

# Explicating ‘Explication’ via Conceptual Spaces

Draft

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Recent years have witnessed a revival of interest in the method of explication (Carnap, 1950; Carus, 2007) as a procedure for conceptual change in philosophy and in science (Kuipers, 2007; Justus, 2012), especially in connection with the meta-philosophical nest of positions that goes under the name ‘conceptual engineering’ (Cappelen, 2018). Carnap originally (Carnap, 1950) stated four desiderata that a good explicatum has to respect: similarity, exactness, fruitfulness, simplicity. These four desiderata give a hint of the theoretical virtues that a good explicatum has to have, but they are too vague and ambiguous for constituting a practical guide for explicating a certain concept. Carnap didn’t make any attempt to further develop these desiderata, leaving to the posterity the problem of constructing a theory of explication. In the philosophical literature, there has recently been a lively debate about the different desiderata that a good explicatum has to satisfy (Shepherd and Justus, 2015; Brun, 2016; Dutilh Novaes and Reck, 2017).

It is still difficult to assess the usefulness of explication as a philosophical method, though. If it is indeed true that many different criteria of adequacy have been proposed and discussed, thereby offering a plethora of recipes for any wannabe explicator, it is nevertheless difficult to judge these proposals due to the vagueness and ambiguity in which they are sometimes framed.

The main aim of this work is to explicate ‘explication’, providing a precise bridge-theory into which the explicandum and the explicatum can be represented. This will allow us an exact framing of the different readings of explication desiderata and therefore a more precise judgment of the adequacy of a given explication.

In order to frame my proposal, I am going to rely on the theory of conceptual spaces (Gärdenfors, 2000, 2014). In recent years, the theory of conceptual spaces has been successfully applied in many different fields (Gärdenfors and Zenker, 2013; Zenker and Gärdenfors, 2015), proving itself to be a powerful tool for representing concept formation and manipulation. It is surprising, thus, that in the philosophical debate over explication the theory of conceptual spaces has not played a significant role. I will argue that conceptual spaces are indeed a powerful tool for framing procedures of conceptual change.

Technically speaking, I frame my proposal of explicating ‘explication’ within an extension of the theory of conceptual spaces originally developed in order to treat vague and comparative concepts (Decock, Dietz and Douven, 2013; Douven et al., 2013). This extension combines a prototypical view of concepts (Rosch, 1975) and the spatial tessellation technique known as ‘Voronoi diagrams’ (Okabe et al., 2000). Of a particular significance for this work is the richness of the representation of concepts that this version of conceptual spaces theory allows, offering to any wannabe explicator the possibility of imposing constraints on the conceptual structure of both the explicandum and the explicatum.

Specifically, in this work I show how various readings of Carnap’s original desiderata that have been proposed in the literature can be precisely framed as logical, geometrical, or topological constraints over the conceptual spaces related to the explicandum and the explicatum. Moreover, I show how the richness of the geometrical representation of concepts in conceptual spaces theory allows us to achieve fine-grained readings of explication desiderata. Examples

of these fine-grained readings are similarity as a quasi-isometry between the conceptual spaces of the explicandum and the explicatum; exactness as a measure of the boundary regions of the explicatum in comparison with the ones of the explicandum; fruitfulness as a convexity requirement on the regions of the explicatum; simplicity as a spatial-complexity measure of the regions of the explicatum.

In order to make these readings clearer, I will use a successful explication from the history of science as case-study: the scientific concept of temperature (Chang, 2004). I will first show how the concepts involved in this explication can be suitably represented in conceptual spaces theory and then how the representation of these concepts technically satisfies all the aforementioned fine-grained readings of explication desiderata.

Finally, I argue that these tools allow us to overcome some alleged limitations (Brun, 2016; Reck, 2012) of explication as a procedure of conceptual engineering such as the so-called “paradox of adequate formalization” (Dutilh Novaes and Reck, 2017).

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