# Mems and Creativity: Issues of Conceptualisation and Falsifiability

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***Abstract***

Mems concept is a mental model analogous to the evolutionary theory of Charles Darwin. It is analogous to the genes in biology. Mems model tries to explain behaviour and mental processes supported by the evolutionary metaphor of variation, selection and adaptation. This article explores the nature, characteristics, brain mechanisms and transmission of Mems. Further, the theoretical assumptions of Darwinism are also examined. The relationship between creativity and the Mems model is critically examined. The issues of falsifiability and empiricism are brought into picture to examine the robustness of the mems concept. The article concludes by suggesting the need for further studies and empirical proofs.

**Index terms – Mems, Creativity, Darwin, Psychology**

## INTRODUCTION

Understanding of species in scientific way with logical and empirical proofs came at a very recent part of human evolutionary history. Cognitive sciences came very recent in this endure and had to face a field which almost remained biased by religious practices, myths, wrong sides of tradition and so on. Life had to have an explanation before or after it is broken into disciplines and areas of enquires. A presumably macro theory was forwarded by Charles Darwin in his book 'On the Origin of Species' that arguably had a sphere of explanation on the species growth and survival. The geographical positioning, comparative studies of past and present inhabitants of South American inhabitants (Darwin 1859) and ontological plus phylogenetic understanding was used in the empirical work done by Darwin in the Galapagos islands.

The theory was accepted with arguments and turned the interest of many researchers into this paradigmatic level. Evolutionary Psychology is exactly such an attempt to work on the ultimate explanation for the way we are; why our nervous system was organised the way it has been organised and not in any other possibilities; why our ancestors have a particular rate of reproduction in the past in specific conditions. Genetic studies coupled with ontological, phylogenetic and embryological studies provide insight into the physical makeup of human being but rarely could it explain the concept of Self, Self-actualisation, altruism and much more. Mems was such a construct developed along such lines where there is a perceived relationship between evolutionary theory and cultural dynamics.

Mems is such a concept developed which have predominant Darwinian and theoretical assumptions. It is an attempt to explain the sophisticated mental processes but came from a tradition that understands the biological processes as evolved through variation, selection and transmission. Richard Dawkins (1976) refers to the construct of Mems or mental representations and is defined as a replicator of cultural information analogous to gene. His description of Mems in his book 'the Selfish Gene' is as follows.

*"Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation. If a scientist hears, or reads about, a good idea, he passes it on to his colleagues and students. He mentions it in his articles and his lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain."* (Dawkins, 1976).

There is a question of how much the biology controls the culture. Even though the genes are our genetic blueprints, just after the full embryonic development the brain takes over the control of body. The culture is experienced in the neuro-systemic processes of the Nervous system. Culture even organises the psychological activities (Ratner 1996). Mems Model is an analogy of the evolutionary theory of biology to the cultural transmission. In this paper, the attempt is to go analytical into meta-theoretical assumptions of Mems and examine its scope and falsifiability taking into consideration a special domain of creativity as a specific context of this macro-theory.

The Mems are transmitted from one brain to another and Gabosa (1997) identifies some essential properties in the transmission of Mems. Firstly, Intra-individual Mem replication is done when the hosts meet each other or teach other. It is actively supported by neural networks and acts as implicit pointers to memory. According to Dennet there exists a differential fitness of Mems and MemX spread among the people because MemX is a good replicator. Secondly, the transmission is Lamarckian and phenotypically mediated. Thirdly, any experience can affect transmission.

Mems are not simple ideas but complex ideas that form into distinct memorable units. Dennet gives the examples of Mems as the ideas of arch, wheel, wearing cloths, alphabets etc. They are the smallest elements that can replicate with reliability and fecundity

(Holdcroft 2000). The persistence of Mems is proportional to the persistence of the vehicles that carry them. For instance the Mems are carried by pictures, books and sayings that transmit through culture but if there is no such medium then the existence and transfer of Mems are under question. (Holdcroft 2000). In social sciences also we can find the cultural transmission of Mems which have diverse names as Social diffusion, co-evolution, social contagion and much more.

Cultural evolution is an idea that information in a cultural domain changes according to a similar process by which the species change whereby the selective retention of favourable cultural variants are kept and others ignored. Or is it the culture selects for the natural selection? Mesoudi and colleagues (2004) provides an example of smokers. The differential adoption of the habit smoking, i.e., whether smoking increase or decrease in frequency is decided either by habit-cultural selection- or by the survival of the smokers-natural selection. Gabora (1997) argues Mems are interconnected. There are different or alternative versions of Mems called as allomeme stored in a network like fashion and are connected in a web of associations. Even the chunking of Mems is possible where the Mems are semantically unrelated.

