



Using Feedback Systems Thinking and Simulation in Core Strategy Teaching

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Abstract

Simulators based on principles of system dynamics are increasingly used in management education. However there is a pedagogical challenge for instructors who wish to connect the insights from such simulators to established concepts and frameworks in core courses. Here we report the deployment of a well-known simulator, Fish Banks, in a core strategy course for students enrolled in EMBA-Global – a dual degree programme offered by London Business School and Columbia Business School. We review the design and content of the strategy course and explain how feedback systems thinking and simulation are used to engage students with important general management topics such as the frames and mindsets that shape top management behaviour, the cognitive biases that obstruct sense making and the challenge of working in groups with conflicting perceptions of a situation.

Problem Statement

Business school instructors are bringing more and more simulators into the mainstream of core strategy teaching.

But how can simulators based on system dynamics be deployed to fit well with established strategy concepts and popular case studies while also demonstrating the benefits of feedback systems thinking and simulation ?

We report results from using the Fish Banks simulator in the core strategy course for EMBA-Global at London and Columbia Business Schools.

Value Statement

The value and visibility of system dynamics in management education will be dramatically improved if mainstream strategy instructors use feedback systems thinking and simulation wisely in core courses.

There are value and visibility analogies for the use of system dynamics based simulators in other areas of mainstream education.

What is EMBA-Global?



