Teaching Land Use Planning Case Studies Through Gaming: an Example of the Trent Simulation Approach

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An earlier article [1] argued that a series of carefully chosen and detailed case studies can be used to demonstrate how general principles drawn from political theory operate in 'the 'real world' of land-use planning. One way of doing this is by using simulation techniques. The aim of this article is to describe how this can be done by drawing out general guidelines from a worked example.

The article is divided into four sections. The first section briefly discusses the general relationship between case studies and simulation. The second and third sections provide a worked example of a case study simulation. The final section draws some general conclusions for those wishing to adapt this approach to the teaching of local politics and planning in schools, colleges and universities.

1. Simulation and the Case Studies

The use of simulation exercises in the teaching of land-use planning is far from new. Early pioneering work by Hendrick, Duke and Feldt [2] in the 1960's, was followed by the development of urban games in the United Kingdom in which the dynamics and growth of urban systems were simulated. [3] Simplified representations of reality provided environments in which students could experience something of the real-world dilemmas of decision-making.

Although the development of urban gaming in this country has suffered from a general lack of evaluation, one major criticism has been that urban games "are poor in their definition and description of the planning environment." [4] This is largely because such games usually try to simulate development at the city or metropolitan area level; as a result, games tend to be either extremely complex in their design and 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 contexts within which real life decision makers operate. One way of ensuring both realism and manageability is to build the games around tightly defined local case studies.

In devising these games it is assumed that traditional teaching methods will provide students with an elementary understanding of the operation of the planning process within the national and local political frameworks. The value of the case study gaming exercise is to take this one stage further by providing an authentic structure which defines the role of each actor and his capacity for action. An appropriate simulation exercise, therefore, is one which both clearly defines the parameter within which each role is played yet leaves each actor with scope for individual initiative to pursue the particular goals which he has been given. By acting out these roles, the students become aware (to an extent not easily achieved through other teaching methods) of the constraints, dilemmas and opportunities that confront the key personnel who influence environmental decision-making.

We would now like to proceed to illustrate these themes by describing one such simulation exercise. But it must be stressed that the game should be seen as one part of a wider teaching package. By using other pedagogical tools the teacher can build on what has been learned from the game. The game alone is not an end in itself.

2. The Cofferidge Close Case Study

A good example of the type of case study well-suited to the simulation exercise described in the previous section is Cofferidge Close, a small commercial development in the old market town of Stony Stratford, now part of the designated area of the new city of Milton Keynes in Buckinghamshire.[5] *The Plan for Milton Keynes*, [6] produced by the Milton Keynes Development Corporation (MK.DC) in 1970, argued that Stony Stratford should contribute an element of historical identity and character to the new city, while providing a wide range of district shopping facilities and other services. But the commercial life and environmental quality of the town had suffered from progressive deterioration, and there was an urgent need for extensive revitalisation. The MKDC was the authority with overall responsibility for implementing the proposals for the new city. An *ad hoc* body set up under the provisions of the New Towns Act of 1965, it had extensive powers to plan and to promote the growth of Milton Keynes, including the ability to undertake the commercial development of particular sites where appropriate. However, all major proposals and capital expenditure by MKDC had first to be approved by the Department of the Environment, which expected certain financial returns and planning achievements. Relations between MKDC and the local authorities within whose boundaries the designated area of the new city fell were generally constructive, though sometimes marked by a difference in outlook characteristic of the two sides; MKDC was naturally concerned

with the growth of the city and its success in meeting regional objectives, while the local authorities were more interested in ensuring that local needs were adequately represented in the process of change.

As part of the improvement programme for Stony Stratford, the Central Planning Unit of the Corporation proposed that 1½ hectares of semi-derelict backlands located behind the High Street be redeveloped (see Fig.1) as a shopping and social centre. It appears that there was little real debate about *whether* the development should

