



Improving the representation of human and system behaviour in OA models

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Study Purpose

- To identify a set of human science factors which could be used to improve the representation of group behaviours in HLOA models
- To improve understanding and coherence between the Operational Analysis (OA) and Human Sciences (HS) communities
- To provide guidance on the direction of the future HS research programme

Approach

- To identify collaborative group members, define the OA problem space and identify the HS influences involved.
- To prioritise the above HS influences and identify a subset of variables for use in HLOA models.
- To identify those HS influences within an example HLOA model
- To identify and capture the key interfaces and issues between the OA and HS communities

Stage 1 Methodology

- Activity 1: Identify collaborative group members from OA and HS communities
- Activity 2: Agree framework to define and bound the HLOA problem space
- Activity 3: Agree a set of 'Phenomena', to contextualise the OA problem space, and identify HS influences

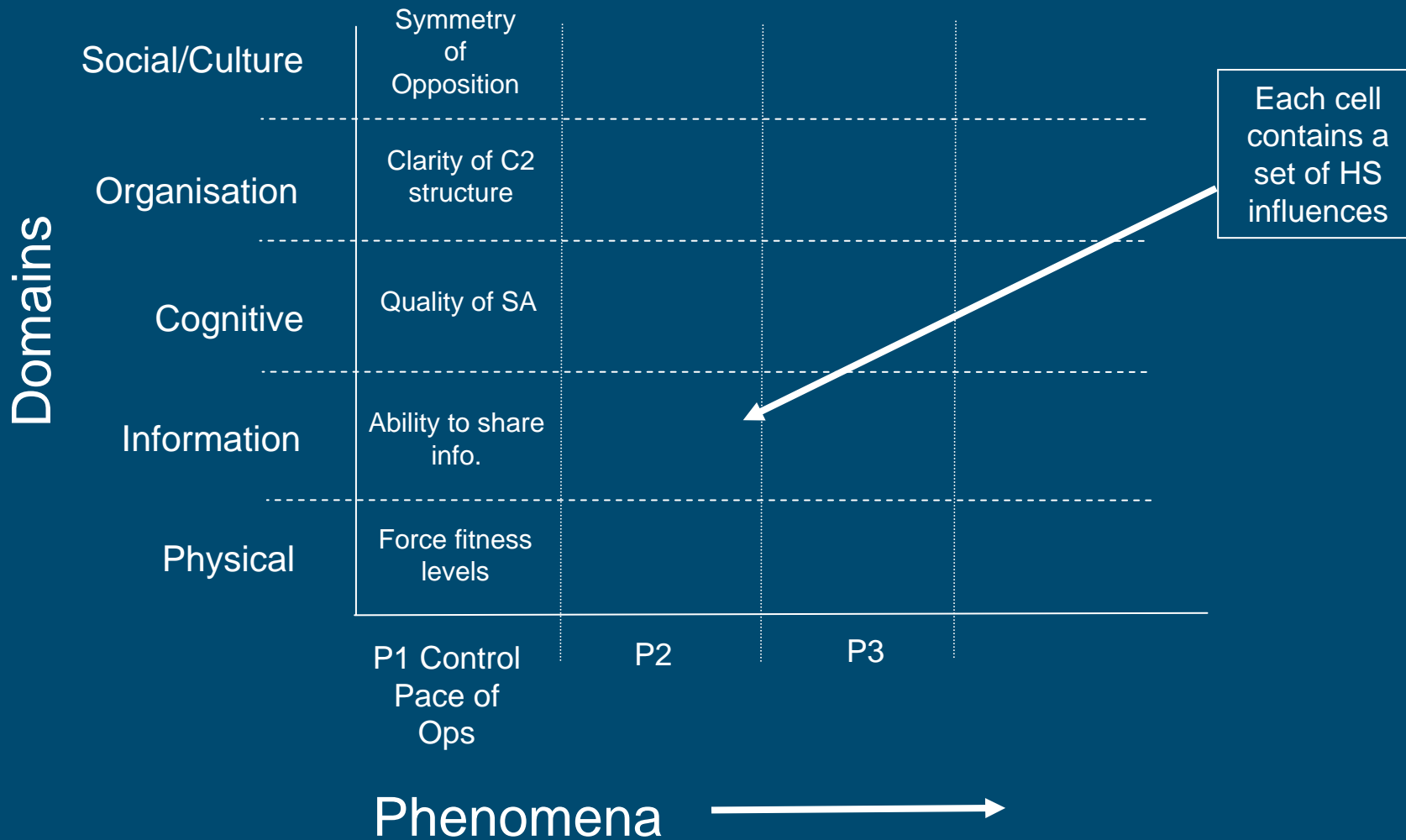
Definitions

- Phenomena
 - *behaviour or state changes attributable to the presence of humans in the system, which can readily be related to a value construct such as effectiveness*
 - E.g. Achieve/lose control of pace of operations. In terms of tempo, it was critical to ensure that UK or coalition forces as opposed to enemy forces controlled the tempo of operations. It was not specifically concerned with either reduced or increased tempo.
- Influences
 - *'An 'Influence' explains how the presence of humans gives rise to the 'Phenomena'.*
 - Influences should ideally be expressed either in terms of a characteristic (noun), variable (noun) or a process (verb) of the 'system' exhibiting the phenomenon'.
 - E.g. Force fitness level, Fatigue.....

Stage 1 Outcomes

- Activity 2:
 - OA problem space bounded
 - PICOS model identified as framework for HS community (**Physical, Information, Communication, Organisational and Social domains**)
- Activity 3:
 - 6 Phenomena identified :
 - Achieve/lose control of pace of operation, Change in support, Failure of force elements to participate in the action, Fratricide & collateral damage, Gain/loss of force cohesion and Surprise
 - 100+ HS Influences identified within the Phenomena

Stage 1 Outcomes (2)



Stage 1 Outcomes (3)

- Activity 3: Example of Output for Phenomenon: Control Pace of Ops
- Sample of the HS influences identified:
 - Physical Domain:
 - Force fitness levels, Degree of personnel acclimatisation
 - Information Domain:
 - Quality of info. available, Ability to share info, Amount of info. received
 - Cognitive Domain:
