Hierarchical Structures™

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Abstract

Hierarchical Structures™ give a visual form to mental models of 'how entities relate' in terms of order or hierarchy, and thus help gain understanding about assumptions and knowledge (or lack thereof) regarding the hierarchical structure of the object of interest — e.g. an un-documented system.

1   Professional value

When formally documented, hierarchy is typically expressed in the ubiquitous organisational charts or 'organ(i/o)grams'. Such hierarchy maps can be enriched with additional information, so much at the *nodes* (e.g. personal information, contacts, roles and responsibilities) as much at the *edges* (e.g. types of relations, frequency of communication). While graphics technology advances, the scoping challenge remains regarding the selection of the relevant information to be displayed.

Un-documented systems require extraction of the relevant information — typically about nodes and edges in a tiered structure — with a complementary study of associated systems and processes. Hence, Hierarchy Maps™ or 'Static system X-rays™' help capture, document, and share descriptive and normative structures of tiered order, with a direct interest in system-wide communication.
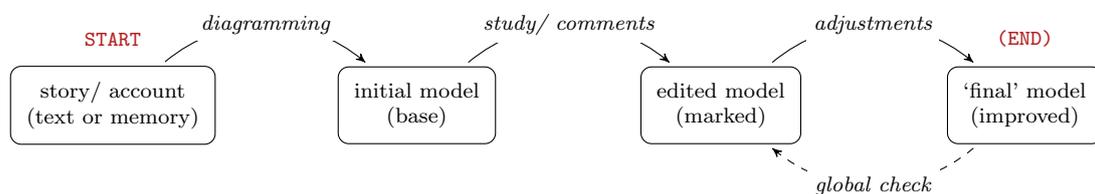
2   Workflow

FIGURE 1   The work to be carried out over four (4) hours; a number of 'loop' iterations may be necessary to achieve a satisfactory model (HBS, RBP, CPD)

3   Programme

Introduction (1.5h)

- The objects of interest: system element, hierarchical tiers (Figure 2)
- Extracting system structure and function (RBP, CPD)
- Static organigram (HBS), communication (CPD), simulation/ check, iterations

Work Session (4h)

- Work in groups (2–4 people)
- Interactive assistance

Presentation, Discussion, and Conclusion (2h)

- Shared experiences
- Applicability issues

4   Technical notes

Audience

- *Project managers* (e.g. team communication plans)
- *Administrators* (e.g. 'rich' organigrams)
- *Essayists* (e.g. character relations)
- *Teachers* (e.g. entity relationships)

Competences

- Identify and get to know key elements in a system (e.g. people)
- Identify and get to know hierarchical relationships between elements
- Distinguish between causal and hierarchical relationships
- Think clearly and explain how system elements communicate among them
- Register and communicate this efficiently
- Identify information about hierarchy in text documents
- Identify one-way and two-way communications between element pairs
- Register and communicate this on organigrams

Techniques[a]

- Text mark-up — $TMU_{[T]}$
- Hierarchical breakdown structures — $HBS_{[T]}$ (Figure 2)
- Reverse blueprints — $RBP_{[T]}$ (Figure 3)
- Concise process diagrams — $CPD_{[T]}$ (Figure 4)

Methods[b]

- Qualitative simulation — $QSM_{[M]}$ (Figure 5)

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[a]v. Perdicoúlis, 2014a
[b]v. Perdicoúlis, 2014b
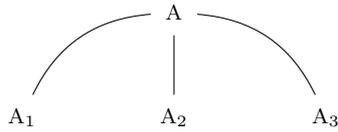
5 Protocols

FIGURE 2   Generic Hierarchical Breakdown Structure (HBS) with no information flow
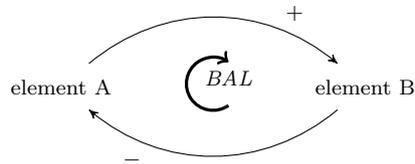

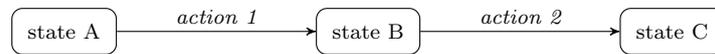FIGURE 3   Generic Reverse Blueprint (RBP) representing a *balancing* feedback loop

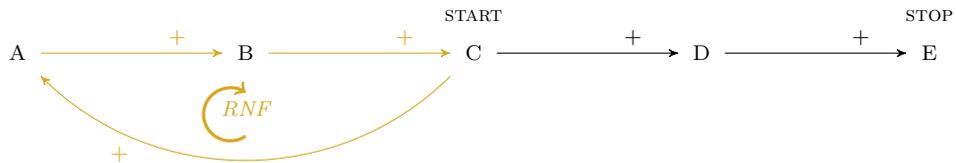FIGURE 4   Generic Concise Process Diagram (CPD)

FIGURE 5   Qualitative simulation on an RBP: starting at element C will only stop at element E, but also involves a reinforcing feedback loop (marked in Gold)

6   Materials and preparation

CASE-STUDY/ WORK MATERIAL   Participants are welcome to bring their own support material (e.g. organigrams, text) in (human) memory or documentation (e.g. digital or printed media).

SOFTWARE   Diagramming can be carried out manually, with pencil and paper. Optionally, participants are welcome to use their own diagramming software, such as *Graphviz*, *LibreOffice Draw*, *OmniGraffle*, or *Visio*.

STENCILS

Perdicoulis, A. (2011c) *OmniGraffle* stencil for CPD [`.graffle`]
Perdicoulis, A. (2011b) *OmniGraffle* stencil for RBP [`.graffle`]
Perdicoulis, A. (2011a) *Graphviz* node-and-edge starter file [`.dot`]

References

Perdicoúlis, A. (2014b) *Methodology*. Perdicoulis Publishing: Folio Division, Technical Collection.

Perdicoúlis, A. (2014a) *Language*. Perdicoulis Publishing: Folio Division, Technical Collection.

Perdicoulis, A. (2015) The delusion of academic ranks. *oestros*, **22**.

Perdicoulis, A. (2013) Hierarchical breakdown structures. *Systems Planner*, **23**.

Perdicoulis, A. (2011) Application Manual for 'Systems Thinking and Decision Making in Urban and Environmental Planning'. *Systems Planner*, **2**.

Perdicoúlis, A. (2010) *Systems Thinking and Decision Making in Urban and Environmental Planning*, Cheltenham: Edward Elgar.

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