and they must also bear in mind that other individuals and agencies who have an input into planning the course will have their own desires and objectives in influencing course member selection.

The possible use of outside training consultants is another problem set factor which has to be considered. UNESCO have, to date, generally financed one or more outside training consultants to work in conjunction with locally based personnel in the planning and running of training courses. With the advent of this Handbook and the general shift of emphasis towards locally based training, it is hoped such collaboration will be further developed and refined, with UNESCO and their consultants playing more of an advisory and monitoring role than 'leading from the front' as they have done to date. Nevertheless, each course situation is unique and UNESCO will undoubtedly continue to treat each case on its merits and lend whatever help it is able.

Course Title: The Management of Human Settlements in Hot Dry Climates.

Participants: Approximately 20, 15 being Sudanese with 5 from nearby African nations. (N. Yemen, S. Yemen, Djibouti and Somalia). They will be professionals working in such fields as planning, housing and development.

When Will The Course Be Held?: 18th – 29th February 1984 with the middle Friday being the rest day.

Where Will The Course Be Held?: City centre hotel, with seminar facilities.

How Long Will The Course Be?: 10 working days with a rest day in the middle. The working day will be 9.a.m. to 2.p.m. with an optional evening session of 6 – 9 p.m.

What Finance Is Available?: UNESCO's Division of Human Settlements and Socio-Cultural Environments are funding one outside trainer to plan and run the course. Finance from UNESCO, UNCHS and ALECSO is sufficient to support a 20 man course, with the majority being from the Sudan.

Who Will Run The Course?: Dr. M. Wynn, UNESCO consultant trainer, with the help of Professor Ian Haywood of the University of Khartoum.

What local contacts might be used?: It is planned to have several 'expert interviews' with local and central government representatives and members of housing and development agencies.

What Documentation, Plans etc. Are available For Use On The Course?: There is relatively little case data available on planning and development in Khartoum. Little work seems to have been done in this field, and even basic data on demography, migration and land use, for example, are lacking.

Language: English

Technical Back-up: A photocopier, overhead and slide projectors, flip charts and boards will be available, plus secretarial/ technical staff from the university to aid the running of the seminar.

Comment: The critical problem set factor, as is often the case, has been the availability of finance, and the implications this has had on participant selection. The option of providing cheaper accommodation in a number of different 'bed and breakfast' units was rejected in favour of a main hotel with the benefits of keeping the group together in a work-orientated environment. This has meant that travel expenses have had to be limited and that only 5 overseas participants will be invited. Given the nature and setting of the course, however, this seems perfectly acceptable.

Figure 2.1. Initial Overview of Problem Set Factors for the Sudan (Khartoum) Course

Access to local contacts, key personnel and local data should also be considered at an early stage in the course planning process.   Local officials and representatives of development agencies or industries can often be called upon to take part in a training course.   Their participation may take the form of a question and answer session lasting up to an hour (as was the case in the Skopelos course) or their involvement may be more regular, at intervals throughout the course.   Much obviously depends on local circumstances, and diplomatic and prestige considerations must be kept in mind.   Such 'expert interviews' may be linked with site visits and field trips and thus the sounding out of potential candidates at an early stage is desirable.

Such contacts might also play a significant role in providing access to local data.   A tenet of the philosophy underlying the UNESCO training programme is that courses should, as far as is possible and desirable, incorporate local case data and encompass local development issues.   Thus some initial fact-finding and review of available information sources will be required.   Indeed, a course might focus entirely on a local development theme.   In such cases, however, local data is often not readily available, and field trips, expert interviews and site visits will consequently take on greater importance in providing participants with first-hand impressions and data-gathering opportunities.

Many other factors will also have to be considered at some stage during the course planning process, and this account is by no means presented as exhaustive.   The logistical

requirements of moving people (on field trips and site visits), the procurement of human and technical back-up facilities (secretary? photocopier?, projectors?, simultaneous translation facilities?) and provision of social arrangements for participants, for example, will all need detailed planning. The 'problem set' will then, consist of a range of inter-related factors particular to each course. It is up to the course planner to explore all avenues for securing the required resources, and then work realistically on building-up the course details from this base.

2.2. Summary Check List

. The problem set consists of the mix of inter-related constraints that shape any course - i.e. the limit of financial, technical, human resources available. These factors are all inter-related and dependant upon other steps in the course design process.

. At the <u>outside</u> try to establish the likely answers to the following questions

- What is the course TITLE (i.e. what is the general area of concern?)

- What FINANCE is available and where from?

- Who will the course PARTICIPANTS be?

- WHERE and WHEN will the course be held?

- How LONG will the course be?

- WHO will RUN the course?

- WHAT LOCAL CONTACTS might be used to help plan and run the course?

- WHAT local DATA is available to use on the course and what other INFORMATION sources might be used?

–   WHAT human and technical BACK-UP facilities are there?

–   WHAT LANGUAGE(S) will the course be held in?

Provisional answers to these questions will provide the basis for proceeding with further stages in the course design process.

3. TRAINING GOALS AND LEARNING OBJECTIVES

3.1. General Overview

Human settlement management training courses will often aim to help course members 'learn' in three main interrelated areas, which may be termed 'generalised training goals'. These three goals are:

A. Learning to understand and manage (some aspects of) the development process

B. Learning to understand yourself and others

C. Learning how to train.

This does not pretend to be an exhaustive definitive list, but rather an initial framework which may be of use to trainers as a means of clarifying their general training goals and learning objectives. Some courses will focus heavily on particular aspects of the development/human settlement management process (Goal A) whilst a course[1] with a stronger 'training trainers' element will give greater importance to the 'Learning How to Train' goal (Goal C).

Indeed, the diffusion of human settlement management expertise is clearly connected with providing course participants with the capacity to train others in what they have learnt. There is, then, a 'training trainers' dimension to many human settlement management courses, although this is not usually overtly stated or centrally addressed (except in the special 'training trainers' courses). It remains, nevertheless, a key element in the underlying UNESCO philosophy of diffusing acquired experience, enhanced awareness and capacity to act accordingly as widely as possible

throughout the governmental, administrative and technical network that the training programme encompasses.

Goal B (Learning to understand oneself and others) is likely to be of significance in enabling participants to develop their own self-awareness and broaden their perceptions of others' roles and activities. Indeed 'learning to learn' is a major theoretical underpinning to this triad of training goals, and Goal B will be of some significance in any course which attempts to foster interdisciplinary and transectoral perspectives (Figure 3.1.).

Figure 3.1. Generalised Training Goals for Human Settlement Management Courses

The figure shows likely training goals for 'training trainers' and 'training managers' courses and their overlap. This Handbook, however, essentially concerns the training of managers.

Closely linked to the training goals will be a set of specific learning objectives. Figure 3.2. lists particular learning objectives which might derive from the training goals mentioned above. Again, it is not an exhaustive list and, because it is not specific to any one course, learning objectives are expressed here in an open-ended way.

Any one course will likely have more precise learning objectives relating to Goal A e.g. indentify critical issues and problems relating to coastal tourist management; (e.g. Figure 3.3.). or implement preferred course of action for the effective management of refugee settlements. etc.etc. These learning objectives pertain to the systems view[2] of planning that has had a major impact on the development and organisation of planning departments since the early seventies and which lies at the heart of planning education courses run in the west for developing world planners.[3]

The second set of objectives, concerning Goal B, relate to what is often termed 'social skills training'. This has been defined by Fraser and Philips as 'any form of training which is designed to help people understand themselves, learn about how others see them, and make choices about their behaviour'.[4] This form of training can encompass a range of techniques, many of which can be used in group training situations which may also meet other learning objectives. In this way, then, the richness of the learning experience for course participants can be enhanced without undue extra requirements on time and space. e.g. a role

Training Goals	LEARNING OBJECTIVES
G O A L A	To Develop a Capacity to: A1 Identify critical issues and problems A2 Identify inter-relationships between problems A3 Generate alternative courses of action A4 Evaluate and appraise potential impacts of different courses of action A5 Implement preferred courses of action A6 Monitor and respond to change in the decision environment
G O A L B	B1 Heighten awareness of one's own strengths and weaknesses B2 Heighten awareness of others' perceptions of your role B3 Broaden your understanding of others' strengths and weaknesses B4 Improve ability to effect appropriate inter-personal interaction B5 Make fuller use of your own potential B6 Improve communication skills
G O A L C	C1 To give participants an awareness of the factors involved in the planning and designing of courses C2 Provide an outline of the range of available instructional methods C3 Give participants first hand experience of using selected training tools and mechanisms C4 To attempt to give participants the awareness and sensitivity to know how and when to use different tools C5 To encourage flexibility in the use of techniques; and an ability to adapt and try new innovatory methods as necessary C6 To provide participants with knowledge and experience of a range of on-going feedback systems

Figure 3.2. Learning Objectives for Human Settlement

Managers Training Courses

TRAINING GOALS : EXAMPLE I

Training Course, Sicily, Italy

A.   To enhance participants' understanding of the processes
     underlying regional underdevelopment in Sicily.

B.   To improve the decision-making capacity of participants
     in their professional roles as they effect Sicily
     (and Southern Italy in general).

LEARNING OBJECTIVES : EXAMPLE I

Training Course, Sicily, Italy

1.   To provide participants with an understanding of macro
     economic and demographic forces which lead to regional
     underdevelopment in the South.

2.   To provide participants with an overview of the economy
     of the Sicilian region.

3.   To develop an understanding of the cultural background
     to the Sicilian Regional problem.

4.   To improve participants' understanding of the
     administrative and development processes involved
     in the northern coastal region of Sicily in the Cefalu-
     Termini Imerese area.

5.   To develop participants self and mutual questioning
     of the processes involved in localised case developments
     in Sicily.

6.   To enhance understanding of the dynamics and potential
     of the tourist industry in Sicily.

29.

Figure 3.3.   Training Goals and Learning Objectives;   Example 1

play or gaming-simulation exercise might focus on an aspect of the development process, but will probably also satisfy certain objectives relating to Goal B.

The last set of objectives concerns the need to familiarize participants with the factors involved in the planning and design of courses and to provide them with a knowledge and first hand experience of the range of training methods most appropriate to their needs. At the same time, it is important that the need for sensitivity, flexibility and innovation in the use of training methods should also be highlighted; and participants should be made aware of the desirability of, and scope for, setting up feedback mechanisms within various temporal and organisational contexts relating to training. As already noted, these objectives will generally remain very much in the background on most 'training managers' courses and it is largely a case of what course members pick up by observation and participation in the use of different methods. It is also worth noting that it is this set of objectives that this Handbook and the Training Method Monographs that accompany it, attempt to achieve.

3.2. Further Perspectives from Field Experience

The preceeding discussion of training goals and learning objectives must be seen in the light of working in the field with the range of personal, psychological and political factors that inevitably influence the outcome of a course. Course members will often come to a course with their own pre-conceived ideas

of what they wish to achieve, and at times, of what the trainer is trying to achieve as well!   Inter-personal rivalries between participant groups or between participants and the trainer(s) can often severely impede the progress of a course along its planned lines, and all must be done to ameliorate   such situations and constructively harness tensions that might arise.

In one UNESCO course held in recent years in the Mediterranean, the bulk of participants, natives of the host country, were from the outset so hostile to the cultural and educational orientation of the trainers (from a north-west European nation), that the whole course programme had to be rescheduled, and some course members refused to enter into the course activities for several days.   Interestingly, however, other course members helped alleviate the situation, and although the eventual course structure was very much different from that originally programmed, the course did provide some useful results.

Apart from highlighting the need to carefully select participants and trainers, this kind of experience clearly illustrates that formally stated course objectives must be balanced against the realities of the personal, psychological and political contexts within which such courses are held. These act, to some degree, as constraints upon what can be achieved, but also provide new and different challenges to the trainer as a manager of the educational experience.   Indeed,

it can justifiably be argued that this type of seemingly tangential development all fits within the scope of training Goal B stated above, i.e. Learning to understand yourself and others.

There will often also be a political element to this 'second level' course management.   In a UNESCO sponsored course held in North Africa, one of the most illustrious course members (a university professor) who had been working independently on critical development issues which were to be discussed during the seminar, attempted from the start to disassociate himself from any likely course proceedings, maintaining that he had already provided the definitive statement on such matters. It was a thinly-veiled attempt to draw his work to the attention of his political peers who were also patrons to the course, providing some of the finance, and acting as hosts.

This attitude proved most disruptive at first, but once the individual concerned had achieved his objectives, (local politicians in private acknowledged the importance of his work and the part it would play in the future), he settled down and played a leading and constructive role.   The trainer, then, has to try to be aware of all the differing impacts and perspectives that will influence a course, and to use his imagination and 'any trick in the book' to develop the situation in a way that will be of maximum mutual benefit to all concerned.

3.3. Summary Checklist

- Generalised Training Goals will obviously be closely linked with the problem set factors and also to the more detailed learning objectives. They are also likely to be overlapping and inter-related themselves.

- Although each course will be different, it is likely to be possible to specify one or two generalised training goals for each course. Figure 3.1. may be useful in helping you clarify your goals.

- Learning Objectives for a course will stem directly from the Training Goals.

- Learning Objectives will more precisely specify how course participants should enhance their understanding through attendance at the course.

- Each course will be different and have its own Learning Objectives, but it is likely that on UNESCO sponsored courses, the transectoral nature of human settlement management problems will be evident in the specified Learning Objectives.

- Remember that psychological and inter-personal factors will often have considerable influence on course direction, once it is underway. This must be borne in mind when planning courses: developing an understanding between participants and about different professional or sectoral perspectives will often feature in the Learning Objectives.

. Try listing sets of Learning Objectives relating to each of your training goals. (Figure 3.2.might act as a useful aid here.)

Notes and References

1   For an example of such a UNESCO sponsored course (held in Szczecin, Poland in 1981) see M. Wynn and P.G.d'Ayala 'Human settlement management training: an approach to course design' Ekistics Vol.49 No. 2 Jan/Feb 1982; See also M. Wynn 'Training Trainers Course, University of Szczecin, Poland - Final Report and Course Handbook' UNESCO Div. of Human Settlements and Socio Cultural Environments, Paris 1981 (mimeo)

2.   See J.B. McLoughlin Urban and Regional Planning: A Systems Approach, Faber and Faber 1969; G. Chadwick A Systems View of Planning, Pergamon Press 1971; J.K. Friend and W. N. Jessop, Local Government and Strategic Choice; An Operational Research Approach to the Processes of Public Planning, Pergamon, 1977.

3.   For example, the post graduate course at the Development Planning Unit, Bartlett School of Architecture, University of London; and the similar course held at the Department of Architecture and Planning,University of Szczecin, Poland.

4.   A. Fraser and K. Phillips 'Approaches to Social Skills Training' Industrial and Commercial Training, Vol.12, No.4. 1980.

4.   SELECTING THE TECHNICAL AND THEMATIC CONTENT AND TRAINING METHODS

4.1.   General Overview

These two critical steps in the course design process are considered together because they are so closely connected. The technical and thematic content of a course will, to a certain degree, suggest what training methods might most effectively be used, and certain training methods are undoubtedly more appropriate for particular subject matters.

The technical and thematic content of a course can be formally summarised as a topic list, which will stem from and reflect the specified learning objectives for the course. The examples included here thus follow-on from those provided in Section 3, relating to Training Goals and Learning Objectives. Here, then, the discussion will concern general linkages between the topic list and training methods, drawing upon certain field examples.   No detailed examination of different training methods is included here, as these are treated in the series of Training Method Monographs that supplement this handbook, and in Appendix 1.

By drawing up a topic list for a course (e.g. Figure 4.1.) the technical and thematic content can be itemised in a systematic fashion, with materials, data, information and case material being provided by the course organisers, by local contacts (in local authorities etc) and possibly by prospective course participants. The content will, of course, be shaped by certain problem set factors and it is likely that certain compromises will have to be found in some situations.   The availability

of relevant data and expertise will be key factors (Figure 4.2.) and if such cannot be found, then learning objectives and course content may have to be modified accordingly.

Training Course, Sicily, Italy: Human Settlement Management in Mediterranean Coastal Zones

1.   Italy's Regional development problems: the dynamics of growth and change

2.   The repercussions of decision-making at different administrative levels.

3.   Introduction to Sicily's contemporary history, culture and development problems.

4.   Development in the Cefalu-Termini Imerese area (focusing on industry, housing, services and tourism).

5.   The Dynamics of Regional Change in Sicily, with particular focus on Tourist Development.

Figure 4.1.   Topic List: Example 1

As regards the selection and use of training methods, several contextual remarks can be made.   It is important to bear in mind the wide range of training methods and techniques from which the trainer can select those most appropriate for any one course.   Figure 4.3. provides a two dimensional list of some of these, and reference should be made to the Training Method Monographs[1] or other major reference works[2] for further guidance.   It is worth emphasising that a major tenet of the

UNESCO training philosophy has been that participants will learn most effectively through asking questions of themselves first, prior to being told the answer (inductive learning) and through learning by doing (experiential learning). Thus the more participative training methods - role play, gaming, structured discussions and team tasks for example - are likely to be of the utmost value in ensuring learning objectives are attained.

Figure 4.2. Working Out the Technical/Thematic
Content of a Course
(With apologies to RON)

It will often be appropriate to use case material drawn from the locale of the course, and thus a range of case studies might usefully provide a starting point for developing a course structure in which training methods can be <u>applied</u> to case material. 'Case study', then, is not so much seen as a specific training method in itself, but rather as an umbrella term reflecting an approach to training that can encompass a wide range of <u>bona fide</u> training methods, in which case study material can be used.

Figure 4.3.   A Two-dimensional List of Training Methods

The need to be clear about course objectives and organisation cannot be overstressed. Too often trainers begin a course poorly prepared, with material that has not been adequately put together and an approach that has not been satisfactorily thought through. This is soon communicated to participants, and the credibility of the course and its objectives suffers accordingly. Be prepared!! A detailed run through of course material and how it is to be used, session by session, will prove its worth on the day.

A combination of training methods for the teaching of any one theme or topic will often be appropriate e.g. short talk and structured discussion, followed by team tasks and panel presentations. Simple combinations like this can be repeated with different topics, with the more specialised or sophisticated methods being used less frequently. One way of linking the topic list with particular training methods is to attempt to construct a matrix of topics (technical/thematic content) vs. methods. In an initial stage, topics can be taken in turn, and the methods that might be used — many or all of which might be of a fairly simple nature — can be charted out along the other axis. In this way, a full matrix can be constructed as shown in Figure 4.4.

Once the matrix is complete, time requirements can be attributed to each cell in the matrix, and a timetable can be drawn up consisting of the different cells from the matrix (Figure 4.5.). When allocating time slots on the timetable,

rather than running straight through each topic, followed by the next, it will often be desirable to return to the same topic later in the course. And, of course, this entire process is cyclical in nature, and a number of revisions will probably be necessary.

TECHNICAL/THEMATIC CONTENT (TOPIC LIST)	Short Talk	Lecture	Slide Presentation	Structured Discussion	Question and Answer Session	Video Analysis	Field Trip	Expert Interview	Team Tasks	Report Writing	Panel Presentations	Game/Simulation
1. Italy's Regional development problems: the dynamics of growth and change		1	2	3	4							
2. The repurcussions of decision-making at different administrative levels.	1											2 Hex Game)
3. Sicily's contemporary history, culture & development		1		5		2			3		4	
4. Development in the Cefalu-Termini-Imerese area (focusing on industry, housing, services and tourism).	1		2		6				3	4	5	
5. The dynamics of regional change in Sicily, with particular reference to tourism.	1					2	3					4 (UN TODES or TAG)

TRAINING METHODS (COURSE MATRIX) : EXAMPLE I

Training Course, Sicily, Italy

Figure 4.4. Course Matrix - Example 1 (Italy Course)

The number in the matrix cells indicate the order in which training methods are to be used. Time requirements can also be added.

	M O R N I N G	AFTERNOON/EVENING
DAY 1	Introduction/Welcome/Hand out of Materials(S.B./V.Q.) Italy's Regional Development Problems: Lecture Slide Presentation, structured discuss.q.& a. (S.B./V.Q)	Decision-making/Investment/Regional Aid Short talk (V.Q) followed by HEX GAME (MW) and Snow Card Feedback on its value/Lessons
DAY 2	Sicily: Introduction to contemporary history Lecture (V.Q.) Group study of video tapes of interviews with representatives of different sections of Sicilian Society (S.B)	Team tasks on interpretation of videotapes; Panel Presentations and Structured Discussion on results (S.B/V.Q/MW)
DAY 3	Development in the Cefalu-Termini - Imerese area Short talk and slide presentation (S.B.) Team Tasks: Groups are assigned	particular case developments to research from supplied dossier and in the field (MW) DOCUMENT AND FIELD RESEARCH BY GROUPS.
DAY 4	Report writing based on Field Research Results (From Day 3)	Panel Presentations from all groups;Q. & A. session and snowcard feedback. (S.B/V.Q/M.W.)
DAY 5	Regional Change and Tourism in Sicily Short talk followed by Field trip,	incorporating interviews with local authority personnel (S.B/V.Q./M.W)
DAY 6	The United Nations Tourist Development Simulation (UNTODES) (S.B/V.Q./M.W)	Final Concluding Session

Fig. 4.5.   Course Timetable – Example 1 (Italy Course)

Bracketed initials indicate who will be leading particular sessions.
More details can be added as they are known.

4.2. Some Examples from Field Experience

Experience of running UNESCO training courses in recent years has provided useful insights into how and why certain training methods might be used to conduct training concerning particular topics. The course run in Sicily, Italy in 1981, for example, focused on human settlement management in Mediterranean coastal areas, with particular reference to the north coast of Sicily. The organisers had, with the aid of UNESCO consultants, developed a gaming simulation (UNTODES II) which modelled the dynamics of growth in the area, and highlighted the effects different types of development would have there. A similar game, developed by Phillipos Loukissas (Tourist Activity Game - Figure 4.6.) was used in a further course held in Skopelos, Greece, to show the impacts of tourist development on the neighbouring Greek island of Skiathos.[4]

In both cases, these games provided viable structures for developing an understanding of the wide range of economic, social, cultural, political and ecological factors involved in the promotion and management of coastal or island development, and for examining alternative development strategies. Problems did arise in the game 'fit' i.e. certain components of the models on which the games were based were questionned on the grounds that they did not accurately reflect reality, but this in itself stimulated valuable questioning and exchange amongst participants.

Round 1 (1950)   Round 8 (1990)

⊠ Steep slope	✳ Tourist Attraction	
⊠ Water	⊔⊔⊔⊔ Beach	
Ⓐ Agricultural	▬ ▬ ▬ Primary Road	
Ⓡ Residential	▬▬▬ Secondary Road	
Ⓒ Commercial	▯ Terminal	
Ⓗ Hospitality	Ⓤ Utility Plant	

1 Km

Fig. 4.6.   The TAG Gameboard

This version of the game models development on the Greek Island of Skiathos from 1950 (left) through to possible development scenarios in the future (right)

The playing of the games provided a number of different and inter-related learning experiences concerning a highly complex settlement management problem, encompassing a large number of inter-related settlement issues.   If time and expertise is available to design such games, they can be most effective in promoting a rapid understanding of complex development problems and possible solutions;   and there are also a number of development games available which can be adapted to fit different local situations.[5]

Other training methods can, of course, be used to achieve similar aims.   Problem orientated techniques such as brainstorming and team tasks can be used to stimulate participant thinking on selected issues, and these can often be effectively

combined with field trips and site visits. The rotational groups sytem (RGS) method embodies this approach, and has the added benefit of producing a group report at the end of the course.

This method, used in the UNESCO sponsored course on Forest Management held in Kassandra, Greece in 1982 centres.. on a small group consideration of selected topics.[7] Each group has several hours to consider and discuss a topic, draw up a brief draft report and give a panel presentation, answering questions from other course members. As the course progresses, the group make-up is rotated, so that participants have the chance to discuss with, and learn from, the full range of course members in a small group situation. Typically, each group is composed of three to five people and three to six major topics might be considered. A final session involves participants in synthesising group reports generated in the earlier stages of the seminar, culminating in the assembly of a final report (possibly with minority sub-reports therein). This approach is particularly suited to a week's course when participants are multi-disciplinary, well versed on the subject matter and recommendations for action are required.

In some developing countries, the availability of data and information is sometimes severely limited, and in such cases open-ended, participant-centred techniques are particularly appropriate. Field trips, site visits and expert interviews can be used as the stimulus for debate and group work, with

the emphasis being on participants to <u>research</u> the subject
matters in the field rather than drawing on existing information
and data.   This, then, involves a somewhat different form
of training, and the trainer must be prepared to give extra
guidance on the additional skills that will be required.

The 10 – day UNESCO course[8], held in Khartoum, Sudan in
1984 was originally planned to centre on this type of
action—research approach.   (Figures 4.7. & 4.8).   The
course concentrated on the management of human settlements
in Hot Dry Climates with particular reference to refugee
housing problems.   In an initial period covering the first
four days, structured discussions and question and
answer sessions with local and central government
representatives were planned to be used in conjunction
with short site visits in different parts of Khartoum
to 'draw apart' the subject matter.   It was an attempt
to provide an understanding of the inter-connected economical,
social, political and historical factors that must be
taken into account in any effective treatment of such
housing problems.   Then, in the latter stages of the
course, participants were divided into small groups, and
strategies worked out in conjunction with the training
staff to undertake more detailed research into housing
problems in selected areas of the city.   Individual group

46.

TECHNICAL/THEMATIC CONTENT	Short Talk	Slide/Lecture	Structured Discussion	Question & Answer Session	Field Research	Expert Interview	Team Tasks	Report Writing	Panel Presentation	Rotational Group Systems	Field Trip
1. Physical, Social and Administrative Aspects of Human Settlement Management (General Exposé)	•	•	•	•		•			•		
2. Gazira Study	•		•			•					•
3. Group Study of Migrant Housing Issues & Problems	•		•		•	•	•	•			
4. Overview of Group Reports: Towards a Full Group Consensus Report.	•			•			•		•	•	

Figure 4.7. Course Matrix – Example 2 (Sudan Course)

DAY	SESSION 1 (9.a.m. – 2.p.a.)	SESSION 2 (6.p.m. – 9.p.m.)
1	Introduction: Overview of Seminar Plan; Brief Introduction to main issues and locate – Handout of materials. Division into groups.	EXAMINATION OF PHYSICAL
2.	Site Visit to Fellata District	SOCIAL AND ADMINISTRATIVE
3.	ASPECTS OF SETTLEMENT MANAGEMENT:	Expert Interview
4.	Short Talks, Participant Reports, Structured Discussions, Question & Answer, Panel Presentations.	
5.	GAZIRA FIELD TRIP: A study of pioneer irrigation scheme and migrant settlement.	
	R E S T D A Y	
6.	Group field research in Omdurman Periphery and other housing case areas yet to be	
7.	determined. Group reports on key issues and recommendations.	
8. 9. 10.	Evaluation and Synthesis of Group Reports and General Thematic of the seminar, using the Rotational Group Systems method: The issues on which the method will be focused might include: Recommendations for Treatment of Migrant Housing (General or particular areas); the importance of planning in settlement management; housing classification as a form of land management; and other issues relating to earlier parts of the seminar.	

Figure 4.8. Course Timetable – Example 2 (Sudan Course)

reports would be discussed by the course group as a whole and the rotational group systems method was planned to be used in the last two days to compare and contrast experiences and perspectives and work towards recommendations for action. The training strategy, then, centred on providing stimuli for participant thinking and research and managing the exchange of experience that follows. In short, empty structures were established into which participants input their findings, and a framework was established for bringing professional expertise to bear on selected settlement management issues.

4.3. Summary Checklist

- The Technical/thematic content of a course may be summarised in the form of a Topic List. This will reflect and derive from the Learning Objectives. It will often be appropriate to use local case study material, if available, as the basis for wider ranging discussion and exchanges of experience.