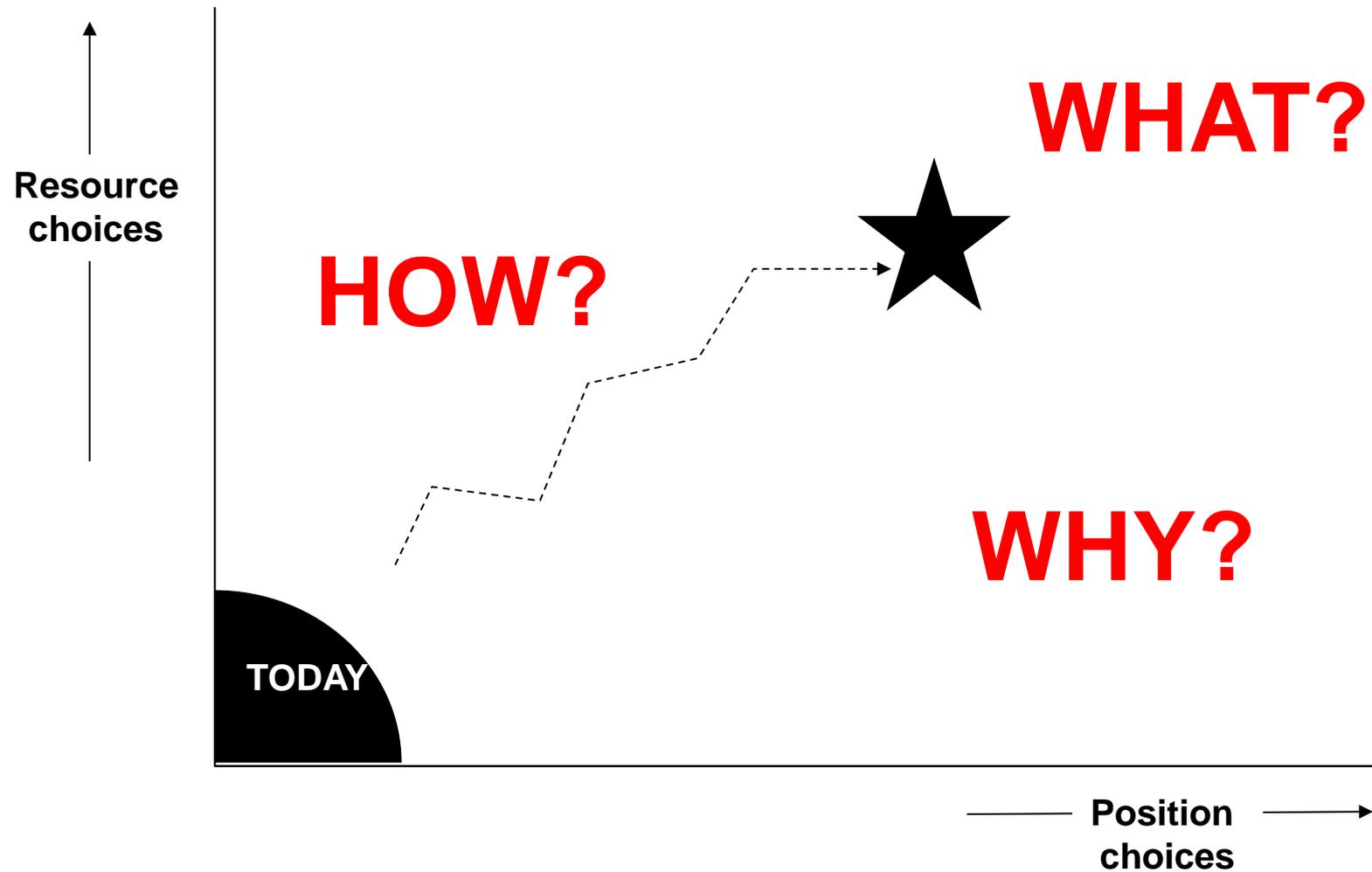
EMBA-Global

The Executive MBA programme for globally focused executives and managers



EMBA-Global is a partnership programme between Columbia Business School, London Business School and The University of Hong Kong designed for experienced executives to gain the insight, network and international perspectives to become successful global business leaders.

