

## **Augmenting Personal Knowledge II.** ***Towards a Post-Critical Conceptualization Framework***

Information technology helps us extend, deepen, and share our knowledge, though it may never deliver on its (fifty year old) promise to *simulate* every aspect of our *personal* knowledge. Recent developments within cognitive and computer supported conceptualization helps us to see why externalizing conceptual knowledge organization proved to be a much deeper problem than it was assumed to be in the 1960s. The answers we offer today take the *tacit dimension* of our knowing into consideration, and use our symbol-structuring to make sense of what we are doing, articulating mental structures within the embodied and intent dependent context of the human search for meaning.

In the second part of our presentation in which we seek to supply a “post critical” framework for *augmented* conceptualization we note the convergence between Polanyi’s post-critical conception of knowing and Engelbart’s quest to augment human problem solving, contrasting the latter (and the conception of personal knowledge) with the *simulation* of intelligent behaviour. By linking *personal knowledge*, in Polanyi’s sense, to Engelbart’s conception of augmented knowledge organization, we sketch out a new account of *why* rendering *tacit knowledge* accessible is taken to be problematic, and *how* personal knowledge and the problem solving process can be augmented by computer support. Viewing emergent augmented symbol-structures as portrayals of aspects of personal knowledge which previously seemed to belong to the domain of tacit knowledge makes us understand that they are carriers bringing them to focal awareness. We make the historical point that key insights into problems which arise in human conceptualization can be found in Polanyi’s account of the way in which our linguistic understanding is reliant upon our tacit awareness, and that his *embodied conception* of knowing, and in particular the *social dimensions* of the *growth* of our personal knowledge, shows striking parallels with Engelbart’s conception of collaborative problem solving.

We apply these insights to computer supported knowledge work including graph based externalizations of conceptualization-processes. In the first part of the presentation we introduced *WikiNizer™Research*, a personal knowledge organization device of the WikiNizer toolbox, to demonstrate that in its graph based knowledge architectures meaning emerges through interaction with the graph and through the development of the graph as a way of organizing further abstractions on new meta levels of higher order properties. We argued that visualizing meta-structures and conceptual relationships supplies us with a tool that can help us track and analyse meaning construction in a *situated, intent dependent, dynamic* way. Since we can record the temporal development of meaningful relations as knowledge trails, interpretation (similar to the way in which a dynamic semantics can be contrasted with a denotational semantics) is able to trace the way it *changes* the *organization* of the information of the interpreter.

This time we take the reverse route which starts with a *problem situation* and proceeds through an exploratory epistemology which (in computer augmented knowledge work) makes use of on-line resources and meta-circular abstractions in the elaboration of effective concepts. This “problem solving mode” (as compared with the analytic one) is the standard use of *WikiNizer™Research* which because of its (these days web based) exploratory nature unavoidably embeds the problem of conceptualization to the context of social knowledge and collaboration. By combining Wiki-like organization with semantic structures, the graph based synergistic solidification of our concept structures enables us to make comparisons at co-originating (computational and cognitive) meta levels, not just in our knowledge states but with the shared knowledge states of others.

We argue, that just as the “state of a language at a given time strongly affects its own evolution”, so the development of visual “languages” and their meta-level organization can be treated as an evolving articulation process within a self-organizing system. Such systems are capable of developing into a succeeding state, if (going along with Engelbart) the applied technology provides us with the means/tools for meta-reflection that are able to enhance the utilization of our tacit knowledge in externalized forms. The evolving, self organizing nature of articulation can be detected in both cognitive and artificial systems, however, for the augmentation of conceptualization the external manipulation of ‘things’ and their conceptual architectures in a human created environment is essential both for embodied cognition and for computer supported knowledge organization. Reflecting on current positions on *computational* (Engelbart) and *cognitive* aspects of *bootstrapping* (Quine, Carey) we make explicit their co-active *interdependency* within intent driven creative problem solving.

Since “bootstrapping” not only augments personal knowledge but also augments collaborative knowledge work and social sense-making, the elaboration of this key point gives us the opportunity to draw parallels between Polanyi’s and Engelbart’s conceptions of meaning creation and underline their complementary similarities in the field of collaborative problem solving. We illustrate how conceptualisations within specific problem domains with computer support can be exchanged, mediated, integrated and evolved collaboratively by sketching the reference model of WikiNizer’s collaborative use in the framework of its collaboration platform, which we call ‘*Conceptipedia*’.