

## Cognitive Science: A Science toward the Future



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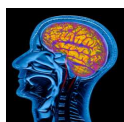
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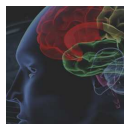
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## Editorial

In spite of various techniques and methods developed in Futures Studies to shape preferable futures, understanding the future as a time-spatial phenomenon that is related directly to human intelligence requires a suitable comprehension system. Given that the future has not happened yet, understanding it as an abstract concept can occur within the subjective framework of human mind as an existent who understands his/her presence in the river of time. This framework is important in the perspective of Cognitive Science as a more evolved neural system and a more potential mind may be able to comprehend the concept of future in a better manner.



Scientific and systematic study of the mind is done in the field of Cognitive Science. Questions such as how the brain creates intelligence are answered in this field. Cognitive Science is an evolving field that initiated in 1950s and was entitled as "Cognitive Science" in 1973. This academic discipline is a new field of study and is at the beginning of its evolving path as well as Futures Studies. Cognitive Science as a new science is involved with scientific methods and measures. The most important principle in this field is that the study of mind is possible through scientific approaches. Those predicates are accepted in this field which can be repeated, tested and measured by scientific tools.

Cognitive Science is an interdisciplinary field and embraces a number of branches including: psychology, neuroscience, computer science, anthropology, linguistics, and philosophy. It is obvious that these branches study the mind along with other related topics. So those parts of these branches which deal with cognitive issues may be categorized under Cognitive Science. It should be noted that many other different branches (from education to biology) may be regarded as subcategories of Cognitive Science.

It is being seen how vast the domain of Cognitive Science is and different applications may be conceived for it. For instance, human behavior, discourse and subjective experiences are studied in the fields of psychology and linguistics through the implementation of Cognitive Science. In fact, they study the outputs of mind with the aid of Cognitive Science. This science is also being used in the field of anthropology. Cognitive Science studies the process of inference in human brain. Differences of thinking behavior in different cultures are also being studied. Cognitive Science is also applied in neuroscience. Neuroscience studies the process of shaping brain and its functions. Through techniques like MRI the functions of neural system is studied in different situations. Cognitive Science helps neuroscientists to study the consequences of damages induced in brain.

Cognitive Science is even applied in fields such as philosophy and logics as outcomes of different branches are summarized in these two fields through offering new theories. Cognitive Science has a significant usage in Computer Science. Brain functions are simulated by computer programs and the process of these functions in the brain is studied.

All the above mentioned applications of Cognitive Science deal with the future and fate of mankind which are being shaped today through scientific advances in this field. It is clear that Futures Studies and Cognitive Science proceed with their evolutionary lines as two distinctive academic disciplines, but they face with each other at a crossing point that is creating a better future for human being and his civilization. Considering the importance of this point and the role of Cognitive Science in shaping preferable futures, this issue of ISFS e-monthly is dedicated to this topic.

## Cognitive Science: A Science toward the Future

Cognitive Science is one of new sciences that constitute what is known as NBIC along with other converging technologies such as Nanotechnology, Biotechnology and Information Technology. This academic field is composed of subcategories like Neuroscience, Psychology, Linguistics, Artificial Intelligence and Philosophy of Mind and is being applied in disciplines such as Medicine, Education, Sociology, Politics, Information Science, Communications & Mass Media, Medical Engineering, Command & Control Engineering and Even Military & Defense Sciences. Many research institutes and universities are busy with research on Cognitive Science to explore the mystery of human's greatest treasure: Man's Brain & Mind. They want to discover the functions of brain as the best and the most complex divine gift granted to human beings.

Neuroscientists, linguists, psychologists, philosophers of mind and theorists have been able to take some valuable steps in the way of exploring and determining human's cognitive functions leading to precious findings in recent years. So they called 1990s as Decade of Brain in the light of besieging scientific capabilities and popular efforts to explore more mysterious dimensions of brain's world. Advanced countries' investments in this area are significant and there is a considerable competition among different countries to find mysteries of brain and their applications. In our country some appropriate investments have been made in the fields of nanotechnology, biotechnology and information technology, but Cognitive Science as the fourth part of NBIC converging technologies has not received enough attention or investment. However, it is enough worthy to be regarded and capitalized as an important technology that will make significant effects in many areas of human's life and civilization. Cognitive Science as all of knowledge-based studies follows a special paradigm. Cognitive scientists regard human's mind as a complex network that receives, stores and retrieves the information and can transform it into different shapes. The operation is called information processing and the paradigm is named as computational approach. In the view of cognitive scientists the mind is some how similar to computer. The information enters the computer by input devices like keyboards and modems then goes through a process to be changed into new forms. The result can shape different kinds of outputs. In the same manner, real world information is captured by our sensors (e.g. eyes & ears) then passed through the processor network (mind). It is stored in the memory and processed through the process of thinking. The outputs can be discourse or a moving behavior. Of course, it should be reminded that the information has an extensive meaning in this approach and embraces all of human's perceptions from his outer world in addition to all the concepts and comprehensions that exist within the mind in both natural and intentional manners.