 - Level of understanding of intent/purpose, Level of individual/group morale
 - Organisational Domain:
 - Efficacy of doctrine, Readiness of HQs, Efficacy of training
 - Socio-Cultural Domain:
 - Symmetry of opposition, Coalition cultural symmetry, Understanding/persuasion of others

Stage 2 Methodology

- Activity 4: Consultation Exercise
- Activity 5: Rationalisation of HS Influences
- Activity 6: Assess a process (trial workshop) to obtain HS data to inform a sample Customer question

Stage 2 Outcomes

Activity 4: Consultation Exercise

- Several additions to HS influences, very few deletions

Activity 5: Rationalisation Process

- Reduced HS Influences to a set of main Themes
- 2 Theme types identified : Intrinsic, Extrinsic
- Themes act as a checklist

Stage 2 Outcomes (2)

Activity 5: Main Themes

- Decision Making
- Doctrine
- Force Fitness
- Host Population Belief Structure
- Logistical Support
- Motivation
- Perceived Level of Improvement by Host Population
- Personnel Strategy
- Quality of Information
- Training
- Trust
- Understanding/ Influencing Others
- (Home Political) – outside scope of study

Stage 2 Outcomes (3)

Activity 6: Trial Workshop

- Identification of questions HS community ask to bound the Customer question
- Consensus apparent across different HS disciplines
- HS community can access a large volume of data. But require specific 'what's it for' information to identify available data
- The workshop increased understanding between the communities

Stage 3 Methodology - Ongoing

- Activity 7: Validate themes, process etc. against other specific models (e.g. SIMMAIR)
- Activity 8: Workshop to test process, robustness of themes, terms & emergent rules /assumptions using an example Model – DIAMOND
- Activity 9: Document Lessons Learned & develop a best practice guide.

Conclusions

- Established common language and understanding between OA and HS communities
- Established a robust framework to encapsulate the OA and HS problem space
- Developed an auditable process to enable identification and inclusion of relevant HS factors in HLOA
- Enabled the development of a code a best practice for collaboration on OA Customer questions and model development

Exploitation

- To contribute to investigation of non-equipment lines of development in order to improve operational effectiveness
- To inform reviews of performance of group behaviours in HQs
- Improve confidence in the outputs from existing and future HLOA models (a measure of the model improvement)
- Continue to:
 - Focus and inform the research plans for HS community
 - Capture existing ongoing research and thinking from SME's
 - Improve understanding between OA and HS communities

Questions ?

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