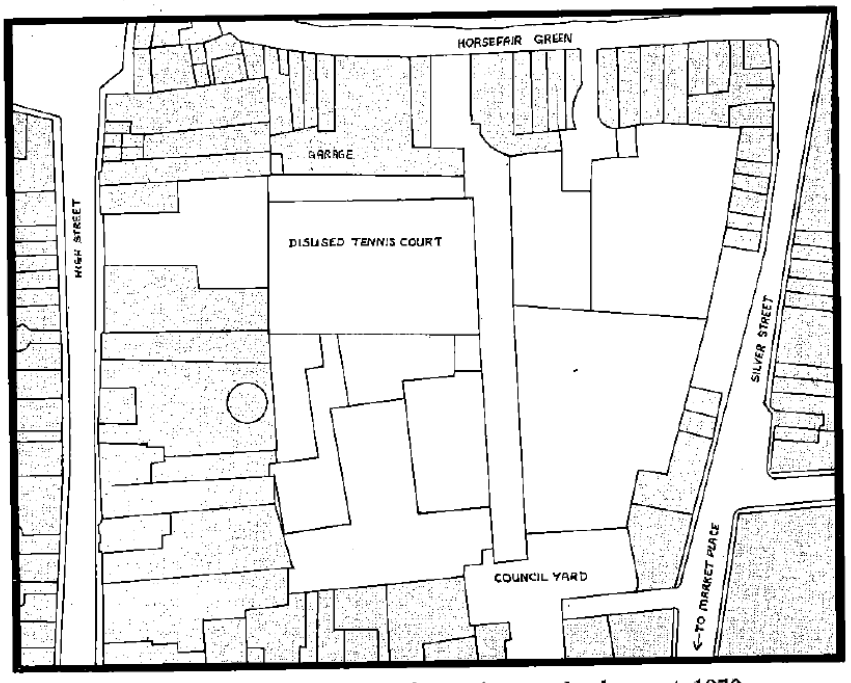


Figure 1. Map of Cofferidge Close, prior to redevelopment, 1970

go ahead or not: there may have been genuine consensus about the need for the scheme, or it may be that the powerful position of MKDC inhibited any direct opposition. However, the question of *how* the site was to be developed was only resolved after prolonged efforts by the various protagonists. A number of organisations and departments participated in the preparation and implementation of the scheme each with its own discrete areas of concern. Disputes concerning the conflicting stakes and interests of the different participants were not uncommon. There was, for example, a continuous. struggle to produce a design which would satisfy the objectives of both the Planning and Finance Departments, within the procedural requirements of the Estates Department. Should more offices be provided to increase the financial return on the scheme? Should housing for disabled people be built on the site? Was there enough money for a public hall? These issues had to be resolved in the face of pressure from the local interests and the need to persuade central government of the merits and viability of the scheme. Moreover, the set of constraints faced by each group was not a static one: the process took place against the background of a falling property market, and uncertainty about the financial contribution to be made to the scheme by Buckinghamshire County Council. Changing requirements for the location of the health centre and library also necessitated substantial revisions at an advanced stage in the design process.

Cofferidge Close, then, represents a consensus building exercise, resulting in a compromise solution which dilutes the returns expected by each participant from the scheme. It also identifies substantial external constraints as being major determinants of the final outcome. It was our intention that the framework of interdependence in which each participant was located should be recreated as realistically as possible, giving students an insight into the limitations of plan implementation through experience of a real life situation.

3. Game description

The Cofferidge Close Case Study Simulation has so far been used with classes of 20 to 30 students divided into 2 groups playing independent games. The game duration has normally been 6-10 hours, sometimes spread over two teaching days.

(a) Roles

The following role descriptions are given to students:

The New Town Development Corporation Design Team Consisting of:

1. A Chief Architect and Planning Officer who is anxious to see maximum number of houses provided, but especially disabled persons dwellings. He is also anxious to see the provision of community facilities, e.g. a public hall. He prefers small shop units to supermarkets and is concerned with the overall quality of the scheme, including landscaping and public open space. He has the final veto on proposals of the design team, and is also a member of the Executive Management Committee (see below).
2. Planning Assistant and Design Assistant. These are responsible for detailed design and planning work on the scheme.

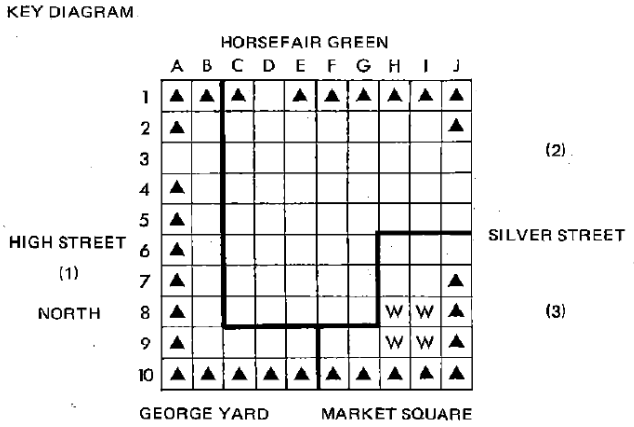
Executive Management Committee (EMC)

The EMC is a coordinating committee of the Chief Officers; in particular it is responsible for the approval of all developments proposed by the Chief Architect and Planning Officer, before their submission to the Department of the Environment (the teacher/game manager plays the DoE).

