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LEADERSHIP DEVELOPMENT IN A SIMULATED URBAN/ SUBURBAN (U/S) ENVIRONMENT

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ABSTRACT

There is an increasing trend in government to look to local and regional governments to provide the solutions to regional problems. This transfer is occurring at a time when the environment has never been more complex, uncertain and changing. The challenge confronting local administrators is, to say the least, considerable. It was hypothesized that a computer- based, decision-making simulation model could make a significant contribution to the effective decision- making development of local administrators and their staffs. Urban/Suburban (U/S) Policy Interaction Model was adapted for training and development of local leaders and citizens. A limited trial and experiment were conducted and evaluation by the participants was positive.

INTRODUCTION

For several decades, economic, Social and political forces have fostered a steady net out-migration of population from the cities and into the suburbs. The exodus was accompanied by relocation of businesses, plants, jobs and wealth. While it appeared that suburbs utilized the city's resources during the day, the city-dweller could see little reciprocal use or contribution from suburban resources-. Cities tend to become the owners of abandoned housing and factories and the homes of the poor and unskilled. In many areas, these perceptions have dangerously polarized the attitudes of the inhabitants of both the cities and the suburbs.

During the 70's, a national sentiment emerged which seemed to imply that this damaging migration and dislocation was, to a degree, attributable to intrusive federal policies. The response has been a slow, but discernible, reallocation of the control of funds to local communities - state, region and city.

However, the delegation of the control of some expenditures to communities has not been without difficulties. In this age of complex problems and voter constituencies, community leaders and decision-makers had to be better prepared. To some extent, in an effort to cope, local leaders have frequently adopted a "single-issue" strategy. Such a policy, of course, is not sufficient given today's political complexities.

The Situation

After two decades of indifference, or in some cases serious conflict, it is now believed desirable to:

facilitate "unfreezing" some rigid regional perceptions pertaining to how a region and its communities function

assist community decision-makers to avoid "single issue" Solutions and deal with several community forces at a time

demonstrate to the community leaders how their decisions interact with those in neighboring communities and cities

provide a setting in which urban and suburban community leaders and concerned Citizens can interact, practice and evaluate the results of their experimental leadership.

Hypothesis for Test

Based upon the foregoing community conditions and needs, it was hypothesized that the problem-solving performances of concerned community members could be enhanced by utilization of a dynamic Urban/Suburban (U/S) Interaction Simulation Model in a proper "laboratory" setting.

Model Development

The actual U/S Interaction Model was developed earlier by the author as a research tool for better understanding regional economic development. The National Endowment for the Humanities provided funds to permit its adaptation and evaluation for community leader training.

The salient features of the U/S Interaction Model are:

A region composed of a city and a suburb is the model's geographical composition

The region is viewed as a dynamic, physical system having an urban and a suburban subsystem

The structures of the urban and the suburban subsystems are identical, i.e. the forces or factors perceived as relevant are the Same.

The factor magnitudes and relationships can differ

Pertinent urban, suburban and regional literature was extensively searched to identify and quantify the system forces or factors. Fig. 1 reflects the first level of the U/S system flow diagram. Major factors such as jobs, housing, plants, taxes and roads are identified

The system was programmed using Fordyn by R. W. Llewellyn which is an excellent collection of Fortran routines that reasonably well emulate the concepts embodied in the simulation language, DYNAMO

While not identical, the model conceptualizes a city about the size of Hartford, Connecticut and a suburb about the size of its Greater Hartford Region, together reflecting a total population of about 1,100,000

About 400 variables and interactions are used in the model, requiring some 2500 statements and 64K memory on a NCR 200

Software is also designed to permit easy change of model parameter so that the characteristics of other types of communities can be readily

Beyond management development, a closely related benefit of regional simulation models is that their construction provides a focus to regional research efforts and expenditures. Weak systemic linkages are highlighted and the utility of missing information is identified, thereby attracting stronger financial support for the research.

Regional simulation models provide a means for retaining in an orderly and logical manner the conclusions reached over time by costly research programs. The low and declining cost of computer hardware coupled with the wide availability and support of software now makes this approach to training and research extremely feasible.

