

Networks of Ideas

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We examine the way ideas organise themselves in the brain. From daily experience we know that one idea may trigger another idea and so on. So, it appears that there is a network of connected ideas stored in our brain, and invoking one helps trigger others. We present the results of an experiment which was designed to poke the topology of this network. For the purpose of this study we define the term “idea” to mean an object. In order to make the experiment feasible, we restricted the list of ideas to 100. We identified in a systematic way 100 such ideas, and iconic representations for each one of them. We arranged the icons in a poster in a random way, and after allowing time for the subjects to familiarise themselves with the contents of the poster, we asked subjects to identify the most similar object to a randomly picked one, then the next most similar object, etc. This way, a person was able to create a thread of connected ideas. We used 20 subjects for our study.

Two months later we repeated the experiment without supplying the visual cues to the subjects: each subject was given a list of nouns and was asked to create the thread of connections again.

Statistical analysis of the results showed that the network of ideas poked by the visual cues and the network of ideas poked by the written cues have the same topology: they are scale-free small world networks, like many natural networks. However, the ideas that serve as hubs in the two networks are different.

We concluded that the network of visually stimulated ideas and that of verbally stimulated are different but of the same topology. This has implications in the way information may be conveyed to a person, and also on the way prior knowledge is stored and made use of in cognitive systems.