Chapter 1 : Complexity, ideology, and governance | Roger Strand - calendrierdelascience.com

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History[edit] The idea of agent-based modeling was developed as a relatively simple concept in the late s. Since it requires computation-intensive procedures, it did not become widespread until the s. Early developments[edit] The history of the agent-based model can be traced back to the Von Neumann machine , a theoretical machine capable of reproduction. The device von Neumann proposed would follow precisely detailed instructions to fashion a copy of itself. The idea intrigued von Neumann, who drew it upâ€"creating the first of the devices later termed cellular automata. Another advance was introduced by the mathematician John Conway. He constructed the well-known Game of Life. Though Schelling originally used coins and graph paper rather than computers, his models embodied the basic concept of agent-based models as autonomous agents interacting in a shared environment with an observed aggregate, emergent outcome. Axelrod would go on to develop many other agent-based models in the field of political science that examine phenomena from ethnocentrism to the dissemination of culture. He tried to model the reality of lively biological agents, known as artificial life , a term coined by Christopher Langton. The first use of the word "agent" and a definition as it is currently used today is hard to track down. One candidate appears to be John Holland and John H. At the same time, during the s, social scientists, mathematicians, operations researchers, and a scattering of people from other disciplines developed Computational and Mathematical Organization Theory CMOT. Bonabeau is a good survey of the potential of agent-based modeling as of the time [10] The s were especially notable for the expansion of ABM within the social sciences, one notable effort was the large-scale ABM, Sugarscape , developed by Joshua M. Epstein and Robert Axtell to simulate and explore the role of social phenomena such as seasonal migrations, pollution, sexual reproduction, combat, and transmission of disease and even culture. During this s timeframe Nigel Gilbert published the first textbook on Social Simulation: Simulation for the social scientist and established a journal from the perspective of social sciences: Samuelson is a good brief overview of the early history, [14] and Samuelson and Samuelson and Macal trace the more recent developments. As of , these three organizations collaborate internationally. Since , UCLA has arranged a conference at Lake Arrowhead, California, that has become another major gathering point for practitioners in this field. Theory[edit] Most computational modeling research describes systems in equilibrium or as moving between equilibria. Agent-based modeling, however, using simple rules, can result in different sorts of complex and interesting behavior. The three ideas central to agent-based models are agents as objects, emergence , and complexity. Agent-based models consist of dynamically interacting rule-based agents. The systems within which they interact can create real-world-like complexity. Typically agents are situated in space and time and reside in networks or in lattice-like neighborhoods. The location of the agents and their responsive behavior are encoded in algorithmic form in computer programs. In some cases, though not always, the agents may be considered as intelligent and purposeful. In ecological ABM often referred to as "individual-based models" in ecology , agents may, for example, be trees in forest, and would not be considered intelligent, although they may be "purposeful" in the sense of optimizing access to a resource such as water. The modeling process is best described as inductive. Sometimes that result is an equilibrium. Sometimes it is an emergent pattern. Sometimes, however, it is an unintelligible mangle. In some ways, agent-based models complement traditional analytic methods. Where analytic methods enable humans to characterize the equilibria of a system, agent-based models allow the possibility of generating those equilibria. This generative contribution may be the most mainstream of the potential benefits of agent-based modeling. Agent-based models can explain the emergence of higher-order patternsâ€"network structures of terrorist organizations and the Internet, power-law distributions in the sizes of traffic jams, wars, and stock-market crashes, and social segregation that persists despite populations of tolerant people. Agent-based models also can be used to identify lever points, defined as moments in time in which interventions have extreme

consequences, and to distinguish among types of path dependency. The task of harnessing that complexity requires consideration of the agents themselvesâ€"their diversity, connectedness, and level of interactions. Framework[edit] Recent work on the Modeling and simulation of Complex Adaptive Systems has demonstrated the need for combining agent-based and complex network based models. Complex Network Modeling Level for developing models using interaction data of various system components. Exploratory Agent-based Modeling Level for developing agent-based models for assessing the feasibility of further research. Descriptive Agent-based Modeling DREAM for developing descriptions of agent-based models by means of using templates and complex network-based models. Other methods of describing agent-based models include code templates [23] and text-based methods such as the ODD Overview, Design concepts, and Design Details protocol. Simple environment affords simple agents, but complex environments generates diversity of behaviour.

Chapter 2 : Project MUSE - Fascism in Spain, â€"

Editorial team. General Editors: David Bourget (Western Ontario) David Chalmers (ANU, NYU) Area Editors: David Bourget Gwen Bradford.

G ; Felix Bermejo-Pareja: This article has been cited by other articles in PMC. Abstract Background The prevalence and predictors of functional status and disability of elderly people have been studied in several European countries including Spain. However, there has been no population-based study incorporating the International Classification of Functioning, Disability and Health ICF framework as the basis for assessing disability. Methods Nine populations surveyed in previous prevalence studies contributed probabilistic and geographically defined samples in June Understanding and communication, Getting along with people, Life activities, Getting around, Participation in society, and Self-care. Results The age-adjusted disability prevalence figures were: Severe and extreme disability prevalence in mobility and life activities was three times higher than the average, and highest among women. Conclusions Disability is highly prevalent among the Spanish elderly. Sex- and age-specific variations of disability are associated with particular disability domains. Background The increasing survival rate from chronic diseases and decreasing birth rate are making Spain one of the fastest ageing societies in the world [1 , 2]. The proportion of the population over 65 years of age doubled during the last 30 years and is expected to double again by [3]. Disability among the elderly people represents a major public health concern in Spain. National prevalence rates of disability and a quantitative approach to disability determinants are needed for service development and evidence-based health decision-making with regard to this population. Over the last few decades, researchers have used a variety of approaches to disability measurement. These varied strategies have hampered comparability across studies and have rendered highly variable epidemiological conclusions on the distribution of disability [5]. Previous enquiries have frequently focused on dependence for activities of daily living ADL, e. By contrast, the International Classification of Functioning, Disability and Health ICF [7] incorporates a multifactorial approach to disability with two core components: Under the ICF model diseases, environmental factors, and personal characteristics can all function as determinants of disability. The ICF provides the basis to develop disease-specific disability profiles [8]. Moreover, the ICF facilitates the identification of targets in rehabilitation, assessment of intervention outcomes, and social and health service planning [9]. Along these lines the ICF checklist for clinical use [11] provides a multi-faceted classification of the components of disability, the impact of environmental aids and the composition of the package of services that may best suit the needs of a particular individual. The ICF scheme opens up the possibility of cross-national and multi-dimensional assessment of disability, thereby offering a more extensive picture of which aspect may be affected for any given individual or cohort. WHO-DAS II is well suited for prevalence studies implementing door-to-door designs given that both the screening 12 items and the full 36 items versions of this instrument are available [12 , 13]. Traditional approaches to disability assessment incorporate items relevant to disability, particularly for clinical use in nursing e. However, they frequently amalgam items on function e. By contrast, WHO-DAS II provides a systematic approach to various social and functional domains of disability, which are assessed separately over a single 5-point Likert scale. There have been no previous population-based studies on health and functioning in the Spanish elderly population under the ICF framework. The ICF system may provide a more comprehensive framework to disability witch could potentially become a standard for psychological assessment [15]. Co-investigators in charge of recruitment in each location were asked to contribute an average of 60 participants aged 75 years of more. Details on the characteristics of the resulting sample including its geographical distribution are available in Virues-Ortega et al.

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