

From collective intentionality to intentional collectives: An ontological perspective

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Abstract

This paper presents a methodology for the analysis of the entities which the discourse on collective intentionality usually refers to. We aim, in particular, at characterizing the notion of intentional collective. Based on reviews of the relevant literature, we apply three formal-ontological tools of our choice (namely, DOLCE, DnS, and DDPO) to the treatment of the notions of collection, agent, plan and collective, all underlying the concept of intentional collective. We believe that the proposed approach offers several advantages, among which its explicitness, modularity and formality. This makes it particularly suitable for a founded specification of typologies of collections and collectives, hence for contributing to both philosophic and scientific research on these topics.

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1. Introduction

During the last decade the problems whether there exists such a thing as collective intentionality and what relationship this holds with individual intentions have been hotly debated in Philosophy of Society, Theory of Action and Social Ontology (see, for instance, Bratman, 1992; Gilbert, 1992, 1996; Searle, 1990, 1995; Tuomela, 1995, 2003a, 2003b). Despite (often deep) differences between the various existing proposals, there are a number of general assumptions that form the common ground of this debate. It is, for instance, generally accepted that the social world is intrinsically plural. It involves, trivially, many individual agents and multiple interactions among them. Moreover, and less trivially, it involves a multiplicity of non-physical entities, which are produced by the agents themselves in

order to represent and manage the complexity of their own interactions.

Reasoning along these lines, in previous work we have distinguished at least two senses in which an entity can be said to be ‘social’ (cf. Masolo et al., 2004). In the first sense, an entity is social if it is an immaterial (more precisely, non-directly extended in space) product of a community. In this sense a social entity depends on agents who constitute, make use of, communicate about, and ‘recognize’ or ‘accept’ it by means of some sort of agreement. Here the term ‘social’ is roughly synonymous of ‘conventional’ and it refers to any aspect of reality that is ‘seen’ and understood in the terms set by a historically and culturally determined conceptualization. Examples of this sense are mathematical and scientific concepts, like triangle and quark, but also common-sense concepts, like sun, inasmuch as their ‘definition’ refers to a body of knowledge shared by a community. In the second and stronger sense, an entity is social if, in addition to having a conventional nature, its very constitution involves a network of relations

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and interactions among social agents. Examples of this second sense are, e.g., euro, president, and consumer, as well as International Monetary Fund, Ethical Committee, and FIAT. This second sense of ‘social’ pivots on the idea that the social world is not only plural but also organized, i.e., it involves institutions and groups characterized by internal structures and roles. Typically, each individual agent simultaneously belongs to and acts within and across a multiplicity of such groups or collectives, ranging from family to professional, cultural, economical or political groups and organizations.¹ For an ontology of social reality, the challenge consists in providing an account of at least some of the basic structures which pervade such reality.

In this paper we follow exactly this lead and try to (re)construct some of the basic notions involved in the discourse on social reality by means of formal-ontological analysis. In order to do this, we reverse the terms of the classical question – what is collective intentionality? – and target, instead, the notion of intentional collective. On the one hand, we investigate and formalize the grounds based on which we define a set of items as a collection and collected items as members of a collection. On the other hand, we propose a way to relate collections and their members to intentional notions.

The main upshots of the presented investigation are the explicitness, modularity, and formality of the notions we introduce, as well as of the methodology we follow. Explicitness, modularity, and formality are key features for any conceptually structured vocabulary that is open to testing. Such a vocabulary will only be successful if the chunks of knowledge contained in the overall structure can be easily isolated, tested on their own, and updated. This is what we do in the following sections. We do not claim, however, that our reconstructions are the only possible ones. The emphasis is on the results that can be obtained through the methodology we propose. This mainly consists in making explicit what is often taken for granted, thus providing the means for well-founded discussions and documented (dis)agreements.

The rest of the paper is structured as follows. Section 2 informally presents our main theses. Section 3 describes the methodological backbone of our investigation. As a matter of fact, our reference scientific community is that of Applied Formal Ontology – a ‘joint venture’ of Artificial Intelligence and Philosophy, which provides formal accounts of large chunks of human knowledge for use in software applications. We begin with providing indications to the (unacquainted) reader about both the sense in which the term ‘ontology’ is used in our field and the specific ontologies adopted here to conduct our investigation: the Descriptive Ontology for Linguistic and Cognitive Engineering (Masolo, Gangemi, Guarino, Oltramari, & Schnei-

der, 2003), Descriptions and Situations (Gangemi & Mika, 2003), and some extensions of these two which have been developed in the context of the DOLCE plus DnS Plan Ontology (Gangemi, Catenacci, Lehmann, & Borgo, 2004). Section 4 provides a formal-ontological account of the notion of collection in terms of what defined in Section 3, along with a typology of collections. Section 5 provides a treatment of intentional collectives in terms of the formally specified notions of collection, agent, and plan. Finally, Section 6 draws some conclusions, reports some applications of the presented work and states the direction of our current and future research.

The reported work is part of our Laboratory’s research program dedicated to social ontologies. In particular, DOLCE, DnS, and DDPO have been developed in the framework of various EU-funded projects, to which our Laboratory has participated as a partner in research on knowledge-based systems.

2. The notions at stake

As stated in Section 1, our main objective is to provide a treatment of the notion of intentional collective and use it to present a general formal framework for an ontology of social reality. Consequently, the focus of the whole paper is on collections and collectives considered as social entities. In this section, we informally present our analysis of the notions at stake. Such analysis is largely based on hypotheses, which find formal and detailed specification throughout the rest of the paper.

According to our reconstruction, collections can be seen as social objects that depend on their members at a certain time. This entails, for instance, that a collection of books in a library remains the same entity even if some books are lost and others acquired over time. Collections depend also (specifically) on the role(s) played by their members. Consider, for example, the constellation of Orion. Should the role ‘being a member of Orion’ cease to exist, the relative constellation would disappear too.

Collections must be covered by at least one role; consider, for instance, a collection of (not further specified) bones, where ‘being a bone’ is the one and only role played by the members. Collections, however, can also be (and usually are) characterized by further roles. For instance, a collection of machines in a factory – where ‘being a piece of industrial machinery’ is the covering role – can be further characterized as a collection of cutting, pasting, etc., machines.

Collections, finally, are unified by ‘theory-like’ entities that we call descriptions, which contain and specify the covering or characterizing roles of the collection.

Collectives, in our proposal, are collections of agents which are unified by the kind of descriptions that we call plans. The members of a collective are ‘held together’ by one plan which specifies a goal and (one or more) covering or characterizing role(s). Hence, in our view both a group of people running towards a common shelter because of

¹ The term collective is used here in a sense that is reminiscent of Ludwik Fleck’s epistemological observations; Fleck’s exact terms, however, were thought-collective (Denkkollektiv) and thought-style (Denkstil); cf. (Cohen & Schnelle, 1986).

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