THE ELEMENTS OF A STRATEGY





THIS SESSION'S OBJECTIVES

**Define and execute a simple strategy,
working in groups**

**Understand how our actions impact rivals,
and their consequences for the sector**

**Discover how our 'frames' govern what we
seek to achieve and how we execute**

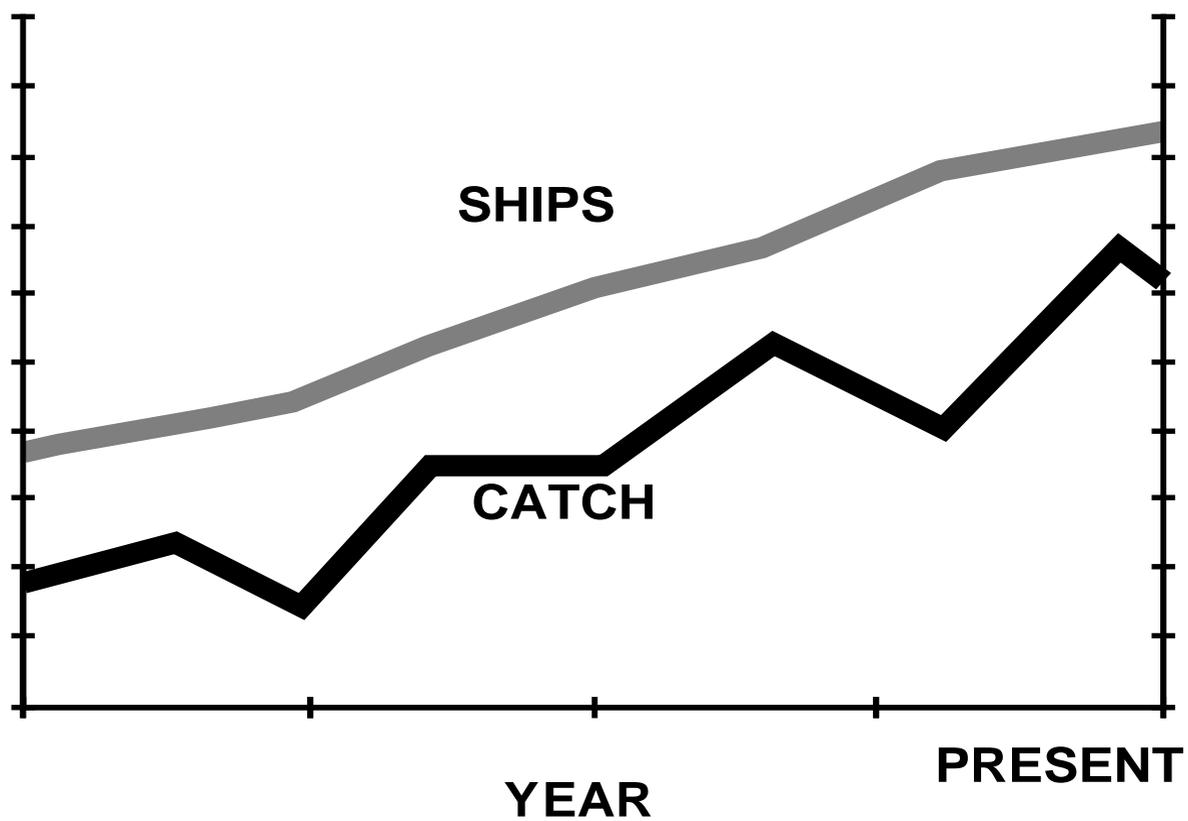
GAME BOARD





YOUR LEGACY

RECENT HISTORY OF THE FISHERIES





WHAT HAPPENED TO THE FISHERIES?