Regarding the evolutionary metaphors of selection variation and transmission Gabora (1997) argues that the brain select, vary and replicate Mems. It makes a world view compatible for the instincts and the real world outside. Brain selects Mems that satisfy the biological and cultural needs. The Memetic landscape should echo the biological landscape of the individual. Understanding creativity from the Memetic perspective will be to relate the construct to evolutionary theory and processes. Jacques Monod, a molecular scientist observed that ideas exhibit the properties of organisms. They propagate their structure, breed, recombine, fuse and ultimately evolve (Goldenberg 1999). Creativity is understood in different levels.

A meta-analytic review of the creativity literature from 1998 to 2008 says that the creativity had been understood in different thematic levels. The basic level starts with the neurological assessment, then to affect/cognition/training. The rest of the five levels in the total of seven levels identified are individual/personality level, groups level, social environmental level, culture or societal level and ultimately the systems approach. For definitional purposes and for a reference point we may use a definition of Sternberg i.e., Creativity is an ability to produce work that is novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive, concerning task constraints) (Sternberg 1996).

The concept of creativity is linked to evolutionary metaphors where a juxtaposing is done between genes and templates and between species and ideas at a deeper level. Genes control the behaviour of species whereas templates control the properties of ideas. Another analogy by Alice Hudder is that the numerous ideas and ideologies conflict each other at a point of time and the weaker one will be neglected while the stronger one will be accepted just following the principles of variation selection and transmission in evolutionary process of species. In this dialectics certain templates are selected that survives and certain templates that which are not selected doesn't survive. Though not a conscious process, during creative thought, memes potentially relevant to a solution would evoke or activate or alter or manipulate one another (Rumelhart & McClelland 1986). This process involves pattern completion, constraint satisfaction, abstraction, and recoding of representations (Gabora 1997). And thus a creative act is explained in terms of the micro units of culture Mems and yet another model evolved for understanding creativity.

## DISCUSSION

When a theoretical model such as that of Mems establishes itself and explains the phenomenon such as creativity there exists loopholes in the conceptualisation of the construct. The meta-theoretical assumptions are challenged as the culture cannot be simply deconstructed into discrete particles (Bloch 2000). The minute particles as conceived as the Mems do not replicate in the way the genes do (Sperber 2000). The entire concept of micro substance of culture as Mems and its templates are not instantly available for an empirical proof. Genetic experiments provide platform for isolating and analysing human genome but on the same line the templates are not found in existence.

If the survival of the fittest or the variation-selection-transmission model is adopted in culture then the ideas that have the most powerful strength will survive. This makes the scope of explaining creativity dim because survival and existence is the only question not the divergence and variation. The slot is ready for the most adaptive and most surviving things but not for all kinds of variations that could have an independent existence. The concept of falsifiability if brought into the issue, then the entire model is not falsifiable. The construct of Mems is hypothetical and the empirical evidence is not sufficient for such models, nor have any neuro-psychological studies accepted it as a fact. According to Popper if a theory cannot be falsified then it is not scientific in any sense.

The species evolution is hierarchical, multiple level and dialectical whereas the cultural transmission may have some essential dialectics but less hierarchical and had to remain speculative about the levels the transmission happens due to lack of empirical proofs and chances of conflicting logical proofs. The notion of progress is mixed with the notion of evolution. May be the cultural transmission may be a growth or progression and rarely an evolution that takes span of millions of years. Questioning what extend of Mems is transferable and what are not transferable leads to confusion. Invisibility of templates is a genuine issue in the model but none of the stronger theories could say what percentage of Mems is transferred to brain to brain and are there some innate factors playing in the accusation, transfer and progression of Mems.

## CONCLUSION

The ex nihilo aspect of creativity is a major roadblock in research and development. The complexity of explaining the concept has led to address it by yet another complex evolutionary metaphor. Mems model had attempted to explain cultural transmission in evolutionary glasses. On detailed analysis, the model had strong meta-theoretical assumptions of Lamarckism and Darwinism. The concept had drawbacks including the lack of verifiability and falsifiability in itself so the macro-theory when explaining specific process like creativity also brings into these issues in the platform of analysis. The call is for more logically compelling theory provided with sufficient empirical proofs such that the theory can be tested, advanced and studied further.

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