Jay W. Forrester

URBAN DYNAMICS

(Dinamici Urbane)

The M.I.T. Press, First ed. 1969, Fourth ed. 1973

Extending his own method of dynamic systems modelling, which had previously been applied in the study of micro-economic systems (Jay W. Forrester: "Industrial Dynamics", The M.I.T. Press, 1961) and the principles of which had been presented in the form of a book intended especially for students (Jay W. Forrester: "Principles of Systems", Wright Allen Press, 1968), the author describes in this book the model of an urban zone. It is regarded as a complex social system, its problems being generated by the interactions between the components of the urban system.

The method used consists in outlining the borders of the system and in observing the feedback cycles whose combination generates the dynamic behaviour of the system. In each feedback, the flow accumulation points are observed, forming the level variables and the functions generating the level bridging speed, forming the rate variables.

The dynamic model achieved comprises 3 subsystems: industry, housing and population. The favourable conditions existing within these subsystems determine the favourable development of the whole system of the urban zone.

The model appears materialized in a chart with the symbols characteristic of the dynamic method of systems modelling and in about 150 mathematical ratios.

These mathematical ratios are written in the DYNAMO II programming language, a language similar to FORTRAN, but, adequate to the dynamic modelling method.

The simulations on the computer with the aid of the model have allowed the obtaining of curves showing how the urban zone responds to various management policies.

The effect of government programmes, outside the town is examined and discussed.

These programmes appear in the model in the form of parameters in the decision functions.

Through the well balanced model, to the effect of a constant aggregation and of an equilibrium between detail and generality, the book is a useful material of study for those concerned with macroeconomic modelling, finding here a dynamic modelling method which yields promising results.

The work "Urban Dynamics" also offers extremely interesting simulation techniques.

Emil Stan