- Try compiling a Topic List which you wish to feature in the course, with brief notes on the materials and resources available to use in conjunction with each topic. These topics are likely to be specific in terms of location, problems, issues, inter-relationships etc.

- There is a wide range of training methods from which to choose. Some will best be suited for teaching certain types of subject matter; and combinations of methods and techniques often give rise to interesting and stimulating sessions.

. Match the Topic List against those training methods you might realistically use. Think through every stage of each exercise, allotting approximate time requirements. Formalise this process in the form of a Matrix of Topics (Technical/Thematic Content) against Training Methods.

. Now try allocating cells in the Matrix to different sessions on the timetable; it will often be desirable to conduct several sessions on the same topic at different stages in the course. It will seldom be the case that the trainer simply ploughs through his topics, one after the other.

. These steps in the course design process are critical and are likely to be those upon which the ultimate success or failure of the course hinges. They demand particular qualities from the course designer - enthusiasm, patience, a thirst for new knowledge, sound judgement and perseverance. To get the timetable just right is likely to require several drafts, as new factors, information sources etc. come to light, and outstanding questions are resolved.

Notes and References

1. See J.L. Taylor. A Basic Guide on Role-Play (Training Method Monograph 1), UNESCO, Division of Ecological Sciences, Paris, 1986; J.L. Taylor & M.G. Wynn, Case Studies and Linked Simulations (Training Method Monograph 2.), UNESCO, Division of Ecological Sciences, Paris, 1986; C.S.Greenblat (The Use and Design of) Gaming Simulations (Training Method Monograph 3), Division of Ecological Sciences, UNESCO, Paris, 1986.

2.   For example, D. Laird, <u>Approaches to Training and Development</u>
     Addison-Wesley Publishing Company 1978;   R.L.Craig (ed)
     <u>Training and Development Handbook</u>, New York, McGraw-Hill,
     1976;   A. Romiszowski, <u>Designing Instructional Systems</u>,
     Kogan Page, 1981.

3.   A full bibliography on case studies is given in J.L.Taylor
     & M. Wynn cited in Note 1 above.   This includes M. Wynn
     & J.L.Taylor 'Urban Management Training: The Case Study
     Dynamic' <u>Journal of European Industrial Training</u>, September
     1980;   M. Wynn, J.L.Taylor, I. Haywood, R. Smith 'Improving
     Urban Management: A Case Study Technique' <u>National
     Development</u>, August 1980;   J. Nisbett and J. Watt <u>Case
     Study</u>, Rediguide 26, Nottingham University School of Education
     1978.

4.   For detail on how to run the Tourist Activity Game, see
     P. Loukissas, 'Coastal Tourism Development: The Tourism
     Activity Game (TAG)' in M. Wynn (Ed) <u>Planning Games</u>,
     E. & F.N. Spon, (Associated Books) London 1985.

5.   See C.S. Greenblat <u>(The Use and Design of)Gaming Simulations</u>,
     (Training Method Monograph No. 3), UNESCO, Division of
     Ecological Sciences, Paris, 1986.

6.   See J.L. Taylor, <u>Instructional Planning Systems: a gaming-
     simulation approach to urban problems</u>, Cambridge University
     Press, Cambridge, 1971;   and A. Feldt, <u>Community Land
     Use Game</u>, Free Press, New York, 1972.

7.   See M. Wynn <u>Forest Management and Biomass Utilization
     Interdisciplinary Research Seminar (Using RGS method)</u> UNESCO,
     Division of Human Settlements and Socio Cultural Environments,
     Paris, Interdisciplinary Training Programme, Report No.1,
     1983.

8.   <u>The Management of Settlements in Hot Dry Climates</u> (Final Report
     of Seminar/workshop sponsored by UNESCO/ALESCO and UNCHS,
     Khartoum 1984).   Division of Ecological Sciences, UNESCO, Paris
     1985.

5. DETAILED COURSE PREPARATION AND COURSE MONITORING

5.1. Being Properly Prepared

Once the timetable has been sketched out and problem set factors (finance, location, resources etc) have been attended to, detailed course preparation can be completed. Previous work on establishing the topic list and the training methods (Section 4) will already have involved consideration of training materials and presentation formats. Here it is essentially a matter of 'plugging the gaps', of going over exactly how you, the trainer, envisage the course going. In other words, it is a case of trying to be as well prepared as possible; it is rather like the lecturer checking through his lecture notes.

Detailed course preparation may take several forms, but it is likely to further develop the course timetable, specifying who is to speak (if known), what role participants will play, what training materials (handouts, overheads, slides, blackboard, game kits, wallcharts etc)., will be used, and making sure they are ready and available and that you, the trainer, know how to operate them. It is remarkable how many times slide presentations lose their momentum because slides are upside down or in the wrong order; and overhead projector bulbs do fail from time to time. Make sure you have spares and know how to fit them yourself! The trainer's professionalism in presenting materials will be under scrutiny and simple things like the clarity of diagrams can make an enormous difference.

For example, if responses from participants are not forthcoming, then it will usually not be advisable to pointedly ask any one individual. Instead, the trainer might tentatively suggest responses himself, or get participants to write their thoughts down. Managing the training course is a second-by-second process and it is as well at this stage to try and estimate the likely problems, and what you might do about them. Other things one should consider in this field are the staging of meals, coffee breaks, field trips, the composition of groups, the nationalities involved and cultural differences. All warrant attention in the detailed planning stage, and if new problems are encountered a reworking of the original timetable may be necessary.

This in fact happened in the final preparations for the Khartoum (Sudan) course. The original timetable (Figure 4.8.) had included detailed field research sessions by course participants, and a special focus on migrant housing issues. Problems were encountered in arranging the field research sessions and a one-day excursion to Gazira, whilst at the same time consultations with UNCHS (one of the sponsors) suggested that concentration on migrant issues was perhaps not that appropriate.

Two months prior to the course, the timetable was re-designed to concentrate on the Rotational Group Systems Method in which three main themes and six sub-themes would be examined,

leading to recommendations for action (Figure 5.1.). These stemmed directly from the originally stated Learning Objectives albeit with some slight change of emphasis and orientation. This example illustrates how the course design process is often likely to be a continuous shaping and reshaping process, working towards a final format that will best fit constraints and objectives. An original blueprint is rarely likely to survive intact the series of iterative steps underaken when designing a course.

It is also useful to consider how the timetable might be modified during a course if, for example, a certain planned activity has to be cancelled at the last minute (e.g. an expert who you had planned to interview falls ill or is unavailable for other reasons). If possible, back-up materials and other training activities should be kept in reserve, and used as and when necessary. This provides added flexibility which will enable the trainer to direct the course upon slightly different lines according to his perception and judgement of participant needs and the general flow of the course.

5.2. Monitoring and Evaluation

The course design procedures outlined in this Handbook provide a simple framework for documenting and monitoring human settlement manager training courses. Course reports might usefully contain details on the following:

February	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th
	1	2	3	4	5	6	7	8	9	10	11
9.00.A.M. —10.30.—	Opening Session	Key Speech/ Key Issues Seminar	Economy Physical Aspects 2 (Phase I)	Key Speech/ Key Issues Seminar	Social-Cultural Welfare Aspects 2 (Phase I)		Key Speech/ Key Issues Seminar	Finance Planning & Administ. 2 (Phase I)	Synthesis Group Working: Economic-Physical Aspects	Synthesis Group Working: Finance Planning and Admin-istration	Final Report Physical Aspects
10.45 12.15.P.M. 12.30.P.M. 2.00.P.M.	Theme Intro	Economic Physical Aspects I (Phase I) Panel Pres. Discussion	Panel Pres. Discussion Economic/ Physical Aspects I (Phase 2)	Social Cultural/ Welfare Aspects I (Phase I) Panel Pres. Discussion	Panel Pres. Discussion Social Cultural/ Welfare Aspects I (Phase 2)		Finance Planning & Administ. I (Phase I) Panel Pres. Discussion	Panel Pres. Discussion Finance Planning & Adminst. I (Phase 2)	Plenary Discussion	Plenary Discussion	Final Report Social Aspects Final Report Admin. Aspects
6.00.P.M. 7.30.P.M.	Problems of Developing Countries	National Presentation	Panel Pres. Discussion Economic/ Physical Aspects 2 (Phase 2)	National Presentation	Panel Pres. Discussion Social/ Cultural Welfare Aspects 2 (Phase 2)		National Presentation	Panel Pres. Discussion Finance Planning & Administ. 2 (Phase 2)	Synthesis Group Working: Social-Cultural/ Welfare Aspects.	Final Report Preparation and Review	Plenary Sessions
7.45.P.M. 9.15.P.M.	Regional Problems		Panel Presentation Discussion		Panel Presentation Discussion			Panel Presentation Discussion	Plenary Discussion		Final Dinner
	INTRODUCTION	ECONOMIC-PHYSICAL ASPECTS OR URBAN MANAGEMENT		SOCIO-CULTURAL/WELFARE ASPECTS OF URBAN MANAGEMENT		FIELD TRIP	FINANCIAL PLANNING AND ADMINISTRATIVE ASPECTS OR URBAN MANAGEMENT		REVIEW SESSIONS		CONCLUSIONS

Sessions using the Rotational Group Systems Method

Themes and Sub-themes

Economic - Physical Aspects

1. The Economy of Human Settlements in Hot Dry Climates
2. The Built-up area in Hot Dry Climates

Socio-Cultural/Welfare Aspects

1. Demography and Socio-Cultural influences
2. Health, Welfare and Education

Financial Planning & Administrative Aspects

1. Finance and Administration
2. The Planning and Management of Development

Figure 5.1.   The Redesigned Timetable for the Khartoum (Sudan) Course

Problem Set

Generalised Training Goals

Learning Objectives

Topic List (Thematic/Technical Content)

Training Methods

  - Course Matrix

  - Course Timetable

Trainers Overall Assessment and Conclusions

Such reports will provide insights into how certain problem set factors, goals and objectives have been translated into particular course structures. These may act as models for others to follow and will also provide UNESCO with the material necessary for conducting an overall monitoring function of their training activities.

Assessment and evaluation notes may be added by the trainer of a general and/or precise nature, referring to the course as a whole or particular sections of it. Course participant feed-back may be gauged on a day-to-day basis (during the course) by the circulation of 'snowcards' (in effect, bits of paper on which participants write their reactions, anonymously or otherwise). Longer term feed-back may be tried by the circulation of questionnaires at the end of the course or at intervals after the course has finished. Figure 5.2. is an example of such a questionnaire, that might usefully be filled in by participants at the end of a course. These should be returned to the trainer and copies sent to the UNESCO Secretariat.

UNESCO

Division of Human Settlements & Socio-Cultural Environments
7 Place de Fontenoy
PARIS 75700, FRANCE

TRAINING
COURSE ASSESSMENT SHEET

COURSE TITLE	LOCATION
NUMBER ATTENDING	COURSE RUN BY	DATES(inc) FROM TO

1. MAIN REASON FOR ATTENDANCE	☐ SENT BY H.O.D	☐ REQUESTED ATTENDING	☐ INVITED TO ATTEND
2. DID THE COURSE ACHIEVE ITS AIMS	☐ COMPLETELY	☐ FAIRLY WELL	☐ NOT VERY WELL	☐ NOT AT ALL
3. TO WHAT EXTENT WERE YOUR SPECIFIC AIMS MET	☐ COMPLETELY	☐ FAIRLY WELL	☐ NOT VERY WELL	☐ NOT AT ALL
4. WERE ALL SUBJECTS WELL COVERED	☐ YES	☐ NO. PLEASE GIVE DETAILS	
5. WAS THE LEVEL OF SUBJECT TREATMENT	☐ TOO ADVANCED	☐ ABOUT RIGHT	☐ TOO ELEMENTARY
6. WAS THE COURSE LENGTH	☐ TOO LONG	☐ ABOUT RIGHT	☐ TOO SHORT
7. WAS THE PACE OF THE COURSE	☐ TOO FAST	☐ ABOUT RIGHT	☐ TOO SLOW

8. HOW SATISFIED WERE YOU WITH:

	VERY SATISFIED	SATISFIED	NOT SATISFIED	REASON NOT SATISFIED
- VISUAL AIDS	☐	☐	☐	
- LITERATURE	☐	☐	☐	
- SPEAKERS	☐	☐	☐	
- PLANNING AND ORGANISATION	☐	☐	☐	
- TEACHING ACCOMMODATION (SEATING etc,)	☐	☐	☐	
- TRAINING METHODS	☐	☐	☐	
- FIELD TRIPS, SITE VISITS	☐	☐	☐	

9. OVERALL COURSE ASSESMENT	☐ EXCELLENT	☐ GOOD	☐ SATISFACTORY	☐ BAD	☐ ATROCIOUS

Figure 5.2.   Course Assessment Sheet   Side 1

P.T.O.

(a) Indicate any subject areas which were dealt with exceptionally well and any that in your opinion were unsatisfactory.

(b) Indicate any subjects which in your opinion should have been included or expanded and any which should have been left out or reduced.

(c) Expand on any aspects of the course which caused particular satisfaction or dissatisfaction.

56.

Figure 5.2. Course Assessment Sheet   Side 2

5.3. Summary Checklist

- Detailed course preparation encompasses all the final arrangements and checks that will help ensure the smooth running of a course. Make sure you know where everything is and how it works. Check you can rely on any intended technical or human back-up services.

- Carefully consider <u>who</u> your course participants are, and what special approach you might use for each one of them. Think about the composition of groups, and who will best fit with each other.

- Make final amendments to the timetable as necessary. If possible, have some sessions ready 'in reserve', to be used as and when necessary.

- Chart participant feed-back during the course, and certainly get them to fill in post-course assessment sheets.

- Compile a course report using the structure presented in this Handbook with any additional conclusions, comments etc. The adoption of a common framework for course design documentation will help UNESCO to effectively monitor, contrast and compare their training course activities.

Reference Material

K. Brethower & G. Rummler 'Evaluating Training' Improving Human Performance Quartlery, 5, Fall-Winter 1976.

R. den Dunnen, P. Baross; 'Evaluation Report on the Training Seminar on Management of Human Settlements, Bandung, Indonesia, 9 - 25 February 1976', Document SHC-76/Conf/646/7, UNESCO, Paris 1976.

D.L. Kirkpatrick (Ed), Evaluating Training Programs, Madison, Wisconsin, American Society for Training and Development, 1975.

6. CONCLUDING REMARKS

Human settlement management has too often not been sufficiently responsive to change and has failed to meet the perceived needs of the public at large. As a consequence there has been a steady erosion of the consensus for planning to the point where the settlement manager's actions are commonly questioned and often contested in a hostile atmosphere.

These difficulties have been exacerbated by the continuing decline of the economic performance of most of the industrial and post-industrial countries, which has further eroded the growth ethos which motivated much planning thought over the last two or three decades. And, at a large scale, the debate about relationships between the North/South countries has slowly been opened up and it is now recognised that there is an urgent need to develop a positive dialogue which will replace dependency concepts with views based on mutual support and learning. Settlement management is clearly an area of priority within this general need. The general implication for the professions concerned with the built environment are seen in a shift of emphasis from the philosophical and conceptual context of planning to a more intensive examination of techniques and the role they have to play. Clearly training can play a key role in this process.

As we move through this current period of uncertainty, it is apparent that there is a need for a more fundamental

consideration of the orientation of settlement management and a review of both the range and application of relevant techniques to the training of settlement managers. It is recognised that the increasing complexity of settlement management both in terms of the range of problems and techniques as well as their geographic spread, places increasing demands on the capacity and ability of UNESCO to monitor and co-ordinate activities and provide the element of continuity essential to the successful development of the Human Settlement Managers' Training Programme.

Much of the experience gained through participation in the training programme is now spread widely throughout the world as participants have moved back into their work situations. Together these people form a valuable network both for the dissemination of UNESCO's efforts and as contributors to the development of UNESCO policies. The positive activation of a network of people who participate in the Human Settlement Manager's Training Programme can provide a valuable means of assisting in the monitoring of both training activities and human settlement management practice and it is in this context that this Handbook should be viewed.

The Handbook itself centres on an open step-by-step approach to course design, which it is felt can most effectively provide the flexibility necessary to deal successfully with the range of circumstances and requirements associated with

different UNESCO training courses. The purpose of the Handbook, then, in conjunction with the Training Method Monographs which accompany it, is to guide trainers through the course design process and offer them a range of possible training methods from which they can choose, which may then be applied to the thematic and technical content particular to each course.

Finally, it is worth underlining that although some trainers may debate the pros and cons of this approach, there remains a vital need for such an approach to be tried. If training courses are not planned and run within some such common framework, then monitoring and mutual learning will be impaired accordingly and courses will continue to be run on an ad hoc basis. There is a clear need for us as trainers, administrators and course organisers to learn from ours and others' experiences and mistakes. Without some common framework within which debate and exchange can flourish, progress is likely to be limited. It is hoped this Handbook, as a common tool to be used by those involved in human settlement management training, will help foster such communication and mutual improvement in performance.

APPENDIX I

A Directory of Training Methods

The following directory offers no more than an introduction to a wide range of training methods. Nevertheless, it may help the reader to identify which methods are likely to be the most appropriate for his training requirements. Examples and further explanation of some of these methods can be found in The Training Methods Monographs that supplement this Handbook. A list of further reading is also included here in Appendix 3.

Action Maze (programmed case study)

An action maze is a programmed case study; participants receive a printed description of the case, with enough detail to take them to the first decision-point. The description gives them options from which to select. Once the group have selected their decision option, they are supplied with the next frame, indicating the course of action taken in the live case study. Ensuing debate considers and compares implications of the various options.

Brainstorming

Brainstorming is a specialized form of discussion. It is commonly used in real problem-solving situations. As a training method, its most frequent use is to teach learners to suspend judgement until a maximum number of ideas have been generated. A second use is to train people to listen positively to the ideas of others, refraining from negative comments which might cause the creative process to dry up. Brainstorming applies the synergistic theory that groups can generate more ideas, and better ideas than all the individual members could do if

they worked independently.   It is therefore a useful method
only when there are numbers of trainees;   five or six is probably
the minimum for a workable brainstorm.

The total brainstorm includes three phases: generation
of ideas, analysis and action-planning.   In the second step,
analysis, participants ask the contributors to explain strange
terms or an unfamiliar idea.   Analysis also includes evaluation.
At this step the participants establish criteria for selecting
the best ideas, then test each idea against those criteria.
As ideas "fall out" because they don't meet the criteria, the
group is left with a workable list of options.   From these they
can select the "best" solution.   They are then ready to move
to the third phase, action-planning.   This consists of outlining
the steps needed to put the adopted solution into operation.

Case Studies

The Case Study is a technique for presenting a situation
through selected 'historical' papers.   A descriptive account
is built up using differing combinations of real world data,
narratives, tapes or films.   Although not commonly thought of
as a simulation the case study relies on a highly selective use
of a representative sample of materials drawn from a range of
sources.   Key elements are selected and the background noise
and trivia is excluded.   As with all forms of simulation consider-
able discrimination is required to determine what is presented
to the extent it is anchored to reality by using a large amount
of real world material.

Clinics

Clinics are sessions in which learners devote their energy to solving a given problem, and may be integrated with field trips, role-plays and demonstrations (photometry, films, videos etc). Such sessions work best when the problem is real life and based on 'immediate' case study data; thus a 'clinic' can address a real-world situation, and possibly using techniques and approaches learnt elsewhere in the course, the team can produce a 'real' solution — the whole exercise constituting an action-research-learning-experience.

Field Trips

Field trips, excursions, observation or tours may or may not be participative learning experiences. That depends very much on how well instructors set up expectations and objectives before the trip takes place and upon the mechanism developed to make sure that learning happens.

A major argument in favour of field trips is that they permit learners to experience sensory impressions which could never occur in classrooms or conference rooms. The trip thus assists the 'generalization' process, permitting behaviours acquired in an isolated or unnatural environment to persist in a less focused "real world". In addition, field trips effectively let people who work in one part of the system comprehend the impact and dependencies they have upon other professions and sectoral interests.

Fishbowl

A special kind of discussion group particularly suited to practicing and evaluating inter-personal and 'social' skills, as well as developing argument on a particular theme. The name comes from the structuring of the group, for at certain times discussants sit in the centre of the wider group. Other members observe this 'fishbowl' and will eventually take place in it themselves. The method works as follows:

1. Define subject area.

2. Formulate a number of pertinent questions related to critical issues. (These may have already been identified in previous sessions, e.g. on systems modelling of reality).

3. Participants are assigned places in an inner ring (the 'fishbowl') and an outer ring.

4. An inner-ring moderator is designated to use the questions (as in 2 above) for instigating and maintaining discussion.

5. Others in the 'fish bowl' (inner ring) are given the task of keeping the discussion going - but their contributions are limited to one minute per input.

6. Outer-ring members (unknown to inner-ring members) are given specific observational roles e.g.:-
   a). Counting the number of times each person speaks.
   b). Counting the number of times discussion drifts to other topics.
   c). Who interrupts and who is interrupted.
   d). Disagreements: with and by whom?
   e). Any conclusion about the critical issues etc.

7. At a given time, stop the 'fishbowl' and feed back data fathered in Step 6 above.

8. Repeat stages 4-6 with different participants in inner and outer rings.

Gaming Simulations

Gaming simulation seeks to represent the essence of a situation as it evolves over time and offers a high degree of participant involvement. Whether the particular game model has an obvious structure or not, inter-relationships between a number of factors can be displayed, visibly manipulated and continuously adjusted. Gaming simulation involves players in various degrees of competition and co-operation where their actions are in part governed by methods of procedure and various rule systems. Most games are primarily concerned with a desire to understand a decision-making process involving both quantative and qualitative elements. In other words, the game resources, constraints and goals have been largely determined in relation to prescribed real world or defined hypothetical systems. Thus a simulation procedure or learning sequence is built up in such a way that it resembles the form of a game.

In-baskets

A form of simulation based on 'in-basket' material one might expect to find on a typical (or atypical!) work day. Usually participants must use their own resources to find solutions. Provides a useful method for operationalising problem solving techniques under pressure. Feedback discussion facilitates several helpful learning activities: reinforcement of successful practices; re-examination of problem areas; self evaluation by participants of learning achievements.

Incident Process

The incident process is a specialized form of case study. It is usually used to teach analytical skills, or techniques for special problem-solving tasks such as handling employee grievances. The incident process differs from normal case studies by giving participants far too little data to reach any decision - even preliminary decisions as in an action maze. The data are available to the instructor, usually in easy-access printed form. However, the instructor reveals the data only when asked a specific question to which the datum is a correct and relevant answer. Learners thus acquire skill in knowing what questions to ask, how to phrase them, how to draw inferences from the data thus uncovered.

Jigsaws

As the name suggests, participants put pieces together to complete an integrated picture. May be used in simple ice-breaker contexts or in more complex situations related to decision-making data (e.g. given key variables of a decision-making problem, the task is to select proper action for every possible combination of variables). Useful in teaching synthesizing skills, problem-solving skills, or organisational skills.

Lecture

The lecture is, by definition, words spoken by the instructor. The lecturer needs plenty of interesting examples to illustrate

theory, colourful and persuasive language to enhance a well-organised pattern of ideas, and a pleasant and stimulating voice.

At the very minimum, lecturers should:

. Speak loudly and clearly enough to be heard. Amplification is recommended if classes include more than 25 learners. In these cases, of course, microphone technique is a requisite skill for the lecturer.

. Organise each lecture around a single theme or "thesis".

. Develop inherent, mutually exclusive "areas of discussion" which thoroughly and relevantly develop the thesis.

. Develop each area of discussion with a variety of evidence. This includes analysis, concrete incidents, illustrations, quotations, statistics, and (if possible) physical objects to display.

Panel Discussion

Panel discussions are a variation on the structured discussion format. Panel discussions tend to be short lectures by a variety of people rather than a long lecture by a single lecturer. In effective panels each speaker concentrates on a single subtopic, delivering a unique thesis (clearly different from any other panelist) and relating that thesis to the unifying objective.

The problem with many panels is that they tend to be so structured that learner participation is very low. Thus the control of the content rests too heavily with the panelists. An antidote for this is a question-answer session after the final presentation. (If the question-answer session comes too soon,

later panelists may be seriously impeded in what they say, or influenced to amend a viewpoint necessary to total achievement of the objective).   Another antidote for the low vitality and one-way communication of the panel format is a post-panel structured discussion in which one leader channels comments as well as questions from the listeners - or between panelists themselves.

Performance Try-out

Performance try-outs act as on-going feedback mechanisms for gauging participant learning; but, perhaps more importantly, they constitute a significant learning experience for the protagonist, giving him the opportunity to put what he has learned, (as manager or trainer) to the test in a group situation.

Programmed Instruction ('small-step' learning)

Participants respond to a question - stimulus which follows the presentation of limited amounts of information; participants are given the 'correct' answers right away, providing immediate feedback on the quality of the response.   The full set of information 'bits', plus question stimuli, may be presented in written form or as an audio-visual format, as well as through 'teaching-machine' and computer applications.

Question-answer sessions

Question-answer sessions delegate control of the content to the trainee yet retain the process control for the instructor.

They tend to follow sessions in which the instructor has guaranteed "delivery" of certain content. The Q-A session thus lets learners control the clarification and repetition activity, with focus on the things learners wish to re-examine.

In more controlled Q-A sessions, instructors announce a topic and a reading assignment, plus the key requirement: a list of questions to be brought to the session itself. The session may be the next meeting of the group; it may also be "after an hour of research and analysis". When the time for the Q-A session arrives, the instructor calls on the learners for their questions. The answers may come from a panel of the students, from the instructor or from invited guests. Whenever the answers come from someone other than the instructor, the instructor need participate only when the data given as answers are inaccurate or incomplete. Of course instructors may be chairpersons.

Role-Play

Role-play involves not just the examination and discussion of documentation as with 'case studies' but requires participants to act out and improvise roles and situations using a given data base as a point of departure. The participants have to act out a sequence of events. They have to move from 'outsiders' to 'insiders', moulding the data and shaping actions and events as a spontaneous performance.

Role-play can often be a relatively simple and straight forward activity since it does not have to rely on a wealth of data and formal structure. All that is required is for the participant to accept a new identity, step inside someone else's shoes, and act and react as appropriately as he is able. What may happen in role-play is anyone's guess; there are few formal restraints on the situation, even if the group involved may be aware of some general objectives.

Reverse Role-plays

Reverse role-plays are helpful methods for gaining an understanding of one's own and others viewpoint, and communication strengths and weaknesses. These can be used in various ways; roles can be switched in the middle of a game; or participants can be asked to 're-enact' others contributions to any presentation or exchange (monitored by training team, perhaps with video equipment), thus highlighting vocabulary usage, stylistic elements etc.

Rotation Role-plays

An extension of reverse role-plays, whereby one 'actor' replaces another in a role-play. Such replacement can be spontaneous, but for the sake of achieving some constructive feedback, it may be preferable if rotations are managed by the trainer/instructor, who may quietly ask an observer to enter into the role-play as a designated character. This form of role-playing

can play a valuable part in facilitating multi-person and multi-disciplinary interpretation of role-play situations.

Rotational Group Systems (RGS)

The RGS method provides a framework for inter-disciplinary learning and exchange which harnesses different participant perspectives on selected issues and topics. It features intensive group discussion and debate, involving participative interaction between group members. Group composition is continually changing from session to session, thereby providing maximum opportunity for participant exposure to the full range of disclipinary perspectives represented in the semina.

The RGS method is especially designed for classroom-based courses although other modules, feature field trips or gaming simulation, for example, may be used in conjunction with the method. Participants are typically divided into 3-5 people each, there being up to 5 groups. Total participant numbers should thus be between 9 and 25.

The seminar is likely to be most productive if its general theme encompasses certain contentious issues and touches upon knowledge and information relating to a number of different disciplines. This range of disciplines should be represented by those attending the seminar.

