

Abstract:

It is often said that Euclid's "Elements" for centuries were used as the Bible of mathematics. However when one studies texts, which circulated under the name of Euclid's "Elements" in different epochs, in different geographical areas and in different cultural and linguistic environments, one finds a surprisingly diverse literature. Until very recently translators and editors of Euclid's classics also worked as revisors who tried to produce an improved version of the "Elements" rather than merely reproduce older contents with new means. In a long run such a non-trivial character of translations of Euclid's "Elements" made possible a radical rethinking of foundations of mathematics, which dramatically changed its shape throughout its long history (and also throughout its wide geography), and at the same time allowed for an impressive historical and geographical continuity of mathematical thinking.

Using the example of Euclid's "Elements" I shall argue that scientific contents, generally, endure through a non-trivial translation rather than mere repetition of linguistic, symbolic and conceptual patterns. I shall show how this translational mechanism allows for a cumulative growth of scientific knowledge, on the one hand, and a renewable symbolic representation of this knowledge, on the other hand. I shall argue that the diversity of symbolic representations is necessary for knowledge aiming at the universal validity and the universal significance. In this context I shall critically reconsider the role of formalization in mathematical and scientific practices. I shall conclude with some reflections concerning the place of translation and formalization in the living traditions of doing philosophy of science.