

10.5 Representing contextualized concepts

Contextualization is another means for organizing and understanding concepts. *Context* refers to the environment or setting in which something exists. For modeling, environment or setting is a concept or phenomena. A contextualised concept is only meaningful within the context of a specific phenomena or concept.

The concept of a *citizen* is only meaningful in the context of a *country*. Citizens of Norway and Denmark have some common properties, but they also differ – a citizen of Norway may have a Norwegian passport whereas a citizen of Denmark may have a Danish passport.

In the previous sections of this chapter, we have seen a number of examples of contextualized concepts. For the grammar example the concepts Symbol and Rule are defined within the context of a specific grammar — SIMULA Symbols and Rules are only meaningful within the context of the SIMULA Grammar object. This is similarly the case for Symbols and Rules of a Java grammar.

For the flight example, the concept of a Flight is only meaningful with the context of a specific FlightRoute.

For the text formatter example, the concept of a Paragraph is only meaningful within the context of a specific document.

A method is also a representation of a concept, in this case a concept where the extension is a set of activities. Methods defined local to classes is thus also a form of representing contextualized concepts. For a method like `deposit` on an `Account`, the extension is the set of operations that make a deposit on the a specific account.

The distinction between phenomena and concepts is common in the world of modeling and philosophy, and this is also the case for conceptual means such as classification and composition. Context/contextualization, however, is not a widely accepted term within modeling.

Context, on the other hand is important within a number of disciplines such as linguistics, semiotics, sociology, anthropology and philosophy where context refers to entities which surround a given focal entity. The context of a given entity is essential for an appropriate interpretation of the entity.

In linguistics, the focal entity may be a word, sentence or speech act and the context is the surrounding text or speech. Within philosophy, *contextualism*, refers to a collection of views that argue that actions or expressions can only be understood in context.

When using the a term like symbol, its is quite clear that the context is important. In a text on Java, symbol obviously refers to a Java symbol. In other situation one may use an explicit term like *Java symbol* or *SIMULA symbol*, which both include the context.

One of the first sources to define a term for covering the context of concepts was the Conceptual Framework developed together with the Beta language. Here there was a need for being able to formulate how to understand nested classes, block-structure from a modeling point-of-view. The Beta Conceptual Framework used the terms *localization* and *concept composition*. As of writing this book, we find contextualization and contextualized concepts to be more precise terms.