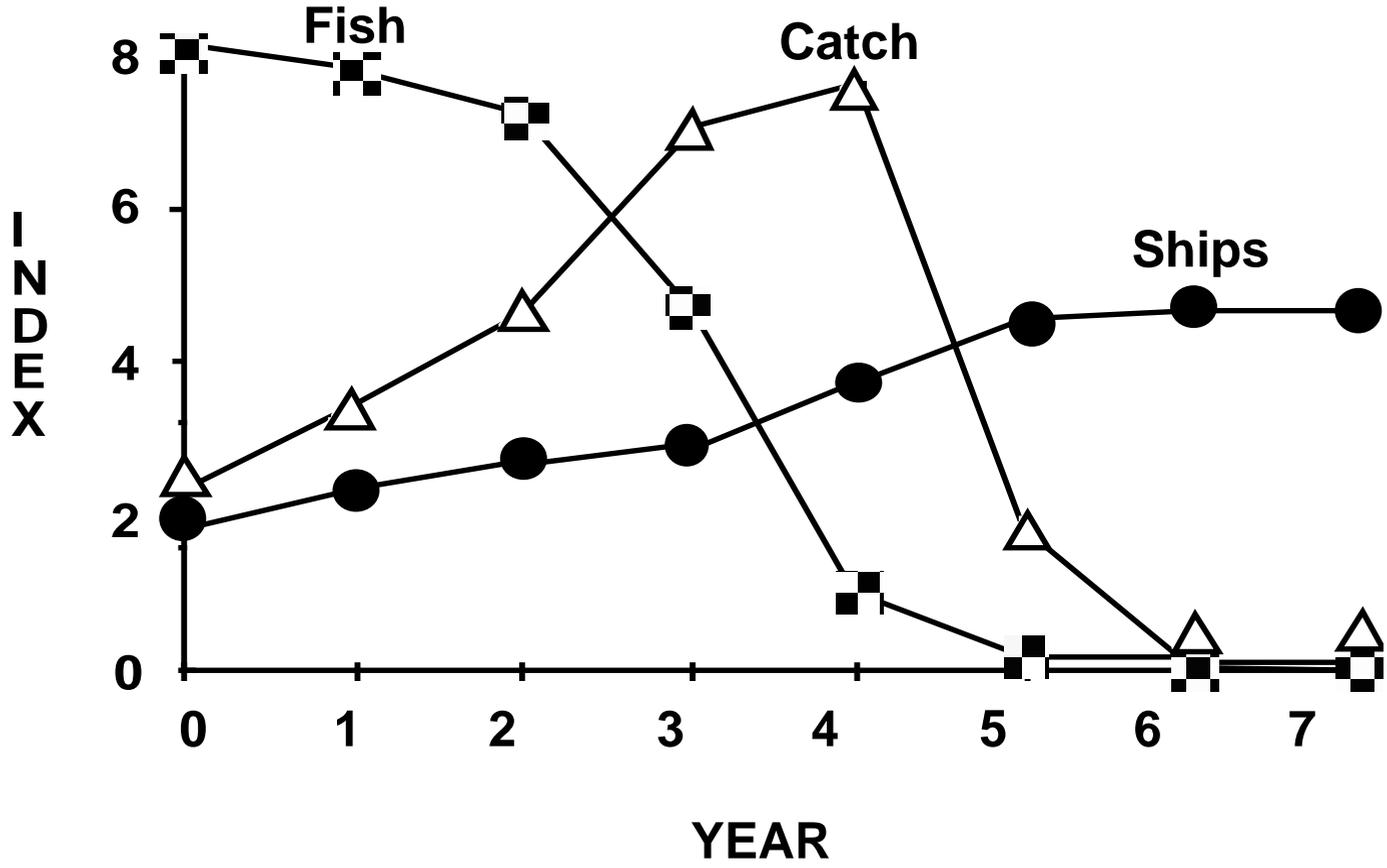


QUESTIONS FOR YOU

- 1. Why did we let the fisheries collapse?**
- 2. How might we have avoided this outcome?**
- 3. What obstacles might we have faced?**
- 4. What analogies do you see between this simulation and the real world?**



TYPICAL GAME BEHAVIOR





"TRAGEDY OF THE COMMONS"

Even the most successful would have been better off had they seen the bigger picture

IRRATIONAL EXUBERANCE?



RATIONAL DECISION MAKING?

Weak or absent market signals: fish price remains constant

Published data at system level (total assets) are lagging indicators

No published information about total catch or leading indicators such as fish population



