

Rationale – A Generic Argument Mapping Tool

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In my talk I will cover some of the “philosophical” issues involved in designing Rationale as a generic argument mapping software tool. These points will be illustrated, of course, with Rationale itself.

Themes to be covered will include:

Educational vs Professional. The two main roles of the software – educational (helping people acquire reasoning skills) and professional (helping people perform “on the job”). The design challenges created by the competing requirements of these two roles.

Intelligence augmentation. In helping people perform on the job, the software is intended to augment human intelligence (cf Englebart) rather than to be a reasoning engine. It is intelligence augmentation (IA) as opposed to artificial intelligence (AI). Hence the omission of various “features” which could in theory be added.

Complementing human cognition. In order to augment human intelligence, the software is designed to complement our “native” cognitive strengths and weaknesses. The software should handle those tasks which brains are not good at, and help brains to do what they are good at. In particular, brains are not good at holding complex structures in short term memory. The software is good at maintaining information, but has to make it possible for brains to effortlessly (a) access and (b) interact with that information. The software is in other words intended to become part of the “extended mind”.

Pre-conscious awareness. With a view to making the communication of information from map to brain, and its subsequent incorporation into thinking, as efficient as possible, the software exploits the brain’s capacity for pre-conscious awareness and processing. Specifically, the software makes use of pre-cognitively processed attributes such as colour, position and shape to convey information.

Semi-formality. The software operates in the “semi-formal” domain. Human reasoning almost always takes place in an informal mode, and this is the source of many of its problems. Formal logic and mathematics are formal, don’t suffer many of the problems of informal reasoning, but have little practical application to real-world reasoning problems. Rationale is based on the idea that the “sweet spot” where human reasoning achieve its best results is in the semi-formal domain – more structured and constrained than ordinary informal discourse, but allowing considerably more roughness, vagueness, flexibility etc. than formal modes.

Scaffolding vs straightjacket. In attempting to hit the semiformal sweetspot, the software design has to walk a fine line between providing structure or scaffolding, on one hand, and providing a confining straightjacket, on the other. Users don’t like to be forced to do things one very particular way, even if, in theory, doing things that way would make their thinking better. In practice they will not use a tool that that is highly constraining (unless they have to). Hence a practical tool must be somewhat forgiving.

Focus vs context. Our attention, in reasoning, generally focuses on particular considerations, or small sets of considerations. However it does so in the context of a complex web of reasoning. Somehow, and imperfectly, we maintain focus and understanding of context simultaneously. Software should support this essential feature of our cognitive processing (cf Tillers, Picturing Inference). Rationale does this by providing

“Show Path” and “Show Context” features, in which the focus of attention is enhanced and the context is recessed.