17th ICCRTS
Track 1: Concepts, Theory & Policy

Paper 1-014: C2 agility, different models of change and reasoning with time

Lorraine Dodd
University of Cranfield
Defence Academy of the United Kingdom
Shrivenham
Wilts SN6 8LA
United Kingdom

Geoff Markham
QinetiQ
St Andrew's Road, Malvern
Worcestershire WR14 3PS
United Kingdom

20th June 2012

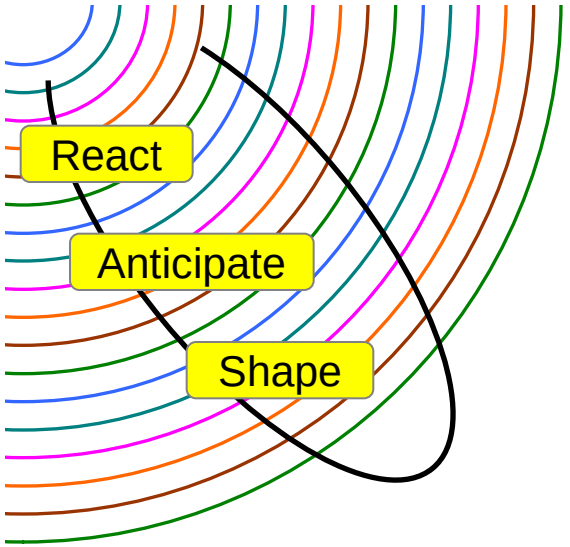
1. What this paper is about

- Agility is a theme which arises in relation to a range of endeavours in the military and the non-military world, appearing either in accounts of practical experience or in statements of aspirations
- Concepts of agility have recently been surveyed in the course of an ongoing study of C2 agility conducted for the UK MOD
  - Command, Inform and Battle Management (CIBM) Research Task 10: C2 agility - 2011-2013
- Common to all of the widely differing accounts of agility which are offered is the interplay between ***continuity*** (i.e. preservation of identity and forms of order) and ***change***
- Both continuity and change imply some notion of ***time*** - but different concepts of agility adopt different uses of time, and indeed different forms of time
- This paper will focus on different ways of reasoning with time in the context of agility, including both how agility is engendered and how agility is exhibited

2. Timeliness – how much time do we have?

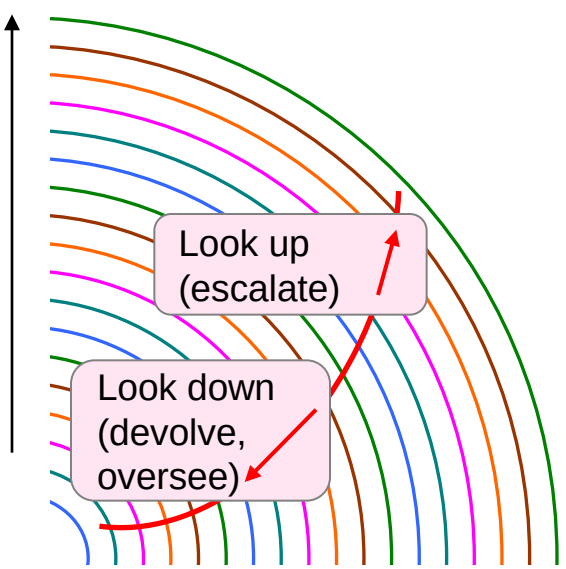
- Different ways of reasoning about the future
- Chronos and kairos

Increasing τ ?



