Collaborative Discussion 1: Knowledge Representation and Reasoning
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Initial Post

Knowledge representation is not a recent phenomenon, nor is it only tied to computing. The Oxford English Dictionary (2023) defines *knowledge* as "familiarity gained by experience". Brachman & Levesque (2004) define knowledge in terms of a relationship between a *proposition* and a *knower,* and relate it to *belief.* They further define *representation* as a symbol that concisely represents an abstract or concrete concept. *Reasoning* is then the manipulation of the symbols to represent beliefs and propositions.

Weststeijn (2011) discusses various, often incorrect, interpretations of pictographs and hieroglyphs, which are symbols dating back thousands of years. As joked about on many Time Team episodes, we often retroactively define symbols we can no longer interpret as "ritual". Weststeijn dissects the misconceptions that language descended from a universal language in hieroglyphics, or that all language descended from Chinese. Therefore, simply representing knowledge is not enough if we cannot share the knowledge or interpret it.

We now know that Ancient Egyptian hieroglyphs (3000 BC – AD 400), while pictographic, are not completely ideographic (conceptual art), but also define consonant sounds and embody semantic markers. The written cursive Ancient Egyptian language evolved from Hieratic to Demotic to Coptic (Loprieno & Müller, 2012).

Chen et al. (2020) describes reasoning as deducing conclusions from premises and states that Artificial Intelligence (AI) must reason, and that reasoning must be based on existing knowledge and experience. They elaborate that "knowledge reasoning" is inferring new knowledge from what is known.

The Rosetta Stone, with its message in Ancient Greek, as well as Ancient Egyptian in both hieroglyphs and Demotic script, utilised knowledge of Ancient Greek and Coptic to reason meaning back to the knowledge representation, so we can now again read the symbols used to represent Ancient Egyptian (Parkinson et al., 1999).

References:
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