

World Dynamics Revisited

Workshop for the 31st International Conference of the System Dynamics Society
Hyatt Regency, Cambridge, Massachusetts, Thursday 25th July 2013, in the Molly Pitcher room.

Workshop Leaders:

John Morecroft, London Business School; Martin Kunc, Warwick Business School

Overview

In 2011 and 2012, at the Washington and St Gallen conferences, I ran interactive half-day workshops about growth and sustainability in industrial society. These workshops used small models of the fishing industry as metaphors to think about the interplay of natural and societal forces that drive industrial growth, and boost wealth creation and prosperity. The laudable aspirations of fishing communities were shown to covertly encounter, and usually exceed, natural yet hidden limits of fishery productivity and replenishment; thereby triggering unintended collapse of fish stocks and livelihoods. Parallels were drawn, in terms of feedback structure and dynamics, between the small fishery models and Jay Forrester's intricate and influential *World Dynamics* model.

In 2013 I joined forces with Martin Kunc in a third workshop where the *World Dynamics* model itself moved to centre stage. Using formulations that precisely replicate those in *World Dynamics* we conducted partial and whole model simulations to examine coordination, growth and prosperity in contemporary industrial society. The workshop spanned 1.5 hours and was well-attended. The session plan was as follows:

1. **Partial Model Sim and Scenario: Capital Accumulation in Industrial Society**
Imagine an industrial society, in a vast yet finite world, with static population, accumulating capital in the search for prosperity. The workshop leader sketches the corresponding accumulation of capital and reviews the dominant logic of investment. As a post-workshop exercise participants can simulate the resulting partial model and try to link the scenario to key and enduring characteristics of normally competent and normally ambitious people (as they are portrayed in the assumptions and equation formulations of *World Dynamics*).
2. **Facilitated Discussion of the Full *World Dynamics* Framework**
The workshop leader sketches additional stock accumulations to represent the full stock-and-flow network of the *World Dynamics* model. Participants then work in pairs to map for themselves plausible interdependencies between the stock and flow networks and to identify, among the links, key enduring traits of global industrial society.
3. **Experiments with the Full *World Dynamics* Model**
The workshop leader runs simulations of the full *World Dynamics* model (using precisely the same formulations and parameter values as the original model). The session concludes with a discussion about the challenge of coordinating global industrial growth and managing the transition to sustainability.

The full set of workshop slides, handouts and models are available as supporting materials in the Online Conference Proceedings (submission 1099).

Key words and phrases: growth and industrialisation; bounded rationality; societal strategy and coordination; investment policy; sustainability