

## **An introduction to the International Seminar on**

### **Language, Mathematics, Music and Society**

Vidya Bhawan Society, Udaipur, Rajasthan, February 26-28, 2010

Education of children is an important and critical social engagement. It involves not only parents and schools but also teachers, teacher trainers, textbook writers, artists and illustrators, and colleges and universities. We need to build bridges across all these individuals, groups of people and institutions in order to help children develop into responsible and rational human beings who will be socially and aesthetically sensitive. For the last 75 years, Vidya Bhawan Society has been engaged in a variety of such activities. One such activity has been regularly organizing national and international workshops and seminars to bring together the academy, teacher trainers, NGOs, teachers, children and others. An International Seminar on 'The Construction of Knowledge' was held during April 16-18, 2004; its proceedings were published in 2005 and a final volume containing all the papers is in the press. In that Seminar, we tried to share the current understanding of how concepts in different domains of knowledge - e.g., language, mathematics, social sciences. - are formed and how they are mapped onto language. An International Seminar on the 'Teaching of Science' was held during Dec 8-10, 2005. It tried to focus on the emergence, evolution and present status of innovations in science teaching in India and abroad at the elementary levels within the context of their ideological, philosophical, sociological and psychological underpinnings. An International Seminar on 'Cognition and Learning: Theory and Practice' was held during Feb 23-25, 2007. It was followed by the International Seminar on 'Teacher Development and Management' held during February 23-25, 2008. We are now planning to enter into a new area.

We feel that it is possible that systems such as language, mathematics, logic and music have something in common and all of them play an important role in shaping our individuality and group membership. All human societies have all these in some form or the other. Perhaps each one of them has its own underlying grammar. A grammar that is universal to all human beings is perhaps governed by the way our brain is biologically structured and the way it develops and matures. It may also be that all these systems and their grammars share some features. All these domains of knowledge are also a part of school curriculum though music and logic are not given the same importance as language and mathematics. It is now recognised that the school curriculum needs to reflect these areas explicitly and independently. The need to consider the nature of these systems and their inter-relationships is therefore now evident. We wish to make a small beginning towards this objective in our next seminar. We, therefore, plan to have a seminar about 'Language, Mathematics, Music and Society' during Feb. 26-28, 2010. We propose to examine questions of the following kind:

1. How is it possible that we so effortlessly understand each other producing new sentences all the time? When we look at the structure of language carefully at the levels of sounds, words, sentences, dialogue and meaning, we realize that it is extremely complex and abstract. Yet we never go wrong; and even when we do, typically under situations of stress, we can and do immediately repair things. What sort of knowledge makes it possible? What are its features? Sounds have no meaning but when we combine them in a rule governed fashion they become words and begin to have meaning and when we start using them in sentences, the meaning of each word depends on the meanings of other words and the context in which the sentence is used. How are the systems of sounds, words and sentences related?
2. Precisely what is the importance of the social context in which we learn how to mean? What does the bridge between language and society and/or culture look like? Is learning to mean only a matter of innate capacity and brain development or does society make important contributions towards that process?
3. What's the nature of the boundary between language and thought? Is language the limiting feature of human thought? Does it define our perception as well? Are there visual thoughts, transformations and maps triggered by images and their spatial organization?
4. What's the nature of the boundaries, if any, among the systems of language, music and mathematics?
5. What, if any, are the implications of the discussions around the above questions for curriculum, textbook writing, teacher training and classroom transaction.

In the case of language, it has been suggested that there is an innate Language Faculty/ Universal Grammar with which we are born. It is this unique faculty that makes language acquisition possible at the young age of 3-4 years. There is no doubt that we learn the languages of the society in which we live but without this Universal Grammar it is suggested that it would be impossible to acquire such a complex system so effortlessly and at such a young age. Like any other core system postulated by science, this grammatical system describes only a part of the phenomenal complexity of language and does not address the issues of its possible relationship with such other systems as music, mathematics and thought; nor do we find any serious discussion of how these relate to society and social action including the education of children.

Several aspects of the grammatical system of languages are however well understood. We know how we make words from sounds; what kind of combinations of sounds languages allow and what kind are forbidden. We know that the basic requirement is that words have meanings and words form creatively exploitable groups when they are related in terms of form and meaning. Clearly, these words belong to different areas of human knowledge and therefore there is a relationship between language development, the concept in these areas, ability to logically formulate arguments and therefore to human thought in general needs to be explored. It would be also important to consider if the adjoining systems also have their own basic universal Grammars and if so, whether they have any relationship with the Grammar of the language.

Some recent research in different areas of human knowledge has shown that there are significant structural similarities between language, music and logic. Can these structural similarities be traced to some common grammatical core? If the answer to the question is in the positive, as seems likely from the very inadequate current research, then the relations between these systems and language are likely to inform us more about the functioning of the human mind including the socio-cultural aspects.

Although we intend to pursue the aims of this conference as rigorously and intelligibly as possible, we shall not lose sight of the fact that human beings live in groups, small and big, structured at the same time in terms of hierarchies of power and relations of solidarity. All human beings (except those with major mental deficits) universally acquire a language, visually structure the world around them, find ways of quantifying it, can clearly distinguish and enjoy music from random noise, and are able to think on their own. We shall, in other words, also raise the question of precisely what is the nature of interaction between their innate capacities and the world they live in? Is there something underlying all these capacities which makes these borders, boundaries, barricades, and bridges more porous than currently recognised?

We are aware that this is a huge agenda for a seminar of 3 days and are also aware that the building of bridges across the crucial categories of participants would not be easy; however, our focus is NOT the technical details involved in answering the questions outlined above but beginning a dialogue concerning the human cognitive system and its development in a variety of human contexts, a better understanding of this would have far-reaching consequences, particularly for education.

Having learnt a few things from the previous seminars we are proposing a modification in the structure of the seminar this time with a view to not only provide all participants space to engage with the content of the seminar, but also give them time to express their ideas, ask questions and respond to issues.