Chapter 4
Strategic Reading & Conceptual Modeling*

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Abstract “Strategic reading” is a term coined to conceive reading as a process of constructing meaning by interacting with text. While reading, individuals use their prior knowledge along with clues from the text to construct meaning, and place the new knowledge within this frame. Strategic reading is then a pivotal ability for conceptual modelers, more so if domain knowledge needs to be acquired mainly from the literature as it is the case for research projects. But this might turn problematic. In Quora and other PhD forums, students moan about their frustrating reading and literature review experiences. Traditionally, students are encouraged to annotate while reading. Digital annotations are expected to be useful for supporting comprehension and interpretation. Our belief is that strategic reading (and hence, conceptual modeling) can be more effective if annotation is conducted in direct relationship to a main research activity: root-cause analysis (RCA). RCA can provide the questions whose answers should be sought in the literature. Unfortunately, this process is not supported by current tools. When reading papers, researchers might not be all aware of the issues being raised during RCA. And the other way around, when it comes to RCA, evidences found in the literature might not be promptly accessible. This paper reports on research to develop a technical solution to this problem: a plug-in for Google Chrome that provides seamless integration between a RCA platform (i.e. MindMeister) and a reading platforms (i.e. Mendeley). The aim: improving RCA awareness while reading so that annotations can be traced back to the RCA issues.

Key words: Strategic Reading, Root-Cause Analysis, Annotating, Mind Mapping

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4.1 Introduction

Some years ago, I was working on Active Databases. At this time, my interests were on formalizing database triggers and their execution model to help debugging large trigger sets. We resorted to the Event Calculus, and here, Antoni’s work was most influential. Specifically, our work was strongly inspired by his paper “Validating conceptual specifications through model execution”[8]. This could have been a possible subject for this chapter. However, I would like to acknowledge here another side of Antoni’s efforts: his dedication to teaching. I had the chance of chatting with Antoni in numerous occasions, and both teaching and students were a common subject. His book on Conceptual Modeling illustrates this concern. Here, I would like to report a recent work which was inspired by one of these chats with Antoni.

It was in Stockholm at CAiSE 2015. After the reception at the City Hall, and wandering along the nice canals that hug this magnificent building, Antoni observed how his students struggle with reading the literature, and particularly, the tendency of students to focus too early on the details of their PhD projects without keeping an eye on related research. This passing comment resonated one year later when I met Prof. John Venable. John has been working on Design Science Research (DSR) for more than fifteen years. DSR highlights the importance of root-cause analysis (RCA) not only at the start of the project but throughout, and how this analysis should be based on data either directly obtained or provided by the literature. The latter reminds me of Antoni’s concerns about students focusing too early on their projects without keeping a wider radar at related literature. And then the bulb lighted up: if a pivotal skill for researchers is that of asking the right questions then, we can conjecture that RCA could be the means to find these questions. This paper reports on how this idea was developed.

DSR requires a profound understanding of the problem to be solved, the consequences to be alleviated, and the causes to be prevented. This in turn usually implies extracting evidence from the literature that warrants the project’s RCA. Reading then, becomes the process of extracting evidence from the literature that sustains the project’s RCA. We then conceive of RCA and reading as two inter-related processes which re-adjust and feed off each other: RCA progresses as new insights are obtained from the literature while the literature is scrutinized along the concerns that arise during RCA.

Unfortunately, this interplay lacks appropriate support in current reading tools (e.g. Acrobat Reader, Mendeley) or reference managers (e.g. Mendeley, NVivo, or End-Note). What is needed is a way to bridge the gap between conceptualizing tools – where ideas are shaped and framed – and reading tools – where ideas are sustained and opposed. We believe the challenge is not on creating brand new tools, but on coupling existing tools with minimal interference with existing practices. What is needed is for tools to keep their autonomy, but interact with a double aim:

1. to guide reading (where reading purposes are to be sought in RCA), and

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1 This is an excerpt from a paper presented at DESRIST 2017 [1].