Structured Discussion

Structured discussions are conversations between trainees, aimed toward specific learning objectives. For structured discussions, this learning objective should be clearly announced in advance or during the first moments of the discussion itself. Thus a typical "preparation" for structured discussion is to predefine the objective, and to build a list of questions to give to the group. These pre-planned questions are used as the initial stimulus, when each subtopic has been thoroughly developed, when discussion wanders, or when the group needs re-stimulating. The "lesson plan" merely lists the objectives and questions; the teaching materials sometimes include printed versions of these for display or distribution to individual partic-ipants.

The structured discussion is appropriate when there are pre-defined objectives and when the trainers do not bring a negative viewpoint to those objectives. More open forums are indicated when the trainees need a chance to ventilate their apathy or hositility toward the training goals.

Team Tasks

Team tasks (small teams of participants) result in some product, decision or recommendation to be shared with similar groups in the course. This differs from the case study. These groups don't analyse specific incidents; they analyse an issue or complete a task. They report their findings or present their

"product" in a report to other groups.   Typical products for

these groups are reports, decisions, a set of recommendations,

a Pro/Con analysis of some issue.

APPENDIX   2

Courses Held As Part Of UNESCO's
Human Settlement Managers Training Programme
1975 - 84

Country	Institutions Involved	Country of Origin of Participants
1. ARGENTINA	· National Secretariat of Natural Resources and Human Environment - National Office for Environmental Organisation (DNOA)	Argentina, Bolivia, Brazil, Chile, Paraguay & Peru
	· CONHABIT Programme (UNDP - Argentinian government)	
	· FLACSO - Latin American Faculty of Social Sciences	
	· CEUR - Centre for Urban and Regional Studies	
	· CISFA - Centre for Social Research on the State and Administration	
	· Bariloche Foundation	
2. GHANA	· Government of Ghana	Ghana, Nigeria, & Senegal
	· Tema Development Corporation	
	· University of Science and Technology (Kumasi)	
	· University of Michigan (USA), UNESCO consultants	
	· African Institute for Economic Development and Planning-Environment Training Programme (IDEP/ENDA) Dakar, Senegal	
3. INDIA	· State Institute of Public Administration, Jaipur Rajasthan	Indian States
	· Ikon/Amsterdam, UNESCO consultants	
	· Human Settlements Task Force - Philippines, UNESCO consultants	

Country	Institutions Involved	Country of Origin of Participants	
4. INDONESIA	· Directorate of Building Research — U.N. Regional Housing Centre, Bandung	— Indonesia — Republic of Korea	— Philippines — Singapore
	· Bouwcentrum International Education, UNESCO consultants	— Nepal — Papua-New Guinea	— Sri Lanka — Thailand
5. IVORY COAST	· University of Abidjan	— Senegal	— Niger
	· African Institute for Economic Development and Planning — Environment Training Programme (IDEP/ENDA), Dakar, Senegal	— Benin — Togo	— Guinea Bissau — Republic of Zaire
	· UNESCO Consultants	— Upper Volta — Mali	— Ivory Coast
6. MOROCCO	· Ministry of Tourism, Housing, Town Planning and Environment		
	· African Institute for Economic Development and Planning- Environment Training Programme (IDEP/ENDA),Dakar,Senegal	Morocco and Egypt.	
	· UNESCO consultants		

1977

Country	Institutions Involved	Country of Origin of Participants
1. ARGENTINA (Training Trainers Course)	· National Secretariat of Natural Resources and Human Environment – National Office for Environmental Organization (DNOA) · CONHABIT Programme (UNDP – Argentinian Government) · FLACSO – Latin American Faculty of Social Sciences · CEUR – Centre for Social Research on the State and Administration	Argentina, Bolivia, Brazil, Chile and Mexico
ARGENTINA (Training Managers Courses)	· The same institutions as in the case of the trainers course, and in addition, the governments of the provinces of Entre Rios, Chaco and Cordoba, and the Organization of American States (OAS)	Argentina, Brazil, Chile and Columbia
2. CHILE	· Ministry of Public works · Ministry of Housing and Town Planning · National commission for Administrative Reform · Catholic University of Chile (CIDU–IPU) · FLACSO – Latin American Faculty of Social Sciences	Chile, Argentina, Brazil
3. ECUADOR (Quito)	· FLACSO · Ecuadorian Institutions	

<u>1978</u>

Country	Institutions Involved	Country of Origin of Participants	
		—	
1. ITALY	• CNITE – Italian National Centre for Educational Technology	– Argentina – Ghana	– Senegal – United States of America
	• Italian National Commission for UNESCO	– Cyprus	– Italy
	• Sicilian Regional Government	– France	– Malta
	• Universities of Palermo and Rome	– Greece	– Spain
	• UNESCO Consultants	– Israel	– Yugoslavia

1979

Country	Institutions Involved	Country of Origin of Participants	
1. MEXICO	• A planning seminar for the organisation of additional courses in the Latin American region was held in Mexico City, with the participation of the Mexican Federal Agency for Human Settlements (SAHOP), the Economic Commission for Latin America (ECLA) and the Latin American Faculty of Social Sciences (FLACSO)		
2. SENEGAL	• African Institute for Economic Development and Planning - Environment Training Programme (IDEP/ENDA)Dakar,Senegal	– Cap Verde	– Mauritania
	• UNESCO Consultants	– Chad	– Niger
	• Senegalese National Authorities:	– Guinea Bissau	– Senegal
	– Directorate of Planning	– Mali	– Upper Volta
	– Directorate of Development of the Casamance Region		

COUNTRY	COURSE TITLE	DURATION (Weeks)	INSTITUTIONS INVOLVED	PARTICIPANTS
1. AUSTRALIA : Adelaide	Social Implications of Energy Management at the Local level	1	UNESCO – National Australian Committee	19 plus staff(13): Australia, Indonesia. Malaysia, New Zealand Papua New Guinea, Philippines
2. SURINAM : (16 August – 16 Sept)	Regional Development, Policy Formulation and Implementation	4	. OEA . FLACSO . UNESCO	27 National (Surinam)
3. FRANCE : Aix en Provence	Alternative technologies and strategies for rural development	14	.GRET	16: Bolivia ,Columbia Mali, Ivory Coast, Ecuador, France, Guatemala, Honduras. Nicaragua, Senegal, Sri Lanka, Zaire
4. FRANCE : Gouvieux (10-20 November)	Methods and skills for human settlement managers training .	2	. INFAC	30 Argentina, Brazil, India, France, Italy, Philippines, Poland, United Kingdom, Sudan, Switzerland, U.S.A. Guinee-Bissau

COUNTRY	COURSE TITLE	DURATION (Weeks)	INSTITUTIONS INVOLVED	PARTICIPANTS
1. MALAYSIA: Kuala Lumpur	Workshop on Human Settlements training programme	3 (days)	.Tech.University of Malaysia	28: National
2. PHILIPPINES : Manila	Training of trainers of human settlements managers	2	.University of Life	22: National
3. POLAND : Szczecin	Training of trainers of human settlement managers	1	.Tech.University of Szczecin .UNESCO training consultant	18: Cuba,Ecuador, Ethiopia, Gambia,India Zambia, Kenya, Mexico, Libya, Pakistan, Thailand, Venezuela
4. MEXICO : Mexico	Problems of implementing Regional and National Development Programmes	1	.FLACSO .OAS .UNESCO	32: France, U.S.A. Brazil, Argentina, Cuba, St. Lucia, Dominican Republic, National
5. GREECE :Skopelos (Aug.22nd – Sept. 5th)	Greek island tourist development management (research seminar)	2	.UNESCO	20:
6. MEXICO: Monterey Nuevo Leon	Development of training strategies on Human Settlements management and planning	3	.OAS .UNESCO	25: National
7. MALI : Mopti	Methods and Techniques for Environmental Planning in Secondary Centres in Africa	3	.ENDA	33: Algeria, Jordan, Guinee Bissau, Morrocco Mauritia, Senegal, Tunisia (plus 20 Mali)
8. FRANCE : 7 Oct. – 17th Dec.	Alternative technologies and strategies for rural development	10	.GRET	14 France, Ecuador Libya; Mali: Morrocco Mexico, Peru, Nicaragua, Senegal, Zaire

COUNTRY	COURSE TITLE	DURATION (Weeks)	INSTITUTIONS INVOLVED	PARTICIPANTS
9. POLAND : Jabonna (19-23 October)	Socio economic pre-requisites of planning the development in integrated rural systems via systems-analytical approach	4 (days)	.Polish National Comm.	47: Egypt, Guinnea, Iraq, Italy, Jordan Morrocco; Mexico, Norway, Poland, Syria U.S.S.R. Holland
10.BRAZIL: Niteroi Rio de Janeiro (26 Oct - 7 Nov)	Strategy of primary health care expansion in Niteroi	2	.FLACSO .	36: National
11.ITALY: Palermo (9-14 November)	Human Settlement Management Methods in Mediterranean (Coastal Zones)	1	.CNITE .UNESCO .RAI TV .Sicilian Region	35: France, Guinee Bissau, United Kingdom Greece, Italy, Malta Tunisia, USA, Turkey Yugoslavia
12.BRAZIL: Porto Alegre (9-29 Nov)		3	.FLACSO .CNDU .SUDESUL .METROPLAN .UNESCO	31: plus 11 National

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COUNTRY	COURSE TITLE	DURATION (Weeks)	INSTITUTIONS INVOLVED	PARTICIPANTS
1. BRAZIL	The management of primary health care services	2	UNESCO/FLACSO/UNICEF	33: Brazilian
2. THAILAND (12-22 April) Bangkok)	Workshop on the Management of Human Settlements in Disaster Situations	1½	UNESCO/AIT (Asian Institute of Technology)	
3. BRAZIL Niteroi (19 July - 7 Aug)	Medical Training Management	3	UNESCO/FLACSO/Federal University of Fluminense, Faculty of Medicie	30:
4. Porto-Alegre (2-14 August)	Urban transport management	2	UNESCO/FLACSO METROPLAN, CNDU, EBTU	30:
5. Belo Horizonte (2-14 August)	Urban transport management	2	UNESCO/FLACSO cndu	
6. Belo Horizonte (16-21 August)	Training Trainers Course	1	UNESCO/FLACSO/CNDU	20:
7. RIO DE JANEIRO (13 - 24 Sep)	Basic Health Welfare Provision in the 'Fouelas' (Shanties)	1½	UNESCO/FLACSO/UNICEF	30:
8. Sao Paulo (12-25 Sept)	Latin American course for training of managers of welfare services	2	UNESCO/FLACSO/FUNDAP/ UNICEF Ministry & Secretary of Health	30;
9. RIO DE JANEIRO (27 Sep - 2 Oct)	Training Trainers Course	1	FLACSO/UNESCO FUNDAP/UNICEF	20:
10. ARGENTINA Buenos Aires (19 Apr. - 30 June)	Planning and Management of Development Projects	2	UNESCO/FLACSO	10:

COUNTRY	COURSE TITLE	DURATION	INSTITUTIONS INVOLVED	PARTICIPANTS
11.Buenos Aries (17 May – 8 July)	Methods and Techniques of Project Management	3	FLACSO/UNESCO/ENTEL	10:
12.CAMEROUN Buea (8 – 14 December)	Training Workshop in Gaming Simulation for Human Settlements	1	UNESCO/ENDA/PAID	20: Senegal, Zambia, Nigeria
13 FRANCE (6 Sep – 19 Dec)	Alternative technologies and strategies of rural development	14	UNESCO/GRET/UCI	19: Peru, Haiti, Nicaragua France, Columbia,Chile Mexico, Ecuador, Sri Lanka
14.GREECE Kassandra (Oct.3 – 8)	Forest Management (Interdisciplinary Research Seminar)	1	UNESCO University of Thessaloniki, Greek Government Ministries	16: Spain, Greece(9) U.S.A. (2), G.B., France, Malta, Italy

1983

COUNTRY	COURSE TITLE	DURATION (Weeks)	INSTITUTIONS INVOLVED	PARTICIPANTS
1. NICARAGUA Managua (25-30 July 1983)	Training for the Management of National Survey Systems	1	FLACSO, DIGE	13: Nicaragua
2. FRANCE Paris (12 Sep - 17 Dec.)	Alternative technologies and strategies of rural development	14	GRET	

1984

1. SUDAN Khartoum	The Management of Human Settlements in Hot Dry Climates	2	ALESCO, UNCHS, University of Khartoum, Sudanese National Commission for Education, Science and Culture	17: Sudan

APPENDIX   3

FURTHER   READING

Books

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Broadwell, Martin M., "How to Improve the Next Batch of Course Objectives You Write," Training, May 1976, p.50.

Davis, James and John Hagaman, "What's Right-And Wrong-With Your Training Room Environment?" Training, July 1976, p.28

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UNESCO

DIVISION OF ECOLOGICAL SCIENCES

MAN AND THE BIOSPHERE PROGRAMME

HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

TRAINING METHODS

METHOD No. 1

A BASIC GUIDE

ON ROLE PLAY

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PREFACE

This monograph is in a series commissioned by U.N.E.S.C.O. to help a wide variety of people who might be interested in using a range of inter-related training methods, many of which are based on simulation techniques. The writer has had to bear in mind that his readers are likely to be an international audience, sometimes minimally equipped and frequently involved in training programmes outside both the formal and conventional educational systems.

Section 1 provides a general introduction for those with little or no experience. In section 2 role-playing is examined in greater depth with reference to differing approaches, the purposes they can serve and how role-playing exercises are conducted. Finally, Section 3 provides some basic examples of role-playing priming models particularly orientated towards simple developmental situations.

It remains to stress that the monograph should be seen as a supplementary note to U.N.E.S.C.O. Human Settlement Training Handbook and as one of a series on specific training techniques. The aim is to present a simple introduction which will promote greater understanding and provide enough information as well as encouragement to make the reader into a user. Role-playing relies upon learning by doing and this text will be successful if it moves the reader to try out a role and run one or two trial role-playing exercises. If the job has been well done not only

will the readers try out certain basic steps but they will be tempted to run linked simulation exercises in their own training programmes and in turn be confident enough to explore possibilities of adapting and designing models to fir their own specific needs.

CONTENTS

1.   GENERAL INTRODUCTION

It is most useful to start by appreciating that it is possible to conceive of at least four broad strands of simulation, namely, the case study, the role-play, the gaming simulation and the computer simulation.   Although all four strands can be inter-related or overlapping, each one has its own particular values and characteristics..   Each form of simulation can be seen to incorporate differing levels of abstraction and it is possible to think of increasingly elbaorate levels of abstraction as you move from case studies through role-playing and gaming-simulation to computer simulation.

Thus related simulation techniques used in training can be seen as activities which evolve around selected parts of the real or hypothetical world.   To a greater or lesser extent they take from the real or hypothetical world what the designer or participants deem appropriate.   In simple terms, they can be viewed as abstractions.   Case Studies are generally less abstract and computer simulations are often more abstract;   whatever their degree of abstraction they are simplified representations which can be animated to aid our understanding.

Role-play involves not just the examination and discussion of documentation as with 'case studies' but requires participants to act out and improvise roles and situations using a given data base as a point of departure.   The participants have to act out a sequence of events.   They have to move from 'outsiders'

to 'insiders', moulding the data and shaping actions and events as a spontaneous performance.

Role-play can often be a relatively simple and straight-forward activity since it does not have to rely on a wealth of data and formal structure. All that is required is for the participant to accept a new identity, step inside someone else's shoes, and act and react as appropriately as he is able. What may happen in role-play is anyone's guess; there are few formal restraints on the situation, even if the group involved may be aware of some general objectives.

2.   THE ELEMENTS OF ROLE-PLAY

From the outset it is important to see role-play providing users with a dramatic confrontation and classification of:

(a)   information and personal expectations about society
      (look at yourselves)

(b)   inter-personal relations and life styles
      (look at actions and behaviour of others)

(c)   relationships of data and knowledge of day-to-day situations
      (look at the world in general and social life in particular)

In simple terms, role play calls for the assumption of a new role outside the normal every day accustomed role.   This other role may be that of a real person, or may be fictitious.   In either case the role may or may not be completely specified and heavily circumscribed.   Thus the student acts a part to stimulate learning and to create better understanding.

Just as William Shakespeare has done, it is possible to view 'all the world as a stage and all the men and women merely players'. They act out a role not only in terms of a patterned way of evaluation and behaviour to others and their environments but also in relation to how they perceive themselves and their own setting.   It is a medium which encourages individual spontaneity without the risks of sanctions and reprisals.   In providing opportunities for active involvement in problem situations, it makes the necessary connection between knowing a principle and acting upon that knowledge.

2.1. Role-playing Formats

The technique of role-playing can be used in many ways to look at:

- ideas

- feelings

- expectations

- attitudes

- behaviour

At the same time the technique seeks to raise the amount and level of verbalisation within groups. In examining such issues a role-playing situation can be introduced by:

a). The Direct Involvement Approach

Here participants are invited to 'act-out' an instant run-through of reactions to material just placed before them. Such an approach relies heavily on spontaneity and a general willingness to indulge in 'free-rein' activities stemming from being placed on the spot.

b). A Total Briefing Approach

This style of role playing can encompass everything from preliminary warm-up sessions, technique explanations, briefing meetings, film and video introductions, background reading, role-induction etc. prior to direct inter-personal involvement. Thus the actual acting out or dramatisation is seen as but one incident in the total learning sequence. Throughout this type of approach a considered commitment must be balanced against

the more impromptu stance obtained through minimum briefing associated with the immediate involvement approach.

c). Role-reversal/re-run approach

Whatever briefing is adopted the option is always available for participants to switch roles or positions in the role-play. This mechanism is a means of exploiting the technique to the full. Not only are participants put into someone else's shoes but after this experience they are forced to see the world anew by being placed into yet another person's position in the same setting.

Role reversal sessions offer the opportunity to appreciate more than one or two points of view. Greater understanding and mutual consideration is generally fostered and higher levels of empathy frequently obtained. For example as an extension of Taylor's (1977) Development Control case study work Booth (1981) has produced video tapes which can usefully be seen as a starting point for further work. In this context role-playing exercises can be based on the video tapes. Alternatively, by using the videotape as a point of reference for relating to certain statutory procedures, students may build or run through their own selected examples.

Whatever type of approach is used it remains to stress that differing formats can provide extremely useful bases of comparison to highlight a wide range of perspectives and insights.

2.2. Role-playing Purposes

Role-play (can serve a number of) purposes:

a). Diagnosis/Evaluation

To find out how individuals react in certain situations e.g.

Does he or she identify readily with other people's roles and problems?

When are certain individuals automatically aggressive/passive/ withdrawn?

b). Decision-making

By role-playing through a number of options, participants can see a range of outcomes being generated. Although optimum solutions are not identified it is possible to increase the general appreciation of the consequences of different actions, e.g.

What happens if a collaborative or competitive approach is adopted in Central Area Renewal?

c). Rehearsal

By practising responses to certain situations it is hoped to improve an individual's verbal adequacy and inter-personal skill. In essence the concern here is focused on preparedness e.g.

Can you cope with being a newcomer in a strange environment?

How would you respond when a TV interviewer identifies your company as a major source of atmospheric pollution?

d). <u>Attitudinal Change</u>

By acting out or dramatising a situation new perspectives can be significantly highlighted.

The background to differences can be revealed and role-reversals can provide a radical basis for reassessing misunderstandings and disagreements e.g.

What would happen if, instead of being the planning officer and trying to refuse planning permission, you were the applicant appealing for the right to build?

e). <u>Self Awareness</u>

Through direct involvement with certain action sequences the individual is confronted with a wider awareness of how others see him. A range of perceptions are thrust upon him which in turn serve to increase or improve his self-awareness. Strengths and shortcomings at individual and group level can be identified and examined in an uninhibiting manner, e.g.

Why is it that 3 people on a Council Sub-Committee cannot agree on priorities?

What has caused the Residents Association to split into two factions?

Clearly there are many differing types and levels of role-playing activity. For example, it can be used to: portray historical events; examine individual and group conflicting situations

or it can provide a framework for the development of social skills. In effect the role-playing dramatization provides both students and teacher with a laboratory situation for analysing and practicing many different aspects of interpersonal relations.

Although this monograph provides a range of examples, it cannot claim to cover the whole spectrum of uses or contexts. Like any educational technique role-playing has to be used as a component in a larger instructional plan. For reasons of space, contextual relationships have not been explored fully but it needs to be stressed that role-plays should not be used as isolated events.

The unique character of role-playing lies in its reliance upon the participants activating the learning situation and seeing its wider relevance. Differing styles and amounts of creativity can be exploited to demonstrate how the gap between thinking and doing can be narrowed and related to real world needs. It cannot be denied that role-playing is a provocative technique which has the potential to stimulate interest in many aspects of environmental education.

2.3. Conducting a role-play exercise

Clearly there are few standard ways to conduct a role-playing exercise. However, once the objectives are determined, the logistics known and the role-play selected, then certain major steps are usually encountered.

a). Explanation of role-playing as an activity

As some students may not have encountered role-playing before, some technique introductions might be necessary. 'Ice-breaker' or 'warm-up-games' can be advantageous in such settings as a means of putting people at ease and for relaxing the group as an entity.

b). Briefing sessions

In covering the objectives of and the context for the exercise it is important to be both clear and direct. Any ambiguity or verbosity can alienate the participants prior to direct involvement. It must always be recalled that additional information can be injected into the exercise as and when the need arises. Often participants can call for further elucidation or more data once a level of confidence or a certain mastery is achieved.

c). Role allocation

To avoid any accusations of teacher domination, favouritism or manipulation a random allocation of roles is often advantageous. It must be clearly seen to be fair and role-reversal re-runs offer the opportunity for wider participation and more balanced involvement. Thus both the initial allocation and the re-run allocation of roles can be seen as public events handled by the participants.

Usually there are two kinds of roles involved in any allocation process – individual roles or group roles. These distinctions have to be made clear and the role profiles have to be adequate

to generate natural responses.   Power and responsibility
should rest with the participants and the greater their
freedom then the greater the motivational and learning benefit.

d). Operating session

Starting times, terminal points and deadlines have to be
set and adhered to as closely as possible.   Having made
this clear then a great deal rests with the participants.
Role players can and should be allowed to be aggressive,
awkward or flippant as they deem appropriate.   Group norms
quickly provide a balance and generally inhibit the more
bizarre forms of behaviour.   The importance of the group
dynamic cannot be overstressed.   The unusual and unconventional
does not have to be sanctioned and the open-endedness rarely
needs to be circumscribed.

e). De-briefing

Feedback discussion sessions are an essential part of the
role-playing learning process.   Where an historical situation
has been replayed the discrepancy between the operating
session and reality provides an excellent point of departure.

It is important to bring role players back to reality and
to dis-associate the actors clearly from the role they played.
This is an important step because it then allows the partic-
ipants to concentrate on the role behaviour rather than
the characteristics of an individual's performance.

Different participants can take the chair and all the role players should be encouraged to present their individual points of view - what did they perceive to be the major issue or how did they go about resolving differences?

After these views are aired and discussed then interest can turn to the collective behaviour and outcomes.

How did the groups organise themselves to explore options and to achieve certain objectives?

How effective were they in achieving certain goals?

Should the role-play be re-enacted and if so with what changes?

Finally, the closing discussion can be even more open-ended in asking:

What lessons were gained from the experience?

Would individuals act differently if placed in a similar situation in the future?

The advantages of formal de-briefing questionnaires should not be overlooked. For designers and teachers constructive comments on the mechanics and fine tuning of the exercises can stem from more reflective consideration given when responding in writing as well as verbally to de-briefing questions.

f). Evaluation

Over and above the assessments of the experience which can be undertaken in the de-briefing session it is important

to recognise that the teacher has a distinct personal evaluation role.   Initial goals and objectives have to be related to <u>verbal</u>, <u>behavioural</u> and <u>written</u> evidence.   From this analysis various indications will emerge with respect to what might have been gained from the experience.   It must be noted that the finest actors are not necessarily the most competent students and interest rests on the ability to <u>understand</u>, <u>feel</u> and respond <u>within an assigned role.</u> An index of performance can thus be established in relation to social maturity and skill development.   The 'skills' can include questions of manner, movement, and gesture as well as the more familiar decision-making and vocal skills. It is as well to remember that the users can be learning as much about themeselves as about others.   The 'skills' can involve opportunities for open-ended questioning emphasising various degrees of self-discovery, self-motivation and self-discipline.   In other words, work with this technique is very much a province now frequently referred to as <u>'life skills'</u> development.

The role-playing experience can be used as a pointer for further work whether by role-playing or by other techniques. Any evaluation procedure can isolate gaps to be filled, points to be reinforced and new areas of concern.   It may well be that further instructional goals can be elaborated and new learning directions established.

Finally, when looking at all the stages involved in running a role-play exercise, it has to be remembered that the great

virtue of the technique must be its ease of use and the open
opportunity it offers everyone to be freely and dramatically
involved.   Ideally, role-playing should be non-authoritarian
in both organisation and practice.

Ultimately, it should not be forgotten that the value of
the technique rests on the participant's ability to apply examples
and lessons of role-play to his or her own inter-personal experience.

2.4. Checklist for using role-play

The following is a useful checklist for those conducting
role-plays (based on Lewis and Mee, 1981).

1.   Be prepared.   Good planning avoids problems.   Think about
your group, your aims, the topics you will use.   Choose the
right kinds of challenge;   too many become threatening, too few
lead to boredom.   Who will work with whom: will you decide
to leave it to them? How much time will you give them?

2.   Be flexible.   Don't be afraid to modify your plans.   It
may be, for example, that a role-play is going far better than
you ever hoped for;   let it go on a bit rather than cutting it
short.   Equally, cut it down if it's not leading anywhere.
Change your groupings, characters and topics if there are good
reasons for doing so.

3.   Avoid confrontation.   It rarely gets you or the group anywhere.
Try to work with the group and encourage them to accept responsibility
for what goes on.

4. Give students confidence – e.g. by trusting them, by praising them, by setting the challenges at the right level so that they can feel successful.

5. Be clear in your instructions. Let them feel free to ask if they don't understand.

6. Be open, supportive and honest. Listen to criticism.

7. Communicate with the group; be sensitive to their needs, even if you're not going to be able, or to want, to meet all of them.

8. Know what you're looking for but be prepared for what you don't expect: it may be better than what you're looking for.

9. Relax and enjoy the work. It can be very exciting and should never be dull.

10. Don't forget that role-play is just one technique. It can be used to extend work already done or to look at things in a fresh way. It can lead you on to other topics.

3.   ROLE-PLAY EXAMPLES

3.1. Role-play on environmental quality

PLACE: A major road running along a third class residential

area into an urban centre in a developing country.

TIME: The present.

PEOPLE: A shopkeeper

A resident

Other shopkeepers

Other residents

Water sellers

RELATIONSHIPS: All the people live in a large third class

housing area facing onto the main road.   The

shopkeepers have shops on the main road frontage.

As only the shops and houses on the main road

frontage have services, water sellers bring

water by donkey cart to the other residents

of the area.

Both the shopkeeper and the resident are self

appointed spokemen anxious for action.

SCENARIO: When the municipal authorities recently upgraded

the main road and gave it a tarmac finish,

they also planted a line of trees either side

of it.   The trees were provided by goat guards

and watered regularly by a mobile tanker.

Recently some of the trees have been destroyed through car accidents; others have lost their guards and been eaten by goats; at the same time watering no longer takes place on a regular basis. The municipal authorities say that because of financial difficulties they cannot replace the damaged trees or guarantee a regular watering arrangement.

The shopkeeper feels that if the trees were replaced and properly maintained they would improve the environment and provide more shade. This would not only encourage more passers by to stop at the shops but would also provide shade for people waiting for buses. He has therefore got one of his friends living in the area to support him and call a public meeting to see if some local initiative could be started.

PROBLEMS: Can a common environmental concern be defined and supported by a community at large?

