Maria C. Keet, *The What and How of Modelling Information and Knowledge. From Mind Maps to Ontologies*, Springer, New York 2023, pp. 177, € 76.06, ISBN 3031396944

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The What and How of Modelling Information and Knowledge: From Mind Maps to Ontologies is the latest volume published in 2023 by Maria Keet. The author's intent is to guide the reader through a gradient journey of increasing complexity regarding the theoretical and methodological aspects of information modelling, specifically from the construction of a Mind Map to that of an Ontology.

The work, divided into eight chapters, spans 184 pages and is enriched with a substantial array of images, illustrations, conceptual maps, diagrams, EER diagrams, ontologies, tables, boxes, and snippets of code that illustrate the models of the case studies. In particular, there is a rich bibliographic section at the end of each chapter. The book also includes an in-depth exploration of Gene Ontology and some very specific notes on the emergence of LLMs (Large Language Models) in the field of information extraction and representation, two central activities of modelling. The comprehensive overview describes the five types of model currently available, and is enhanced by biographical references, historical notes, and small examples of domain models such as fermentation, labor migration, plankton, peace, lyrebirds, and lemonade.

Delving into the heart of the discussion, the five central chapters each present a type of model in the following order: "Mind Maps", "Models and Diagrams in Biology", "Conceptual Data Model", "Ontologies and Similar Artefacts" and lastly, "Ontology-With a capital O" (referring to foundational ontologies).

For each type of modelling, a description is provided concerning its scope and reasons for use, origins, technical and theoretical developments, as well as respective strengths and

technological limitations. Indeed, it is the gradual overcoming of these limitations that guides the reader from constructing a Mind Map, the simplest level characterized by lower representation complexity, to the final goal: the construction of an Ontology, the most advanced and effective technology available for modeling and conceptual representation. The first chapter, "Introduction: Why modeling" illustrates how the activity of conceptualization and representation of a specific topic should not be seen solely as a technological tool or as a specialized technical subject. Rather, the author argues that it should be recognized as a disposition towards the abstraction of human thought and that practicing and refining this skill leads to a better understanding of the world. This, in turn, helps to meet the need to unravel a complex source of information into its fundamental concepts and internal relationships, thereby systematizing and more effectively grasping its informational content.

This disposition and necessity have also been carried out online by humans, to the extent that the author continues: "There are secondary benefits emanating from this short answer. The structuring helps getting better answers in an online search on the Web – e.g., Google's knowledge graph – and it helps learning new study material, such as creating a Mind Map as a summary of a piece of text" (pp. 2-3). As extensively described regarding diagrams in biology, conceptual data models, and ontologies (and it should be emphasized here that these sections of the volume provide a solid conceptual and technical foundation for anyone looking to approach these topics), models play a fundamental and increasingly significant role in the world of research and computer science, serving both as an application platform for representing knowledge and as a predictive tool. In fact, alongside achieving a higher degree of understanding on a specific topic, a model, specifically an ontology, is created with the intent of equipping it with predictive capabilities regarding the represented information.

To define the meaning of the term "model", the author uses the expression: "It's an abstraction, idealisation, approximation or simplification of reality or of what is intended or expected to become reality, or of our best understanding of reality we can attain" (p. 1).

The sentence immediately following this definition: "Very many types of models fit this description" (p. 2), reflects the underlying reason for the writing of this text, which is the need to critically describe the types of model and modelling activities currently available, advocating for their value.

What makes this volume a valuable resource for anyone wanting to approach systematic information modeling and knowledge representation is the clarity with which the construction of each of the five proposed models in the domain of dance is described and argued. The transition from one model to the next, showing how the latter addresses the limitations found in the previous one, is extremely effective for teaching purposes.

In fact, to account for the specificities of each of these modelling approaches, in the seventh chapter, "Fit for Purpose", the author presents a comparative summary of the five models in the dance domain (namely: the Mind Map, Diagram, Conceptual Data Model, Dance Ontology and Ontology of Dance) and the models in the migrant labor domain (namely: the Mind Map, EER diagram and Ontology of Migrant Labor).

In the section "Design Your Own Modelling Language" of the same chapter, best practices are suggested for the reader to construct their own representation. The reader is invited to proceed by answering the following questions: "What type of models are there? How do you build one? What can you do with a model? Which type of model is best for what purpose? Why do all that modelling?" (p. 2), providing useful guidance in selecting the model most suitable for their needs and the specificities of the object to be represented. In conclusion, this text, along with the previous *An Introduction to Ontology Engineering* from 2020, serves as a technical foundation and a reference case study for those wishing to dive into the world of modeling.

Useful Links

http://www.meteck.org/modellingbook/index.html