Global Simulation Models

A Comparative Study

John Clark and Sam Cole with Ray Curnow and Mike Hopkins Science Policy Research Unit, University of Sussex

	TECHNICCHE HOC SCHULE DARMSTADT										
	Fact-bereich 1										
	Gesamtbibliothek										
A Wiley-I	nterscience Publication choustene										
	Invento -Nr.: 32, 428										
	014/240										
	Absteil-Nr. : 429/49										
	Sachgebiete:										
	1,6,9,2										

JOHN WILEY & SONS

London · New York · Sydney · Toronto

Contents

1	Introduction								
	Concern about the future								
	The systems viewpoint								
	The first generation of world models								
	The scope of the book	•					1		
2	An Overview of New World Modelling Eff	orts					1.		
	Introduction						1		
	The Club of Rome/Mesarovic-Pestel st	trateg	y for	survi	ival n	nodel	1-		
	The Japanese Club of Rome—A model of the future world	f proc			llocat	ion in	1		
	The Fundacion Bariloche alternative wor	ld mo	odel				2		
	0.1 11 1111 00 .					•	2		
3	Systems and World Problems						2		
J	(D) 11 XXII						2		
	The contribution of systems thinking	•	•	•		•	3		
	Approaches to systems analysis and mod	elling	•	•	•	•	3		
	701 1 0 11 1 0	·		•	•	•	3		
	The fole of models in forecasting .	•	•	•	•	•	-		
4	The Theoretical Foundations						4		
	The evolution of knowledge—paradigms						4		
	Physical, biological and social theories					•	4		
	Organizational issues in world model buil	lding					5		
5	Technical Issues of World Models and Mo	dellin	σ				5		
_	Introduction		_				5		
	Modelling goals and admitted observatio			ection	n of	•			
	appropriate data				. 0.		5		
	Subsystems and aggregation		•	•	•	•	6		
	System-model synthesis: treatment of data and uncertainty								
	Model testing					•	6		
6	Models in Application						7		
	Introduction						7		

The policy context							71
Macro-economic models .							73
Ecological models							77
Demographic models							79
Political conflict models							80
Urban and geographic models						_	81
Programme policy budgeting system							84
The role of models in policy					,	•	86
Researchers, sponsors and their val	lues			_	•	•	89
Models as part of the social proces					•	•	93
Some social implications						•	94
Channels of communication .						•	96
An extended model of the modellin				•	•	•	98
Preliminary conclusions about the Inputs to modelling and requireme Manipulation of inputs—scale and Must models be complex? The social and institutional framew Conclusions	nts for mode vork	their ls of r	explores	oitatio sentati	on ion .	· · · · ·	100 106 108 110 112 115
Appendixes	•	•	•	٠	•	٠	113
Interactive simulation modelling							117
The technical tools of modelling	•			•	•	•	121
References							125
Index							131