ROLES: Roles are allocated for the following key figures:

    . A shopkeeper

    . A resident

Remaining members of the group are allocated roles as shopkeepers, water sellers and residents in the approximate ratios of one to one to five.

ROLE-PLAY: The role-play starts with the shopkeeper setting out the background to the decline of the planting scheme, the reaction of the municipality and his conviction that substantial benefits would accrue to the community if they would undertake collective action to restore and maintain the trees. He then invites his resident friend to outline his views. An open role-play session can then be introduced, in which any of the other participants can express their news. The ensuing debate can be controlled and directed as deemed appropriate.

THIRD CLASS RESIDENTIAL AREA

SHOPS

TREES

ROAD

AGRICULTURAL LAND

Sketch for Role-play on Environmental Quality

3.2. Role-play on road re-alignment

PLACE: A main road running between areas of first and third class housing in an urban settlement in a developing country.   There are a number of shops in the third class area fronting onto the road.

TIME: The present

PEOPLE: Assistant Commissioner

Municipal Planning Officer

Spokesman for first class residents

Spokesman for third class residents

Spokesman for third class shopkeepers

Other first class residents

Other third class residents.

RELATIONSHIPS: The third class residents are largely unskilled manual workers living in mud brick houses with the shopkeepers on one side of the road.

The first class residents are mainly high ranking government officials and army officers with some merchants.   Their houses are concrete and brick structures set on the other side of the road.

The Assistant Commissioner and the Municipal Planning Officer represent the official government point of view.

SCENARIO: The municipal authorities are proposing to build a new road about half a mile east of the existing road between the first class housing area and the airport. It is intended that this new road will relieve congestion on the existing road and provide access to the airport area when it is re-developed for industrial uses in the future.

The first class housing residents support the proposal for the new road because many of them are involved in development and they recognise that the new road will enhance the land values on the airport site when it comes up for re-development.

The third class housing residents are dependent upon the existing road for public transport and for passing trade for the shops. If the road is re-aligned they will have to walk further to the buses and trade will be affected. They would rather see improvements carried out to the roads within the third class area to bring them up to the standard of the first class area. At present the third class roads are unsurfaced and are flooded every wet season. The first class roads have a hard surface and flood drainage.

PROBLEMS: Is it possible to devise a strategy which will result in environmental improvements whilst respecting the interests of the different groups?

Is that even desirable?

ROLES: Roles are allocated for the following key figures:

- Assistant Commissioner
- Municipal Planning Officer
- Spokesman for first class residents
- Spokesman for third class residents
- Spokesman for third class shopkeepers.

Remaining members of the group are allocated roles as first class and third class residents in a ratio of approximately one to two.

ROLE-PLAY: The role-play takes place in the office of the Assistant Commissioner who acts as Chairman. The third class residents, who requested the meeting, are surprised to find that the first class residents have been invited.

The Commissioner briefly explains that the purpose of the road is to reduce congestion and, in particular, reduce accidents and he is surprised to find that the third class residents do not support these objectives.

He then invites the representative of the third class residents to state their case.

SHOPS

THIRD
CLASS
HOUSING

SHOPS

SHOPS

Existing Road

FIRST
CLASS
HOUSING

$\frac{1}{2}$ mile

Proposed Road

AIRPORT TO BE
DEVELOPED FOR
INDUSTRY IN
FUTURE

Sketch for Role-play on Road Re-alignment

3.3. Role-play on squatter up-grading

PLACE: Squatter development on the perimeter of a major urban settlement in a developing country.

TIME: The present

PEOPLE: Central government housing expert

      Local municipality planning officer

      The religious leader of the community

      A number of tribal leaders

      Residents of the squatter housing area

      Residents of an adjacent legal settlement

RELATIONSHIPS: The Housing Expert is there to enforce the policies of central government irrespective of local sentiments.

      The local planning officer is subordinate to the central government expert and is responsible for the actual implementation of the proposals.

      The religious leader is the spiritual head of the whole community but commands diminishing respect.

      The tribal leaders represent different factions within their community and their allegiance is to these factions rather than the community.

The residents accept the natural authority of their religious and tribal leaders but do not always agree with them.

The residents of the adjoining legal settlement are antagonistic with regard to the claims of the illegal settlement and do not want to see resources diverted to their interests.

SCENARIO: Official government policy towards illegal settlements is either to bull-doze them and send the inhabitants back to their villages or, bull-doze the site, prepare a new sub-division scheme based on standard sites and roads and re-allocate the sites on a lottery basis. In such a scheme some sites would be allocated for shops, schools, a clinic and religious buildings. Central government would provide school teachers and medical workers provided the community was responsible for the actual construction of the buildings. All new sites would be provided with water and electricity services with the owners being expected to provide pit latrines. All sites would be disposed of on a leasehold basis with a nominal ground rent. Because of reduced densities after re-development it is estimated that there

would be an overspill factor of 25-30%. The municipality would not accept responsibility for providing overspill sites.

The existing site has developed on an irregular basis over a number of years. It has no services but the residents have constructed their own shops, religious buildings, clubs and a school run by the community. The buildings are built of temporary materials but a few are developing more permanent structures using mud brick construction technique. Some sites have managed to tap illicitly the electricity supply from the adjacent legal settlement. Water is brought from water sellers or collected from points in the adjacent settlements. In general these illegal settlers do not want demolition and upgrading but would like to be provided with proper services and some security of tenure.

Residents in the adjoining settlement, who were once squatters themselves, resent the arrival of these new squatters and the consequent competition for jobs and services. They would like to see the settlement demolished and re-developed for industrial uses to provide more employment opportunities.

PROBLEMS: Can an equitable policy be developed for squatter up-grading which does not merely exacerbate the rural-urban drift.

ROLES: Roles are allocated for the central government housing expert and the local municipality planning officer.

              The role is then allocated for the religious leader and the remainder of the group allocated roles as tribal leaders, residents of the squatter housing and residents of the adjacent housing in the approximate ratio of one to three to one.

ROLE-PLAY: The role-play proper begins with the central government housing expert explaining central government policy with regard to squatters and advising the squatters that if they oppose the up-grading proposals he will be obliged to recommend to the Minister that the site should be cleared and the people dispersed.

              The religious leader explains that his people have already suffered a great deal through migration and only want to be left alone and provided with proper services. He then turns to the tribal leaders for their support.

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DIVISION OF ECOLOGICAL SCIENCES

MAN AND THE BIOSPHERE PROGRAMME

HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

TRAINING METHODS

MONOGRAPH No. 2

CASE STUDIES AND

LINKED SIMULATIONS

John L. Taylor and Martin Wynn

CASE STUDIES AND LINKED SIMULATIONS

PREFACE

This monograph is one of a series commissed by U.N.E.S.C.O. to help a wider variety of people who might be interested in using a range of inter-related training techniques. The writers have had to bear in mind that their readers are likely to be an international audience, sometimes minimally equipped and frequently involved in human settlement management training programmes outside both the formal and conventional educational systems.

Section 1 provides the general education background for those with little or no experience. In Section 2 case studies are examined in greater depth with reference to differing approaches, the purposes they can serve and how they can be assembled. Finally, Section 3 provides a range of suggestions for building on case studies with a variety of linked simulations.

It remains to stress that the monograph should be seen as a supplementary note to the U.N.E.S.C.O. Human Settlement Managers Handbook for the Design and Organisation of Training Courses and as one of a series on specific training techniques. The aim is to present a simple introduction which will promote greater understanding and provide enough information as well as encouragement to make the reader into a user. The linked simulations discussed here rely upon learning by doing and this text will be successful if it moves the reader to compile his own case study material and be confident enough to explore possibilities of adapting and designing training formats to fit his own specific needs.

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1.   GENERAL EDUCATIONAL BACKGROUND

The case study, as a means of learning from the 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 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 environmental change and of developing better techniques and procedures for the management of settlements.   Slowly there appears to be a growing recognition of the benefits of the transference of experience via case studies at both national and international levels, particularly with regard to the third world.

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 can 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 it has the following characteristics:

- it allows the reader to identify with specified persons or set role positions.

- it captures the affective moods and other dynamic properties of an unfolding situation.

- it separates the description from the conceptualisation and generalisation.

Case studies are designed to be used in parallel with other educational opportunities i.e. to be set alongside:

- the lecture course or seminar programme

- an expert interview, e.g. with a government official or interest group representative whose role may play some part in the case study.

- the practical assignment e.g. a study of related documents or field research of development which may again feature in the case itself.

- involvement in simulations, which may be directly linked to the case study or of a wider-ranging nature.

- group discussion and analysis of related themes.

- role-play exercises that might constitute an integral part of the case study itself.

For anyone under training, there is always the danger that their tuition may not be readily related or adequately grounded in concrete reality. Limited access to central government, local authority or other confidential files means that many people seeking to broaden their understanding are given little opportunity to examine tangible evidence of real-world land use decision-making in a favourable setting. Even when such files are available for discussion, spare copies and direct access are not often possible for reasons of confidentiality or political sensitivity. Furthermore, it is freely acknowledged that such files are only a partial account of a process. Obviously it is possible to see the files and some data as a one-sided story lacking both depth and balance. Hence one of our major objectives in producing this monograph is to set down how case study learning can be fostered, improved and generally extended.

2.   CASE STUDY METHODOLOGY

2.1. A Basic Training Stance

The case study has long been a part of the standard methodology of anthropological and business studies.   Much can be learned from the literature in these areas.   However, it is important to make certain distinctions clear.   Our aim is to define a preliminary framework for the exchange of experience which would help others explore both the potentialities and problems stemming from an experiential methodological stance.   In short, the overall goal is to explore a learning process tied to concrete examples which might develop the understanding and skill of human settlement managers.

The case study format devised and used by the authors commonly contains two major elements: a) selected 'real-world' letters, memoranda and completed forms and b) a set of linked narratives. Both types of documentation are presented in a simple and straight-forward manner.   However, the documentation is colour coded to ensure that a distinction is made between the hard data and the more qualitative descriptive links.   Such an approach stems from a belief that teaching materials and academic papers too often seem to demand, or at least frequently achieve, a stylistic level which does little to foster frank communication and productive exchange.

From the above remarks it will be seen that case studies need not be assembled as models of good practice or as examples

of mal-administration.   Rather it is hoped that extremes are avoided and that the more idiosyncratic has been neglected in favour of practices and procedures familiar or relevant to human settlement concerns.   In a field such as this, where fact and value judgement are so closely intertwined, there would seem to be a special need for communication techniques which present such a balanced view of general practice and emerging issues. Implicity in this attitude is the belief that this does not preclude the practitioners learning as much from failures, stalemate situations and abortive work as can be gained from the examination of acknowledged successes and widely acclaimed triumphs.

2.2. Advantages of the Case Study Approach

Despite the mixed amount of experience with case studies it is possible to categorise the favourable comments documented in the literature in at least two ways:

a)   Realism

The main advantage of using the case method is its obvious realism.   Case documentation is clearly identifiable as real life material and is presented in a form whereby settlement management knowledge can be readily acquired and quickly developed.   Users are given the opportunity of coming into contact with and handling realistic 'raw' data as well as having the chance to confront related problem situations.   In short, the great merit of the approach is its vivideness and immediacy from realism.

In theoretical terms the case study approach can be viewed as experientially based learning, the assumption of experience-based learning being that learning is more likely to be advanced if the material to be assimilated is anchored in a more concrete experience. As a consequence it is generally assumed that direct, recent or vividly portrayed experiences are more effective than abstract, remote or poorly described situations. Building on such a view, Walton (1972) has suggested that the case study is more likely to serve its purpose if it:

- allows the reader to identify with specified persons OR set role positions;

- captures the affective moods and other dynamic properties of an unfolding situation;

- separates the description from the conceptualisation and generalisation.

Justifiably the case study is noted for its ability to cover processes of change. It has been found that the particular form of case study discussed here complies with these findings and in addition allows a build-up of complexity within a single case study.

b). Flexibility

Once the case study data is collected and structured, the material can then be used in a variety of ways. This flexibility can be easily achieved and involves little further investment

in terms of time and resources. Whatever is selected the ability to provoke relevant questioning of an on-going process, test hypothesis and speculate where a process is heading may be the most valuable lessons to be derived from the case study method. In recognising these facts the appropriate case study format can be selected or specifically tailored to a prescribed setting and particular user requirements.

Cases can be used at a variety of levels, in a wide range of contexts and can be modified and refined in the light of feedback received. However, it does warrant saying that case studies do not encompass everything. The risk or danger of submerging the reader with a mass of administrative and technical detail has to be acknowledged. Here a question of balance comes into play. The compilers have to chart a course between the extremes of over burdening users with detail OR alternatively so over-simplifying the cases that realism, the major advantage of the case study approach, might be lost.

2.3. Preparation of Human Settlement 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 these objectives and due emphasis can be given to particular aspects concerning issues, procedures or skills as appropriate.

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 inter-actions 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. (Figure 2.1.) 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 betwen 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. Once the material has been 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

Data
collection

Data structuring
and initial analysis

Case study
circulation

Final analysis
and packaging

Research
team

Site
practitioners

Field
workers

Data
base

Data base
structuring
and summary
report by
research team

Site practitioners,
local authorities,
developers etc.

Party reports
on case study

Final analysis of data
and party reports

Straight Case History

Decision Stage Chart

Process Flow Chart

Role-playing Exercises

Linked simulations

Further refinement and
development through feed-
back from participant
groups and interested parties.

Various
combinations
and uses are
possible
depending on
the nature
of case
material,
course
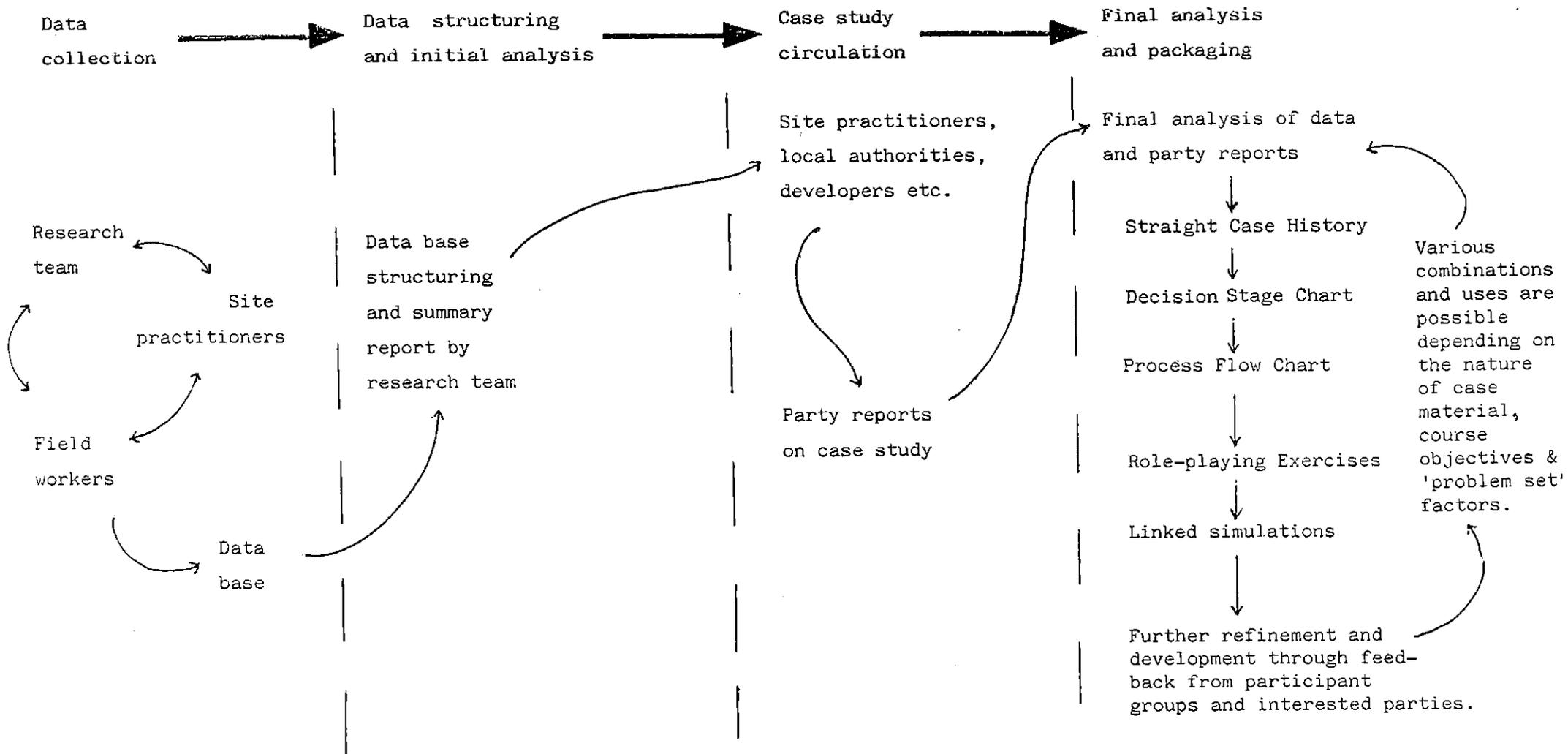objectives &
'problem set'
factors.

Figure 2.1.   Stages in the development and use of a case study

reveal gaps in the data and a further round of data collection found to be necessary to balance the presentation of the material.

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 processes involved in the project. The role and significance of the main actors in the various decision-making stages can also be identified in a simple table referenced back to the structuring of the data base (See Figure 2.2.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Eastwood urban district council	O	O	o	o													
BROXTOWE DISTRICT COUNCIL																	
Planning department			●	O	O	O	O		O	o	O	O	O	O		O	O
Other departments				o		O	o					O				o	
Development services committee			●	O	●							O					
Housing services committee					O		O	O			O	O			O	O	O
Full council			O		O		O	O			O	O			O	O	O
Residents and/or residents committee			●	●	O	o	o	O	o						o	O	O
Nottinghamshire County Council											O		O				O
Department of the Environment							o			O				o			O
Building contractors		o						o							o	o	
Planning consultants		o		o	o												
Other public agencies	o					O				O							
Other members of the public	o										o		o	O			

● Key decisions   O Important decisions   o Participation in the decision making/development processes

Figure 2.2.   The Decision-making Chart for the Buildings Case Study

Source: Wynn (1985)

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.

Having assumed the main elements of the case study, our experience has shown that it is then advisable 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 completed basic case study will then contain the following sections:

- summary of main characteristics and action

- introductory explanation of terms and context

- the structured data base

- a decision stage table in which the role and significance

of the main actors are identified and related back to the data base (See Figure 2.2.).

• a process flow chart identifying the separate but overlapping processes of the project (See Figure 2.3.)

STAGES IN THE OVERALL CHANGE PROCESS, IDENTIFIED IN THE DATA BASE

DIFFERENT SUB-PROCESSES	1970 1971 1972 1973 1974 1975 1976
Design/planning process	
Land transactions	
Construction process (villas)	
Construction process (rds)	
Service installation	
Local employment change	
Ecological impact (terrestrial)	
Ecological impact (marine)	
Tax revenue change	

Figure 2.3. The Process-flow Chart For The Gonzalta Case Study

Source: Wynn (1985)

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. (See Figure 2.1.) 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 the last stage in the continuous self-learning and refinement process (See Figure 2.1.).

2.4. Use of the Case Study

The potential uses of case studies are not mutually exclusive, but rather overlapping and complimentary, and one case study

data base may be used to serve several ends, depending on specific course objectives (Figure 2.1.) Where the case study is being used to evalute past performance, and the participants in the actual event of the case study also participate in the evaluation stage, the learning situation may consist of the following events:

a). There can be an examination stage where the case study summary is reviewed to ensure familiarity with its overall aspects. Interest will then centre on an examination of the actual data base, with specific questions being raised by the trainer to promote relevant questioning or discussion and possibly to elucidate further points of information.

b). The second stage of analysis can, by reference to the process flow chart, move on to define the roles 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. Conversley, there may be consideration 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.

c). The third stage can be concerned to analyse the decision stage chart in an endeavour to pinpoint the key decision 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-playing 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.

d).   The final stage can consist of a summary session which will attempt to bring together the key issues in the case study and review the general performance of the management system, possibly outlining areas where improvement may be envisaged and comparisons made.

3. LINKED CASE STUDY SIMULATIONS

3.1. Introduction

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 factual descriptions of the process. The case study data bases provide a valuable starting point for the development of a number of training techniques, with the emphasis on the participation of the trainees in the learning and evaluation process, drawing their own conclusions through the interesting and convincing presentation of material drawn from the data base. Some of the possibilities have already been outlined in the previous section.

Simulation techniques, however, are a further, and particularly powerful means of understanding and evaluating the operation of theory in practice. Their use in training related to the built environment is far from new. Early pioneering work in the 1960's saw the development of gaming models in which the dynamics and growth of urban systems were crudely simulated. One major criticism of these games has been their poor definition and description of the planning enrivonment; 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 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.

Case study simulations share the educational advantages of more conventional case study training. They are anchored to a real-life situation and have an immediacy and relevance that can be easily appreciated. In addition, as Walton (1972) has pointed out, the case study 'can attend to aspects of a change programme which other methodologies cannot; namely processes of change and of change intervention'. But such development of the students' understanding and judgement in any one case has far wider applicability and value. Ayres (1974) has concisely summed this up as follows: 'By studying a case, the trainee has the opportunity of analysing a situation and thinking through the consequences of applying or failing to apply relevant principles or practice. In this way, judgement and hence decision-making can be improved without knowing the precise situation to which judgement will be applied'.

As with the case method per se, much has already been written on the educational attributes of gaming simulations. Suffice it to say here that simulations such as those being discussed

here take cognisance of at least four seemingly important educational characteristics.   These are:

a). active and extensive student involvement in their learning process, with considerable emphasis placed on guided self-discovery.

b). decision-making experience in realistic settings with rapid and repeated feedback, the feedback indicating the consequences of actions, the adequacy of performance and the challenge of improving decision-making arising out of speedy error signals.

c). conducive environmental conditions with, for example, opportunities to experiment with little at stake and situations where the role of teacher as critic or judge is partly supressed by self-pacing and self-monitoring instructional procedures.

d). diversity of presentation through differing combinations of methods and materials which call upon the full range of auditory, manipulatory, verbal and visual skills.

Decision-making contexts can 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 can be introduced to re-create the immediate and more external influences that shaped the decision-making courses 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 display symbols, role play descriptions and game moves based on the decision-making stages of the data base.

The game can conclude with a de-briefing session which includes 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 simulating discussion both about the participant's 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 other training techniques to provide the student with an understanding of the operation of the management process, within the national, political and administrative context. The case 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 actor becomes aware of the constraints, dilemmas and opportunities that confront the key personnel who influence the processes of managing environmental changes.

3.2. The Design of Case Study Simulations

Numerous authors and game designs have attempted to establish rules and procedures for the design of simulations. For example, Duke (1980) has set out 'nine steps' for game designers. These nine steps he has seen as 'carefully thought through and useful' yet he readily admits that 'the simple, eloquent truth seems to be no matter who describes the problem, sooner or later it boils down to 'Go build the game', at which point the designer is forced to resort to his or her own intituion and/or to the format of some other game that might suggest itself from previous experience'.

This last comment is probably one of the most valid to bear in mind when designing a game, and what follows is merely a set of guidelines derived from the authors' own experience in case study game design. This experience suggests that game design is best thought of as an iterative, cyclical process which centres on trying to create and match a manageable, workable simulation

with a known or envisaged change process, representing planning and development on the ground. In additon to adhering to the guidelines which follow, it has also proved advantageous to work in a team of at least two, and preferably three, people, so that ideas can be 'bounced off' each other; and whilst every effort should be made to provide a game framework representing an often extremely complex reality, it must be realised that some simplification cannot be avoided, and should not be shied away from. If then, the simulation is becoming so complex to be unworkable, cut out some of the detail, intricacies or whatever. They can always be added again later.

As Figure 3.1. shows, four main 'areas' in case study game design can be identified, which are discussed in turn below.

a). Mapping the Change Process.

Case study simulations can either be retrospective, futuristic or atemporal but in any case they will likely start with a situation representing real development at some time or other.

The first stage in the cyclical design process centres on mapping out what changes in the initial developmental, institutional, planning etc. situation are likely to take place in the game (i.e. the change process). If a case study simulation is retrospective, i.e. built on a change process which has occurred, then it is often worthwhile to attempt to divide the flow of events into several major chronological 'phases', differentiated by significant change in some parameter or aspect of the case e.g.
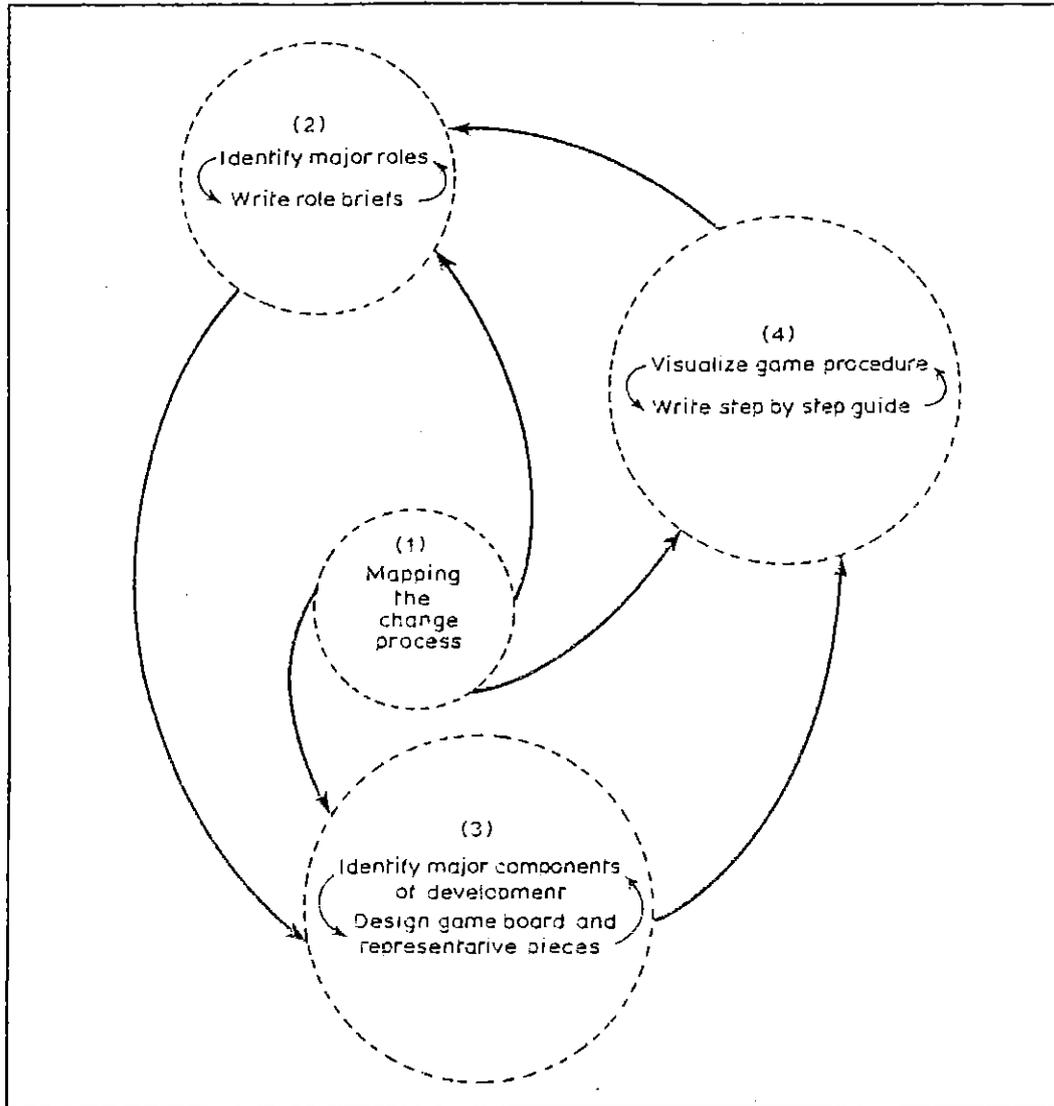
Figure 3.1.   Case Study Design

Source: Wynn (1985)

new development on the ground, change in institutional framework, a key decision with wide-ranging repercussions by a major actor.