TABLE 2
PARTICIPANT EVALUATION

question	Mean on a Scale of 1:5
1. To what extent did this simulation model help you to appreciate the complexity of the policy making process?	3.9
2. Do you think your skills in decision making have been improved by using this exercise?	2.8
3. Do you think this method would be effective for training public officials as well as private citizens?	3.9
4. Were the introduction to and preparation for the use of the model adequate?	3.4
5. The size of the group was too small or too large.	2.6
6. Did you feel that there was adequate and constructive interaction among the members of your group? inadequate or most adequate	3.6

Specific participant conclusions were:

A regional simulation does increase the awareness and perceptions of local leaders as to the goals and strategies of others.

The need to deal with multiple factors tends to reduce the resort to "one-issue" politics.

An awareness and appreciation for community complexity were established.

Although each exercise was no more than 3 hours duration, it was felt that decision-making skills were improved.

Perhaps most satisfying, the participants rated the U/S model as a very effective method by which to train both public and private local decision-makers.

Finally, the participants concurred that the U/S Model provided a viable setting for constructive interaction on extremely sensitive issues.

Comments and observations were also requested. The two improvements most frequently suggested were:

The suburb sector of the region should be divided into segments more closely representing the actual sizes of the communities of the participants.

Education and the associated school system together with its interactions should be included in the model.

SUMMARY

This first effort was severely constrained both in scope and duration, It did not have many of the desirable conditions for a proper experimental design. Nevertheless, sufficient evidence was gathered to demonstrate the feasibility of regional simulations for developing decision-making skills at the critical

level of the community leader and concerned citizen.
Recommendations for Future Use

Considerable progress has been made in the development and refinement of corporation, business and international business simulation models. Acceptance and use of these models has spread rapidly in education and training. However, in the public sector, where decision-making can often be even more complex than in the business sector, simulated decision- making has not yet received comparable research development and application attention.

Little research exists on the training effectiveness of decision simulations in the public sector. This experiment, I feel, confirms the existence of a large number of local and regional personnel who can materially benefit by the development and application of regional decision-making simulations.

The U/S Interaction Model is built on Jay Forrester's DYNAMO and his system concepts. While alternative utdel structures should be evaluated, at present, the system concept can best express the regional perceptions of the decision-maker. Explanation of this type of model to the decision-maker is, therefore, greatly facilitated.

Thus, I would recommend:

1) Accelerated development of local and/or regional decision-making simulations.

2) Expanded use of these models for:

   a) University level public sector courses.

   b) Local and regional officer training and development programs.

   c) Carefully designed experiments to validate the effectiveness of dynamic models in public management development,