1. *General Manager of Development Corporation.* He is the chief officer of the development corporation and chairman of the EMC. He is concerned with the broad overview of the scheme e.g. financial returns and good planning. But he is also concerned with the overall prestige and good name 'of Milton Keynes. This means that he is concerned with newspaper reports and public opinion.
2. *Chief Estates Officer.* He has responsibility for land purchasing and negotiations. He also advises the design team of the financial implications of their land use requirements. He should work closely with the design team to ensure that the land bought meets both financial and planning objectives. He can use Compulsory Purchase Orders (CPO's) subject to the approval of the EMC if necessary but it is Development Corporation policy to try to acquire land voluntarily.
3. *Finance Officer.* His main concern is to maximise returns on the scheme. After all costs have been met, the scheme should show a profit of +10 monetary units (MU) in order to satisfy the Department of the Environment (see below). However the DoE *might be* prepared to accept less if there are substantial planning and social advantages.
4. *Chief Architect and Planning Officer.*

The Property Owners (see Fig. 2)

1. *James.* Owner of garage (non-conforming use) on periphery of site and adjoining land. Willing to sell if price is right.
2. *White-Bread.* Owner of bakery and adjoining land and representative of other shop keepers. Does not really want to sell back of his yard, but sees some advantage in gaining access to rear of premises.
3. *Wolverton Urban District Council.* Own a council yard and adjoining land for which they have no use. They are keen to sell, provided the price is right, suspecting that the Development Corporation would not use CPO against them. (Public authorities are reluctant to use a CPO against each other although in law this may be possible).



NB: Thick lines represent the boundaries between different land ownerships. Area 1 is owned by Mr White-Bread, a baker whose shop is located on square A4. Area 2 is owned by James's, who run a rather dilapidated and noisy garage on square C1. Area 3 is owned by Wolverton Urban District Council, who use the squares marked W as a yard for the Technical Services Department. Existing buildings on site are marked ▲

Fig 2. Cofferidge Close, Stony Stratford, Milton Keynes

Stony Stratford Civic Society (SSCS)

1. Lt. Gen. Frogsmorton MC (and Bar). President of the Society.
2. Ms. Vanessa Castells, Sec. of the Society, and lecturer at the Open University.
3. Mr. George Grubbit, local and long established shop keeper. He is frightened that new incoming firms would rob those like him of custom. The Society is concerned that the Development Corporation will ride rough shod over the interests of the indigenous community and would rob Stony Stratford of its distinctive identity, but some argue that the Development Corporation could provide new opportunities, such as a Community Hall and new housing.

   The society agreed at its last AGM to press for a new community hall at Cofferidge Close. They were suspicious that the Development Corporation would want to develop it on a less accessible site.

Reporters

Two reporters. Their job is to get information as and when they can from the other actors, and to give their own opinions, through editorials. These will be posted on the notice board. The main channels of communication will be through the press. The reporters will also be expected to undertake case studies of the exercise and present them at the debriefing session.

Each player is given a badge to show his role and each group (i.e. Design Team, Property Owners, etc.) is given its own area in the classroom or studio (a designation label is given to each group). A map of the Cofferidge Close area prior to development is shown (Fig. 1), plus photographs, diagrams, etc., which will give the students something of the flavour of the area and the use and state of existing buildings, as well as the ownership patterns of the land. Each student is also provided with a diagrammatic version of the site set out on a 10 x 10 squared grid (Fig. 2).

(b) **The Design Brief, and Development Values**

All the students are provided with the design brief issued to the Design Team This states that the area is to be developed as a shopping and social centre to serve the new neighbourhood of Stony Stratford. The plan, therefore, should attempt if possible, to:-

i. Provide enhanced shopping facilities whether in terms of small shops or supermarkets (1 shop = 1 square on the grid, a supermarket must cover at least 2 squares on the grid plan).
ii. Provide Offices (1 office = 1 square on the grid plan with total office development covering a maximum of 6 squares, a factor dictated by the Government's location of offices policy).
iii. Provide community facilities in the form of a Library and a Health Centre (covering a minimum of two and four squares respectively).
iv. Provide some housing for the disabled (½ square = 1 disabled persons house).
v. Provide some executive housing (1 house = 1 square).
vi. Provide public open space.
vii. Get rid of the garage because it is an eyesore and because it is noxious, but as far as possible keep existing buildings intact.