These divisions are to some extent arbitrary and artificial, but are useful as an enabling mechanism facilitating a loose structuring of the case around which the game can be built. They are also likely to change several times in the course of game design, and can be orientated to aid the running and manage-

ability of the simulation.   In the Buildings Game design by Wynn
(1985), for example, the three major phases of the game are:

.   Group meetings: Development of General Strategies

.   Consultation and the Design Process

.   Public Exhibition and Resident Voting

In reality, as can be imagined, the first two were very much
over-lapping and interconnected, but such a segregation of activities
is often necessary to help make the simulation workable in practice.

With forward looking or atemporal cases, in which the change
process is envisaged rather than known from fact, the outcome
and structuring of the game are likely to be more open, and a
division of the simulation into 'rounds' is more appropriate.
Unlike the 'phases' in a known retrospective case study, 'rounds'
will be similar in structure and/or represent a repeating, constant
time sequence.   Essentially, then, the designer must try to
establish the main flow of events in the development process
as it occurred or is likely to occur in the case study area.
The type of developments which particularly lend themselves to
this form of game building are those set within manageable time
and space frameworks, such as housing or industrial estates,
tourist complexes, city centre renewal schemes, housing re-habilit-
ation schemes, community installations etc.

Elaborate case study research may precede the building of
the game, and provide the in-depth analysis of the change process
on which the simulation can be structured.   Game design, however,
does not necessarily require such in-depth analysis.   A simple

check-list of the type of factors that should be established would include:

a). CONTEXT.   The time and space frameworks within which the case study is set.

b). ROLES.   The major agencies in the case study

c). HISTORICAL   The changes in 'development on the ground'
    EVENTS   that take place.

d). RESOURCES   The sources of funding for such development.

e). CONSTRAINTS   The planning regulations of relevance to the case, and other elements of the legal-administrative framework.

From here, a set of leading questions that might help stimulate relevant thinking would include:

.   Who are the major agencies involved in promoting and financing the scheme?

.   What role do the planning authority and public authorities play in regulating development?

.   Who benefits from the development? Who lives, works or shops here?

.   What attitude do various interest groups have with regard to the development?

.   Is the development in line with an approved plan? Is it necessary for a special plan to be drawn-up and approved for the development to take place? Is the development in line with this plan?

. Who are the main agencies involved in implementing the proposal? Who are the builders?

. How much does the scheme cost?

. Who provides the major services and infrastructure? Are there problems with co-ordinating implementation?

It is this type of approach, then, which must clearly be adapted to each individual case, that will help map out the change process around which the simulation is to be built. The following three main interrelated procedures then develop this initial activity and will inevitably involve reshaping and amendment as the game design process progresses.

b). Identify Major Actors and Write Role Briefs.

Once the major actors in the case study have been identified, consideration must be given to selection and emphasis in the simulation. Sometimes, it is useful to build the game on just one part (i.e. one chronological section) of the change process depicted in the case study, because the case as a whole may be too complex. Similarly, certain minor actors may be omitted from the game, and extra media or outside agencies can be added if it helps to foster inter-agency communication in the game itself. Some role players may work together in teams in the game (e.g. Local Authority Planner, and his Design Assistant) whilst others, although interacting with other participants, may make decisions individually.

Once the major role-playing teams and individuals have been identified, provisional role briefs can be written for each role. These are only provisional because, as Figure 3.1. indicates, the whole process of game design is a cyclical, iterative one, and all aspects of the game are likely to be amended more than once in the preparatory period. As a general rule, role briefs should be not too long or complex, being perhaps one or two paragraphs at most per role-player.

c). Identify Development Components: Design Game Board and Pieces

The writing of role-briefs is likely to help clarify what different agencies are likely to do in the game. The major visual focus of the game will usually be the game board, and the use of representative pieces to simulate the growth of the built-up area as the game progresses. Here, then, the designer must attempt to provide some simplified representation of the case area and of the functional components of development which features in the change process (e.g. housing, possibly sub-classified, industry, green space, hospitals, roads, etc.etc.)

A useful aid is to establish the smallest component, in terms of ground space, which you wish to feature in the game (e.g. 1 unit of industrial floor space, covering a ground area of 100m,; or 1 unit of public housing, covering ground space of 50m, etc); then divide the case area into a grid of units of this groundspace and use this as the basis for the game board design. Similarly, all other representative pieces can be multiples

of this unit size.

d). Visualize Game Procedure: Write Out Step By Step Guide

This final stage in game design is the most critical and
probably the most difficult.   Taking the role-briefs, the game
board and representative pieces, the designer must try to envisage
how he wishes the game to proceed (based on his original mapping
of the change process).   Here, then, he must go through a series
of checks and rechecks to ensure that role-briefs, game board
etc. are appropriately designed to channel the game in the desired
direction.   Other gaming elements, such as changes in the background
scenario and entry of new roles, can be planned, and financial
returns, interest rates and other parameters can be finalised
once the designer has the full 'vision' of the game in his mind.
The designer may also wish to consider at this stage whether
some model - procedural, economic or whatever, - is to be built
into the game and how this is to be tied in with the operation
of the game.

At the same time, of course, it must be remembered that
when the game is played, participants should be left a certain
freedom of choice to make their own decisions within the constraints
imposed by their role briefs and the directives established in
the game procedure.   (This may be handed out, shown on overhead
projector or communicated orally, step by step).   It is really
a matter, then, of striking the right balance between regulating
the game (through role briefs and game procedure stipulations)
sufficiently to provide a viable framework for simulating the

case study, and yet giving participants enough freedom of action to make decisions and thus ensure the heuristic and interactive learning which is central to gaming simulation. It is not always easy to achieve this balance, and, as already noted, it is likely to take several cyclical design modifications (prior to actually playing the game) before a satisfactory end product is achieved.

3.3. General Operational Guidance

Every game differs somewhat in format and operation, but the following general guidance notes may be useful for those embarking on case study game design and/operation for the first time.

(1) Prepare Role-briefs, role badges, team signplates, game boards, representative pieces etc. Arrange room accordingly.

(2) It is often useful to give an introductory talk of 30-60 minutes on:

(a) The simulation exercise in general.

(b) The case study which is to form the basis of the game
- without giving away too many secrets of who did what, when, why and how. These are things which should be revealed in the game itself.

(3) Assign roles, give out role-briefs and other necessary handouts, explain Game Board as appropriate, and let participants get on with it!

(4) Introduce 'Game Procedure' steps as necessary. Be available to chivvy and push participants along as necessary. Introduce

changes in background scenario, financial parameters etc., as planned.

(5) Be prepared to call a halt to the simulation for 'intermediary' feedback sessions if it seems advisable to clarify participants' thinking and stimulate new developments.

(6) Final Debriefing. Use snowcards to gauge participant response to the game technique and to monitor what they have learnt. Then go through the game step by step and compare it with what else might have happened or did happen in the real-life case study (Figure 2.2.) This not only stimulates further discussion and self-questioning, but also gives all participants a synoptic view of both the simulated and real-life change processes.

Here it is worth bearing in mind that there is usually no one 'correct' answer to a case study simulation, and participants' actions and decisions may be equally or more valid than what happens in a real case. What simulations provide is an insight into how and why such decisions are made, an experience reinforced and enriched by having faced the decision-making dilemmas themselves, albeit in a simulated risk free environment. As recently noted by Winer and Vazquez-Abad (1981), 'an educational simulation should not be the reproduction of a system given to students to digest, but rather given to them so that, by exploration and manipulation, they can 'discover' the system's behaviour'.

In addition, Vincent's research into classroom interaction in case study gaming has produced a number of recommendations

of a more general nature which should be borne in mind, in both game operation and design, and which reinforce the authors' findings. Vincent (1976) makes the observation that "the initial impression that the game/simulation/case-study presents to teacher and student would appear to be of extreme importance. Both ask the same questions. Can I use it? Do I want to use it? Is the simulation easy and interesting to work? Do I have confidence in using it? Is it attractively presented?" Our research suggests that materials should have a strong visual and intellectual impact upon those people who are about to use them; and the introduction to the resources needs to be as short as possible. The teacher should not 'over explain' the game: rather than talk about it, he should get on with it!

Moving on from this, it would appear that presentation of the information to the students in the form of a simple problem will encourage them to gather the information they feel is important and relevant. Not only must clear work goals be established, but the trainees must also see the importance of the existence of the group and the group's goals. They must want to belong to the group because they feel that what the group is seeking to achieve is important to them as individuals. The case-study should provide teacher and student with data concerning a particular human settlement management problem or issue. Various alternative courses of action will develop concerning the problem. The students need firstly to digest and understand the information and then use that information to solve the problem posed. The student then has the opportunity of actually doing something.

There would appear to be a need to keep the basic points that the case-study is trying to communicate as simple as possible. If we start from a simple base with limited aims, a more complete state of affairs can be developed as the students become more involved with the case-study.

In the case-study approach the class is generally divided up into small working groups. The size of the individual working groups would seem to be a crucial factor in the effectiveness of the materials used. The number of students who may most effectively work together in a case-study group seems to be a function of the degree of familiarity of the students with one another, the course content and study group methods. The greater the familiarity between the students, the smaller the ideal number of the group and vice-versa. Work in this field (McLennan, 1974) indicates that in a gaming situation, 7-8 students are the maximum number for one of these work groups. Maximum size of the class would appear to be 20 with fifteen students being the optimum. Minimum class size would seem to be around ten, with a suggested lower group limit of four.

Finally, it is worth noting Fennessey's assertion (1973) that 'the effectiveness of a game depends not only upon the game mechanics, but also upon the way in which the game is actually used. Therefore, the thoroughness, clarity and consistency of this communication between designer and user may mean the difference between a user's having a positive or a negative experience with the game'. Once the game has been designed, run and tested,

often a complex decision-making and settlement management process. Such games, then, can provide course participants with a stimulating framework for integrating knowledge gleaned elsewhere, resulting in a heightened awareness of their own and others' roles, and their improved performance as settlement managers.

In summary, it can be said that case study gaming provides a framework for interdisciplinary involvement, which can promote a variety of levels and types of learning at one and the same time, and update the professional in various aspects of his work. As such, case study training can act as a catalyst for self and mutual learning, and so play a valuable part in enhancing the general awareness and performance of professional practitioners, politicians and consumers. It is hoped that this text directly and indirectly, will contribute to the realization of this potential.

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DIVISION OF ECOLOGICAL SCIENCES

MAN AND THE BIOSPHERE PROGRAMME

HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

TRAINING METHODS

MONOGRAPH   No.   3

GAMING SIMULATIONS

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PREFACE

The speed, efficiency, and success of game design depends on numerous factors. Of particular importance is the degree of exposure the designers have had to existing materials. Familiarity with a wide range of styles of gaming-simulation, both as a participant and as a game operator, provides invaluable sensitization to the options that can be selected by the designer and to the elements that make up a good gaming-simulation. Hence the best way to learn about gaming-simulation is first to participate in and run a great many gaming-simulations, and then to work directly with an experienced designer on a concrete design problem. Many very capable designers have considerable difficulty articulating what they do and why in the abstract, but can clearly explain what they are doing and why as they go through the process. One thus learns by doing — a principle underlying teaching with gaming-simulations as well.

This guide to gaming-simulation design differs from others in that it presents a combination of the "science" and the "art" of game design by offering not simply a discussion of the steps to be taken, but also a selection of examples of each. Some of these are in the form of case studies of the design process as it was followed for a particular gaming-simulation. More importantly, each of the design steps and game elements is illustrated by concrete examples which have been chosen to reflect the wide variety of options the designer can choose, and to represent a number of subject areas.

1.   INTRODUCTION

1.1. Gaming-Simulations and Educational Objectives

Gaming-simulations have been successfully designed and utilized to meet a number of objectives of teaching and training including the following:

1.   Increasing motivation and interest

    a.   in the subject matter

    b.   in the general field of study

    c.   in doing further research on a topic

2.   Teaching: conveying information or reinforcing information already given in another format

    a.   facts

    b.   gestalt or systemic understanding

    c.   the relationship of a specific role to an overall system

    d.   a broadened awareness of options, policies, and issues

    e.   probable consequences of particular policies or events

3.   Skill development

    a.   critical thinking and analysis

    b.   decision-making

    c.   interactional skills, such as bargaining and negotiating

    d.   communication skills

    e.   particular skills such as proposal writing, summarizing for radio or newspaper accounts, budget preparation

    f.   preparedness for specific future tasks such as applying for a job, managing workers on a team, coping with emergencies

4.   Attitude change

   a.   social values, such as competition, co-operation etc.

   b.   empathy for others in other roles

5.   Self-evaluation or evaluation by others

   a.   self-awareness of knowledge, skills, assumptions,
         attitudes, leadership abilities etc.

   b.   teacher's (or trainer's or employer's) appraisal of
         participant's knowledge, skills, assumptions, attitudes,
         leadership abilities etc.

While the objectives listed above include most of the aims
of individual teachers and trainers, surely gaming-simulations
are not the only mode of attaining these pedagogical aims.
Indeed, through lectures, case studies, role-playing, audio-visual
materials, etc., teachers and trainers have sought these ends.
But gaming-simulations may be potent tools to be used in conjunction
with these other techniques, replacing them for some purposes
but in general supplementing the existing "kit" of techniques
of a teacher or trainer.

1.2.   Is There An Existing Game-Simulation That Could Be Used?

At the time of writing it is impossible to estimate the
number of existing gaming-simulations that are potentially available
to the interested user.   The most complete listing of gaming-
simulations is the latest edition of the The Guide to Simulations/
Games for Education and Training, edited by Robert Horn and Anne
Cleaves (1980).   This large volume contains information about
more than 1000 gaming-simulations for students aged 11 and older.

A major criterion for including an item in the Guide was that it be available for sale or distribution. The subject matter areas under which materials are listed include domestic politics, ecology/land use/population, economics, health and health care, communication and numerous other topics. Many teachers and trainers, with a bit of investigation, will find an existing gaming-simulation appropriate to their purposes described therein.

The items in the Horn and Cleaves Guide, however, represent only the tip of the iceberg, since almost all items included are produced in the United States. Numerous additional gaming-simulations in English have been created in Great Britain, however. While there is no British guide to these materials with the comprehensiveness of the Horn guide, some information can be found in the resource lists available from SAGSET (see bibliography for details).

Again, these sources cover only a portion of gaming-simulations, for active professionals can be found in the Netherlands, Germany, France, most East European countries, and elsewhere (see Stahl, 1983 and issues of Simulation and Games for discussion of gaming on an international level). Many of these persons have produced materials in their native languages, but sometimes they have published versions in other languages as well. No reference guide to these materials is known to this author, but a search for them might well begin with correspondence with Jan Klabbers, Secretary of the International Simulation and Gaming Association (again see the bibliography for details).

Despite the great number of existing gaming-simulations, you may encounter problems in finding useful material. The gaming-simulation must not only be in your language and deal with the appropriate subject matter, but it must be suitable for students of the right age, skill level, knowledge and experience. The gaming-simulation must also fit into your training program in terms of the time needed for preparation and play. Thus you may find that there is a game dealing with your problem (e.g. the economics of small scale farming in India) but that it is designed to be played with groups of 25 elementary school students. in a week of class time, while you deal with groups of 6-10 adult professionals who meet for one two-hour block of time. When the producer and the potential user are in different countries, there is also a problem of availability. This entails questions of cost, shipping time and materials needed to run the game (e.g. does it require the user to have access to a computer or to supplies not readily available?)

Even if the description of the parameters and materials and cost of the game suggest it may be appropriate, examination of the materials themselves often reveals it is not so suitable as it initially seemed. Simulations of problems of development, for example, are few in number in the first place. More problematic, however, is the fact that most of them have been designed by white, Western males, often working exclusively from written materials, having no direct personal experience with the problem or geographic area. While this does not guarantee failure to

develop an accurate model, unfortunately the models are often weak.

1.3. Could an Existing Game be Adapted?

Before starting from scratch on a design enterprise, you should consider whether an existing game might be modified to suit your needs. If the basic model is similar to what you need, but a different institutional area or cultural setting makes the game inappropriate, it may be that a suitable gaming-simulation can be developed by altering the original. A gaming-simulation of major elements and relationships in an American college (EDGE CITY COLLEGE) was found to offer a model of the workings of an educational institution that could be modified for African trainers concerned with teaching students about bureaucratic form (see Greenblat, 1982).

A careful reading of the rest of this manual will prepare you to modify existing materials. Their component parts can be analyzed using the scheme here, and the relevant portions of the design and construction stages can be brought to bear on this simpler task of re-design.

1.4. Can I "Load a Frame Game"

The final possibility to be mentioned here is use of a special form of gaming-simulation usually referred to as a frame game. Richard Duke and I defined these in Game-Generating-Games as follows:

VILLAGE HEALTH IMPASSE?

CATHY STEIN GREENBLAT

IMPASSE?©
the IMPact
ASSEssment
GAME

R. D. DUKE & C. S. GREENBLAT

EVALUATOR

THE EXPERT'S OPINION

INSTRUCTIONS FOR PLAY

CUT OUT THE EVALUATOR AND PLACE IT IN THE CENTER OF THE GAME WHEEL. ASSESS THE IMPACT ON EACH PROBLEM USING THIS SCALE:

- A — INCREASE IT A LOT
- B — INCREASE IT A LITTLE
- C — NO EFFECT
- D — DECREASE IT A LITTLE
- E — DECREASE IT A LOT

RECORD YOUR ANSWERS ON THE GAME WHEEL. THEN FLIP THE EVALUATOR, LINE UP THE NUMBERS, AND COMPARE WITH THE 'EXPERT' WHOSE LOGIC IS EXPLAINED ON THE NEXT PAGE. PLAY ALONE OR WITH OTHERS.

Figure 1.1. The IMPASSE? AT ISSUE GAME.
(example of use in Third World context)

Basic mechanisms or frameworks which can be loaded with
appropriate subject matter for any occasion. The basic
rules, once learned, persist for use after use, even though
the subject matter changes. For example, a very simple
frame game known to most of you is the crossword puzzle.
The format is the same in every day's newspaper, but the
content changes from day to day.

(Duke and Greenblat, 1979 : 2)

That volume presents examples and full instructions for loading
three frame games: IMPASSE? AT ISSUE! and THE CONCEPTUAL MAPPING
GAME. The first of these is a very simple, but effective, tool
for generating discussion, and has been utilized in many nations
for a vast array of topics. Figure 1.1. presents a partial
loading of a version for consideration of local health issues
in third-world countries. You can consider what issues or policies
might be loaded on the reverse side of the "Evaluator" for analysis
of their impacts on the 30 variables in the larger game wheel,
to get an idea of the ease of using a frame game. Other frame
games have been described by Thiagarajan and Stolovich (1980).

1.5. General Guidelines for Running Games

If you have found a suitable gaming-simulation, you will
find there are a number of keys to successful use. A sound
educational experience will emerge when the teacher/trainer pays
attention to simple recommendations concerning preparation, introd-
uction, operation of the game, and post-play discussion/critique.

A short version of such guidelines are offered below; more elaborate advice can be found in Greenblat and Duke (1975 or 1981) and in Jones (1982). You may wish, or find it necessary, to design your own gaming-simulation. Even if you do find and use existing materials, the temptation to design your own is likely to arise eventually. The rest of this manual is devoted to that enterprise.

PREPARATION:

1. Know what your intentions, aims, or pedagogical purposes are: review the available games; select the one that seems appropriate.

2. Integrate the game with other course materials.

3. Become familiar enough with the game so that you can run it well.

4. Be sure you have adequate personnel to run the game; train assistants.

5. Make a time schedule for the game. Be sure to have adequate time available.

6. Prepare all materials. Careful checking avoids chaos at gametime.

7. Decide whether to give out materials in advance.

8. Decide when roles will be assigned and how they will be assigned.

9. Prepare space and furniture arrangement. Check unfamiliar rooms as far in advance as possible.

10. Decide on a policy concerning visitors and/or observers.

INTRODUCTION TO THE GAME

1. In the introduction to the game, make early reference to:
   a. Gaming-simulation as an instructional medium.
   b. The purpose of the gaming-simulation about to be played.
   c. The rules of the game in outline form.
   d. The roles represented by players in the room.

2. Keep the introduction brief.

3. Sound decisive.

4. Explain that initially the participants should expect to be confused.

5. Acknowledge the normality of nervousness and self-consciousness in the beginning.

6. Sound enthusiastic.

OPERATION OF THE GAME

1. Remind players of the rules as situations arise.

2. Give out necessary resources.

3. Collect forms which must be submitted to the game operator.

4. Check forms and other materials that are submitted for accuracy.

5. Perform the necessary calculations.

6. Announce time limits and any time changes.

7. At several intervals announce the time left in the round.

8. Regulate the rhythm of game and non-game enterprises.

9. Deal with unanticipated consequences.

10. The major activity of the operator during this phase is careful observation and assistance to those who require it.

11. Watch players when they get the results of each cycle.

12. Watch for general lassitude in player behaviour.

POST-PLAY DISCUSSION/CRITIQUE

1. Let players first vent their emotions about the game experience.

2. Then systematically examine the model presented by the game from the perspective of the various roles.

3. Finally, focus on the reality which was represented by the game rather than the game itself.

2. GAME DESIGN: SETTING OBJECTIVES AND PARAMETERS (STAGE 1)

Let us begin with a summary of the questions to be answered in this stage. When you set to work, write the underlined words on sheets of paper or index cards and write the answers as you develop them.

What is the subject matter of the proposed gaming-simulation?

What is the purpose the gaming-simulation is to serve?

Who are the likely players of the gaming-simulation?

Who are the likely operators of the gaming-simulation?

What is the probable context of use of the gaming-simulation?

What resources (time, money, other) are likely to be available to users of the gaming-simulation?

What resources (time, money, other) are available for development of the gaming-simulation?

2.1. The Subject Matter

The first and most obvious consideration is that of the subject matter. In many instances you will have decided to design your gaming-simulation because you know about a topic and wish a better way to teach about it to others. (If you are a novice designer it is unlikely that you have been approached by someone else and asked to design a gaming-simulation about a topic with which you are not familiar. This will happen when you have designed several successful products. In that case, you must work with the client for careful specification of the subject matter and other objectives and parameters).

At this early point you need not be concerned with a detailed statement, but you must narrow the topic somewhat. You need to translate general formulations to more limited statements such as the following:

"The character of traditional village life in Africa, and the factors that facilitate and factors that hinder "development" in these villages...." (from THE AFRICAN VILLAGE DEVELOPMENT GAME).

Simple as it sounds to write such statements of the subject matter, you will often find that design team members will have different ideas about which facet of the topic should serve as the basis for the gaming-simulation. One person may wish to emphasise the role of elders in structuring village life, another may want to focus on the role of development agents in bringing about change, and a third may be concerned with patterns of communication among village residents and between them and the outside world.

It is often helpful to begin by "brainstorming" for suggestions about specific subject matter - i.e. make a list of those foci that might be emphasised. Generate a long list at first, witholding judgement about the suitability or interest any suggested topic has to you. Then consider each possibility independently. Finally, narrow the list down to those two or three statements that look most promising. If you cannot reach agreement on the one to be adopted as your subject matter statement, you may

wish to leave several options for the moment, and move to other questions, later returning to make the final choice.

2.2. Purpose

This question is closely connected with that of subject matter. Indeed in some cases, particularly where skill development is of particular concern, the question of purpose may be more important than that of subject matter. For example, if your main purpose for the gaming-simulation is to develop players' communication skills, it may not matter to you very much whether the subject matter is in the domain of local politics or hospital administration. Rather, you will select a subject matter area that you know something about and that is likely to interest the players and engage them in verbal interaction.

In many cases there will be more than one purpose. If this is so, you should list several aims, but you must put them in some order of priority.

2.3. Players' Characteristics

Who will the likely players be? You must answer this in terms of as many of their characteristics as possible, but particular attention must be given to their age, knowledge of the subject matter or level of relevant skills prior to play, social and/or occupational positions, and to the degree of homogeneity of typical groups of players. A gaming-simulation about health care for terminally ill patients, designed to create empathy

for both medical personnel and patients, for example, will be differently designed depending upon whether it is to be played by high school students or nursing students or old people. Similarly, a game about some aspect of business management must have different characteristics if it is to be played by audiences of community members to show them the pressures on business leaders than if it is to be played by corporate executives to sensitize them to the problems of co-ordination of departments in the firm. It is important, then, that you state your target group of players and think carefully about their characteristics, for these have implications for the degree of complexity you can present, the degree of formality that must be included, the need for background information etc.

2.4. Operator Characteristics

A question directly related to the one above is that of the characteristics of the likely operators. In the case of commercially produced entertainment games, players themselves are likely to choose a game and organise themselves to play it. In the case of gaming-simulations, however, the players are likely to be invited or "forced" to play a game selected by a teacher, group leader, or conference organiser. You must thus think about who these people are and what aims, interests, and abilities they have. A gaming-simulation that would have enormous appeal to secondary school social studies students will not be adopted for their use if it does not appeal to secondary school social studies teachers; a gaming-simulation designed to strengthen

players' communication skills by focussing on irrigation project management will not be likely to be selected by a trainer with limited economics background.

2.5. Context of Use

How do you envisage the gaming-simulation will generally be used? Will it be incorporated in courses on the topic offered in schools? Is it to be used at professional meetings or conferences by player groups created for the occasion but with no continuing contact? Will it be used as the "opener" in a 2-3 day workshop or course, or alternatively, as a finale to a short course, giving participants a way to try out what they have learned? Will preparatory or follow-up sessions be possible? Will the topic also be dealt with through lectures, films, reading assignments, or is the gaming-simulation the main vehicle to be employed?

Specification of the context of use will give you the ability to determine how many players must be accommodated in play sessions. If the gaming-simulation is directed at classes that are typically composed of 20-25 students, you must design a gaming-simulation with that number of roles, or one in which the class can be divided into smaller groups for simultaneous play (recall that teachers may not be able to find assistants, so one operator will have to be able to run the game with these parallel groups...) If the training sessions in which you want the gaming-simulation used are typically composed of 5-10 participants, you will have different constraints in design.

The answer to the question of context of use will tell you something about how _long_ the gaming-simulation can last, and also about how much follow-up can be expected. It is also directly keyed to the question of resources of the users, as discussed below.

2.6. Resources for Play

Time: You must decide approximately how long play is to last. This answer is likely to flow directly from the above considerations, but there may be latitude available. Thus if training sessions typically last for 3 days, you could design a one-hour, a half-day, or a three-day exercise. Again, advance specification of the approximate time that you think operators will be willing to devote to the enterprise will affect later decisions about what to simulate and how to incorporate it in the gaming elements.

Monetary resources: If you know something about the resources that will be available to potential users you will also be guided in design decisions. Expensive paraphernalia should not be included if users have limited financial resources to buy such a kit; rather you should use very inexpensive materials or in-structions for self-made kits. On the other hand, if the gaming-simulation is to be used by a corporate training program, you may need to use printed forms rather than mimeographed ones, and other materials will have to look "serious" to these people or they may not take the gaming-simulation seriously.

Some users(such as those in training program offices, secondary schools, and corporations) must usually purchase the gaming-simulation from their budgets, but in other cases a portion of the costs can be passed on to players (e.g. university students can each be asked to purchase a manual as part of their course material). Information about this may affect the form in which you put the final product.

Other Resources: Finally, what do you know about the other resources available to potential users? What kind of space do they have to work in, for example? Are the rooms they have access to, large or small? do they have desks or tables in them or can such desks or tables be obtained easily? If not, are the players likely to be willing to sit on the floor if they have to write (secondary school students will usually be happy to do so; physicians and business executives will not). Is the furniture movable or fixed in place?

