Ningaloo

Collaboration Cluster

# Can we learn how systems work?

Researchers are developing simple video-games to help us understand how systems work. Systems such as human communities, the economy, ecosystems, urban traffic and climate, all appear very different to us; however, their behaviour is often very similar, because it is the result of a relatively few, very similar processes. If we understand these few common processes, we can better understand the functioning of many systems around us.

## Background

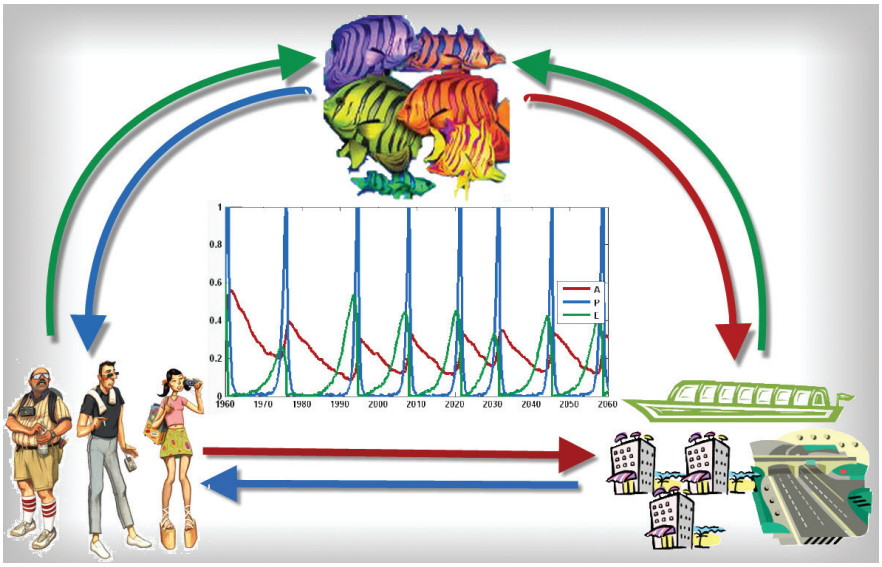
Several experiments carried out in different places around the world have shown that people often have trouble dealing with relatively simple concepts like the difference between flows of materials and their accumulation, exponential growth, feedback, etc. which have profound impacts on system behaviour.

This often results in poor decision-making and management choices, even by experts, with potentially negative consequences on system management.

## Learning about systems

Our initial results suggest that learning about simple models can help us understand the processes that act in larger systems and help recognise their influence on the systems themselves.

Despite management decisions in the Ningaloo Park being supported by considerable scientific information, this information is often very specific and needs to be summarised at a high level for decision-making to occur.




At this level, system understanding is crucial and learning about systems will help to both maximise the impact of scientific research in decision making and to improve the decision making process itself.

## Next steps

Currently three types of video-game-like models have been developed. The first provides for training and testing of the relationship between flows of materials and their accumulation; it has been used with under-graduate students and is available to the general public at **www.per.marine.csiro.au/staff/Fabio.Boschetti/Learn_Css.htm**.

The second allows users to study the interaction between people, their activities and the environment and has been designed to facilitate the interaction between stakeholders and managers in a workshop setting. It is available at **www.per.marine.csiro.au/staff/Fabio.Boschetti/APE.htm**.

The third model enables the study of interplay between fishing regulations, catches and fish stocks. The latter, as well as more training models which will be developed in the coming years will be made available for public use at **www.per.marine.csiro.au/staff/Fabio.Boschetti/**.

*Ningaloo research is an initiative of the Western Australian Marine Science Institution, CSIRO's Ningaloo Collaboration Cluster and the Australian Institute of Marine Science, working in partnership with government, local communities and enterprises.*

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