For simplicity's sake the planner will do the design work on the grid, plan. Roads and parking space do not have to be shown on the plan, but have to be calculated on the basis of 1 road square per 5 developed squares (including buildings but excluding green spaces). The number of road and parking squares must, however; be allocated somewhere on the grid plan. Financial constraints are incorporated into the planning process. The monetary values are calculated in Monetary Units (MU) per grid square. The most profitable use of land is for office development. Each square of *office development* yields 7 MU/sq. Other values are as follows:-

Library (Occupying a minimum of 2 squares) + 1 MU/sq. (paid for by Bucks. County Council, therefore some profit to MKDC).

Health Centre (occupying a minimum of 4 squares + 1 MU/sq. (paid for by Bucks. County Council, therefore some profit to MKDC).

Green Zones - 1 MU/sq., (an expense for the MKDC).

Shop (1 shop; 1 square) + 3MU/sq. (commercial rent for MKDC).

Supermarket (each occupies a minimum of 2 squares) + 4 MU/sq. (more profitable than ordinary shops and therefore rent yield greater).

Executive houses (1 per square) + 2 MU/sq. (rent gain to MKDC).

Disabled peoples houses (2 per square) - 2 MU/sq. (these are subsidised by the Development Corporation and therefore constitute a loss for MKDC). Roads and parking spaces are given a -1 MU/sq. rating. Land prices must also be taken into account, and so the rate which the Development Corporation has to pay the land owners, either voluntarily or by compulsory purchase, for each square, will have to be deducted from the Design Team's profit estimates. Before the game starts, all the players are told that James' land is the most valuable and that Wolverton UDC's is the cheapest. Developed land is more expensive than undeveloped land and land prices have recently varied from between 0.5 and 1.5 MU/sq. in the area. Should the Development Corporation wish to go for compulsory purchase then once the decision has been made, the teachers/game managers will act as district valuers and inform the Development Corporation that the values of James' land is 1.2 MU/sq. undeveloped, 1.4 developed, White Bread's land is worth 1 MU/sq. undeveloped, 1.2 developed, and Wolverton UDC is 0.8 MU/sq. undeveloped, 0.9 developed. Unless there are compelling social reasons the Department of the Environment will not give permission to the Development Corporation to go ahead with the plan unless it shows an overall profit of +10 MU. Consequently the Design Team must match commercial viability with social need.

(c) **Game procedure**

If we assume that role assignment and familiarisation with the Design Brief are over by 10.00 a.m., the game can proceed, under the overall direction and coordination of the game managers as follows:-

1. The Design Team prepares a plan.
2. Members of the Executive Management Committee consider the financial parameters.
3. Property owners decide on their selling prices.
4. The Stony Stratford Civic Society produce their plan - with emphasis on the social value of their scheme, even if it makes a financial loss.
5. Newspaper reporters *try* to get statements from the involved parties and make their own editorial statements. Ideas in note form are pinned upon press noticeboards.

10.45 a.m: The preliminary design is submitted to the EMC for discussion. The SSCS and the property owners are subsequently invited by the General Manager to participate in the latter stages of the meeting. The EMC then discuss their (the SSCS') reactions. The design team are then brought in to make any modifications considered necessary. The draft plan is issued and preliminary negotiations for land purchase begin. It is possible that at this stage some or all the necessary land is purchased, subject to DoE approval. This depends upon whether an amicable agreement with the various parties can be made. The press, after sounding out general opinions, reacts. The Development Corporation may at this stage start thinking about Compulsory Purchase procedures.

12.30 p.m. Summary of game so far. Lunch.

1.30 p.m. Circulate notes indicating a *shift of policy* on the part of Bucks. County Council: The Library scheme is withdrawn and the Health Centre has to be located on squares 9FG and 10FG (simplifying what really happened - See section 2). Game participants react, considering the implications for the design of area. Shortly after, the collapse of the property market is announced, simplifying a general tendency which happened during 1974 (again/see section 2).

The value of office development falls to 2 MU/sq., supermarket to +3 MU/Sq., shops to +2 MU/sq., and the public hall from -2 to -3 MU/sq. Land prices also fall to vary from 0.3 to 1.1 MU/sq. These figures are made generally available. If land has already been purchased, the Development Corporation has to try to recuperate its losses by adjusting the design content accordingly. If no land or only some land has been purchased at this point, then negotiations will be revised. Should compulsory purchase be necessary new instructions will be given as follows:-

James 0.9 MU/sq. undeveloped and 1 .1 MU/sq. developed.