How might we have obtained or inferred critical information about the health of the sector?



COOPERATIVE INFORMATION SHARING AND ACTION SOUNDS NICE...





BARRIERS TO INFORMATION SHARING AND ACTION

Competitive mindset automatically adopted

Opportunities to cooperate described as “trading”

Apparent one-off winner-takes-all opportunities (auctions, sales)

Time horizon unclear so tend to short-termism

Long lags: by the time problems are apparent, radical disruptive action is needed

Inequality: larger operators sacrifice more

Lack of trust, shared values and community

OBLIQUITY

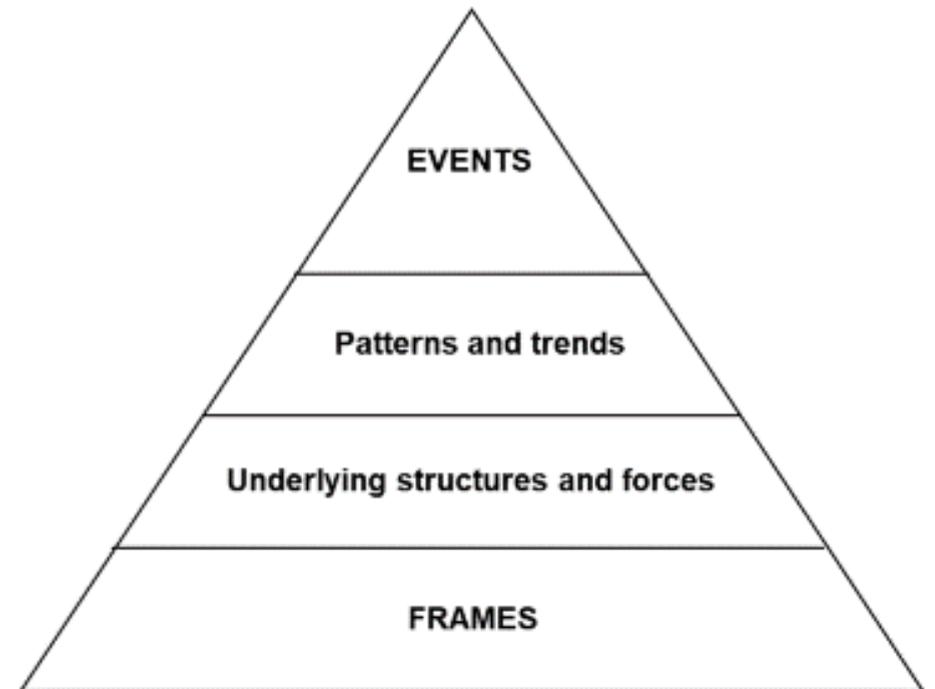
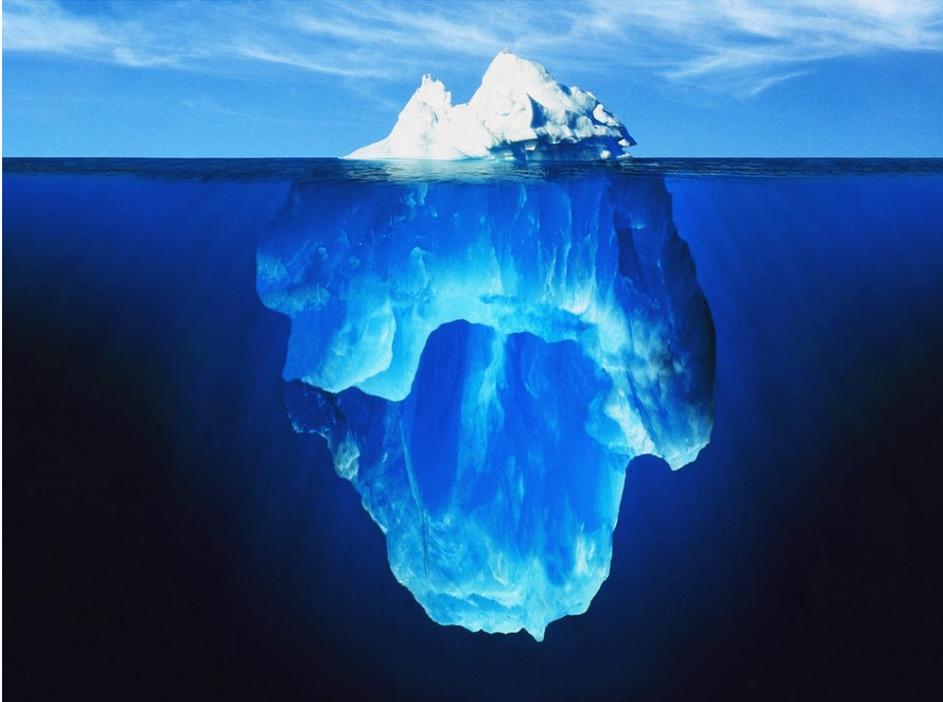
TEDxWarwick - John Kay - Obliquity: How Complex Goals Are Best Achieved Indirectly



