

---

## Levels of describing frames – a systematic and historical account of what frames are

LARS INDERELST  
(Heinrich Heine Universität Düsseldorf)

---

The technical term “frame” and some other analogous terms such-as “schema” have become quite important in a variety of disciplines reaching from cognitive psychology and linguistics to the notion of framing in the social sciences. All of these do claim to have the same historical predecessor namely the original notion of frame in Marvin Minsky (1975). In this talk I have two main aims a) describe different levels on which frame-theories can be classified and b) apply this scheme to an historical account of frame-theories and their development.

- (1) Frames are described as representations, structures of representations, social constructs or concepts etc. From a philosophical point of view this shows that the ontological status of frames, i.e. the question what kind of entities frames are, is not clear or at least varies among disciplines and different frame-conceptions. The ontological level is the first level on which frame-theories can be classified.
- (2) If frames are to have an explanatory value they are supposed to fulfill a certain function. This might be a social or a cognitive function and, therefore, is independent of the way they are classified ontologically since there are several cognitive and social functions frames could possibly fulfill and different stories might be told which kinds of entities are needed to explain those functions. On the functional level frames, e.g., might be said to be the representations involved in conceptual tasks, memory tasks, language processing etc.
- (3) If frames are representations the question comes up which kind of content they do represent. One distinction is, e.g., the distinction between factual and procedural knowledge in Minsky, but on the same level it can be discussed whether frames are only used to represent semantic knowledge or also to represent syntactic structures etc.
- (4) Frames also are defined in virtue of structural properties which can differ between different incarnations of frame-theory, e.g., allowing default values and non-attribute relations.
- (5) Finally on an external level there are certain terminological choices associated with frame-theory, e.g., the terms used for the different structural elements of frames that help to identify frame-theories as a more or less coherent group.

In my historical overview I start with shortly describing the history of theories of representations and concepts in philosophy which shows ontological options available to classify frames. I then discuss possible philosophical predecessors such-as schemata in Kant and abstract ideas in English Empiricism, especially their resemblance to frame theories on the functional and content level.

There are some authors that are identified as predecessors by the early proponents of frame-theory such-as Bartlett, Kuhn and Bateson. I reconstruct the immediate pre-history of frame-theory including authors such-as Selz and Head evaluating whether their notions of frame, schema, paradigms etc. do correspond to frame theory on the five levels described above.

I then provide a detailed analysis of four of the most influential conceptions of frames namely Marvin Minsky (1975) and Charles Fillmore (1968), who can both be said to be the inventors of frame-theory depending on what perspective is taken, Erwin Goffman (1974) as an important proponent of frame-theory in the social sciences and finally Lawrence Barsalou (1992) who introduced a very precise but more narrow notion of frames as conceptual attribute-value structures.

Following this I give a short overview of the development and different branches of frame-theory since its beginnings up to recent times, e.g., Fillmore's FrameNET and a lexical approach to frames are discussed.

There are two interesting insights this systematic and historical review of frame-theories provides:

- (a) There are two main definitions of frames, one on the functional level defining them as background knowledge guiding the interpretation of certain situations, phenomena etc., the other on the structural level describing frames as slot-filler-structures or attribute-value-structures.
- (b) On the ontological level frame-theories are ambiguous concerning their commitment to one of the available ontological options. This area should receive more attention by frame theorists than it has up to this point.

Barsalou, L. W. (1992). Frames, concepts, and conceptual fields. In: A. Lehrer & E. F. Kittay (eds.), *Frames, fields, and contrasts*. Erlbaum: Hillsday. pp. 21-74.

Fillmore, Charles J. (1968). The case for case. In: E. Bach & R. T. Harms (eds.) *Universals in Linguistic Theory*, Holt: Rinehart and Winston, pp. 1-88.

Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience*, Harmondsworth, Middlesex: Penguin Books.

Minsky, M. (1975). A Framework for representing knowledge, in: P.H. Winston (ed.), *The Psychology of Computer Vision*, New York: McGraw-Hill, pp. 211-277.