

ABSTRACT

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Memory, Social Networks, and Language: Probing the *Meme* Hypothesis II**
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WHAT IS A MEME? A FUNCTIONAL DEFINITION

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There are a plethora of definitions for the meme, with most being variations of Dawkins original notion of a unit (whatever that means) of cultural transmission, where culture may be defined as the total pattern of behavior (and its products) of a population of agents, embodied in thought, behavior, and artifacts, dependent upon the capacity for learning and transmitting knowledge to succeeding generations. None of extant definitions of a meme is sufficient to allow a meme to be clearly recognized, measured, or provide the basis for scientific research. And without the establishment of a scientific basis and the ability to explain, predict, and control phenomena, memetics will remain a functionally useless pseudo-science.

While Dawkins focused on the meme as a replicator, analogous to the gene, able to affect human evolution through the evolutionary algorithm of variation, replication, and differential fitness, for practical applications the relevant key characteristics of the meme are that it consists of information which persists, propagates, and influences human behavior.

An initial pragmatic definition was developed to distinguish a meme from other sorts of information (such as common daily utterances). It invokes an order of magnitude rule and places an emphasis on the necessity of a threshold for propagation and persistence. Metrics were defined (each with submetrics) to facilitate the measurement of memes: propagation, persistence, impact, and entropy. Additional metrics may be defined based on the results of future experiments with tools such as functional magnetic resonance imaging (fMRI). Other experimental approaches include the modeling and simulation of social networks and information propagation through social networks, as well as the tools and techniques of neuroeconomics.

The attempt to establish a scientific basis for memetics is critically important. For example, within a suitable framework memetics could counter zealots and fanatical true believers, preventing irrational conflict and promoting rational solutions to endemic national and international problems. Of course, without safeguards memetics will become a double-edged sword.