All OR is ‘soft’ OR !

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Themes . . . .

- Preamble
- Defence analysis
- Subjective methods in defence
- Guidance for analysts
- Guidance review – guidance for the ‘desk officer’
- Is all OA soft OA?

- . . . acknowledges his Socratic Temperament . . . .

Preamble

- History
  - Engineering : the art of the safely feasible
  - Business : the art of the profitable (increased value)
  - Science : the art of the real and true
  - Economics : the art of marshalling the resources. . . . which create the opportunities for building the safely feasible . . . . .
  - Operational Research : the art of increasing the value of the safely feasible, using the methods which have revealed the real and true, using marshalled resources
- Issues
  - Probable v. certain
  - Meaning v. value / cost
  - Known unknowns v. unknown unknowns
- Ideas
  - Model – abstract surrogate with which we can experiment
  - Reality and truth matter even if we don't know quite why
- 'Analysis' – understanding, can lead to improvement

Defence

- Operates on several levels :
  - Political
  - Institutional
  - Technical
  - Operational
- Defence ‘Analysis’ is called for at each level
- What are the proper methods in each level?
- Is there an integrating method that can bridge the levels?

Analysis Methods in Defence

- ‘Speed – time – distance’ & ‘balance of investment’
- Acknowledged uncertainties – frequencies / probabilities
- Human factor has a ‘toe-hold’ in
  - Ergonomic efficacy
  - Command & control (‘IT’)
  - Combat identification
- Therefore, mostly ‘hard’
- Conducted at the Technical and Operational levels

Objectivity, and Subjectivity

- Objective, *aka* ‘hard’, methods
  - Physics and engineering paradigms
  - Realist, external
  - People ‘free’
  - Value free
- Subjective, *aka* ‘soft’ methods
  - No universal / meta paradigms
  - Relativist, internal
  - People dominant component
  - Value is the essence

Subjective Methods in Defence

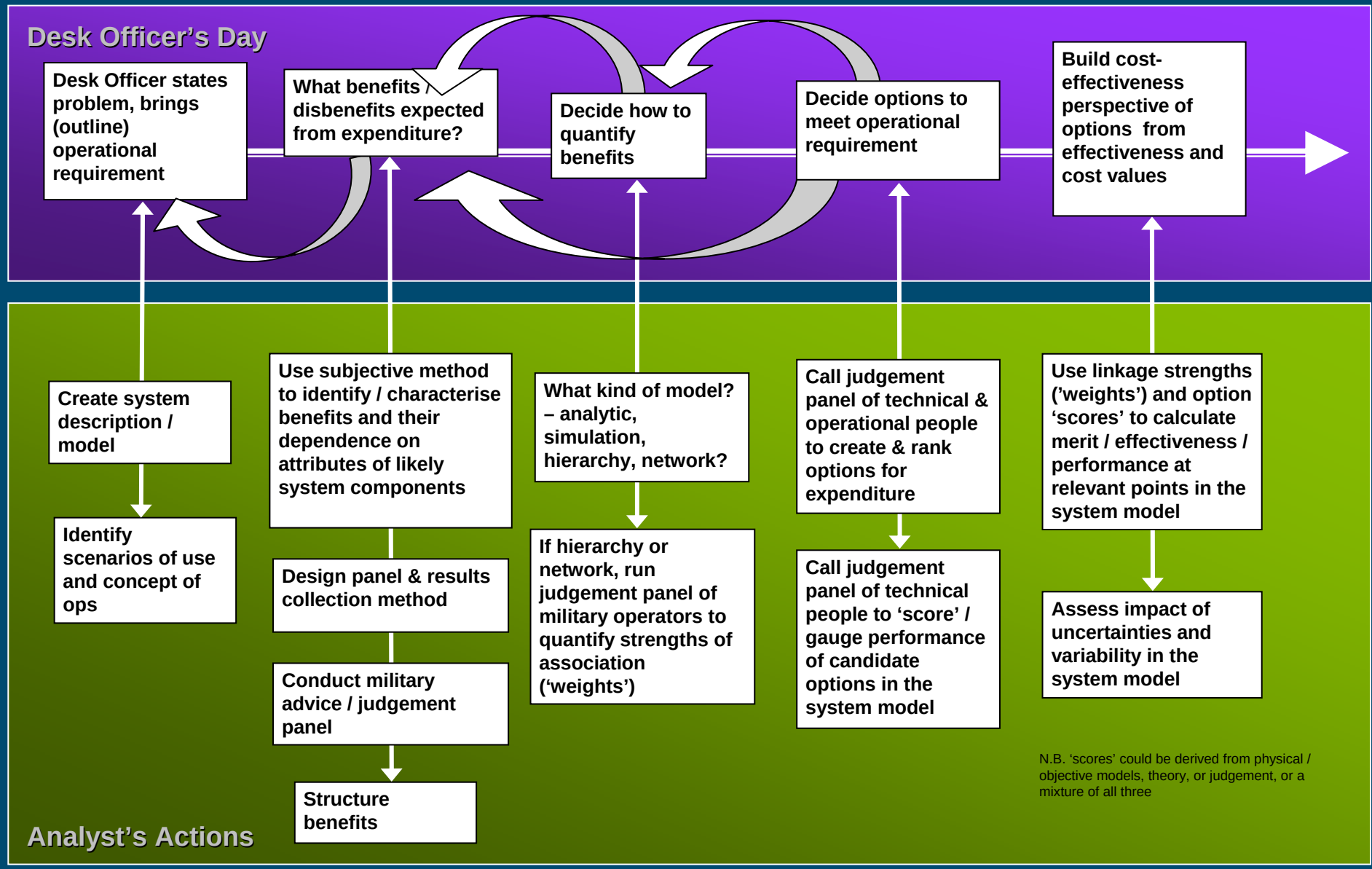
- Resisted - technocratic world-view, yet . . . .
- All pervasive !
- Institutionalised : doctrine; scenario definition; concepts of operation; ‘traditional’ unit structures
- All approached *via* technique very similar to a typical ‘problem structuring’ method

Guidance to analysts - current

- Extant guidance (2001) :
  - Strive to maximise objectivity and rigour
  - Gauge the validity of the overall approach in terms appropriate to the problem domain
  - (Remember there will be) distortions deriving from unrepresented effects of interactions between factors
  - The provenance and validity of data has heightened significance because it is derived from judgements
  - Auditability through clear separation (of objective and subjective methods, and of methods and data)
  - There are often subjective phases in otherwise objective approaches,
  - Cost-effectiveness should based on objective / 'hard' methods. It is unlikely that subjective / 'soft' methods alone will suffice
  - multi-methodology likely the right approach for most assessments . . . consistent with the heritage of OR/OA . . . likely to result in well-structured, rigorous, and quantitative analysis, of maximum utility to the decision maker

Guidance Review - aims

- Update extant guidance to reflect current structures and processes
- Refresh in the light of evolution of technique
- Seek peer review
- Assist the ‘desk officer’
- Process as well as principles
- What are the practicalities – of ‘rigour’, ‘objectivity’, ‘validity’, etc?



My experience . . .

- A given ‘problem’ can emerge from anywhere in its dimension space
- It may emerge in several dimensions at once, though often the ‘owner’ doesn’t realise it
- These usually true even in the traditionally ‘hard’ analysis domains
- Every analyst (should be) obliged to explain what they have left out, and why

“All OR is ‘soft’ OR”

Pro	Con
Assumptions	Data
The Rev. Bayes	Frequency
Opinion	Physics
Progress	Credibility
Consensus	Vulnerability
Mutuality	Responsibility
Polity	Repeatability

Questions ?