FIGURE 1

SIMPLIFIED FLOW DIAGRAM FOR THE URBAN/SUBURBAN
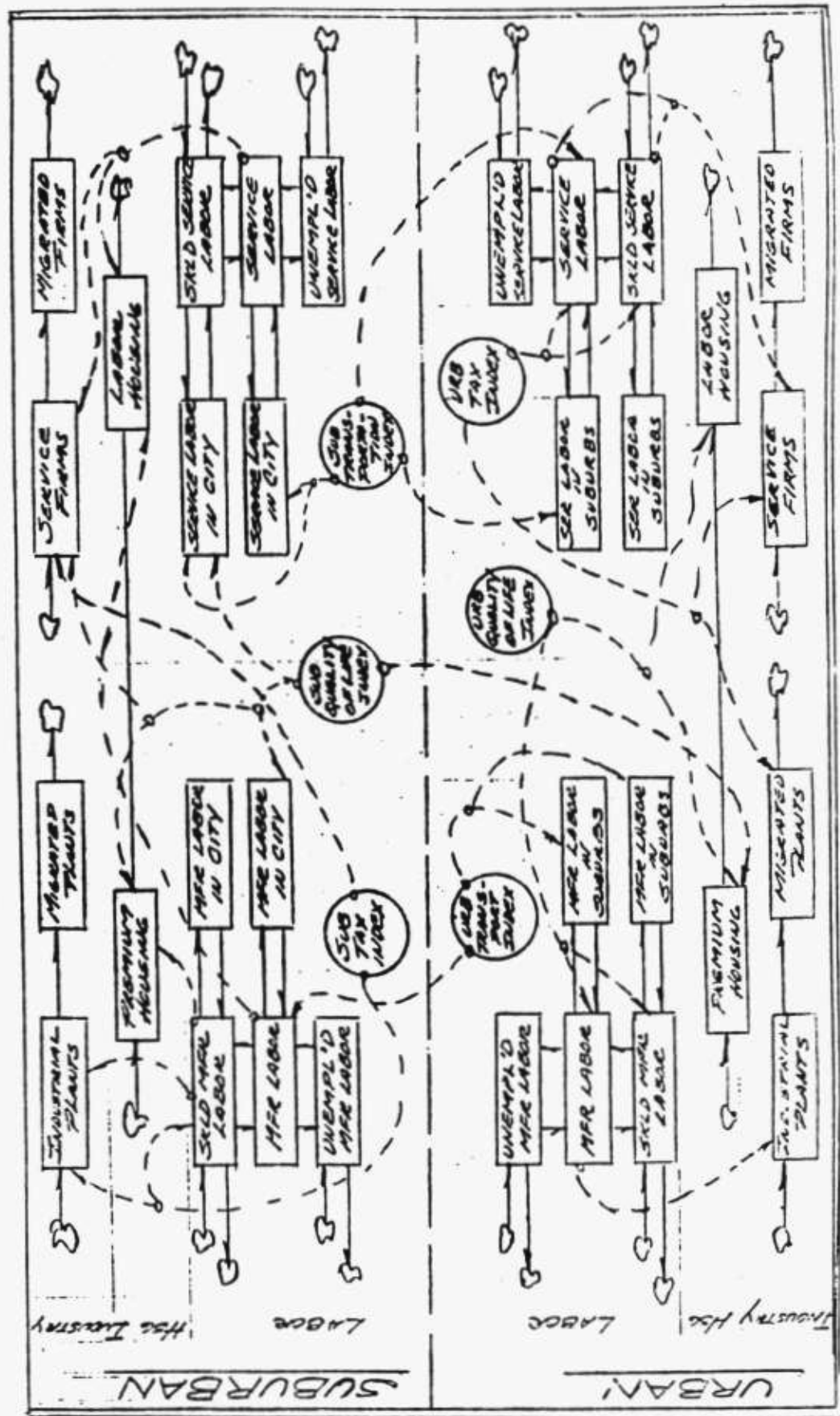
SIMULATION MODEL

FIGURE 2

URBAN/SUBURBAN POLICY DECISION IMPACT SHEET

BEFORE	URBAN FACTORS	AFTER DECISION #1		AFTER DECISION #2	
		Number	% Change	Number	% Change
701	Manufacturing Plants				
4219	Retail/Service Firms				
24100	Upper Income Housing				
63300	Lower/Middle Income Housing				
336500	Population				
217900	Jobs				
96000	Employed				
3206	Unemployed				
28080	Employed in suburb				
20020	Auto users				
1501	Bus users				
486	Open Space Acres				
11,800,000	Budget Balance				
1.11	Tax ratio per capita				
1.05	Transportation Index				
1.03	Tax Ratio Index				
1.89	Quality of Life Index				

	URBAN:SUBURBAN COMPARISON FACTORS:				
1.25	Transportation Index*				
1.27	Tax Ratio Index**				
1.68	Quality of Life Index***				

*Increasing transportation costs and time are reflected in a decreasing index number.

**An increasing tax ratio index reflects a need to raise taxes; a decreasing index, to lower taxes.

***An increasing index number reflects an improvement in the "quality of life."

FIGURE 3
URBAN POLICY DECISION SHEET

In order to accomplish the goal of "improving the quality of life," you, as members of the urban council, may need to make some policy decisions which involve capital expenditures and are balanced by increases in revenues. Although, in reality, there are many factors which may be considered, for the purposes of this exercise the expenditure factors which may be considered are highway transportation, low income housing, job opportunities through new business acquisition, and welfare subsidies. The revenue factors to be considered that will balance these program costs are sales and/or property taxes and special assessments on employed persons.