White Bread's 0.7 MU/sq. undeveloped and 0.8 MU/sq. developed.

Wolverton UDC 0.5 MU/sq.- undeveloped and 0.6 MU/sq. developed.

The Development Corporation now revises its plans and draws in participants for discussion and negotiation as it thinks fit.

The plan is then submitted to DoE and, through the press, the SSCS reacts.

(d) **Debriefing**

The debriefing may take place at the end of the first day or at a later date. The development of the real case study is recounted by the game manager and at critical points the explanation is halted and the members of each game are asked to comment on the differences between the real Case Study and the two simulated versions. These comparisons have proved invaluable in stimulating discussion about the functioning of the planning system. Having worked through the case study, the students are then asked to write down what they have learned from the exercise, thus

clarifying their own thinking and reinforcing the learning experience.

Subsequent discussion in, tutorial groups can then lead towards a critical evaluation of both the students' responses within the game and of the political, economic and social context within which the planning system operates.

4. Conclusions

Through. tutorial group and class discussion it soon emerged that the complex activity involved in the planning of Cofferidge Close made a major impression on the game participants. On the basis of a subsequent questionnaire survey, it was clear that the game brought home that whilst the planner may believe that he knows what is best for a community, the people likely to be affected by his decisions, such as local residents, do not necessarily share those views. The planners in the game felt that consultations with the local residents could make their plan more sensitive. But it was soon realised that even when wishes of local people were accommodated, otherwise desirable schemes had to be modified in order to satisfy restraints imposed by the property owners, the Department of the Environment, other local government agencies, and above all the economic climate. Indeed perhaps the most significant lesson to emerge for most students was the conflict between what is socially desirable and what is financially feasible.

From this came the realisation that planning has to be a flexible activity, often undertaken within tight time constraints (more time might lead to a better plan, but where development is concerned time costs money, and therefore has to be rationed). And often carefully thought out and hard won schemes have at times to be scrapped. Furthermore the planning had to be a cooperative activity. Those playing the planner's role also found that tact and patience was the best policy when it came to dealing with outside agencies and pressure groups. The exercise also helped to show the students why plan making, despite the need at critical points to react to decisions quickly, can be a lengthy process. Finally dealing with the press brought home the importance of careful, accurate briefing. Any misunderstandings, picked up by the various pressure groups, could make life very difficult for the planners.

We have attempted to show, through one worked example the mechanics and benefits of case study simulation, and it may be that some teachers will find the Cofferidge Close game, as it has been presented here, suitable for their own requirements. We are, however, equally concerned that the experience recounted in this article may encourage teachers to attempt similar simulation exercises on the basis of their own case study research. For in so doing they can select examples which will be more sensitive to their own teaching requirements and relate more directly to the overall requirements of their course syllabi.

Notes

1. Smith, R. J. 'The Local Case Study in the Teaching of Politics to Planners', Teaching Politics, Vol. 6, No. 1, 1977, 32·36.
2. See for example, Duke, R. D: Gaming Simulation in Urban Research, Institute for Community Development, Michigan State University, East Lansing, Michigan, 1964, and Feldt, A. G: 'Operational Gaming in Planning Education', Journal of American Institute of Planners, January, 1966.
3. See for example, Taylor J. L: 'Instructional Planning Systems: A gaming Simulation Approach to urban problems' Cambridge University Press,.1971.
4. Romanos, M: 'Undergraduate Planning - Is Gaming the Answer', Simulation and Games, Vol. 9, No. l, March 1978, 89·107.
5. The Cofferidge Close Case Study is one of a series that has been under· taken with SSRC and OECD sponsorship under the overall direction of Dr. J. L. Taylor, now Assistant Director of North East London Polytechnic. For further details on Cofferidge Close, see Totterdill, P: Cofferidge Close, OECD Cast Study (Draft), Department of Town and Country Planning, Trent Polytechnic (mimeo).
6. The Plan for Milton Keynes, main consultants Llewelyn-Davis Weeks Forestier-Walker and Bor, MKDC, 1970.

Acknowledgements

Grateful acknowledgement is given to Milton Keynes Development Corporation for access to data, to OECD and SSRC for continuing support in related research areas, and to our students, and especially to the first year undergraduates (1978/79) studying planning at Trent Polytechnic. Of course all responsibility for fact and opinion in the article rests with the authors.

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