Organisation Of Memory Essay, Research Paper

The Organisation of memory By Tasneem Sarwar

A considerable amount of research has been carried out on the nature and structure of memory, its functions and processes but recently, psychologists such as Schank (1975) have started to conduct empirical studies on the organisation of memory. This essay will examine one of the more recent developments in the organisation of memory, the schema theory.

According to Gross (1999) the organisation of memory involves two main concepts. These are the format in which information is arranged and how this information is arranged. The earlier theories, such as the matrix and hierarchical network models by Collins and Quillians (1969, 1972) concerning the organisation of memory adopted a logical, sequential approach to the organisation of memory. Later on, in the late 1970 s psychologists such as, Schank, Abelson and Rumelhart realised that the organisation of memory is not as logical as the earlier models proposed. The schema theories make an attempt at addressing the more complex aspects of the organisation of memory.

Semantic memory plays a fundamental role in the earlier theories but according to Baddley (1990) it became increasingly obvious during the 1970 s that the SM must contain structures considerably larger than the simple concepts discussed in the network models by Collins and Loftus. Bartlett (1932) used the term schema to refer to this larger unit of semantic memory. According to Hayes (1999) a schema is a .form of representation which we use to guide our actions Bartlett (1932) described a schema as an active organisation of past reactions, or of past experiences which must always be supposed to be operating in any well-adapted organismic response . Bartlett also realised that our memory is often disorganised, vague and incomplete and that any theoretical model must attempt to explain such inaccuracies in our representation of information or knowledge. Bartlett also recognised that memory is a reconstructive process in which information already stored affects the remembering of other events. According to Cohen (1993), schema theory represents the most influential approach to the fundamental problem identified by Bartlett. At its core is the belief that what we remember is influenced by what we already know and that our use of past experience to deal with new experience is a fundamental feature of how the mind works.

Two major modern schema theories are those of Rumelhart (1975) and Schank (1975) and Schank and Abelson (1977). Their theories greatly overlap and are, in many ways inter-related. The main concepts and ideas in these two theories were summarised by Norman (183/85). First, that schema’s have variables or slots. Schemas are packets of information, which comprise a fixed, compulsory value plus a variable or optional value. Rumelhart and Norman (1983) described schemas as varying considerably in the amount of information they contain-some are quite simple while others are extremely complex . Here, there is a subtle reference to the variable slots. Second, schemas can be related together to form systems. That is, they are not mutually exclusive packets of information but can be overlapping. For example, a schema for a picnic may be part of a larger system of schemas including, meals, outings and parties. Third, Schemas represent knowledge of all levels of abstraction. Schemas can relate to abstract ideologies, abstract concepts or concrete objects. For example, they may be used to describe justice or the appearance of a face. Fourth, Schemas represent knowledge rather than definition. Schemas incorporate knowledge and experience of the world rather than abstract rules. Fifth, schemas are active recognition devices. This is very similar to Bartlett’s effort after meaning whereby we try to make sense of ambiguous and unfamiliar information in terms of our existing knowledge and understanding.

According to Schank (1975) and Schank and Abelson (1977) we develop schemas and scripts which represent commonly experienced social events such as catching a bus or going to a restaurant. Baddley (1990) says, ” scripts can only be interpreted by bringing in a great deal of additional information” According to Schank et al, scripts are essential ways of summarising common cultural assumptions. Not only do they help us to understand text and discourse but also predict future events and behave appropriately in given social situations. Furthermore, scripts contain the sequences of actions one goes through when carrying out stereotypical events and would also include the sorts of objects and actors we are likely to encounter. Schank and Abelson (1977) built their scripts into a computer program (SAM) which, they claim is capable answers about restaurants and accounts of restaurants. Their scripts were supported by Bower et al (1979) where he asked people to list 20 actions/events in sequential order which commonly occur while eating at a restaurant and found considerable agreement. He found that 73% mentioned sitting down, ordering, eating, paying the bill and leaving. Also, at least 48% included entering, giving the reservation name, ordering drinks, eating dessert and leaving a tip. Thus there were at least 15 events similar to the majority of people. These findings broadly agree with Schank and Abelson s restaurant script. Interestingly, when such events were embodied in a story people tended to falsely recall the facts, which were not explicitly recorded but were consistent with the script.

The schema theories have strengths and weaknesses. They were able to provide a fundamental basis and further development in theorising the organisation of memory. Not only did they address the more complex situations of social and cultural aspects of everyday situations but were also to provide a basis for the explanations of real life situations. However, one of the main problems of the schema theory is that it is often very difficult to define what a schema is. Rumelhart (1980) identified four different analogies of what a schema is but was unable to actually define a schema. The schema theory is also very limited as Alber and Hasher (1987) argue that memory representation is much richer than the schema theory suggests. The schema theory adopted a rather limited model of the schema, which said that schema first encoded only relevant information and then extracted only relevant meaning, so that none of the original form of the information would be needed. When Alber and Hasher identified aspects of memory, which were richer than that, and also included, irrelevant details they concluded that schema were not adequate to explain how organisation and memory representation works.

Cohen (1993) points out that the whole idea of a schema is too vague to be useful . Also that there is an overemphasis on the inaccuracies of memory and overlooks the fact that complex events are sometimes remembered in great detail. Cohen further argues that the schema theory does not suggest the origin of schema or how they are created in the beginning. Nonetheless, he admits that without schemas we are unable to interpret new experiences and also these new experiences build up schemas. It seems that schemas definitely form part of the organisation of memory although the schema theory itself had many limitations and needs to be developed further.

In conclusion, the schema theory has provided us with a fundamental basis on which theorists may develop further and use it as a solid grounding and basis for their theories. However, the theory is too limited and vague and does not address all aspects of our complex memory system. Yet, it is evident that schema play an important and essential role in our social and cultural environments and do explain some aspects of the way our memory is organised.