“Strange as it may seem, overcoming geographic obstacles, winning decisive battles or meeting global business targets are the type of goals often best achieved when pursued indirectly. This is the idea of Obliquity. Oblique approaches are most effective in difficult terrain, or where outcomes depend on interactions with other people.”

- John Kay

THE ICEBERG OF SENSE-MAKING



Source: Senge (adapted)



TRANSFORMING OUR OWN PERSPECTIVE

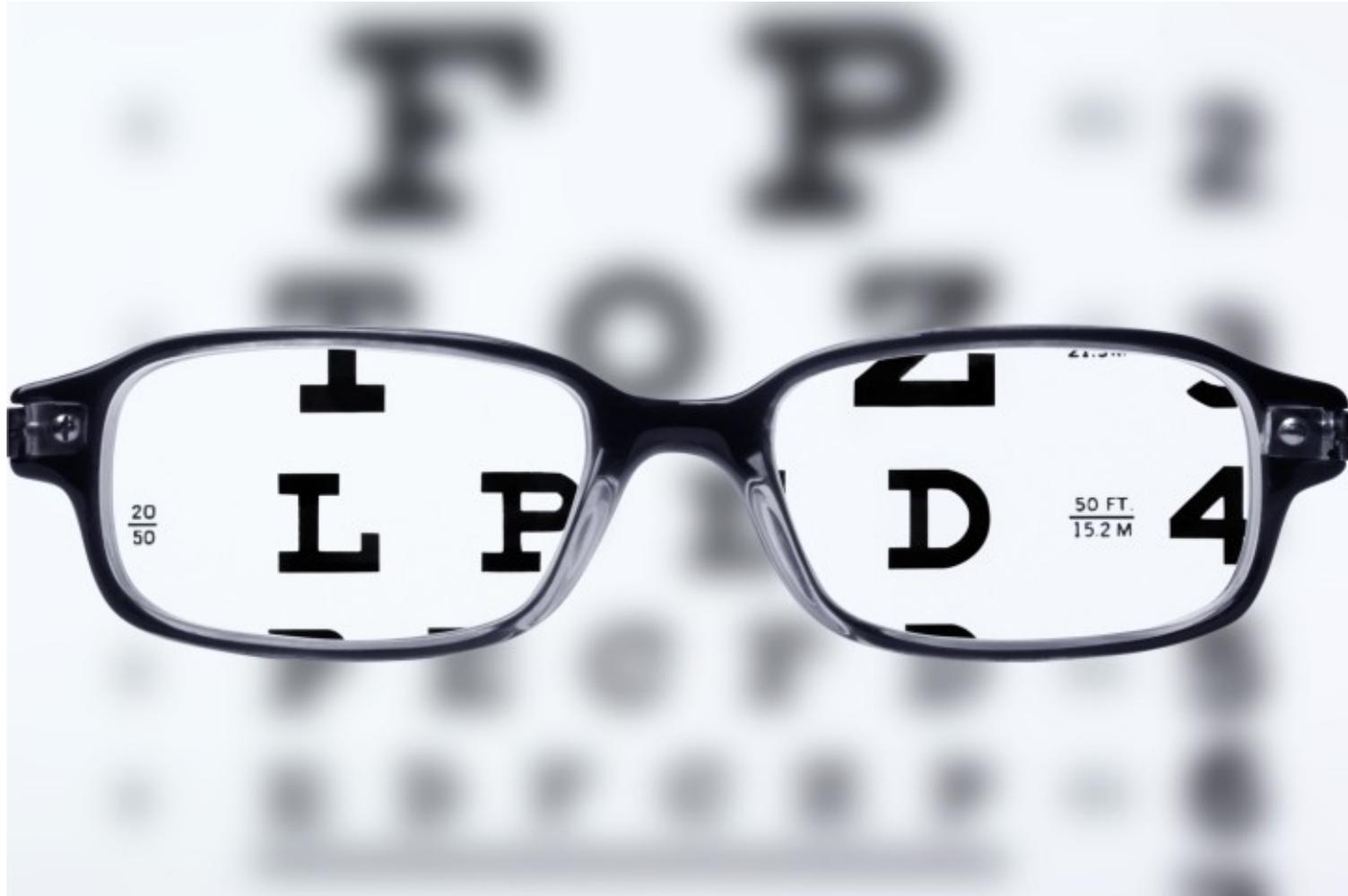
Events: on which we tend to focus e.g. drop in our own catch

Patterns and trends: that alert us to a fundamental issue e.g. change in total catch

Underlying structures and forces: the deeper factors driving trends e.g. stocks must be falling fastest when catch is greatest

Frames: through which we see the world that allows the situation to persist

FRAMES GOVERN BEHAVIOUR





FRAMES CAN BECOME BLINKERS





FRAMES ENCOUNTERED IN THE GAME

Extrapolationist: “Our actions won’t affect the future; there will always be fish”

Win at All Costs: “You’ve got to win; it’s that simple”

Titanic Syndrome: “If we’re going down, we might as well go first class”

Bummer: “Things are the way they are and there’s nothing we can do about it”

Social Trap: “If others do it, I’d be stupid not to”

Moral High Ground: “My first responsibility is to my family”

Invisible Hand: “Someone or something will take care of it”

Shameless: “I want a lot and I don’t care about the consequences”

Fairyland: “It’s just a game”



THE PARADOX OF *FRAMES*

To make sense of a complex world, we impose a *frame* on it

- Simplifying and focusing our field of view
- Borne of what we know to be important through experience

Over time, *frames* become embedded in

- Metrics
- Policy rules
- Success stories
- And more

Committing to shared *frames* enables aligned action

But *frames* limit what we are able to see – and do

SPOT THE DIFFERENCE

Google

Yahoo!