3. Time and the use of organizational structure

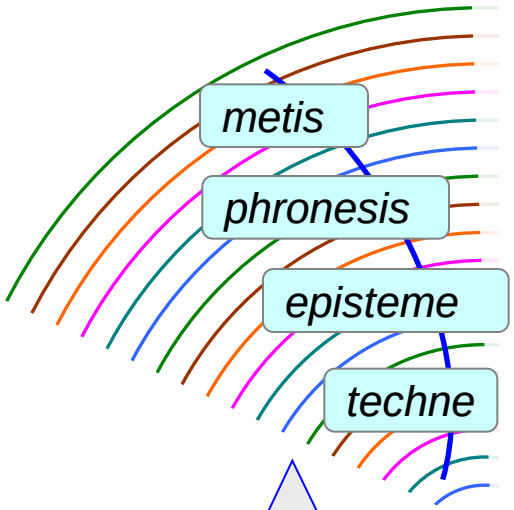
- Different option and decision spaces



4.1 Types of knowledge used in different decision-roles

Four types of knowledge	Type of decision-role			
	Operator (e.g. driver) Practical	Decision-taker (e.g. Battle Cmdr) Tactical	Decision-maker (e.g. 2* Cmdr) Operational	Shaper (e.g. 4* CINC) Strategic
Conjectural knowledge and cunning learnt thro complexity (*metis*)	Understanding modus operandi and decoys, etc of adversarial operators.	Plan robustness and ability to consider 'cunning' plans.	Ability to defer decisions and to balance all aspects of rules and freedoms.	How to shape relationships for natural flow of complex operations.
Experiential knowledge learnt through felt experience (*phronesis*)	Self reflection & creation of new options or actions – being resourceful.	Create effective options outside usual course of action options.	Understanding of situation as a whole – as felt OK to over-ride principles.	Feel for when to re-generate or remove policy boundaries.
Teachable knowledge (*episteme*)	Learning how to cope with equipment break-down.	Operational and situational knowledge (e.g. ORBATs and geography).	Knowledge of own capability & organisation: constraints and restraints.	Knowledge of others' key strengths and weaknesses (power balance).
Technical skills and practices (*techne*)	Skills & refresh of practical tasks.	Estimate processes and CoA selection.	People skills for appropriate delegation of decision rights.	Mechanisms for setting policy (e.g. veto, rules of engagement).

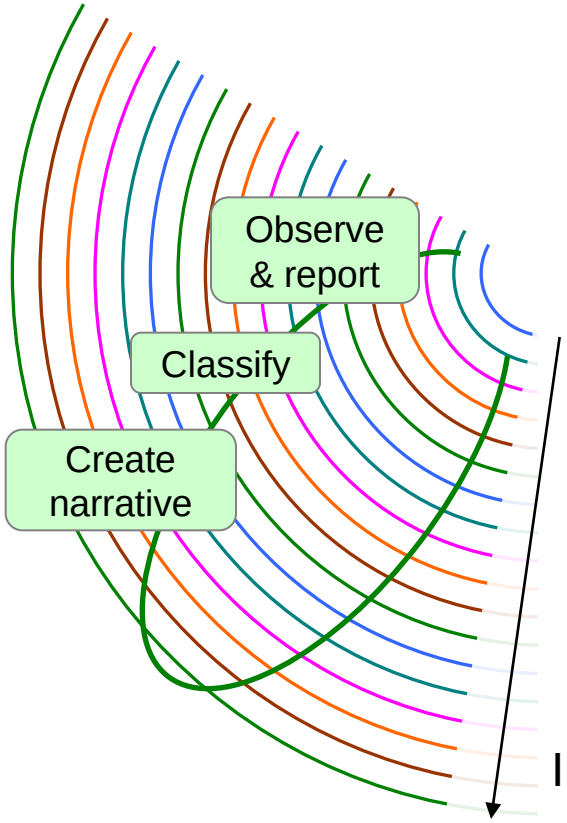
4.2 Types of knowledge used in different decision-roles



- Different ways of applying expertise and knowledge

Four types of knowledge	Type of decision-role			
	Operator (e.g. driver) Practical	Decision-taker (e.g. Battle Cmdr) Tactical	Decision-maker (e.g. 2* Cmdr) Operational	Shaper (e.g. 4* CINC) Strategic
Conjectural knowledge and cunning learnt thro complexity (*metis*)	Understanding modus operandi and decoys, etc of adversarial operators.	Plan robustness and ability to consider 'cunning' plans.	Ability to defer decisions and to balance all aspects of rules and freedoms.	How to shape relationships for natural flow of complex operations.
Experiential knowledge learnt through felt experience (*phronesis*)	Self reflection & creation of new options or actions – being resourceful.	Create effective options outside usual course of action options.	Understanding of situation as a whole – as felt OK to over-ride principles.	Feel for when to re-generate or remove policy boundaries.
Teachable knowledge (*episteme*)	Learning how to cope with equipment break-down.	Operational and situational knowledge (e.g. ORBATs and geography).	Knowledge of own capability & organisation: constraints and restraints.	Knowledge of others' key strengths and weaknesses (power balance).
Technical skills and practices (*techne*)	Skills & refresh of practical tasks.	Estimate processes and CoA selection.	People skills for appropriate delegation of decision rights.	Mechanisms for setting policy (e.g. veto, rules of engagement).