What about facilities for photocopying? computing (via hand calculators or computers)? What kind of materials can readily be purchased in stores in the locales of users? Again, this will affect your decisions about what to include in the symbology and about whether to provide complete kits or instructions for assembling kits.

2.7. Resources for Development

The questions concerning time, money and other resources must also be asked about the design team. How much time do

you have to meet and work on the gaming-simulation? Are there deadlines for completion? Will you be able to work together or must much be done separately? Do you have funds available from your employer or an outside source or must you personally pay for all materials used? Are some resources such as photocopying, typing, etc. available to you free of charge? These answers should be seriously developed before you start. Later you will want to say "I think it would be best if we did X, but it will cost us too much to prepare those materials, so it will be better to chose strategy Y."

2.8. Writing Out the Answers

When you have completed this stage, then you should have information on your index cards or sheets that will permit you to prepare a 1-3 page statement of objectives and parameters. Figure 2.1. presents sample statements.

Do not trust to memory about your answers, but write them out and keep the statement in front of you as a reminder and to help narrow the options at each later step. Furthermore, it will be helpful to have such a statement prepared if your boss or others ask what you are doing! Finally, as we shall see in considering the Construction Stage, this statement can be used with only minor editing, as the beginning of the Operator's Manual and for providing essential summary information about the product. Thus writing it out now will save you work later.

1. Subject Matter
     Factors which hinder and/or promote rural development at the
scale of a village. Particular attention will be paid to self-help
programmes for health and education systems and the manner in
which village actions are influenced by regional/national planning
objectives and policies.

2. Purposes
     a. Understanding factors of development and their interaction
     b. More empathy for villagers and knowledge of their rationale
     c. Exploration of what development agents role could/should be

3. Players
     Development agents in service or in training:
          a. Priority for village level workers
          b. Second priority for division/sub-division/micro-region
             workers
          c. Third priority for provincial and national level agents

4. Potential Operators
     Training Institute staff with regular students, or for
     refresher courses for graduates and in-service training
     sessions organized on request from grass roots development
     agents.

5. Context of Use
     See #4 above.
     Number of Players: 20-25 a suitable group, given the number of
     roles. It also corresponds to a batch or 1/2 batch in a
     training institute and a reasonable number of people who can
     be assembled for a short in-service training session.

     Time Frame for Play: Including breaks and discussion:
       Minimum: 5 hours
       Maximum: 1 day (about 8 hours)

6. Resources (for design)
     25 highly qualified participants with active development
     and/or training experience, in different African countries.
     Student case studies of 2 villages
     Case studies of effects of migration
     PAID facilities (blackboard, classroom(s), typing, running
     off)
     Limited monetary resources (necessarily limits costs of
        reproducing copies of the game)

Figure 2.1. - Initial Statement of Objectives and Parameters

in the African Village Development Game

3. GAME DESIGN: MODEL DEVELOPMENT (STAGE 2)

3.1. Getting Started

Stage 2, developing the conceptual model for your gaming-simulation, is extremely important, for you cannot simulate a system if you do not understand it. You will, however, find that this stage of the overall process entails many relatively familiar activities: your task at this point is to describe in writing, and when possible also in diagrammatic form, the most salient aspects of the system you wish to simulate. In that sense, developing the conceptual model is somewhat similar to writing a report or short "term paper". This report will present a simplification of the real system (as does any model, whether it be verbal, graphic, physical, mathematical, or a simulation), however, it is likely to be far too complex to translate it fully into a gaming-simulation, particularly if play is to be relatively short (i.e. 1-2 hours). You will then have to review your model, identifying those elements and relationships you believe to be of greatest importance for inclusion.

This stage of gaming-simulation design, then, will take you to the library, to your own prior work, to case studies, and perhaps to some direct field work. How much effort is involved depends upon your existing knowledge of the system. In some cases, designers work on topics on which they have previously done considerable research. Then they are likely to have already identified the salient elements, and can start at the point of identifying the most critical ones to be included. Typically, even

if the designers are already very familiar with the topic, they will want to conceptualize it in a form close to the gaming format. Gaming-simulation design demands that one think quite <u>concretely</u> and that one develop an overall or <u>systemic</u> understanding. You have to ask not only about definitions and specific linkages, but also about interconnections among roles, goals, resources, and rules.

3.2. Case Study: The African Village Development Game

This gaming-simulation was designed in the context of a training workshop on gaming-simulation design sponsored by UNESCO and the Pan African Institute for Development (PAID) in Buea, Cameroon. Workshop participants (with the exception of this author!) were highly knowledgeable about dimensions of life in African villages, and about problems of introducing change in such contexts. In addition, PAID provided four recent case-studies of villages to all participants at the start of the workshop. Model development was possible without using additional documents.

Participants developed a conceptual model by working in sub-groups, each devoted to identification of one of the three major <u>actors in</u> the real world system. Their task was to define as fully as they could the main <u>roles</u>, and for each, their goals, activities and resources. A second group worked on listing factors that promote and factors that hinder development in villages, and identifying the linkages between them. Finally, a third group worked on identification of the natural and social charact-eristics (other than roles and development factors) in a typical

village and the kinds of external events that might effect these.

They were also asked to produce a map of a "typical" village.

Figure 3.1. presents a portion of the piece of the model developed

by the group concerned with roles; figure 3.2. presents a portion

of the list of factors identified by the second group.

ACTORS	GOALS	ACTIVITIES	RESOURCES
1. Village male farmers	a. increase cash crop production b. feed himself and family c. educate children d. increase family size e. enhance prestige f. participate as a community member g. increase personal and family health	-farming -hunting -fishing -house construction -attending meetings -trading -participate in traditional activities -pursuit -voluntary enterprises (e.g. road construction	-land -farming implements -farming animals -time -fishing equipment -hunting equipment -friendship -children
....			
7. Chief	a. Progress of the village b. Enhance his prestige c. Effective leadership d. Maintenance of law and order e. Maintenance of traditional customs	- preside over traditional meetings - settling disputes - representation of the village - collection of taxes - presiding over ceremonies	-land -wives -children -animals -farming implements -time -wages given -friendship -authority

Figure 3.1. Portion of Model of African Village Development Game:

Actors

FACTORS FOSTERING VILLAGE DEVELOPMENT:

Natural/ Demographic

Balance of immigration with emigration
Existence of fertile soil
Good housing and resettlement
Clean streams with fish and sand
Adequate game/gaming
Use of minerals
Reasonable size of population
Balanced ratio of men/women
Birth rate renews population
Low mortality rate
Birth control and family planning
Existence of forests for lumbering

Social, Cultural, and Health

Cultural:
   Acceptance of changes in food habits
Social
   A good organisation of the population
   A good integration of ethnic groups
Health
   Nutritional education including use of local products
   Sanitary education

Political and Administrative

Solidarity and cohesion between different groups
Village Council is well run and represents all groups within the
      village
Dynamic leadership of village institutions
Awareness of the political aspects of under-development (How
      inequitable N-S relations are worked out on village level)

Economic

Use of appropriate technology
Use of natural resources
Adequate food production for domestic consumption
Maintain fertility of the soil
Accumulation of capital in the village
Invest surplus income in the village
Land tenure system, with land for all
Acceptance of recommended/improved production techniques
Local efficient marketing services
Suitable agricultural education of the people
Efficient transportation system

Figure 3.2.

Portion of Model of African Village Development Game

Later discussion by the whole design team was directed at narrowing down these lists by identifying the factors that were most important to them for inclusion in the final product.

3.3. Suggestions for Proceeding

There are, then, several different forms the conceptual model can take. The strategy recommended to you is the one I have found most amenable to easy transition to Stage 3: that is, research the referent system and

(1)   identify the major actors, including their goals, activities and resources, and the interactions between them:

(2)   identify and if possible schematically describe the major system characteristics and linkages:

(3)   indicate the types of external factors that may effect the system.

If the design team is small (i.e. 2-5 persons), you should work together on each of these; if the design team is larger, it may be more efficient to sub-divide into groups of at least three persons and initially divide the tasks, later coming together for refinement of the conceptualizations.

Next review the three sets of statements, and decide which components you consider most important for inclusion. These decisions should depend partly on your judgement of which factors are primary and which ones secondary in the real world. They should also depend on your design objectives: that is, how much

simplification is essential given the decisions you made in Stage 1. Take out your statement of objectives and parameters (from Stage 1) and <u>use</u> it to generate a list of the major elements of the model you want to be sure to include in the gaming-simulation.

In making these reductions of elements, you must keep in mind that the gaming-simulation must not have so much detail and complexity that it is either unplayable or that the lessons you wish to teach through it are lost in a forest of ideas. Allan Feldt and Fred Goodman urge in this regard that:

> The important principle in good design is how to keep things out of games, not how to put them in. It seems possible that many games fall into one of three classes of design and use, reflecting their level of complexity and the number of "variables" represented within them. Games containing less than ten variables seem amenable to play in periods of one or two hours although more extended use can be made of them.... Other games which deal with 25-50 variables seem to require four or five hours at a minimum for adequate presentation and play. They are less conveniently used in a simple classroom setting and often require more elaborate preparation and assistance in their conduct... Substantially more elaborate games generally require computerized assistance or very large staffs to assist in their management and frequently require several days or weeks to play... Within the constraints of the purpose and necessary levels of detail which a particular purpose may require, the game designer is urged to follow Thoreau's advice and "simplify, simplify". (1975:4).

When this has been completed, you are ready to begin the <u>design</u> stage proper.

4.   GAME DESIGN: FORM: STAGE 3

When it comes to explaining <u>how</u> to incorporate each element of the conceptual model into the gaming-simulation, most manuals fail.   Some simply say "that's what you have to do", and leave the rest to your imagination. The   approach   here   considers   six elements of form —   scenario, steps of play, roles, external factors, visual imagery and symbols, and an accounting system. These will be discussed in turn, and examples will be given.

Your eventual job for the rest of Stage 3 will be two-fold:

1.   Decide in which form each model element will be included (e.g. will it be included in the scenario, or in the external events?).

2.   Decide on the precise character of each of the 6 elements for your gaming-simulation.

4.1. Scenario

Players must be introduced to the game through a short description of "where they are" and what the problem that they will be coping with is.   This can be read aloud by the game operator, or handed out to players to read.   Generally all players should collectively be given some "stage setting", and then introduced to their particular roles, but sometimes presentation of a common scenario is followed by sub-division into groups, each receiving a second scenario (e.g. BAFA-BAFA, THE AFRICAN VILLAGE DEVELOPMENT GAME).   The scenario should also make reference

to what they will be doing in the course of play of the game (see steps of play below), and to who the main role-players are. Where players are in a hypotehtical country or town it is often helpful to include visual material, such as a map, (see visual imagery below) and some designers have found it helpful to include slides of similar places (e.g. CARIBBEAN FISHERMAN).

The nature of scenarios can be seen in the following examples of rather complex scenarios from ST. PHILIP (Figure 4.1.) and THE AFRICAN VILLAGE DEVELOPMENT GAME (Figure 4.2.)

4.2. Steps of Play

We will consider steps of play in terms of two levels of design: overall play (i.e. the macro level), and play of a round or cycle (including different activities for those in different roles or role-sets).

As regards the macro level, you must determine what is to happen in the full time from the briefing to the debriefing. Where the structure if cyclic, the steps each player engages in may be the same from one round to another, but it should be pointed out that the cumulative effects of earlier decisions and events will effect what he or she can do. It is sometimes possible (and often desirable) to begin with a simple first round and then add new elements. If you do this, however, it is usually necessary to inform players that there will be additional rules or options introduced later. Otherwise they are likely to turn

St. Philip: Background Information

St. Philip is one of those small Caribbean islands that somehow always seems difficult to place, exactly...(see map).

It is situated between the Windward and Leeward island groups, but not really part of either. Sixty square miles (155 square kilometers) in area, it has a population of just over 30,000. As an Associated State, it relies on Britain for external policy and aid but controls its own internal affairs through a twelve person legislature. 16,000 of the population live in and around Queenstown, the capital and most historic city of the island, also the seat of Parliament. The only other major settlement on the island is the smaller port of Purple River.

The northern sector of the island is low and flat and is joined to the main part by a narrow peninsula. North Bay is a rather strange place, and people who live there are peripheral to the mainstream of island activity. In the south, there are two extinct volcanic peaks, from which several small rivers flow. The best soils are in Mid-Island, but nowhere is there really first class agricultural land, and the rather thin and stony soils have usually to be farmed with care and ingenuity to produce good results. The beaches are pleasant, but the sand is the less popular brown color.

St. Philip was first visited by Europeans in 1622 when Thomas Warner dropped anchor in Anchorage Bay on his way back from Guiana and St. Kitts. Later, British colonists arrived, and by the eighteenth century sugar plantations were established, but the decline in cane agriculture began in the early nineteenth century.

In the twentieth century, increasing costs of production made sugar cultivation uneconomic, and unrest about labor conditions eventually led to the collapse of the sugar estates in the 1950s. Samuel Wells led the St. Philip Friendly Society, a trade union in essence, into opposition against the planters. All the planters left the island save one, Evelyn Talbot, who later became a friend of Wells. Wells came into political power and has been Prime Minister ever since, except for the years 1976-79, when Francis Smythe and the United Party were briefly in power. The two political parties on the island seem divided by pragmatic rather than doctrinaire differences.

Under Wells, the sugar lands were divided amongst Philippians into plots of between one and four acres (0.4 to 1.6 hectares) and the development of banana growing encouraged. Bananas can exist on a wide range of cultivable land, even on stony and marginal soils; they need little labor, no processing, and produce a first fruit within twelve months of planting, and so were admirable as a replacement crop for sugar. Thus small banana farms grew up in the 1950s and 1960s to replace the old sugar estates. An agreement was reached with the E.B.G., a big European importing firm, but the banana industry in St. Philip has suffered troubles recently from competition from Jamaica and West Africa, and from bad weather conditions. Bananas are now exported in boxes rather than on the stem, but the future of the industry is unclear, and many growers are becoming frustrated and unhappy.

There are two banana boxing plants on the island, but no other industry of export significance. There are few vegetable farmers, some coconut and lime groves, and some shell fishing from coastal villages. Bananas are ninety percent of the exports.

St. Philip faces population pressure, rising unemployment, and the vulnerability of a one crop economy. Recently the idea of tourism has been talked about in guarded terms, but Philippians have seen its disruptive influence on other islands and are

unsure about what effect large-scale development would have.

Tourists have arrived via the cruise ships and ferries which call at Queenstown in increasing numbers in the summer. But the island has only a small airstrip, north of Queenstown, and no airport as yet capable of handling medium or long-range jets—the likely carriers of the "package holiday" market.

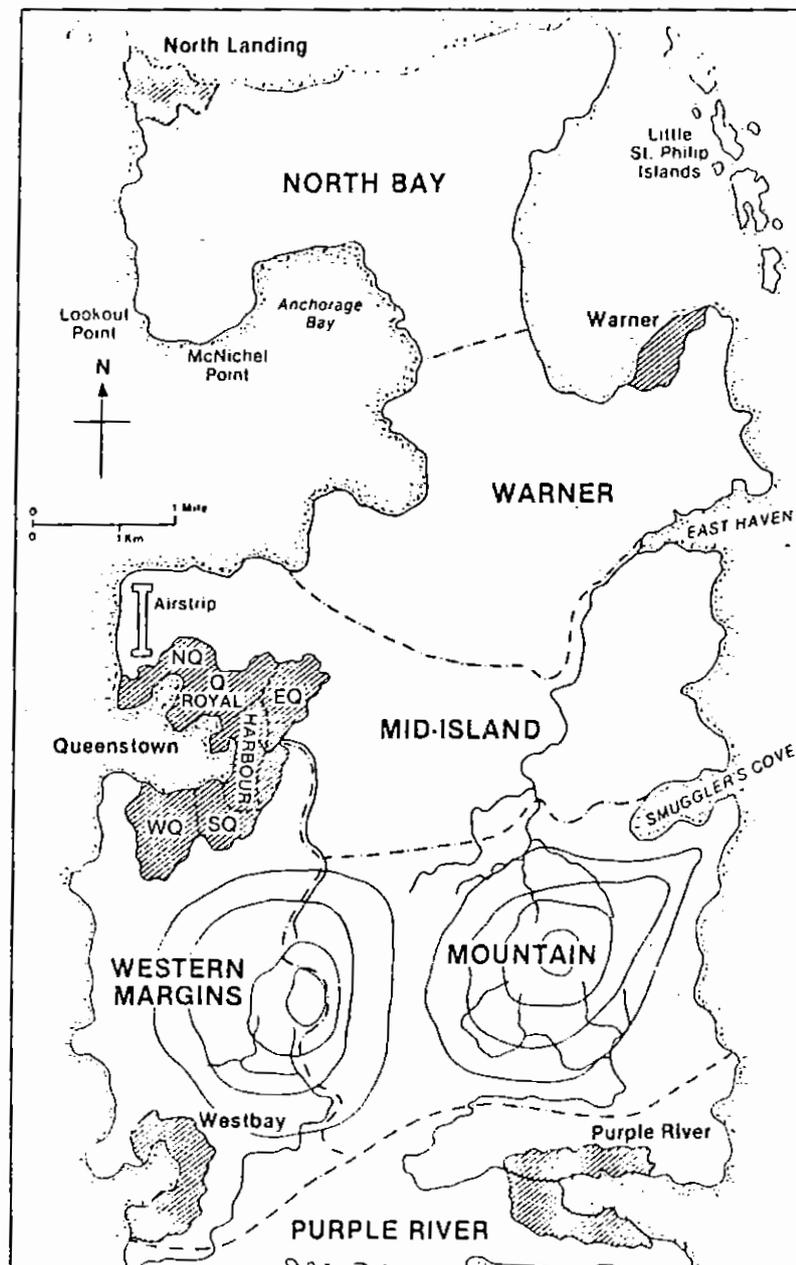A Map of the Island of St. Philip

Figure 4.1. Scenario: ST. PHILIP

Welcome, inhabitants of Somnas!

SOMNAS village is located at the foot of Mount Somnas. It is bounded on north and south by two rivers, Nasana and Amost, both rising from Mount Somnas, which then converge on the opposite side of the mountain. Climatically Somnas village has a tropical climate and vegetation, i.e., it is hot and wet most of the year and there is a heavy forest. Rainfall is heavy. The vegetation is thick tropical forest. There are mainly two seasons in the year: wet season, March to October, during which it rains heavily and continuously and a dry season when there is scarcely any rain. The soil is rich and volcanic.

Your village economy is enough for subsistence living, with some little surplus which you can sell so as to buy vital but meagre household needs. There is little technology and only a skimpy base for investment capital. The soil is fertile though it could be improved, but the roads are bad and there is a lack of knowledge about modern farming methods and techniques. Coping with sickness and diseases take up about 30% of your time and energy. There is no clinic or health center in your village, but one exists in the next village 10 miles away.

We are not very sure of the present population of your village, but the figures from the last census suggest a population of about 1,000 people, broken down as follows:

	MALE	FEMALE
CHILDREN	225	225
ADULTS	240	300

The active population is therefore approximately 540 persons.

In the simulation, there is a representative population of 12 in which 6 players each represent 40 men and another 6 players each represent 50 women and 75 children. These persons engage in farming or fishing. There are also several specialized roles, including a chief, a school teacher, a village preacher, and a traditional doctor. Each of you will be assigned a role in a few moments, and will receive specific instructions on what to do.

The people of Somnas are traditional and conservative. Since you are very interested in having many of the benefits of modern civilization, you will accept and adapt to changes but only if they are well introduced into your community.

(Continued)

Figure 4.2.

AFRICAN VILLAGE DEVELOPMENT GAME: SCENARIO FOR VILLAGERS

There are several elements of Summes culture that are particularly important. Here are some major customs to observe and some basic vocabulary you must use:

1. As a community you have great respect for your chief, whom you obey to show your respect for village law and custom. Those who do not respect the chief are sanctioned, ostracised, and eventually ejected. To get the chief's attention you must bend down (the women go on their knees) and clap three times, and say "mbe". You must always use "mbe" when responding to the chief, for example, "Yes mbe", "no mbe".

2. The traditional doctor heals, prophesies and can also cast evil spells on "bad" villagers. He is feared and respected. To the traditional doctor you use the word "mo'o" instead. Failure to use the words of respect and deference can bring wroth upon the guilty villager.

3. Common Greetings: UNPAGAWO (Response: the same)

4. Indication of Approval: GASI (Positive response to question or situation)

5. Indication of Disapproval: ONLEC (Negative response)

6. Extreme disapproval: Stamp right foot on the ground.

7. Click your cups when drinking palm wine together to symbolize peace, friendship, solidarity and happiness.

8. If a stranger comes into the village, he/she must first report to the chief. Usually he brings along a present or some respectable drink such as a calabash of palm wine or a bottle of gin or whisky. The chief must approve of all his activities in the village, or else the villagers will not cooperate. A star (or other symbol) from the chief indicates such approval. The chief's approval may require that he consults with village elders first.

9. Generally the community disapproves of strangers talking to their women, and women are not to discuss family issues with non-family members except on the authority or approval of the men. Women seek the approval of the men before making decisions of significance.

10. You all enjoy life very much, and love to dance traditional dances and drink palm wine for relaxation. You use the slightest opportunity to celebrate and enjoy life. Consequently you engage in elaborate birth and death celebrations. There is one big Yam Festival each year planned and organized by the chief.

The Government is sending 4-5 development agents into your village to assist you in your development activities. You are to cooperate with the development agents as long as it suits your interests and purposes, and so long as they behave themselves. You may deny them your cooperation when they behave poorly or against your interests.

Figure 4.2. cont....

on the operator with complaints that it wasn't fair, because they didn't know what would come next when they planned their strategy. (In a few instances such warnings are deliberately not given, as emphasis in the gaming-simulation is on some of the "unfairness" of rule changes. The best example of this is Garry Shirts' enormously popular STARPOWER).

On the micro level, you must then determine what actions are taken, and in what order, by all players and the operator, at each stage of play. Finally, each player (or role) need not know the micro-level steps for all players, but must receive instructions on his or her own activities. Those steps of play must specify things that must be done, things that can be done (but are optional) and things that cannot be done by players. The latter category should usually be sub-divided into natural laws that cannot be violated (e.g. players cannot decide that they do not need to eat in order to survive) and man-made laws (e.g. you cannot steal from others) which they may choose to violate but may have to face adverse consequences.

An extremely important dimension of the steps of play relates to communications between players. Communication may be open, restricted to written messages, or non-existent, depending upon the system you are modelling. If players represent diplomats from different nations, for example, they should only be free to communicate with members of other nations at particular points of play. In THE CONFERENCE GAME, conference planner players communicate with the hotel personnel and speakers' bureaux staff

(played by the operators) only by letter or telephone (in this case, via walkie-talkies in different rooms), to simulate the character of such communications with the real world. To make such communication realistic, game letters sometimes go astray or are not answered for long periods of time; the parties are often not available when called, telephone messages are sometimes not delivered or are ignored, and "wrong numbers" are often reached!

Two critical points in planning the steps of play are the timing of breaks and the rules for ending the game. If the period of play is to be a long one, players must be permitted coffee/tea breaks and meal breaks. If play is to be spread over several days' time, even longer breaks will occur. Thus the designer must pay careful attention to structuring play so that breaks do not occur at inopportune moments. Careful attention to the parameters set out in Stage 1 will alert you to the need to take these into account.

Similarly, it is important to guard against artificial ends of play. Sometimes the end is obvious and reasonable: a set period of time is given to the culminating parliamentary session, and play ends when the decision is reached; a vote is taken to see who has won the election towards which play has been directed; the radio program is produced and disseminated. In other instances, especially where there is a cyclic structure, the "end" may not be so obvious. It is also important to avoid players' engaging in "end-of-the-world" strategy. That is, they are told there will be five cycles or rounds, and in the

fifth one, they invest all their funds in a win or lose action, hoping to come out the winners, while their prior play was much more cautious. One way to avoid this is to have the operator announce there will be six rounds and then end the game at the end of the fifth round. Another option is to have an indeterminate number of rounds, by for example, throwing a die at the end of each round announcing that if a 6 turns up the game is over. The former strategy may create annoyance at the operator, though it is usually easily deflected by an explanation of why play was terminated prematurely: the latter strategy makes it difficult for the operator to know how long a period is needed for play.

Figures 4.3. and 4.4. give examples of steps of play in BAFA-BAFA and THE AFRICAN VILLAGE DEVELOPMENT GAME.

Figure 4.3.

STEPS OF PLAY: BAFA-BAFA

Orientation
1.   Divide into two cultures
2.   Learn and practice new cultures
3.   Select an observer
4.   Exchange of observers
5.   Report of observers
6.   Exchange of visitors (until all players have been visitors)
7.   End of game
8.   Discussion and analysis.

Figure 4.4.   34.

AFRICAN VILLAGE DEVELOPMENT GAME:

GENERAL INSTRUCTIONS AND STEPS OF PLAY

To play this game you will be divided into two groups:
Villagers and Development Agents.   Each group will be given a
scenario of what they are to do. However all players need to know
the following:
1.   Each villager shall wear a green ribbon around his or her
head;
2. Development agents shall wear name tags;
3. See symbols sheet for further clarification of symbols;
4.   The play of each round will take place in five steps. The
detailed activities for each of these steps are contained in your
role cards. The general activities in the steps are as follows:

Step 1. Production Stage

Each of you is to engage in the basic production
activities of your role.

Step 2. Market Stage

You carry out social interaction activities geared to
furthering duties of your role.
Villagers: Sell and buy commodities; contribute to
festivals   and   other   community
activities.
Chief: Collects   taxes or contributions, organize
festivals.
Development Agents: Organize Village Development
Committee, cooperative union, education
classes, etc.

Step 3. Meeting Time

Various meetings will be held at this time:
Villagers: Meet in Cooperative Unions, Educational
classes, Church meetings
Chief: Meet with Village Traditional Council; may
also   meet with VDC, DO, Development
Agents.
Development Agents: Meeting   Community   Groups,
Educational classes, Cooperative Unions,
VDC.

Step 4. Social Time

Palm wine time; community projects; dance parties;
church meetings.

Step 5. Community Meetings

All Villagers:Speeches by Chief, and others he invites
to make presentations.
Progress Reports.
Award of Prizes.
Development Agents: Meet with Regional Officer

4.3. Roles

Players must be given roles to play, including goals to strive for, resources available for them to control or allocate (e.g. time, influence, votes, land, money), and activities in which they will engage during play.

Not all roles you identified in the conceptual model need to be represented by players. Indeed, only those persons who make decisions that affect the outcome should generally be included in the role set. Players in different roles will have different learning experiences (see Greenblat, 1980 and Lederman, 1983 for elaboration) and players who have little or nothing to do for much of the game are not likely to learn much. These actors' decisions can be incorporated into the operator's role, into external events, or into the accounting system.

In determining the roles to be created, there are numerous decisions the designer must make. The degree of role specificity is one such dimension. Who they are asked to play can take a number of forms:

a). Where players are experts in some subject matter field, they may be asked to play themselves, bringing to bear on the gaming problem the values, knowledge, interest and political stakes they have in reality, and considering the impact of a proposed action on their sector as a whole.

b). Participants may be told to play as themselves (i.e. use their own skills, values etc) but to assume another oocupat-

tional role (City Planner in CLUG, journalist in RADIO COVINGHAM): or national idenitity and occupation (island fisherman in CARIBBEAN FISHERMAN, Indian rice-farmer in GREEN REVOLUTION).

c). Players may be given a set of general values in the form of rules of their culture or group. Alpha society members in BAFA-BAFA are told they are easy-going and friendly and enjoy contact with others who obey the rules of their culture: Beta society members are told they are concerned with bargaining and making money.

d). Players may be given very detailed information about who they are and what positions they are to take on various issues. In THE ACADEMIC GAME one player is told that he is very concerned with his own work and is disinterested in spending time talking with others, while another is told he enjoys giving advice to students and colleagues, etc.,

e). Finally, players may be given real-life persons to play -- a specific political leader, corporate executive etc., whose personal values and style are to be simulated.

