Visual metaphors as a cognitive scalpel:
cutting through the language disguise

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Abstract

This paper makes a tentative case for the adoption of principled information mapping (based on visual metaphors) as a lingua franca for the communication of complex information in ESP environments and in ESP instruction. As instances of principled information mapping, 2 visual metaphor based tools are presented. These are currently implemented in the author's curricula to provide a confidence-building bridge between the world of language (e.g. text) and the world of structured information: Hunter's Information Structure Maps and (b) Cmaps (Novakian maps. Example ESP instructional applications of the two tools are presented.

Key words: low text, information structure, concept mapping, mind mapping, ESP, EAP, teaching, research

I.   Introduction

This paper makes a tentative case for the adoption of principled information mapping (based on visual metaphors) as a lingua franca for the communication of complex information in ESP environments and in ESP instruction.

Information designers commonly criticize PowerPoint slides full of sentences; the format doesn't suit the medium, we say. Yet it remains standard practice to communicate structured information (information is structured) as narrative, in continuous linear text, which visually reveals little or nothing about the structure of the information that it carries.

ESP work is a good matrix for examination of the alternatives to continuous text as a representation of structured information. ESP learner-clients typically need information immediately, hence the need for structural representations that support navigation. Visual encodings are most welcome in such workplace environments as the cockpit, the operating room, the tour bus.

Principled information mapping is mapping which adheres to one or several visual metaphors. This adherence provides encoded information depth which is not available in 'unprincipled' mapping such as mind mapping.

As instances of principled information mapping, 2 visual metaphor based tools are presented. These are currently implemented in the author's curricula to provide a confidence-building bridge between the world of language (e.g. text) and the world of structured information:

(a) Information Structure Maps, which show symbolically the relations between atomic bits of information at the sentence level; and

(b) Cmaps (Novakian maps), which portray graphically the rich relations between concepts in a concept array.

Example ESP instructional applications of the two tools are presented.

II. Mind maps and visual metaphors

Surely the most well known information map style is the mind map, developed by Buzan (1983). Mind maps are usually radial in layout; content of the nodes is not prescribed, and the links between nodes are simple lines providing no articulation of the relation between the nodes. Typically mind map links are associations. This is not an information structure.
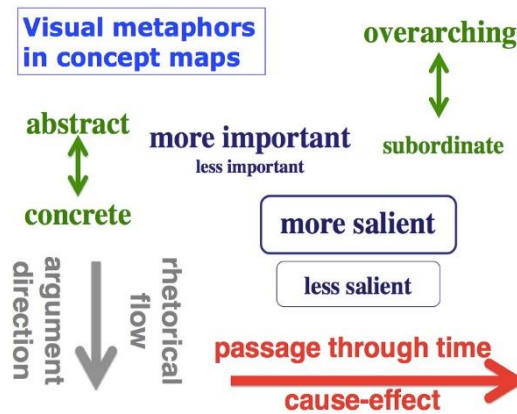
Figure 1. Some typical information mapping visual metaphors.

If an information map is to have power to represent information structures, it must be built so as to adhere to some visual metaphor. For examples of visual metaphors see Fig. 1.

III. Hunter's ISmaps

Hunter's Information Structure maps are designed to represent the atomic information structures which are regularly signaled in text at the sentence level: Description, Classification, Comparison, Sequence, Cause-effect and Pro-con.

As these are widely recognized generic structures, there are a number of graphical representations for them in common information design practice.
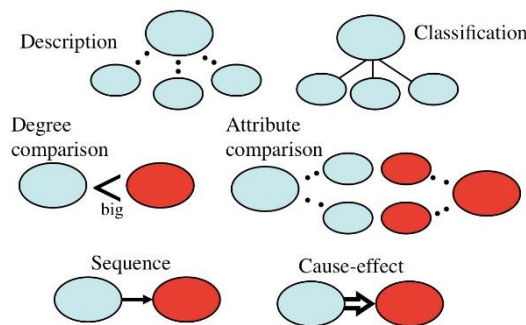

Figure 2. The information structure representations of Hunter's ISmaps.

Note that the classification representation is the international standard, as are sequence and cause-effect. Description is designed to differentiate it from classification. Also, each structure has different visual metaphors in operation. For example, description and classification are based on the 'superordinate is up' metaphor.
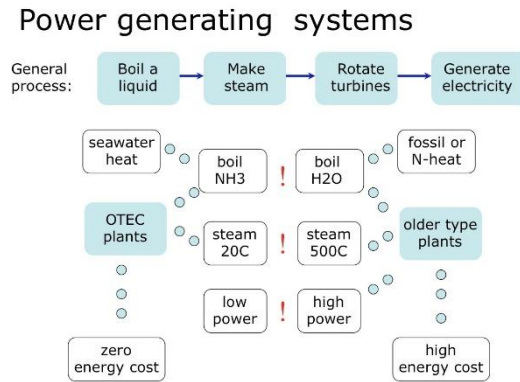
Figure 3. A typical ISmap summary of a one-page science magazine article.