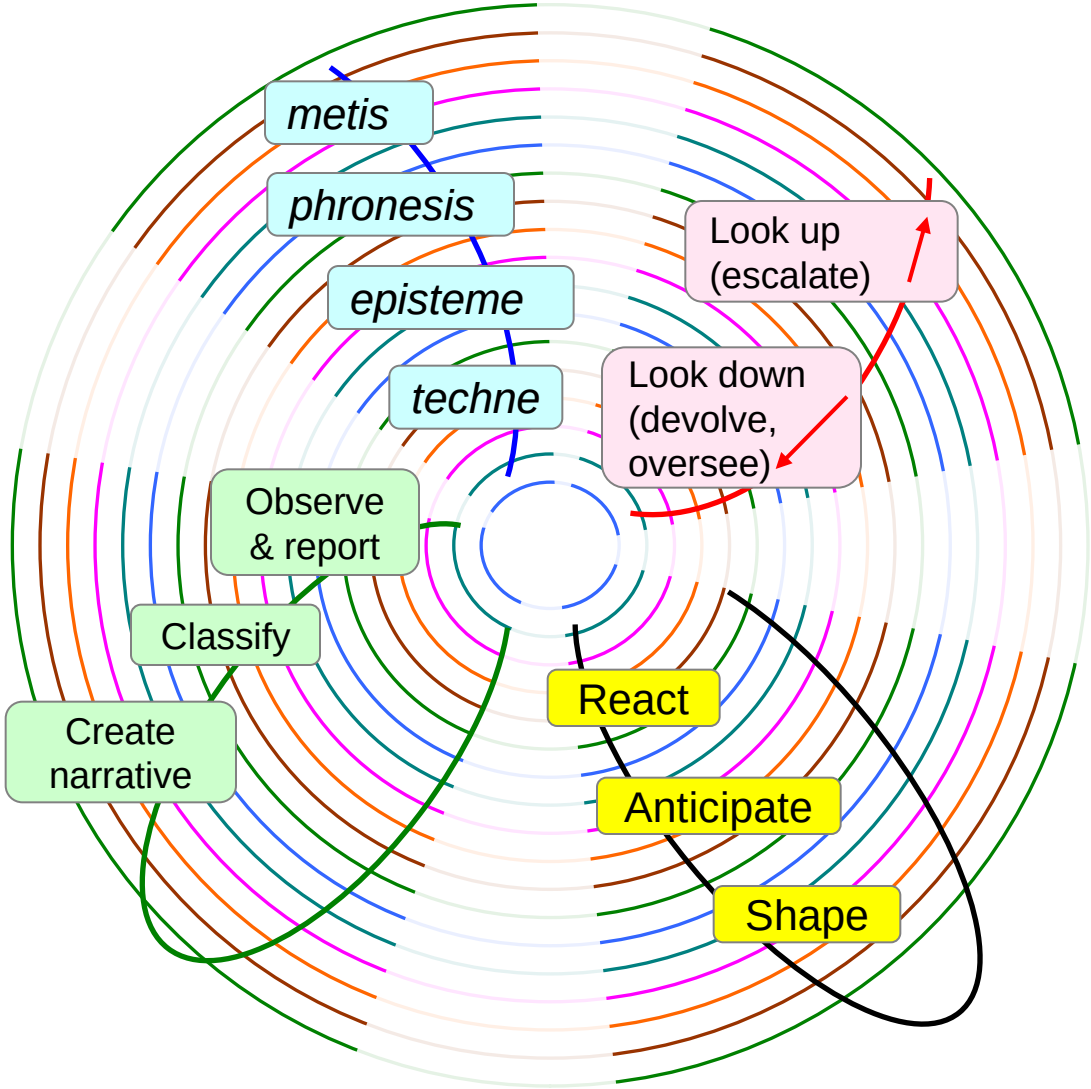
5. Reporting and learning



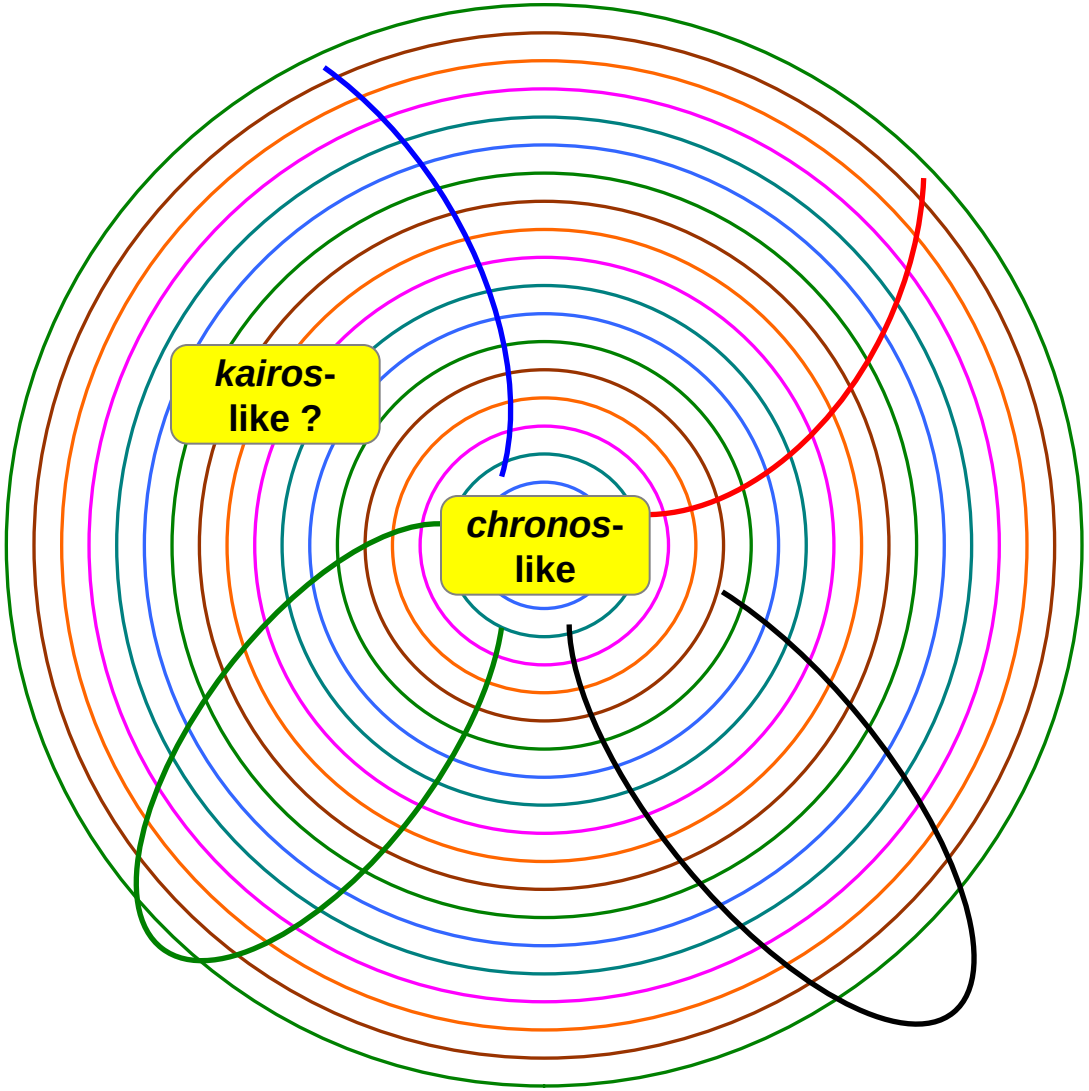
- Different ways of remembering the past
- Individual and institutional learning

Increasing τ ?