Code No.	FACTOR	SUGGESTED RANGES FOR INITIAL CONSIDERATION	DECISION	COST
	EXPENDITURES:			
(1)	Low Income Housing Building/Rehabilitation	200-300 Units @ $16,000 ea.		
(6)	Removal sub-standard	5-10 Units @ $5,000 ea.		
	Business Acquisition			
(2)	Manufacture	10-30 Plants @ $50,000 ea.		
(4)	Service & Retail	50-150 Companies @ $20,000 ea.		
	Highway Transportation			
(18)	Vehicle Capacity	8000-12000 vehicles p. hr. @ $500 ea. (Current: 10,000/hr.)		
(7)	Street and Parking	+ 10-30 acres @ $100,000 ea.		
(23)	Welfare Subsidies	$300-$600 per unemployed person per year (Current: $475)		
(9)	TOTAL EXPENDITURES *			
	REVENUES:			
(11)	Employment Assessment	$0-$50 per employed person per year (Current: $0)		
(14)	Sales Tax	$100-$240 per person per year (Current: $190)		
(25)	Property Tax	$47-$61 per $1000 (Current: $54)		
	TOTAL REVENUES *			

*TOTAL EXPENDITURES SHOULD APPROXIMATE TOTAL REVENUES

FIGURE 4
URBAN/SUBURBAN POLICY DECISION IMPACT SHEET

BEFORE	URBAN FACTORS	AFTER DECISION # 1		AFTER DECISION #2	
		Number	% Change	Number	% Change
669	Manufacturing Plants	721	8		
3,884	Retail/Service Firms	4050	4		
21,670	Upper Income Housing	22790	5		
62,920	Lower/Middle Income Housing	61750	-2		
366,500	Population	364800	-		
202,200	Jobs	201050	-		
103,900	Employed	112850	9		
3,861	Unemployed	3703	-4		
31,020	Employed in suburb	32170	4		
22,110	Auto users	23120	5		
1,711	Bus users	1902	11		
487	Open Space Acres	442	-9		
-2,250,000	Budget Balance	-1809300	20		
1	Tax ratio per capita	0.90	-10		
1	Transportation Index	1.01	1		
1.1	Tax Ratio Index	1.21	10		
1.8	Quality of Life Index	1.75	-3		

	URBAN:SUBURBAN COMPARISON FACTORS:				
1.2	Transportation Index*	1.3	8		
1.3	Tax Ratio Index **	1.35	4		
1.6	Quality of Life Index ***	1.5	-6		

*Increasing transportation costs and time are reflected in a decreasing index number.
*An increasing tax ratio index reflects a need to raise taxes; a decreasing index, to lower taxes.
*An increasing index number reflects an improvement in the "quality of life."

FIGURE 5

PARTICIPANT EVALUATION
SHEET

We hope that you have found the use of the Urban/Suburban Policy Making
Simulation interesting. The designer of this model, and we on the NEH Grant
staff would appreciate learning your thoughts about the exercise. Would you
please fill out the following questionnaire, adding comments wherever you wish?

1. To what extent did this simulation model help you to appreciate the
    complexity of the policy making process?

```
        1           2           3           4           5
    very little                                 a great deal
```

2. Do you think your skills in decision making have been improved by
    using this exercise?

```
        1           2           3           4           5
    very little                                 a great deal
```

3. Do you think this method would be effective for training public officials
    as well as private citizens?

```
        1           2           3           4           5
    ineffective                                 very effective
```

4. Were the introduction to and preparation for the use of the model adequate?

```
        1           2           3           4           5
    inadequate                                  most adequate
```

5, The size of the group was

```
        1           2           3           4           5
    too small                                   too large
```

6. Did you feel that there was adequate and constructive interaction among
    the members of your group?

```
        1           2           3           4           5
    inadequate                                  most adequate
```