LIDL

Tesco

Emirates

Gulf

Zara

Benneton

Brahma

Antarctica

Apple

Sony

Amazon

Barnes & Noble

Fujifilm

Kodak

Embraer

Fairchild Dornier

Lafarge-Holcim

Blue Circle

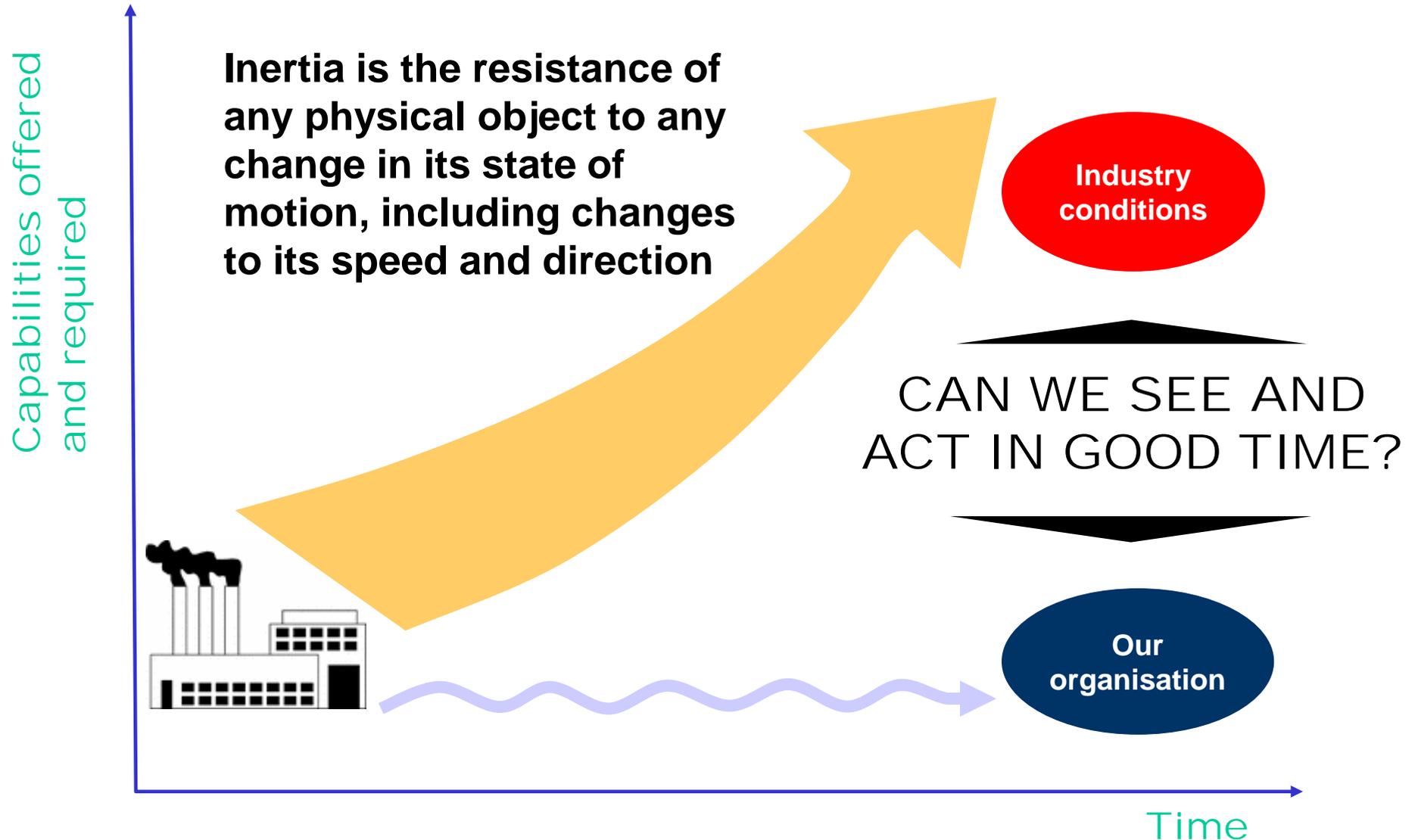


Both winners and losers faced similar opportunities and had with them the resources for success

WINNERS AND LOSERS: HAND DEALT OR HAND PLAYED...



ACTIVE INERTIA





CO-CONSULTING WORKBOOK ASSIGNMENT

For our businesses	For ourselves
What 'frames' can we infer from its decision rules, measurement systems, rewards, promotions and celebrations? What are their consequences?	What are our habitual 'frames'? How have they constrained or enabled what we could accomplish? How might we need to stretch them?