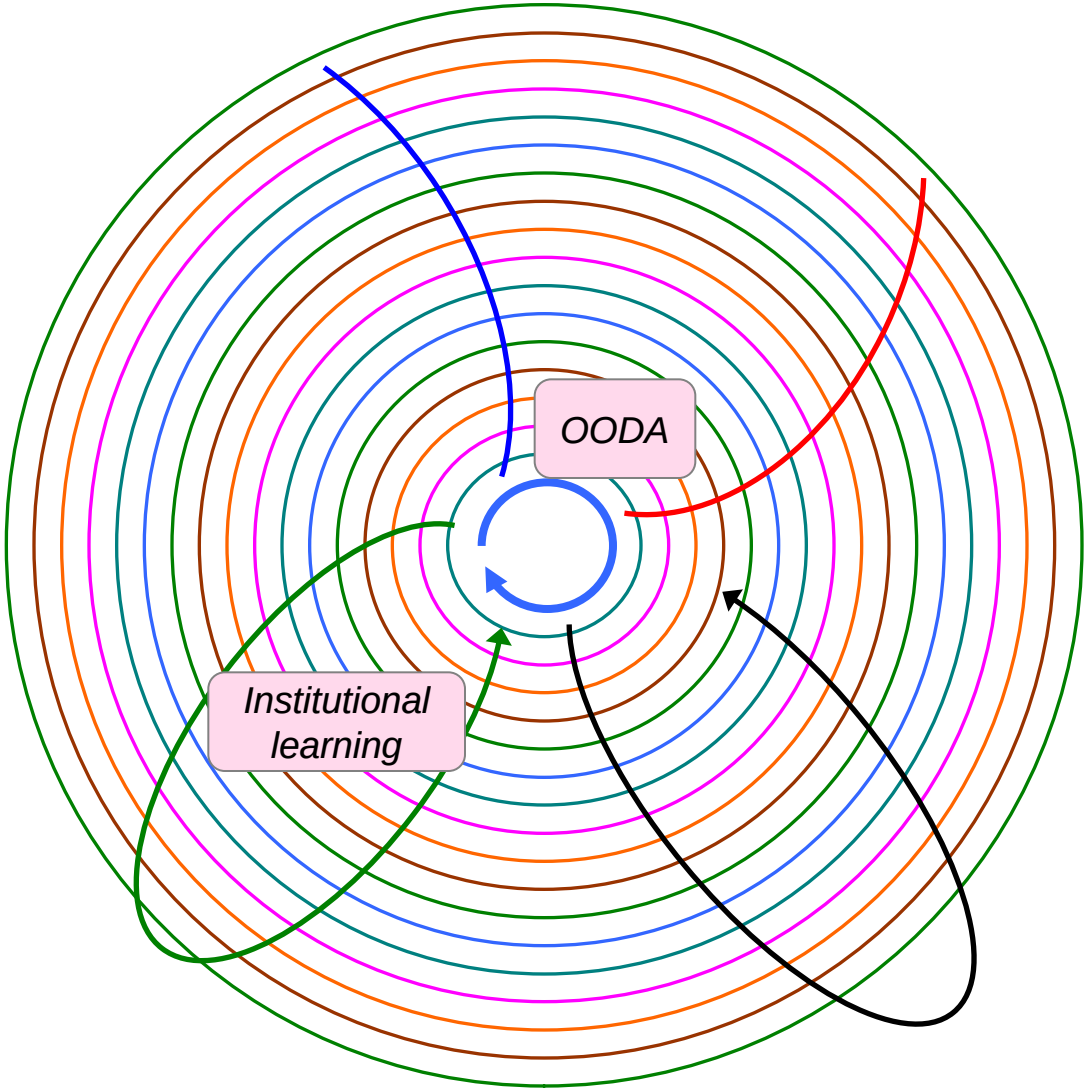
6.1 Forms of time and orders of agility



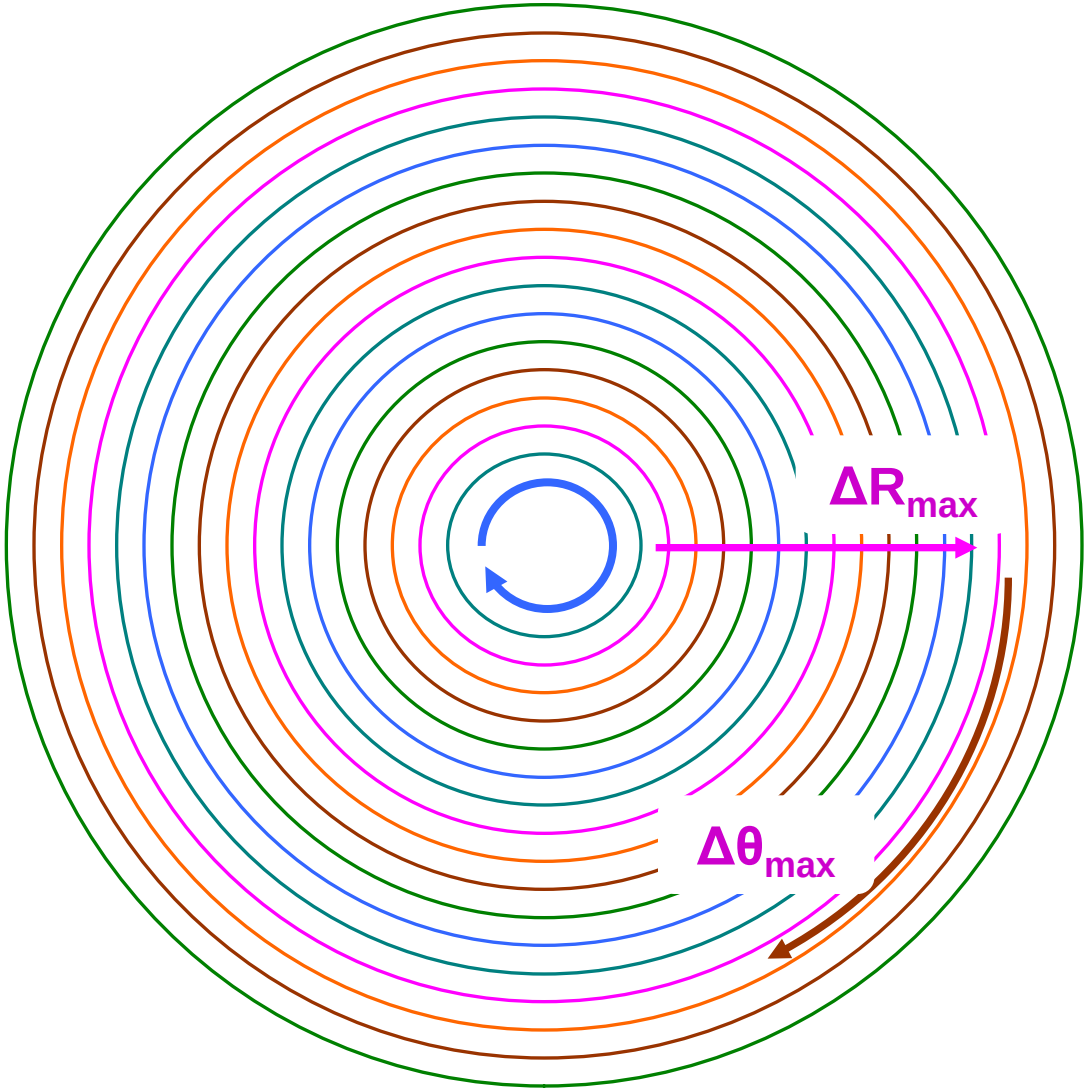
6.2 Forms of time



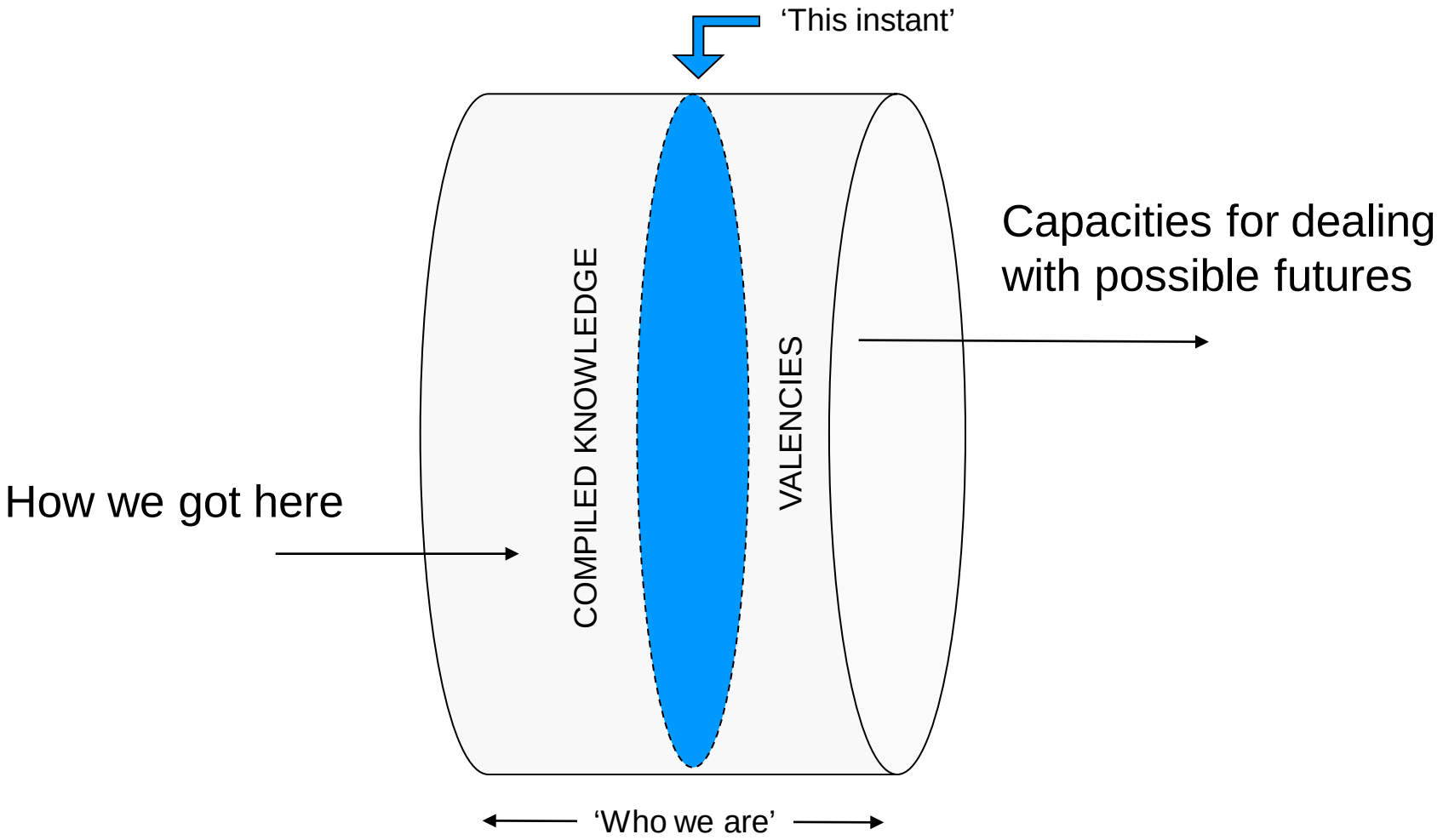
6.3 Forms of time - cycles



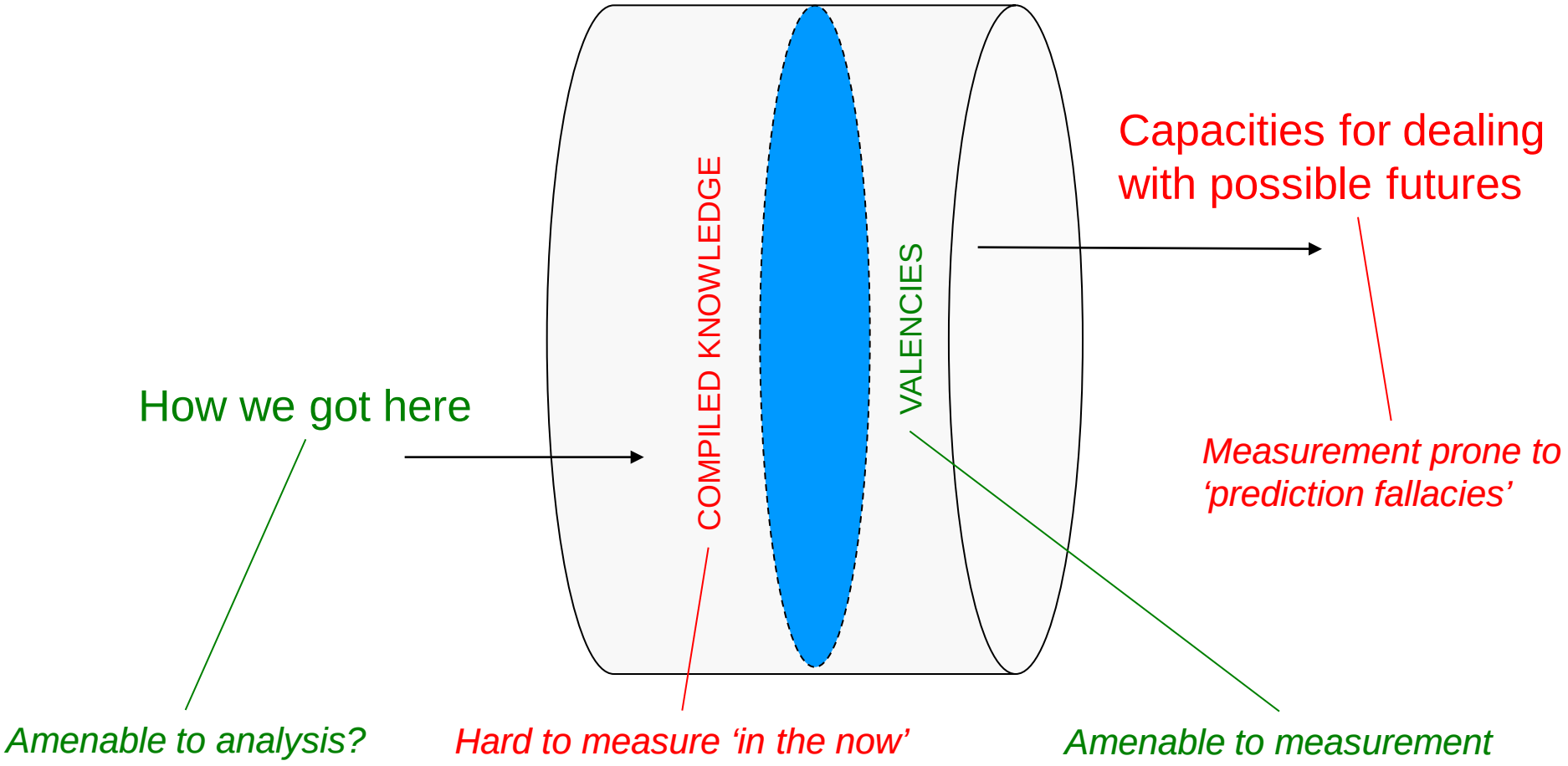
6.4 Forms of time and orders of agility



7.1 Understanding the ‘now’



7.2 Understanding the ‘now’



8. Summary

1. C2 agility cannot be related to (or measured against) a single form of time derived from classical mechanics
   - there are rich and diverse forms of time being exercised
   - these different forms need to be acknowledged in assessment and in experimentation focussed on the measurement of C2 agility under different conditions
2. There are some important concepts of C2 agility – particularly those associated with mental agility and learning – which can only be properly measured using forms of time other than the *chronos* of sequential, clock-tick time
   - equivalently, Jaques' intentional and forward-projected dimension of time
3. By embracing richer and more diverse forms of time, a broader and more effective range of concepts for C2 agility can be embraced
4. Use of different organizational metaphors (e.g. brain, culture, organism – after Morgan) provides us with the stimulus to see the various forms of time being exercised in both the C2 organization and the environment in which it is operating


team
solomon
ACTIONABLE ADVICE AND SOLUTIONS