Many experienced game designers advise that players not be given very specific instructions (option e) about playing a particular person. It is better to make the person "The Mayor", giving resources and constraints that are available to someone in that role. Similarly, it is generally accepted that assignment

of attitudes and values along with the role should be minimized (option d)., although some very good games violate this principle.

There are several options in terms of the <u>number</u> and <u>type</u> of roles that can be provided, and the resultant form of <u>player organisation</u>.

a). All players can be given the <u>same role</u> and goal and activity. For example, in CARIBBEAN FISHERMAN, all players are fishermen trying to maximise their catch.

b). Players can be told they are members of parallel teams, with each team given a common goal and common resources (e.g. CLUG), leaving it to individuals to make collective decisions or to allocate responsibilities and co-ordinate their activities.

c). Players can be divided into two or three (or more) different teams with different instructions and resources. In the HEX game, for example, most of the players are local admini-strators, some are regional administrators, and some are national leaders. Each member of each role set has common goals and activities, although their resources vary. In BAFA-BAFA, half the players are members of the Alpha Culture and half are members of the Beta Culture.

d). There can be several role sets, each broken down into <u>several different specific roles</u> each with their own characterisations. In the AFRICAN VILLAGE DEVELOPMENT GAME, for example, different

role descriptions are written for the chief, the traditional

doctor, the priest, the village men, the village women,

and the development agents.

In keeping with the above elements, role descriptions can

be very simple or quite complex, as the following examples from

ST. PHILIP (Figure 4.5.) and THE AFRICAN VILLAGE DEVELOPMENT GAME

(Figure 4.6.) illustrate.

Bob Ballinger   *M.P. for Mountain*   *United Party*
Your constituency includes many of the poorest banana farms. and many are on the verge of economic ruin. You want help for the banana farmers. but you also see the need for the island to diversify into other forms of agriculture. Smuggler's Cove in your constituency is a small rocky inlet that might have tourist potential, but it could only be on a small-scale and certainly not as big as Anchorage Bay.
Q. Do you support tourism as a way of making the island prosperous? Or is the best way forward to stay with traditional rural occupations?

Figure 4.5.   Sample Role: ST. PHILIP

4.4.   External Factors

As indicated earlier, not all roles have to be played and

not all external events have to be introduced in the scenario.

As play progresses, other actors, natural events, or social changes

may effect the options available to players or the consequences

of their actions.   These may be introduced in several fashions.

1).   They may be pre-determined, so the operator is told to

introduce event A at a specific point, and event B at a

AFRICAN VILLAGE DEVELOPMENT GAME:

CHIEF'S ROLE

As Chief of Somnas, you have very important responsibilities. Your goals are to receive the loyalty and obedience of your villagers, to maintain peace and village stability, and to assure that the traditions of many generations of citizens of Somnas are respected.

Your jobs include making ceremonial speeches, collecting levies for community use, receiving visitors, representing the villagers to the regional government, and presiding over cases which require adjudication. As Chief you are also the head of the Traditional Council. You must diligently watch for threats to the community's traditions. At the community meeting held at the end of each year, you will be expected to distribute awards to all citizens who you consider have been good citizens; to those who have been the best peacemakers, to those who are the most powerful, and to the best farmer. Thus you must identify these people during the course of play. Gifts given to you will more than provide your subsistence needs.

Your tasks during each of the steps of a round of play are as follows:

Production - Supervise community activities; consult with others; plan community events.

Market - Collecting levies; meet personal and family subsistence needs; receive gifts. Receive event cards.

Group Meetings - Chair a meeting of the village traditional council.

Social Life - Do anything necessary to foster community spirit.

Community Meeting- Lead the meetings, give a speech, make awards; lead the group in chants off UNPAGAWO. At the first meeting, give your blessing to the traditional doctor. You may ask the schoolteacher to serve as secretary.

Figure 4.6. AFRICAN VILLAGE DEVELOPMENT GAME: CHIEF'S ROLE

later time.

2). Events may be introduced depending upon players' actions. For example, the operator may be told to introduce a particular event if the state of the economy reaches a particular (low or high) point.

3). External factors may be introduced by <u>chance</u>. Chance events can be introduced in several ways.

a). They can be based upon <u>probabilities</u>. For example, if the model specifies the probabilities of drought, a die can be rolled each "year" to see if there is a drought (as in GREEN RESOLUTION). If weather conditions affect the success of different strategies, these can likewise be introduced through chance related to the probabilities. In some parts of the Caribean, for example, weather conditions turn bad approximately once every six days, and when they turn bad they often stay bad for two to three days. Thus designer Rex Walford introduced a dice throw into CARIBBEAN FISHERMAN. If a 6 is thrown, the weather turns bad; in the round following a 6, either a 4,5, or 6 means it stays bad and in the next round a 5 or 6 keeps it bad. Otherwise the weather is fair.

b). Chance cards can also be <u>variant</u> for those engaged in different activities. Separate decks of chance cards are provided for those in school, at work, and engaged in hustling, in GHETTO, and separate chance cards are provided for local, regional and national administrators in the HEX GAME (see examples in Figure 4.7.).

```
National
Border disputes require the
allocation of 30 units for arms
at once.

Give 30 cash units to operator
or agriculture in Region I will
be lost.
```

```
Region I
Region offered matching grant
of 5 housing units.

Take this card to banker with
5 of your own housing units to
receive additional 5 units.

Allocate units to local
settlements.
```

```
Urban I
Drought in a neighboring
country results in the immi-
gration of five population units
in the urban settlement.

Hand in this card to banker
to receive 5 population units.
```

Figure 4.7.   SAMPLE EVENT CARDS FROM THE HEX GAME

4.5. Symbols and Visual Imagery

Visual imagery and physical symbols can add much to a gaming-simulation. Here I refer to markers, badges, blocks, chips, "money" and other physical representations. Carefully selected, these can lead to greater engagement of players in the action, and can also provide much easier means of identifying who is who and what score one has. Larger charts are another form of imagery that are often helpful to players to remind them of rules, steps, pay-offs, or relative position. Sometimes they take the form of a map (as seen earlier in conjunction with the ST. PHILIP scenario) to remind players of the geographic character-istics of the area.

A major form of visual imagery found in a number of games is a playing board. Many designers (including this author) began with initial opposition to boards, assuming that they forced one into a circuit form (such as MONOPOLY) or a race-track form, in which players moved markers according to dice throw to see who would reach the end first. More careful examination of the options, however, reveals that in addition to these forms, very creative use can be made of a board. A board may provide considerable orientation for players, by serving as a place for storing goods and recording success. The board in GHETTO, for example, shows the options available and the amount of time each player has invested in each of the possibile activities. The boards in THE HEX GAME show the general character of the areas and the differential population and resources in each. Boards should thus not be rejected out of hand. (A fine description

of types of boards is found in Thatcher and Robinson, 1983;
instructions for designing simple board games are offered in
Ellington, Addinall, and Percival, 1982).

4.6. Accounting System

The accounting system refers here to all elements that
can be quantified and their linkages. In a gaming-simulation
with a simple accounting system, for example, each player may
have one vote to cast at the end of the play, and the only
calculation to be made is to add the votes. On the other hand,
a complex accounting system with many sub-models is involved
in gaming-simulations in which players have several resources
(e.g. money, influence, land) which can be exchanged and in which
consequences result from a combination of players' actions and
outside factors such as the stock market, bank interest rates,
and the total amount of product developed by production "teams".
Gaming-simulations with this level of complexity of the accounting
system almost invariably employ a computer.

In designing the accounting system, then, you must determine
all the places at which there will be quantifications. That
is, go through all the other items: scenario, roles, steps of
play, external events, visual imagery/symbols and see where quantif-
ications are needed. You may have referred to such factors
as size of population, salaries earned by various players, amount
produced by a factory with full staff, degree of loss from drought
or flood, mortgage rates, costs of importing items, cost per
military unit sent for defense, price of parcels of land or for

various building projects.   In this stage, you must list each of these quantifiable elements, and indicate how they are linked to one another;   in the Construction stage, actual numbers must be put into charts and graphs and calibrations must be worked out and refined.

Many of the quantifications will entail players' resources. Some of these may be simple to determine: for example you may choose to make players' "salaries" realistic by consulting current figures for that type of worker.   Others may require that you attach numbers to something more abstract, such as influence or prestige.   The key in such cases is to make the relative amounts given each player realistic.   To ascertain the linkages between player resources and other elements, you may find it helpful to consider the following questions (the more complex the game, the more such questions there will be):

a).   What type of resources do each of the players have (e.g. money, land, time, votes)?

b).   How much of each resource does each player or set of players have initially? (for now you can just indicate high, medium, low).

c).   How, if at all, can such resources be transferred?   (e.g. players can give one another money: they can promise to cast their votes in a particular way, but cannot give another player the votes).

d).   How can more of these resources be gained?   (e.g. each

round spent "at work" gains units of money: successful passage of a bill one's constituents support in one round gains additional influence for the legislator in the next round).

e). What might each resource be spent on? that is, what costs are there that have to be paid with these resources? (e.g. minimum subsistence needs; taxes; prestige that must be maintained; medical care costs per unit; minimum time to be spent at work).

In many games you will also have to calculate the impact of external events. A table should thus be made indicating the types of external events that are to be included, and the types of costs or rewards they entail (e.g. flood destroys houses; inflation increases production costs). This will have to be done for external events and for all role players who are not represented by participants, but rather whose actions are built into the model or operator's actions.

If there is a board, indicate what types of units are to be represented on the board for which qualifications have to be determined (e.g. number of houses that are in a given area, cost of land in an area, degree of deterioration of property in that area, chances of a boat being lost if it fishes in a given area, number of barrels of rice produced per hectare, etc). Another quantitative element included in many gaming-simulations is a mode of calculating final scores. Scores most fequently emphasise competition between players, but can also emphasise

co-operation.   This delineation of places in which you will

have to insert figures will alert you to data which will be needed

for accurate calibration in the Construction phase.   It will

also be helpful if you can make "dummy" tables indicating the

factors that have to be interrelated.

4.7. Making Design Decisions

Having read through all the options outlined so far, you

must now begin narrowing the choices and making design decisions

for your gaming-simulation.   You are urged to make your statement

of intent as complete as possible by doing the following:

a). Decide what form each of the elements of your model will

take.   You will have to make choices yourself, as each

problem has a number of different possible solutions.

Take a page of paper, and make seven columns, headed "Model

Element", "Scenario", "Roles", "Steps of Play", "External

Factors", Visual Imagery and Symbols", and "Accounting

System".   Then list the major items you wish to include

from stage 2) in the gaming-simulation in the first column.

As you decide which form each element should take, make

a check in the appropriate box as in Figure 4.8.

b). Next make a detailed description of what must be done for

each form: e.g. who must be mentioned in the scenario?

what roles should be designed?;   what elements are to be

represented symbolically or visually?   Be as specific

as you can in this.   It will be helpful to do this by

heading one page (instead of one column as in Figure 4.3.)

with each of the six forms, and then detailing your plan. You are likely to encounter the greatest difficulties in describing the accounting system; although all the decisions are interdependent, this set depends most fully on the others. Indicate at least <u>what</u> linkages must be determined.

	Scena- rio	Roles	Steps of play	Exter- nal events	Visual imagery symbols	Account- ing system
<u>Model Element</u> Changing popu- lation						
Uncertain weather						
Transport						
Group conflict						
Deference to traditional authority						
Limited decision- making by women						
Etc.						

Figure 4.8. Sample Portion of Design Decisions Sheet

Remember --- you are not actually writing the scenario, the role cards etc., until the next stage: construction. Here you need to detail what is to be done --- i.e. your design decisions. If you know any game designers it will be helpful to review the document with them. If you are designing the gaming-simulation for a client, be sure to review the design decision statements with them before proceeding.

Finally, keep in mind that THIS IS NOT AN EASY TASK!!! DO NOT RUSH AND DO NOT BECOME FRUSTRATED WHEN YOU CAN'T FIGURE OUT HOW TO INCLUDE SOMETHING RIGHT AWAY. Keep in mind the sound advice of two experienced game-designers, R. Garry Shirts and Ken Jones:

> "Let's get going. There's a job to do, let's do it. Work, work, work, that's the only way to get anything done in this world.' When I start on a project, I have to restrain those driving forces for a while and say to myself 'Wait, there's probably a hundred ways of approaching this problem and you've only discovered ten. Give yourself some overnight think time. Ask yourself some more dumb questions. How would a child look at the problem? A person from another planet or culture? If this situation were boiled for an hour and a half what would be left after draining off the juices? What if you had to design the game with coloured buttons and drawing pins?.
>
> DeBono, in his book New Think points out that once a person starts digging a mental hole, there is a tendency to persevere, to keep digging, to take satisfaction in perfecting the shape and size of the hole without considering whether it is in the right place. To increase the probability of digging the hole in the right place, one should dig

many shallow holes all over the area before selecting one to develop. In the beginning stages of game design, one must resist the temptation to accept the first idea with merit as the final idea. Dig more holes."

R. Garry Shirts, 1977: p.2.

"There is a story about a sculptor who had just finished making a stone elephant. He was asked 'How did you do it?' He replied, 'I chipped away those bits that did not look like an elephant.'

Simulation design can be rather like this. Most people think of creative work as building, but it might be just as useful to think of it as chipping away. The simulation designer starts with a thousand potential simulations and ends up with one.

Creation involves closing options. Should the simulation be closed or open-ended? Should it be on a national or a local level? Should there be group roles or individual profiles? As each of these questions is decided, a great many possible simulations have been chipped away.

When a teacher inspects a package of simulation material, he or she may think that the author started off with a nice clear objective and the simulation was arrived at by some sort of logical deduction. What the teacher does not see is the author's wastepaper basket."

Ken Jones, 1982: 31.

5.   CONSTRUCTION AND FIELD TESTING

At last you are ready for the last stage — the one at which many unsuccessful would-be designers begin: constructing the game!   Here there are three tasks:

1.   Create a successfully-running game by:

a). assembling materials and making a sample game

b). field testing the game

c). modifying the game based on the field tests

d). repeating b and c until you have had several fully successful runs.

2.   Prepare an operator's manual

3.   Make the game available for others to use.

This stage requires time and ingenuity.   The particular things you need to do will be very game-specific, but some general guidelines can be offered here.

5.1. Assembling Materials and Making a Sample Game

Following the statements you developed in Stage 3, you now must select materials, draft forms, assemble pieces etc., and construct the scenario, roles, steps of play, external events, visual imagery and symbology, and accounting system.   As you prepare to work, gather some general materials you may need:

Standard size paper in several colours, (you will find it easier to keep track of what you have done if you use different colour paper for each set of materials — roles, events etc.)

Index cards

Glue, scotch tape, rubber cement, paper clips

Scissors

Coloured pencils and coloured markers

Coloured construction paper or cardboard

Stencils, a compass, a ruler, and other materials for drawing.

You may also want to have items such as stick-on dots, a timer, dice, something that can be used as markers, some form of chips, etc., if your gaming-simulation is to entail paraphernalia.

When I began to design gaming-simulations, excellent advice was given me by Fred Goodman, who said "Before you actually select materials, spend a few hours walking through a stationery store, a toy store and a hardware store." I have regularly done this, and find that these casual visits always yield good results. I have often been alerted to existing materials that I had not considered, but that could easily and cheaply be incorporated into my gaming-simulations. When I offer design workshops in other countries, I always make an early visit to the local markets to see what materials can readily be obtained. As a result, I have learned that buttons, safety pins, paper clips, beans and other such items are as useful as plastic chips and paper materials which are often in short supply outside the west. These materials not only "work" as well, but make it much easier to ask later users to assemble their own kits.

If you are using a board in your gaming-simulation, do not spend too much time making the first prototype, as you will

undoubtedly make several more versions before you are satisfied with it and consider it final. Use pencil to sketch the early forms of paper; as you get closer to a satisfactory design, switch to sturdier cardboard. Felt-tip markers (or transparent self-adhesive film) are far preferable to crayons or paints for colouring, as they give much more stable and permanent colour. While multi-coloured boards are very pretty, you should also keep in mind that they are both difficult and expensive to reproduce. Thus it is recommended that you keep your artistic expressiveness (and particularly the use of colours) to the essentials unless you anticipate having considerable funds for commercial reproduction and sale! In making early versions of role cards, charts, etc., the same advice pertains: make them neat, but do not spend too much time making them elaborate and beautiful, as you are likely to find they will require several modifications.

One important decision you will have to make concerns the use of tokens vs. paper and pencil counts (or some combination of the two). Samuel Livingston briefly describes the relative advantages as follows:

> "Tokens have the advantage of being something tangible that the players can handle and exchange. They also help to keep errors from going unnoticed. On the other hand, the use of tokens requires that quantities be expressed in small whole numbers, which often is not realistic. Pencil-and-paper calculations permit the use of large numbers or small fractions. Which method you use will depend on the type of items you're trying to represent and the age, interests and abilities of the players you are designing the game for". (1972: 2)

Other construction decisions will also entail choices between paper and pencil forms and more concrete symbology. Feldt and Goodman advocate considerable use of the latter:

"The utility and power of any game is significantly enhanced if the designer makes creative and imaginative use of graphic display and mnemonic materials. Game boards, counters, colour coding of objects, creation of two dimensional and three dimensional composite representations of game components and their status, pins, strings, badges and hats are all important parts of the creative and utilitarian design of games. Such objects are not simply "gimmics" to amuse and engross potential players, however. Chosen and used effectively, they are important assets to the understanding and insight of the players as to ways in which the game is progressing and useful accounting mechanisms for keeping track of various accounting processes operating within the game." (1975: 4)

The key words here are "chosen and used effectively" for when adopted indiscriminantly or excessively, such materials can distract players from the lessons of the gaming-simulation. You must thus try to avoid having too many roles, cards, or other paraphernalia.

5.2. Field Testing and Modifying the Gaming-Simulation

When you have assembled the materials for a first sample, you are ready to find a group to try it out. In general, you should try to run the game with players as much like those for whom it is designed as possible. Sometimes, however, you may deliberately reject this policy, particularly in the earliest

trials.   If you only need a few players, you may wish to ask a few friends to play through the game with you the first time. Even if they are unlike the players for whom the game is ultimately designed, the most obvious problems will be revealed and you can modify those aspects before moving to strangers.   Similarly, if you are designing a game for businessmen or other practitioners who have very scarce time and whom you cannot readily assemble for a trial run, you may find it better to assemble a group of students in the field for the earliest runs, waiting until you think you have a version that is more "finished" before you try it with the professionals.

During or immediately after each run, take notes about problems that arose.   What instructions were not clear?   What strategies did players employ that you did not expect (or that you do not want to be possible)?   What outcomes were generated that were not realistic?   Were players sufficiently interested? Was the tempo of play satisfactory? etc.   As you consider the "success" of the product you have constructed there are several criteria to employ, which have been implied by the above questions. While the grossest violations should have been obvious by looking at the materials, careful evaluation requires that you judge these aspects by examining the gaming-simulation in operation:

a).   Validity: that is, does the content of the gaming-simulation accurately represent the real-world situation it is designed to simulate?   You may wish to ask a subject-matter expert (such as a colleague who is knowledgeable about the topic) to help you assess how successfully you have translated

the conceptual model into a gaming-simulation and about ways the validity might be improved.

b). <u>Verisimilitude:</u>   Do the players have a <u>sense</u> of being in the real situation?   Validity and verisimilitude do not necessarily go together.   The game may be valid, but players may not <u>feel</u> it to be realistic.   Alternatively, they may feel it is realistic, but more expert examination may reveal many inaccurate representations.   Obviously, you must strive for both validity and verisimilitude!

c). <u>Playability</u>: this refers to the timing, clarity of instructions etc.   If players become very confused or bored, they will not play, even though the model is valid.

d). <u>Operability</u>: similarly, the game must be manageable without the operator being a magician!   If the full design team is needed to run the game, beware: a limited number of assistants can usually be obtained by the operator, and so the tasks of running the game must be manageable by one or two persons.

e). <u>Pedagogically sound</u>: Does the game do what you, the designer, intended?   That is, does it meet your initial objectives as spelled out in Stage 1?   If so, you will obviously be pleased.   If not, you need to make further modifications. Alternatively, you may have the flexibility to <u>alter</u> the objectives (e.g. to decide it's a good gaming-simulation

for a younger group of players than you intended), although this "luxury" is generally not available to those working on contract for a client or designing for their own training programs.

As long as problems arise in any of these domains, you must follow the field-tests with modification of the materials, and then re-test. If you worked carefully through the prior stages, you should find that the basic gaming-simulation is sound, though it has "bugs" to be worked out. Each "bug" leads the designer back to a re-examination of the conceptual model and the game model, in search of a missing element or one inaccurately linked to others. I am reminded of a "Hagar the Horrible" cartoon, in which the first frame shows only the heads of Hagar and a friend, with the captions "What's that?" and "Skis -- I just invented them." The second frame shows full bodies. Hagar is staring at his friend's feet, which are strapped onto backwards skis (i.e. the curved end is in the back). The friend adds "Of course I don't have all the bugs worked out." The basic idea may be there, but the "twist" needed to make the creation work effectively may be elusive. On the other hand, you may be carried through this stage by the satisfaction you will derive from the realisation that you are close to success!

5.3. Preparing an Operator's Model

When the game has been successfully run several times and you are satisfied with it, it is time to make it accessible to other operators. The following is a list of topics that should

be treated in the manual:

1. Technical overview

    a. Subject matter and purpose

    b. Players

    c. Number of players

    d. Personnel needed to run the game

    e. Time requirement

    f. Space requirement

    g. Materials requirement.

2. The Conceptual Model

3. Description of the Game in Operation

4. Running the Game

    a. Pre-game preparations (kit, materials, room set-up, assigning roles)

    b. Introducing the game

    c. Running the game

    d. Ending the game

5. Guide for post-play discussion

Even a cursory view of the topics will reveal that the writing you did in Stage 1 and Stage 2 can be used with only minor editing for Sections 1 and 2. Sections 3 and 4 necessitate that you make explicit some of the things that you, as the designer, know about how to run the game. It may be helpful to tape record all your instructions and statements to a group of players and

to transcribe and edit these in order to generate a "script" for the operator using the gaming-simulation for the first time. Spend some serious time (perhaps with a colleague who is particularly adept at leading discussions) in generating a guide for leading a post-game discussion, as this is one of the most important elements of the successful use of the product.

5.4. Dissemination

If you wish the gaming-simulation you developed to be used by others outside your institution, you must investigate copyright and publication possibilities. These are very variable from one country to another, so no general advice can be offered you here. If you know others who have published similar materials, consult them. It may also be wise to discuss this with a lawyer (solicitor) to be sure your rights are protected, particularly at the stages at which you send out samples and sign contracts.

Finally, I urge you to prepare a 1-2 page summary of the completed gaming-simulation, whether it is published or not. Send this to colleagues in your discipline, and to the heads of the organisations listed above, so they can pass information on to others, and perhaps put you in touch with people who share your interests and activities.

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            topics are available from Alan Coote, SAGSET Secretary,
            Department of Management and Legal Studies, the Polytechnic
            of Wales, Pontypridd, Mid Glamorgan, CF37 IDL, Wales

            1.   Introductory Reading
            2.   Game and Simulation Design (references)
            3.   Game and Simulation Evaluation (references)
            4.   Chemistry
            5.   Economics
            6.   International Relations
            7.   Business and Management Relations
            8.   Mathematics
            9.   Teaching English as a Foreign Language
            10. Health Education
            11. Education Management
            12. Human Relations
            13. Geography
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GAMING-SIMULATIONS

THE ACADEMIC GAME

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ACCESS

> Designed by Susan Ebel and Jean L. Easterly
> Published by SIMILE 11, P.O. Box 910, Del Mar, California, 92014 USA

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> Unpublished: information available from Pier d'Ayala, UNESCO Division of Ecological Sciences, 7 Place Fontenoy, 75015 Paris, France or from Cathy Greenblat, Department of Sociology, Rutgers University, New Brunswick, New Jersey 08903 USA.

AT ISSUE!

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> Published in Game-Generating-Games. Beverly Hills, California: Sage Publications, USA (1979).

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> Published by SIMILE 11, P.O. Box 910, Del Mar, California, 92014, USA

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> Published by John Knox Press, 341 Ponce de Leon Avenue, N.E., Atlanta, Georgia 30308, USA.

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Department, 850 Third Avenue, New York, New York 10022 USA.

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>Published by Institute of Higher Education Research and Services,
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>Published by Bobbs-Merrill Company, Educational Division, 4300 W.
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>Information available from Graham Chapman, Department of Geography,
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>Green   Information available from CSG Enterprises, 34 Bayard
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Ismaning, West Germany.

SHIPWRECK

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Ismaning, West Germany.

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USA.

ST. PHILIP: A SIMULATION ABOUT THE DEVELOPMENT OF A CARIBBEAN ISLAND

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> Published by The Chemical Society, Education Division, Burlington
> House, Piccadilly, London W1V OBN, United Kingdom.

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DIVISION OF ECOLOGICAL SCIENCES

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HUMAN SETTLEMENT MANAGERS TRAINING PROGRAMME

TRAINING METHODS

MONOGRAPH No. 4

SIMULATION

AND THE

MICRO-COMPUTER

Dr. Martin Wynn

1986

SIMULATION AND THE MICRO-COMPUTER

PREFACE

This monograph is one in a series commissioned by UNESCO to help a wide variety of people interested in using a range of training techniques and formats.

The subject area -- Simulation and the micro-computer - may at first glance seem rather remote to field workers who may be minimally equipped in terms of financial resources and educational technology. It is, however, a rapidly emerging form of training in the commerical, industrial and educational sectors in the Developed World, and clearly has great potential for developing world and distance learning programs. Furthermore, it is particularly useful for simulating environmental and developmental processes which feature strongly in the Human Settlement Managers training programme.

This short monograph, however, pretends to be no more than a simple introduction to the subject matter, to point readers towards some of the keytexts that have appeared during the past few years. Indeed, grateful acknowledgement is given to several of the authors listed in the bibliography, from whose notes selected examples have been taken.

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1. INTRODUCTION TO COMPUTER SIMULATIONS

1.1. Origins

This monograph examines the various uses of simulation for education and training which involve the exploitation of the computer for the running of all or part of the simulation. The development of this form of simulation can be seen as a part of the growth in computer based training (CBT) in recent years, which has been given renewed impetus by recent advances in the micro-computer field.

Over twenty years ago the mainframe computer started to be used in education to deal with complex multivariables - it was really the first time that a teaching aid could be used to dynamically demonstrate the result of many factors varying simultaneously. In the area of management and business education, the business game was rapidly developed, based upon the principles developed in war games for strategic defence purposes; but unfortunately, and for a number of reasons, its real capacity for management development purposes was not fully exploited.

The development of the use of computer based simulations went through several phases of popularity. Amongst their advantages was the fact that dynamic exercises could be tried within a life-like context of increased complexity. Disadvantages included the expense, and dependence of teachers on computer technologists. At first, such computer based simulations had to be carried out at the computer location, although mainframe time sharing reduced this problem from the early seventies onwards, albeit with added expense.

