

A review of recent studies on "Collective Intelligence"

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According to an overview of earth's history, we can see the gross picture of human evolution. Originally we were self-replicating molecules, next to the single-celled bacteria and became various species of multicellular gregarious animals which think logically. It is a major event on earth's history that human being began to do science evolving explosively to enable us to recognize ourselves as such an entity. This event is called the seventh big event in the whole Earth's history (Kumazawa: 2002). At present, human being has obtained a potential to control other lives together with their environment and started to interfere the natural evolution. Recognizing this situation, we think we have an important responsibility of utilizing our intelligence towards what is ought to be. However, we know we have not intelligent enough to do what is expected to do. A straightforward approach demanded may be the study and development of "collective intelligence".

Current human society is changing rapidly in association with the realization of information society. A group regarding information (knowledge, wisdom, idea) as a potential resource to be utilized extends their competitive edge and creates new ideas and technologies. Another type of reasoning is such that predictions by crowds of ordinary people are smarter than predictions by some professionals (Page:2004,Surowiecki:2005). The concept of collective intelligence is utilized in a system such as data mining and even for controlling someone's decision. Examples are not limited to Google's search system, Wikipedia, stock price prediction, a way to find optimal solution, and clustering. Now, collective intelligence may possibly decide where the society is heading in future.

However, we know from one's previous socio-psychological experiments that the crowd is not the basis of good judgment(Darley and Latane:1968). Because an atmosphere or a common knowledge that develop when the people gather mislead someone. These are the mass psychology, bystander effect, totalitarian ego.

For these reasons, it is ideal that we make use not only the information in the accumulated knowledge, but for us to bring out the collective intelligence in real time and prevent someone from falling into mass psychology. Some companies are beginning to practice the collective intelligence in utilization of "knowledge, diversity, and disruption".

In this way, despite a general awareness of the importance of collective intelligence, the concept and structure are still in the discussion stage. In this research, we review the studies on "collective intelligence" in artificial life and artificial intelligence and what the scientists have so far.

Keywords: Collective Intelligence, Crowd Psychology, Artificial Life, Artificial Intelligence