Discussion

Views and reflections about the value and visibility of system dynamics in management education.

Value and visibility analogies in other areas of mainstream education.

Bibliography

Ginsberg A. & Morecroft J. (1997) Weaving Feedback Systems Thinking into the Case Method: An Application to Corporate Strategy, *Management Learning*, 28 (4), 455-473. Also available under e-Topic: Diversification, on the Instructors' website for *Strategic Modelling and Business Dynamics 2nd Edition*, Wiley 2015 www.wiley.com/go/strategicmodelling2e (accessed 23 February 2018).

Meadows, D.L., Fiddaman, T. & Shannon, D. (2001). *Fish Banks, Ltd. A Micro-computer Assisted Group Simulation That Teaches Principles of Sustainable Management of Renewable Natural Resources* (5th edn). The FishBanks Ltd. game was developed by Professor Dennis Meadows, co-author of "Limits to Growth." The board game kits which include the game software, PowerPoint slide sets for introducing and debriefing the game, instructions for playing the game, the role description, game board, and pieces are sold through the System Dynamics Society <http://www.systemdynamics.org/> (accessed 23 February 2018).

Senge, P., Smith, B., Kruschwitz, N., Laur, J. & Schley, S. (2008). *The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World*. London: Nicholas Brealey.

Sterman, J.D. (2014a). Interactive web-based simulations for strategy and sustainability; The MIT Sloan *Learning Edge* management flight simulators, Part 1, *System Dynamics Review* 30(1-2), 89-121.

Sterman, J.D. (2014b). Interactive web-based simulations for strategy and sustainability; The MIT Sloan *Learning Edge* management flight simulators, Part 2, *System Dynamics Review* 30(3), 206-231.

Strategy Dynamics (2017). Professional Services Microworld, <https://strategydynamics.com/microworlds/> (accessed 23 February 2018).

Speaker Bios

Dominic Houlder brings a unique mix of theory, practical experience, and insight to his work. He is Adjunct Professor in Strategic and Entrepreneurial Management at London Business School. Previously, he worked for The Boston Consulting Group and held senior leadership positions in the corporate world. Dominic has been a committed Buddhist practitioner for more than 30 years.

At London Business School, Dominic was Associate Dean of the School's flagship Sloan Fellowship Programme. He continues to be closely involved in the programme, which attracts highly successful, senior professionals at turning points in their careers and lives, and he is a repeated winner of the Sloan Fellows' "Best Teacher" award. He is Academic Director for the School's Global Business Consortium for senior managers - from Oracle, Emirates, GEA, DP World, BUPA and Mars - who are moving into key leadership positions. As lead Faculty, Dominic also directs London Business School's open Executive Education programme "Executing Strategy for Results"

Dominic oversees the Board of his family's business interests in Latin America. In the non-profit arena, Dominic is a Trustee of the Clore Social Leadership Foundation, a Governor of the RNLI and a Trustee of the Karuna Trust.

He has an MA in History from Cambridge University an MBA from Stanford Business School and a Master's Degree in Philosophy (with Distinction) from Buckingham University, where he studied under Sir Roger Scruton. His home is in Scotland, where — alongside his academic and client commitments — he is a crofter on the Isle of Skye.

John Morecroft is Senior Fellow in Management Science and Operations at London Business School where he has taught system dynamics, problem structuring and strategy to MBAs, PhDs and executives. He served as Associate Dean of the School's Executive MBA and co-designed EMBA-Global, a dual degree programme with New York's Columbia Business School. He is well-known for his work in system dynamics and strategy. He has published numerous journal articles, co-edited three books and written a system dynamics textbook, *Strategic Modelling and Business Dynamics* (Wiley 2015, 2nd edition). He is a Past President of the System Dynamics Society and one of its Founding Members. He received the Society's Jay Wright Forrester Award for his work on bounded rationality, decisionmaking and information feedback in models of the firm. He develops behavioural models and simulators to study the long-term performance of firms and industries. He has led applied research projects with a wide range of organisations from Royal Dutch/Shell to BBC World Service, Harley-Davidson, and Mars. Before joining London Business School he was on the faculty of MIT's Sloan School of Management where he received his PhD.