Computer-based training thus became a monopoly of the giant mainframe computers, which have been utilised for such purposes by the educational, industrial and commercial sectors since the early seventies (Figure 1.1).   Now, however, the micro-computer, like an adolescent scorning its father, has asserted itself in the CBT world, offering cheap power and the promise of greater
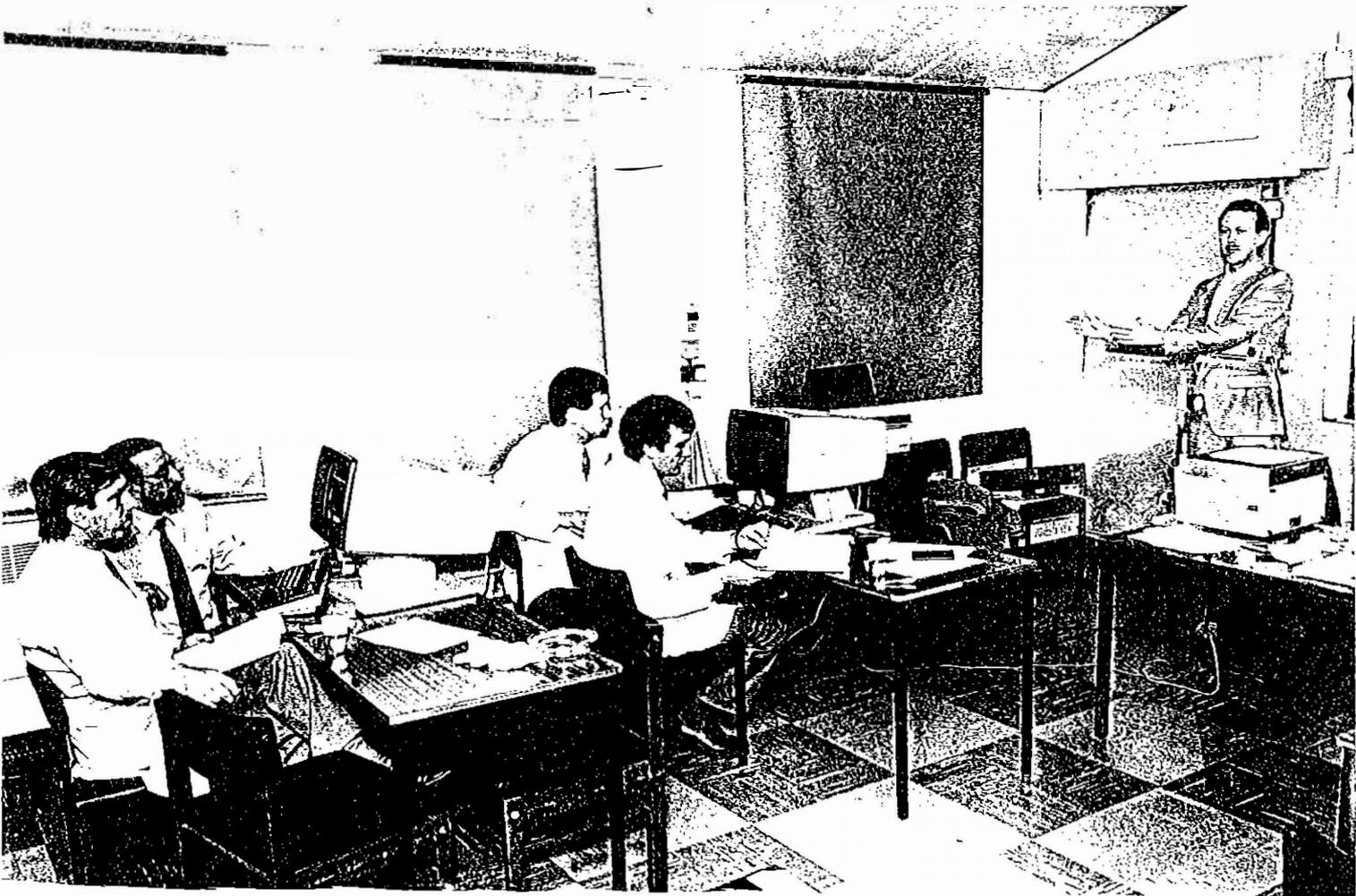
Figure 1.1.   Computer Simulation for Management Training

Here Martin Wynn leads a simulation of on-line computer systems on networked mini-computers, GLAXO Pharmaceuticals, Speke, G.B.

(Photo courtesy of GLAXO PHARMACEUTICALS)

word-processing and graphics sophistication, together with ease

of programming; and the plethora of 'authoring' software packages

now available means that little or no formal programming skill

is required to produce competent CBT packages. Thus, whilst

some of the simulation examples described in this paper were

designed to run on mainframe computers, they are included as

illustrations of what can now readily be achieved on micros.

Indeed, the graphics facilities now available on most micros

means that the visual presentation and impact of computer simulations

can be greatly enhanced.

1.2. Definitions and educational attributes

One commentator has pointed out how nearly all computer-

based training may be seen as a form of simulation in its broadest

sense, and also shows how the distinction between computer-based

training and simulator training is becoming increasily blurred.

Computers play an important part in most training simulators,

whilst as noted above, much computer based training revolves around

simulation techniques. One recent definition of Artificial

Intelligence as 'computerised simulation of intelligent behaviour'

highlights the possible breadth of discussion, and matters are

further confused by the overlap between simulation and modelling.

Most computer simulations are organised around some form of model,

whilst model building frequently involves the use of computers.

In this discussion, we shall consider those models which

have been built into a computer program for the purpose of

providing students with a substitute for part of the real world,

and we shall refer to these ready-made models as computer simulations. In these simulations, students can vary or control the behaviour of key variables in a system of interest, and measure the resulting effects far more simply and with far less instrumental training than that required in a normal laboratory situation. Simulations introduce students to the logic of experimentation and enable them to undertake such experimentation in a risk-free environment. They can operate at levels of complexity to suit the age and educational level of the student user; and they can produce results in a variety of forms - numeric, textual or graphic. Moreover, they can include significant amounts of calculation and accounting, which the computer handles with ease.

This is not to suggest that computer simulations are without their problems. If trainers fail to draw student attention to the simplification involved in a simulation, and let them believe that the model is a perfect reflection of the real world, then the value of the simulation will be undermined. A further problem arises in the way students are asked to use the simulation. Goals must be set for the simulation activity, or there is a danger that students will merely go through the motions of manipulating the package without being forced to consider why they are doing so. Part of this problem can be solved by building into the simulation various 'tests' or problems which have to be solved by students before they can make further progress.

It is extremely important that trainers ensure that simulation exercises are embedded in other learning activities, and that

students use their computer experience to further their understanding of the real world. An idealized view of how simulations might fit into a teaching scheme is shown in Figure 1.2 below.

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                    STUDY OF
                   REAL WORLD
                  OBSERVATIONS
                       |
                       ↓
                PREPARATION FOR
                USE OF COMPUTER
                   SIMULATION
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                    USE OF
                   COMPUTER
                  SIMULATION
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                COMPARISON OF
              SIMULATION RESULTS
              WITH REAL WORLD DATA
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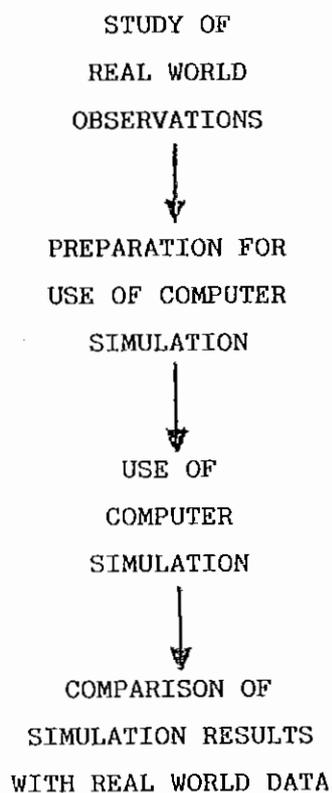
Figure 1.2. The Use of Computer Simulations

In the following discussion several interrelated uses of computer simulations will be illustrated. The first use is as a vehicle through which students can explore make-believe worlds. Such worlds may either be replicas of part of the real world, suitably simplified, or reflect normative assumptions about

how the world operates. Some of these simulations are presented as 'straight' simulations in which the student is meant to learn by a process of experimenting with the model. In other cases, particularly those which simulate elements of the human world, the simulation is cast in the form of a game with the student making decisions which are part of the process being modelled. In other situations, the most effective way of getting the student to investigate elements of the real world is to provide a model that purports to explain it, but whose level of explanation is known to be out of tune with observable facts. By comparing the faulty model with empirical observations, the student is given a basis for more surely identifiying, describing and explaining the elements of the real world supposedly simulated by the model. Most a priori or normative models developed in the social sciences serve this role.

The third use for simulations is as design or training tools. In this role, simulations provide a test-bed for the student's skill without the danger or expense of allowing him to practice on the real world. The most obvious lay example is the aircraft simulator, which is used by airline pilots prior to taking to the air.

These three roles are not mutually exclusive, and sometimes a single simulation will serve all three purposes at the same time. The distinction is made to draw attention to the different functions computer simulations can perform.

2.   COMPUTER SIMULATIONS

In this section, a number of computer simulations are illustrated and discussed.   These have been given one of three classifications, which are overlapping and interrelated.   First, computer simulation models are those where the simulation essentially concerns the manipulation of a pre-defined model by means of a computer program. Computer simulation games, on the other hand, go further than mere model manipulation and attempt to dynamically illustrate the repurcussions of individual or group decision-making in a simulated environment.   Finally, some examples of how computer simulations can be used for more precisely defined technical training purposes are given in the section on computer simulations as training tools.

2.1. Computer Simulation Models

Many computer programs have been developed which provide students with replicas of the real world.   Not surprisingly, a large proportion of these come from the physical sicences where the processes observable in the natural environment are often understood with a reasonable degree of certainty.

A typical example is RUNOFF, a simulation which illustrates what happens to rainfall as it enters a simple ecosystem.   In order to run this simulation, students must first define various characteristics of their hypothetical ecosystem - temperature, type of vegetation, degree of vegetation cover, and lithology. They then create a storm with a given pattern of rainfall intensity,

8.

which introduces precipitation into the system. The program then models the passage of the rain through the system and displays the various 'designations' of the water either graphically or numerically.

RUNOFF is an interesting case study, because it can be used to demonstrate to students that all simulations, however realistic their behaviour might seem, are only embodiments of theory. RUNOFF -- like many other educational computer simulations -- is a highly simplified model.

This point is worth emphasising in the classroom, because students are sometimes too ready to accept the results of a computer simulation as 'the truth'. Follow-up sessions can take students a step or two beyond the output of the simulation to confront the differing patterns observable in the real world. As long as teachers continually bring students back to an examination of the real world, they need have few fears about the over-simplification represented by the simulation models they might consider using. Indeed, simplified models are often preferable to ultra-sophisticated ones. Not only do simpler models allow students to see more clearly the effect of experimenting with inputs to the model, but they also allow students to discover for themselves the degree of simplification involved, and to accept this as a challenge to identify the complexities of the real-world system in complementary activities.

Such simulations are particularly valuable in helping students to examine processes that occur through both space and time. One such example is SPREAD, a simulation program which illustrates some of the factors involved in the spread of a contagious disease. SPREAD is based on the diffusion of Dutch elm disease in Britain during the 1970s and demonstrates the importance of spacing in affecting the speed at which the disease spreads. Students set up a pattern of healthy and immune trees in a regular grid, and the program then simulates the diffusion of the disease on a year-by-year basis. Trees that become diseased are marked with a 'D', those that survive are indicated by an 'I' and those that die are marked with an 'X'. Most elements of the hypothetical treescape are modifiable by the student user (for example the distribution pattern of the trees can be adjusted in various ways), but the disease always spreads from four initially diseased trees in the top left hand corner of the study area.

These simulations illustrate very clearly how the computer undertakes tediously repetitive calculations on behalf of students giving them more time to question the assumptions of the models being used, and providing them with plenty of evidence with which to evaluate the appropriateness of the simple diffusion analogy for describing time-space processes in the real world.

2.2. Computer Simulation Games

Games are a type of simulation which can be used to illustrate the processes of decision-making which lead to the creation of the man-made environment. (Taylor & Walford, 1978; Wynn, 1985).

Frequently games provide insights for students which are difficult to achieve by other, more traditional teaching methods. In a role-playing game, students act out singly or in groups the attitudes and decision of target individuals, groups of institutions, and discover the significance of social rules by immersing themselves temporarily in the appointed role. In a computerised game, students may play with or against the computer, and the exercise benefits from the greater realism which is made possible by using the computer to calculate the outcomes of the students' decisions.

SLICK is an interactive computer simulation designed for the 10-16 age range. It focuses on a case study of oil pollution around the UK coast, and has been designed to run on a number of popular micros (BBC, Apple II and RML 380-2 micros). In addition to the program itself, the user is supplied with:

· A data sheet describing the various methods of pollution control and their benefits and disadvantages.

· A map of the coastline to be protected during the game which is near a busy tanker route and contains many environmentally sensitive features.

· A briefing sheet which informs the student that he or she has just been appointed Local Pollution Officer for the area and has a budget of £5000 for anti-pollution materials.

· Illustrations of the various methods of pollution control

Program notes

Four Briefing Papers with background on the oil company's environmental activities and further information on the problems of dealing with oil spillages.

At the start of the program a replica of the map appears on the screen, in full colour. This is followed by an order form on which materials up to the value of £5000 are ordered. If desired, the program will automatically allocate this figure to help younger students. An emergency is then announced. A tanker is leaking oil at a specific grid reference on the map. The screen shows information on wind speed and direction and the student must predict where the slick will move in a certain time period and type in the appropriate grid reference. The game is controlled by a time base and students have less and less time to make predictions and take action as the game progresses.

After each successful prediction of the slick's movement (there are 28 to make in each game) students can try to deal with the threat. This can include loading a tug with dispersant or absorbent materials, desptaching the tug to the slick and unloading the materials, placing booms at sensitive points, and deploying skimmers to mop up any oil the booms collect. Feedback is given, such as the remaining weight of their slick. At the end of the game, the student is given a score reflecting the quality of their decisions and the accuracy of their predictions. The slick can take 50 routes, so the game can be played many times by the same

student or group of students. This program has several benefits; it teaches about pollution control whilst still requiring a range of numerical and other skills, such as map interpretation, and also illustrates the sophistication of graphics now available on most micros.

POVERTY is representative of a large number of computer games which put students in charge of a hypothetical land use system and challenges them to optimise the use of available resources. POVERTY represents a hypothetical group of villages in a marginal farming area of West Africa. Most of the events which affect the farming cycle in this area - weather, disease, war etc - are included within the game. The program introduces events at random, though the frequency with which they occur is kept within realistic limits. The game may be played by a single student managing the affairs of a single village, or by two or more students (sharing the same terminal), each in charge of a different village in the study area. The object of the game is not winning, but using the resources available to escape the downward spiral of poverty. Students representing separate villages can play against each other. They take decisions about which crops are to be grown for each year of the simulation, and the computer takes on the dual role of game accountant and provider of certain random 'Acts of God'.

One of the features shared by such games as POVERTY is the large amount of calculation required to keep the players informed

of the outcomes of the decision. It is this calculation burden that led to the creation of computer versions of games such as POVERTY. In these games, the main role of the computer is to relieve the players from keeping track of the scores at each stage of play. This has the advantage of allowing students to concentrate on the concepts conveyed by the game.

Not all games demand the full computer treatment. Indeed the designer of a game should be wary of transferring a complete game on to the computer if one of its main aims is to provide students with first-hand experience of social interaction. With mixed-ability groups of students at middle-school level, for example, the less able student often benefits from role-playing interchanges and subsequent discussions with the more able students in the group. In such cases, teachers may wish to use the computer only in an ancillary role, perhaps to keep scores between rounds, or to provide students with access to game information.

An example of this can be found in the use of the Hackney Partnership Game, which addresses the problems of co-operation and collaboration between public and private agencies in the re-development of inner city sites in a London municipality. This is one of a series of case study simulations developed by Wynn and others, all of which lend themselves to micro-computerisation (See Wynn, 1985).

The simulation is designed for 15 to 20 participants, and is based on the search for consensus within and between four role

playing teams – Local Community Group, Local Private Sector, Local Authority and Developers and Investors. The focus of debate is the potential use of twenty derelict sites chosen from the inner city borough of Hackney. Twelve possible projects, each with different costings, employment creation factors and other requirements and attributes, may be implemented on any of the twenty sites, and a fluctuating overall budgetary allowance makes several such projects feasible on any one site. The game is more of an argumentative rather than design process and the micro is thus used to store the succession of recommendations for site-use produced by different role playing groups in four separate rounds; and the distribution of these recommendations within the Matrix Board of Sites and projects is displayed on peripheral VDUs. This not only provides role playing teams with a continually updated impression of the most favoured project/site combinations but also allows them to recall any of the previously entered solutions (special 'Solution Forms' are given out to all participants) for reference and consultation. Without the micro, the participants' instant access to this wide range of data would be impossible and the simulation itself extremely difficult to manage.

The program is written in Basic and runs on the North Star Horizon, with printer keyboard and two Visual Display Units. On one, 'feasible solutions' for project implementation on particular sites are shown as they are keyed in, whilst on the other, a matrix of sites versus projects shows the distribution of feasible solutions giving participants a continually updated impression of the most

popular site and project combinations. Any feasible solution can then be retrieved, viewed and printed out if required for further examination and discussion. This is of particular value when groups are asked to compare and choose between different 'feasible solutions' for land use on the different sites.

The Hackney Partnership Game illustrates one way in which the traditional role playing game can be provided with computer support. It also illustrates the positive contribution that can be made by computer graphics in providing a visual reminder of the current state of the game. Another example of this role is to be seen in PORTS, in which students build up a map of a hypothetical coastal region within which the growth of competing ports is to be simulated. The 'gameboard map' is presented on the screen of a graphical VDU during the simulation and serves to remind students of the spatial arrangement of their simulated world. Where the game is set in a real location, the presence of a visual display may help students playing the game to learn something about the geography of the area in question.

One final point needs to be underlined. The use of such games, computer or otherwise, must be carefully organised and handled by trainers, or their surface entertainment component may over-ride their educational intent. Not that teachers should oversee student participation in a game in an authoritarian manner, as this would plainly conflict with some of the educational benefits of this form of exercise. Rather, teachers need to set the game

experience within a clearly defined educational framework. In practice, this may be achieved in several ways, either by briefing the students carefully before the game or by providing them with documentation which clearly outlines the educational and geographical implications of the exercise. Careful debriefing is essential after the game if these lessons are not be lost (Walford, 1969). Wynn (1985) provides useful examples of ways in which games can be 'embedded' in complementary educational activities to maximise the learning benefits.

2.3. Computer Simulations as Training Tools

The final type of computer simulation to consider is that meant to be used as a design, management or training tool. In several disciplines, particularly those with a strong vocational orientation, the computer is frequently called upon to act as a training device. For example, engineers, highway designers, architects and environmentalists commonly use the computer to implement design decisions or to practise a skill without having to consider the consequences of doing it 'for real'. In these circumstances, the computer models used in the simulations have to be as realistic as possible, and therefore contrast with most of the educational simulations discussed so far in which simplification is a desirable characteristic. In some cases, trainees will already have mastered the appropriate theory; in other cases they may need no theoretical understanding of the system they are being trained to manipulate. In either case, trainees use the simulation for the practical experience it provides.

An example of such a computer simulation is ROUTE, a program which simulates the decision to build a motorway through a large English town.   It was designed to introduce students to cross-disciplinary approaches to solving environmental problems but ROUTE may also be used as an introduction to the techniques of environmental impact analysis.   Under program control, the computer displays a map of the town, which is subdivided into three types of land use; rural, low-density housing, and high-density housing. The student then types in an 'environmental impact matrix' which summarises the importance he attaches to the impact of the proposed motorway on up to seven factors;   noise, vibration, atmospheric pollution, social severance, land take, visual intrusion and danger. He then enters a proposed route for the motorway, distinguishing those parts which are to be built on the surface, in cuttings or in tunnels.   The computer is then set the task of producing a scored environmental impact matrix for this route, given the student's stated set of importance values.   The program can inject further realism into the exercise by calculating the financial cost of building the proposed motorway.

The bulk of experience of this form of computer simulation, however, is found in the industrial and commercial sectors and examples from a major pharmaceutical firm are included here. At Glaxo Pharmaceuticals U.K., a range of CBT packages have been made available on the distributed network of Hewlett-Packard mini-computers, which are linked to over 1,000 computer terminals on four separate sites.   These interactive packages have, in

the first instance, been used to train staff in the use of key programs in the Stock Control, Stores Recording, Quality Assurance and Production Systems. Within each package, the use of on-line programs is simulated using mock data which has no effect on the live databases. These packages are entirely self-contained and require minimal resources in terms of disc space and processing power. They can be used on an ad hoc basis by any of the company's staff and also under supervision on site with a subject expert on hand to answer any questions that may arise. They have contribted significantly to computer end-user training and have in part replaced formal courses previously held at the company's Greenford (London) site, saving considerably in human, financial and technical resources. The range of packages is now being extended to cover other subject material such as office systems and the use of database enquiry languages.

A further development at Glaxo in the CBT field has been the design of an interactive 'Expert System' to aid the diagnosis of bronchial hyper-activity. The system, called ADEPT, has broken new ground in several areas, notably in medical teaching and video-disc application.

ADEPT contains both knowledge about the subject area of asthma and the methodology for comparing information from a particular patient with this knowledge base. This information is collected as responses from the user to a series of questions presented in sequence. These questions are designed to explore various

areas relevant to establishing a diagnosis and assessing the severity of the condition.

This information is quantified and then adjusted by data relating to symptom frequency and severity. This leads to an overall assessment of the condition of the patient at the time of presentation. For patients who are receiving therapy which might influence the overall symptom pattern, an appropriate correction is applied to the assessment and this leads to a prediction concerning the underlying severity of the disease being treated. Once a conclusion has been reached about the underlying (untreated) disease severity, it selects a suitable treatment or treatment combination from a list of possible therapies. Age and other factors are taken into account in reaching this therapeutic proposal. When appropriate, non-therapeutic measures are also indicated.

From the practical point of view, the ADEPT system incorporates a touch screen which obviates the need for a keyboard, therefore making data entry really rapid. From a user's point of view, this means no fumbling with keyboards and no looking alternately between the screen and keyboard. It also incorporates a video disc to support the computer software. At any stage in a consult-ation the user can call for an explanation, which is normally a short video sequence, illustrating and explaining the point being made.

So in summary, ADEPT has brought together three disciplines, each with different skills and objectives, but with a common purpose.

It is bringing advanced technology, advanced medical thinking and advanced computing to the practising doctor.   Use of the system potentially leads to:

·   The diagnosis of hyper-reactivity and assessment of severity

,   A highlighting of associated supportive information

·   A proposed treatment regimen

·   A prognostic summary

The system is currently being used in training hospitals in different parts of the country, and it is expected that further packages will be produced in due course which similarly incorporate the use of video clips

3. CONCLUDING REMARKS

The number of educational and training packages now being written for micro-computer delivery is huge and it is one of the fastest growing industries in the world. Soon, micro-computers will be powerful enough to duplicate most of today's mainframe system capabilities and we may well see a move away from mainframe delivered courseware. In spite of the proliferation of micro-computers for business, IBM is capturing the micro market like it captured the mainframe market, whilst many manufacturers are seeing rapidly declining sales. It may be wise to consider the likely life expectancy of your proposed micro, before considering a move towards micro supported CBT. Many major computer companies are now producing a new range of micros on which IBM compatible software will run.

Some of the better systems for micro-computers have produced excellent results and success stories can be found all over the world. Many made-to-measure packages are now available, but the increased 'user friendliness' of higher level languages and authoring software is making it ever easier for trainers to design their own courseware and build customised applications to meet their own needs.

The need for training of trainers in this area of micro course-ware development is clear enough, increasingly so because improved technology allows ever better graphics, sound, animation and video clips to be incorporated into computer simulations. At the same

time, there is a parallel need for wide ranging reviews of the technical and financial feasibility of introducing micro-based education in both the developed and developing worlds. It was H G Wells who commented that "human history becomes more and more a race between education and catastrophe" and we would be wise to harness as fully and rapidly the educational potential now offered by the micro-computer.

NOTES

1. R.B. Stammers 'The computer terminal as a simulator' Journal of European Industrial Training, Vol 5, No 7, 1981, pp 27-29.

2. David Catton, quoted in C. Guilfoyle, 'Artificial Intelligence crosses the bridge to see the light of day', Datalink, June 24, 1985, p8.

3. For a discussion of the distinction between modelling and simulation, see W.S. Dorn, 'Simulation versus models : which one and when?". Journal of Research in Science Teaching, 12 (4) 1975, pp 371-377

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CENTRES OF COMPUTER BASED TRAINING ACTIVITY

UNITED KINGDOM

BCS (British Computer Society), 13 Mansfield Street, London W1MOBP

CATAM (University of Cambridge Computer Aided Teaching of Applied Mathematics), Department of Applied Mathematics and Theoretical Physics, Silver Street, Cambridge CB3 9EW

CEDAR (Computers in Education as a Resource) Wide range of free publications, Imperial College Computer Centre, Exhibition Road, London SW7

CEG (Computer Education Group) Publishes Computer Education, North Staffordshire Polytechnic Computer Centre, Blackheath Lane, Stafford.

CET (Council for Educational Technology) Publishes several publications including CALNEWS, 3 Devonshire Street, London W1N 2BA

CHESS (Association of Computer Units in Colleges of Higher Education) Hatfield Polytechnic, Hatfield, Herts AL10 9AB.

EDINBURGH University, Department of Artificial Intelligence, Forest Hill, Edinburgh EH1 2QI. Probably the leading AI research group in the UK. Many publications in AI and CAL.

GAPE (Geographical Association Package Exchange) Department of Geography, University of Technology, Loughborough LE11 3TN

ITMA (Investigation into Teaching with Microprocessor Assitance), College of St. Mark and St. John, Derriford Road, Plymouth, Devon PL6 8BH. Free newsletter.

LEEDS University, Computer Based Learning Unit, Leeds LS2 9JT. Under Dr. J.R.Hartley, one of the leading CAL authorities in the country, this unit carries out a great deal of research. Several papers and publications are available.

MAPE (Micros and Primary Education), St. Helen's School, Bluntisham, Cambridgeshire. Is associated with Microscope published by John Lane, Newman College, Bartley Green, Birmingham B32 3NT

UNITED STATES

ILLINOIS University, Computer-Based Research Laboratory, 252 Engineering Research Laboratory, Urbana, IL 61801. Research and development of CERL version of PLATO. Many publications. Consults with CAL writers.

INTERNATIONAL Council for Computers in Education, Department of Computer and Information Science, University of Oregon, Eugene, OR 97403 6000 individual members.

MICROCOMPUTER Research Centre (MRC), Box 18, Teachers College, Columbia University, New York, NY 10027. Provides consultation and information on educational uses of microcomputers. Software evaluation.

MINNESTOA Educational Computing Consortium, 2520 Broadway Drive, St. Paul, MN 55113. One of the largest and most highly respected organizations in the United States using computers in education. Have developed a large range of fully tested material for use on mainframe terminals or micro-computers.

NATIONAL Centre for Research in Vocational Education, Ohio State University, 1960 Kenny Road, Columbus, OH43210. Non-profitmaking with international membership. Deals with 45000 requests a year for information. Several monthly newsletters and magazines

NEW YORK State University, Faculty of Educational Studies, New Media Lab and Programmed Instruction Center, 210 Baldy Hall, Anhert NY 14260. List of publications available on request.

THE NETWORK Inc, 290 South Main Street, Andover, MA 01810. Non-profitmaking educational service. Publication list available.

NICEM (National Information Center for Educational Media), University of Southern California, University Park, Los Angeles. CA 90007. 500,000 entries of non-print media in current data base. Each entry contains brief synopsis.

SIMULATION and Gaming Association (SAGA), 4833 Greentree Road, Lebanon, OH 45036

SAN FRANCISCO State University, Audiovisual and Instructional Television Center, 1600 Holloway Avenue, San Francisco, CA 94132. Has developed a 35 channel cable system for over 60000 homes including CAL services.