Figure 3 presents a typical ISmap summary of a one-page science magazine article. It should be noted that numerous acceptable representations are possible, and careful reading of learner maps is essential to fair evaluation.

Hunter's ISmaps are implemented in the Thinking in English curriculum of Kochi University of Technology, and are a main communication medium in the textbook *Thinking in English* (Hunter, 2007).

IV. Cmaps

Cmaps, created with the freeware Cmap Tools, are an instance of Novakian mapping, created by Joseph Novak (1998). Cmaps are based on two visual metaphors: up is superordinate; and link label = node-node relation. Note that arrowheads are not acceptable in Cmaps since orientation (and thus super- and subordinate nodes) is defined by the up-down visual metaphor.
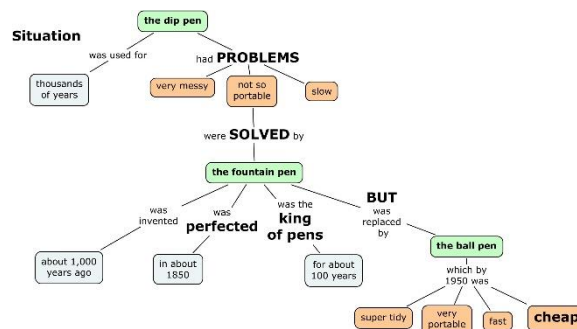

Figure 3. A concept map in Cmap form.

In EAP, Cmaps are immediately applicable to the mapping of argument, for analysis of research papers or scientific articles, and also for the articulation of the argument underlying one's own paper.

Fig. 4 shows a typical analysis of the argument in a research paper, although this task was an inferential one: determine what must have been the content of the paper, given only a science magazine summary of the paper.
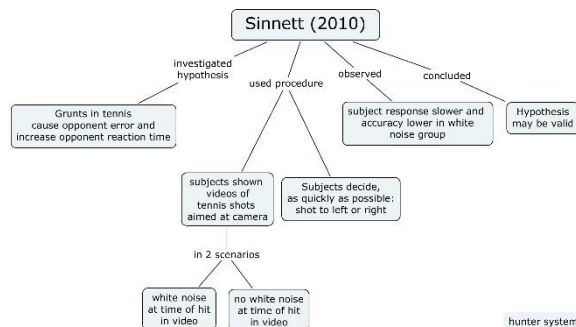

Figure 4. An argument map in Cmap form.

Cmap argument maps such as that in figure 4 are extensively implemented in the author's Technical Writing 2 and Research Writing EAP courses for scholarship PhD engineering students at Kochi University of Technology. This approach has proven effective for two types of learners: visual thinkers and those who are constructing extensive, complex arguments in management studies.

The Cmap form also enables the creation of a wide variety of 'spring loaded' task, tasks in which language issues give rise to information issues and vice versa, see for example figure 5.
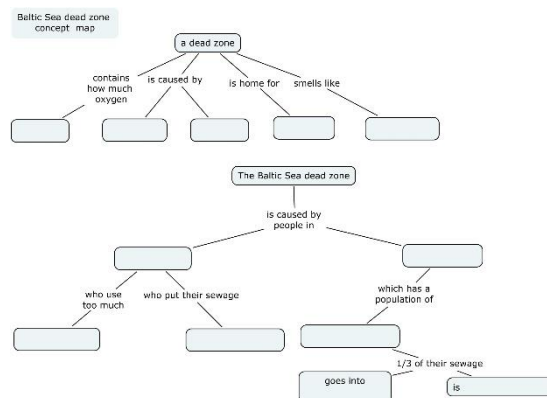

Figure 5. A cmap cloze for analytical reading practice.

Cmap Tools are available for freed download at http://cmap.ihmc.us/cmaptools/. At the same site there is a large collection of papers and how-to material.

V. Conclusion

By imposing visual metaphors on information mapping instances, it is possible to create mapping tools that enable low text representations of information structure, and as a result empower ESP and EAP learners to develop skill and confidence in working with structured information. ISmaps and Cmaps are two successful examples of such tools.

Further information, support and mentoring are available from the author at lawriehunter@gmail.com

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