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## Frames and Mental Files

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There are diverse views about the way mental representations are stored in the mind. Two of the most prominent ones come from Barsalou and Recanati. In particular, Barsalou (1992,1999) offers the notion of a frame, which has been refined and further developed by Petersen (2007), while Recanati (2011) suggests the notion of mental files. Admittedly, the two notions seem diverse at a glance but they still share some interesting commonalities which will prove useful when trying to understand the way mental representations are structured in the mind. To anticipate my claims, I argue that the mental file model lacks some important specifications that can already be found in frames.

**Mental Files and Frames** Mental files are containers or bundles of properties that are tied to specific (singular) objects. Mental files store the information that has been acquired about specific objects. The function of mental files in thought can be understood in an analogous way to singular terms in language: they refer to, determine or stand for individual objects. An important aspect in the theory of mental files is the way in which mental files combine in thought: When it is discovered that two distinct mental files (with different information stored) refer to the same object, e.g. in Frege cases concerning thoughts about Hesperus and Phosphorus, they can be *linked* together and flow of information between these two files is made possible.

According to Barsalou, frames are the general format of (mental) representations. Thus, the content of concepts can be naturally accounted for in terms of frames. A central characteristic of frames is their recursive attribute-value structure. In that respect, a frame can consist of a certain number of slots which can be filled with various values, determined by the attributes that assign values to these slots. The structure of frames is recursive, as every attribute in a frame can become the central part of a frame and therefore the concept represented by the frame. Thus, different frames for different concepts can easily combine by 'docking' at the slots for shared attribute values. The frames of 'Hesperus' and 'Phosphorus' e.g. share the attribute-value 'planet', which is one possibility for the frames to link.

**Problems with Files** As stated above, both theories take into account the necessity of linking or combining representations – a cornerstone for every theory of conceptual thought, as widely acknowledged features such as compositionality and systematicity rely on combining representations. Furthermore, the possibility of thinking of one and the same object in different ways, is just made possible (and explicable) in terms of representing different information when thinking about an object. A theory of mental representation with cognitive significance has therefore to give convincing answers to the questions of how the combination of representations is made possible and why it is that we sometimes think about the same object in different ways. In the following, I will argue that, although Recanati is acknowledging these issues and tries to address them by introducing the linking operation, frames serve better for explaining the required operations.

A central problem for the mental file account is that the linking operation is not specified in detail. Recanati recognizes the need for connecting distinct files, as otherwise they would remain isolated and informational exchange would never be possible – if one learned that “Cicero=Tulli”, one could not form the thought that there is a man that is bald and well-read, because the relevant information is still stored in different files and according to the way they are defined, “[i]nformational integration and inferential exploitation of information only takes place within files [...]” (Recanati, 2011). Thus, a link is established in the case of discovering identities, while at the same time preserving different files which enable one to think in different ways of an object. Recanati explains *why* there has to be a link between files, i.e. the functional role of linking, but he does not explain *how* this linking is to be understood in detail. Some questions arise: What gets linked – the properties (information) in the files or the files as a whole? Or is the link another property, therefore information in the file that contains the reference to another file (or its properties)? Unfortunately, Recanati so far gives no decisive answers to these questions, which renders his idea to some degree underspecified. Frames on the other hand are able to overcome this blank space while at the same time preserving all of Recanati’s initial ideas.

1. As already pointed to above, different frames can share the same attribute values, which is exactly the possible locus of connecting frames. Different frames can easily “dock on” when sharing possible attribute values – the frames for ‘Cicero’ and ‘Tulli’ e.g. share the attribute value “roman”, which would be one possible connection point. Therefore, the linking operation, which is an important operation required for explaining the relevant cognitive abilities in question, is already an integral part of the frame theory.

2. Moreover, frames can represent not only singular objects, but various elements of human knowledge: actions, events and the like, as frames are held to “provide the fundamental representation of knowledge in human cognition” (Barsalou, 1992). In that sense, frames can account for all kinds of mental representations.

3. Frames are also very well suited to explain the possibility to think of an object in different ways: When to frames are linked, a larger frame is generated. Whenever tokening that frame, only some attributes of that large frame are focused on – so it is still possible to focus on Tulli aspects when thinking about that ancient person a.k.a. Cicero. Regarding cognition, it seems implausible to assume otherwise: If every time a concept is tokened in thought the whole frame with all its attribute values would have to be instantiated, far more information than necessary for specific ways of thinking would be represented. When thinking about my first car I bought, I will focus on the color, the sound, maybe the way it drove and the first cassette played, but rather not on its having a trunk and a fuel pump, although these are aspects of my car frame that can be tokened on different occasions.

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