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Ontology of Multisensory Unification

We experience the world from a unified, first-person perspective. In particular, our awareness contains elements associated with distinct modalities as we may simultaneously perceive the environment using distinct senses. Furthermore, the elements presented in such multimodal experiences are not presented as merely co-occurring, but are usually unified within some higher-order structures. For example, we are not only able to experience that something looks dog-like and something makes a barking sound, but also that there is a single object which looks in a certain way and makes a certain sound (see O'Callaghan, 2015). In consequence, it is plausible that elements presented in usual multimodal experiences are arranged according to certain principles, and one of the goals of philosophy of perception is to develop a conceptual framework explicating these principles (e.g., Macpherson, 2011; Richardson, 2010; O'Callaghan, 2016).

The above intuitive observations lead to a unification problem which is multisensory and structural. It is multisensory as it concerns the way in which elements presented in virtue of various senses are unified in multimodal experiences. It is structural since addressing it requires specifying the structure of multimodal experiences by, inter alia, characterizing dependency relations between presented elements, determining the spatiotemporal framework in which they are presented, and specifying the rules according to which simpler elements compose complex wholes. The question of multisensory, structural unification is particularly difficult due to the fact that each modality may organize the presented elements by using distinct structures. For instance, spatial structures organizing olfactory, auditory, and visual elements may differ significantly from each other and each of various modalities may individuate and track presented entities in accordance with distinct principles (see Briscoe, 2016; Matthen, 2010; Smith, 2013; de Vignemont, 2014; Young, 2016). In consequence, it is not obvious how these distinct structures, which may not be compatible, constitute unified structures of multimodal experiences.

The philosophical studies have faced serious limitations in attempts to resolve the above unification problem. First, no answer is provided to the question of how potentially incompatible unimodal structures constitute multimodal structures. Second, philosophical studies usually focus only on specific types of experiences. Third, the descriptions of structural aspects of sensory experiences are often provided in nontechnical terms. I aim to amend these problems and provide a novel solution to the question of multisensory unification by developing an ontological model in which

experiential structures are analysed using formal, ontological theories. The development of the ontological model will provide a unified, precise conceptual framework which characterizes structures of various experiences and explicates relations between unimodal and multimodal structures.

My investigations will be guided by three major hypotheses: (a) Simple unity hypothesis according to which the structure of a multimodal experience is unified due to the fact that unimodal structures are compatible with each other, (b) Transformative unity hypothesis which states that the structure of a multimodal experience is unified but the unimodal structures are not compatible, so to compose a unified multimodal structure they undergo some transformations, and (c) Disunity hypothesis according to which the structure of a multimodal experience is not unified. These hypotheses will be evaluated in the context of four crucial dimensions of experiential structures: (1) Spatiotemporal frameworks, (2) Compositional principles, (3) Individuation principles, (4) Structural dependencies. The formulated ontological model will establish which general hypotheses, and their specific realizations, are the most plausible in the context of four structural dimensions of various types of multimodal experiences. The project will last five years; during each of the first four years one of the project's dimensions will be analysed, and during the final year, relying on the previous results, a full ontological model of structural, multisensory unification will be formulated.