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Analogy and Mapping: Philosophy, Mathematics and Space

ABSTRACT. In this paper I aim to show that the classic concept of “analogy” can be interpreted in mathematical terms. The vagueness of how “alike” two objects are, can be tackled by a consideration of their topological and group properties, especially symmetry and connectivity. Two objects can be put in a relationship of mapping, and the likeness would depend on which properties are preserved through the morphism, including their local and/global character. The concept of analogy plays a key role in Aristotle and scholastic philosophy. In this philosophical tradition it is stated that some concepts are *univocal* and some are *equivocal*. Analogy is understood as a third term between pure difference and pure identity. But a problem arises however when resorting to more strict uses of analogical reasoning: it lacks of rigorosity. Not because science cannot employ analogies between realms, but because they cannot be evaluated. There are no objective degrees of likeness or at least criteria to evaluate how adequate or inadequate an analogy is. It is in the Renaissance philosophy however, where analogy gains a radically new significance, as it is linked to mathematical *structures*. It was not only proportion or metaphor, but a more general term which emerged progressively, namely, “form”. Analogy was not to be settled upon vague and questionable resemblances—of qualitative nature—nor in pure quantitative terms—as in the case of proportion. Settled the ground for the discussion, some basic notions of topology and group theory are presented. The core idea of this section is the concept of map as a way of putting two different spaces in correspondence. With some mathematical elements we offer a model which depicts the double relationship of a subject to the world and to another subject, such that an ontological as well an intersubjective approach can be articulated. This model takes inspiration in polycontextural reasoning, a non-classic logic. In the next section I discuss the property of connectivity in polycontextural logic in contrast to the classical Aristotelian approach. I conclude with some phenomenological reflections to interpret the discussion carried above as a way of understanding the world and our experience in general.

KEY WORDS: analogy, topology, phenomenology, non-classical logics, intersubjectivity

1. Introduction

In this paper I claim that the philosophical concept of *analogy* a) can be interpreted in mathematical and, more specifically, geometrical terms