A Simple View of Complexity in Project Management

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See also: **Risk Management and Complexity Theory - The Human Dimension of Risk**
www.mosaicprojects.com.au/Resources_Papers_072.html

The Meaning of Risk in an Uncertain World
www.mosaicprojects.com.au/Resources_Papers_040.html

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Agenda

- Modern Project Management
- TKOs and Social Networks
- The Complexity Landscape
- Tying TKOs, SNs & Complexity Together
- Conclusions

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Modern Project Management

- Modern project management has developed in the last 50 years
- Its ideas, tools and techniques are based on the Cartesian/ Newtonian/ Enlightenment philosophies
- It is rooted firmly in the ideas of 'Scientific Management'

See: The Origins of Modern Project Management:
http://www.mosaicprojects.com.au/Resources_Papers_050.html

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Modern Project Management

- Key PM assumptions include:
- The ideas of 'reductionism'
  – The characteristics (and behaviours) of a complicated entity can be understood by studying the characteristics of it parts
  – PM tool: the WBS (Work Breakdown Structure)

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Modern Project Management

- The ideas of 'the clockwork universe'
  - The outcome of an action is predictable and repeatable
  - Outcomes (outputs) scale in proportion to inputs (ie more effort results in a larger output)
  - PM tool: the Schedule
    (task durations change predictably based on the level of resources applied to the task)

See: Float - Is it real?:
http://www.mosaicprojects.com.au/Resources_Papers_043.html

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Modern Project Management

- The future is controllable
  - By developing effective schedules and cost plans and managing to the plans
  - By ensuring adequate levels of detail in the plans
- If control is not established at the current levels, add more detail
  - To help Manages control the workers actions

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Modern Project Management

- The 'command and control' ideas of the 1970s and 80s are being modified, updated and replaced
- Risk (uncertainty) is seen as important and 'risk management' is now practiced
- Risk can be mapped to 'complexity'

See: The Meaning of Risk in an Uncertain World:
http://www.mosaicprojects.com.au/Resources_Papers_040.html
Risk Management and Complexity Theory :
http://www.mosaicprojects.com.au/Resources_Papers_072.html

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Modern Project Management

- 'People skills' and Leadership are coming to be seen as important attributes of the Project Manager
- Effective stakeholder management is definitely seen as a major item in delivering project success

See: Avoiding the 'Successful Failure':
http://www.mosaicprojects.com.au/Resources_Papers_046.html
Or visit: http://www.stakeholder-management.com

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Modern Project Management

- This paper will demonstrate:
- Command and control does not work, particularly for knowledge workers
- Schedules, cost plans, risk studies, etc are still important but for different, achievable purposes

- Some new ideas about projects….

Projects as TKOs

- Projects have been described as 'Temporary Knowledge Organisations' or TKOs they:
  - Gather and process existing knowledge to create new knowledge
  - Use the new knowledge to create the output the TKO was set up to deliver
  - Members of the TKO (or project team) are seen as knowledge workers

Social Networks

- The project team is a 'social network'
- It is both a part of and separate from the larger social network consisting of the 'organisation' and other stakeholders
- The know-how and energy in the network are its 'social capital' that can be generated and used to deliver the project
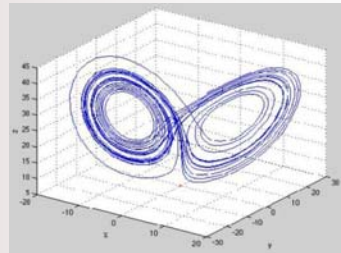- Social capital is transmitted through the network

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The Complexity Landscape

- Complexity theory has evolved from 'chaos theory'
- It is now used for the study of multi-dimensional problems
- All projects involve multi-dimensional issues

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Key Ideas from Complexity

- The **Tipping Point** described the way natural systems can absorb influences with minimal (or predictable) change until the 'tipping point' is reached and then there is a sudden catastrophic change

- **How close is the 'tipping point'?**
  (you don't know until it has been reached at least once)

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Key Ideas from Complexity

- The **Butterfly Effect** describes the situation where minute changes in the starting condition can have major and unpredictable consequences
- **Nonlinearity** suggests that you can do the same thing several times over and get completely different results –
  all human relationships are non-linear

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Key Ideas from Complexity

- **Complex dynamical systems** continually exchange 'energy' with their environment (eg a Typhoon) at the detail level they are in 'chaos' but overall are a 'system'
- **Strange Attractors** are best thought of as the recurring 'patterns' that are quasi-predictable (eg the track taken by the typhoon) – this off-sets the total chaos of non-linearity (but only for the most part)

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Key Ideas from Complexity

- **Self Organising Systems** are complex dynamical systems that appear capable of self-organisation (eg a shoal of fish)
- Feedback loops within these systems create rich patterns of behaviour
- Importantly, how the system will behave cannot be determined by studying its parts
- The system is 'living on the edge of chaos'

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Key Ideas from Complexity

- **<u>Complex adaptive systems</u>** are self-organising systems that have the capacity to learn from their experience
- A project team is a 'complex adaptive system'
  - Responding and adapting to its surroundings
  - 'Living on the edge of chaos' creating new knowledge as it evolves and learns

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Key Ideas from Complexity

- **<u>Complex Responsive Processes of Relating</u>** (CRPR) occurs within complex adaptive systems made up of people
- CRPR puts emphasis on the interaction among people within a network
- It focuses on the essentially responsive and participative nature of the human processes of organising and relating

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Key Ideas from Complexity

- The interactions take place through the relationships. Each relationship:
  - Uses 'language' to conduct knowledge
  - Has a power dimension
  - Has a degree of connectivity in both directions (not necessarily the same)
- There appears to be much in common between the ideas embedded in CRPR, TKOs and Social Network theory

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Key Ideas from Complexity

- The future seen from these perspectives is under perpetual construction by the movement of the human action itself
- The individual decisions made by people in the network 'create' the future – **Different decisions, different outcomes**
- The 'team' is oriented towards an 'unknown future' that it is in the process of continually creating

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Conclusions

- The future is not predictable, each project team creates its own future
- This future is always 'somewhat uncertain'
- Project control systems don't control anything (neither do managers)
- Project documentation provides a 'rich language' for communicating complex ideas about time, cost, etc

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Conclusions

- These ideas allow the social network of the project team, through CRPR to agree on the 'future' they would like to achieve
- And the coordinate and align their actions to work towards achieving that future in an uncertain world
- And adjust their actions sensibly as their surrounding environment changes

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Conclusions

- True complexity lies in the minds of people
- Project management needs to re-focus on the reality of complexity
  - The 'soft skills' of motivating and leading the project team to achieve an agreed outcome
  - Managing the expectations of stakeholders to allow 'success'
  - **Note:** Both of these processes are assisted by effective project 'control' documentation

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Conclusions

- **All projects are complex** –

- some are big and complicated as well!

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Questions Please

More complexity and risk management papers see:
www.mosaicprojects.com.au/Resources_Papers.html#Risk

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