

Action Dependent Knowledge Representation

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We concern ourselves with the nature of explicit knowledge that is defined by analytic expressions of relations. Today it is common to operate with a "parallel" conception of explicit knowledge, which is independent of circumstances and statically described, and of contextual practical knowledge. We argue for analytic propositional knowledge being part of practical knowledge. The premise is that static law-like and dynamic situation-adapted knowledge coincide [?]. However, this raises the question how contextuality can be compatible with a static representation of knowledge.

To clarify this we describe the representation by means of relations between entities and not as representation of the entities themselves. This leads to a description of entities by relational patterns. The idea can be traced back to the formal philosophical ontology, as described by Husserl, according to which we find a considerable number of such stable patterns [?]. We assume that objects and events do not conjoin at random but that they show certain repetitive patterns, describing the connections between different entities [?]. Looking at these relational patterns in more detail we find that the relevance of specific relations changes with respect to contexts shifts. This means that the relational representation is bound to the context to which it refers. By a context shift we mean a minimal change of context that does not essentially change the character of the description. However, if we perform context shifts one by one, this can lead to significant changes in the relevance of certain relations.

The decisive point is that for every context we can determine relations that constitute the entity in the sense that we can reconstruct the entities on the basis of these relations. We consider these relations as necessary to constitute the entity in the given context. Nevertheless there are arbitrarily many other relations that a contingent in a given context, i.e., they are not suitable to constitute the respective entity.

Necessary relations of an entity refer to explicit knowledge about it while contingent relations are covered by tacit knowledge, e.g., we also know unconsciously that an apple also contains certain vitamins even if we are only interested to satisfy our hunger. This means that it is the domain of tacit knowledge to handle all relations that only casually appear in a certain context.

The change of relevance of certain relation due to context shifts resembles the sorites paradox in some respect [?]. Although the relevance of certain relations seems to remain constant we observe a clear appearance and disappearance of relevance, leading to different relational patterns. Thus we obtain a constancy of the entity accompanied by changing constituent relations. This flexibility is

related to the adaptation of entity representations to different context that provide appropriate relational patterns for every situation. It allows us to reduce an entity in a given context to a finite number of constituting relations as the basis for a formal explication of this entity.

The consequence for knowledge management from this consideration is that there are no universal relational patterns that are valid for all contexts. Therefore we have to carefully check whether a relational pattern fits to the individual context of application. If we don't obey this, we inevitably run into logical inconsistencies. This confronts us with the problem to identify entities that are constituted by different relational patterns in different contexts. This is a task that is hardly solvable for machine so far. However, it is a well-known problem in data bases where the same entities, e.g., business partners, are described in different ways, e.g., as vendors and as buyers, and the system is not able to identify them.

References

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