I. WHAT IS IN THIS STUDY ?

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I.1 SCOPE OF THE STUDY

In this study, we confine ourselves to mathematics education of school age children (although we are not confining ourselves to mathematics education in regular schools) and related areas such as teacher education, and will not specifically study issues such as vocational education or education at tertiary level. Problems in mathematics education to be investigated may include issues such as curriculum, assessment, policy, influences of information and communication technology (ICT) and multimedia, community and family background etc. These will be further elaborated in Section IV.

I.2 WHAT DO WE MEAN BY 'CULTURAL TRADITION' IN THIS STUDY ?

'Tradition' is an equivocal word which can refer to many different things. As this study is on mathematics education, we obviously would like to study 'traditions' which have a bearing on mathematics education. Two obvious choices are the *education* tradition and the *mathematics* tradition in different countries or regions. Indeed it is reported in the literature that mathematics education in a given country or system is very much influenced by the underlying education tradition and mathematics tradition. However, in this study we would argue that both the education tradition and the mathematics tradition are related to a deeper level of tradition, that of the culture. And it is this deeper level of *cultural tradition* with reference to which we would like to compare the mathematics education in different regions.

Culture is "one of the two or three most complicated words in the English language". It may refer to "the fabric of ideas, ideals, beliefs, skills, tools, aesthetic objects, methods of thinking, customs and tradition", or the "*configuration* or *generalization* of the 'spirit' which inform the 'whole way of life' of a distinct people". For this study, culture refers essentially to values and beliefs, especially those values and beliefs which are related to education, mathematics or mathematics education. An example of a value that pertains to education is the importance attached to education in different cultures. An example concerning mathematics is the view of the nature of mathematics (e.g. whether or not it is essentially a pragmatic discipline). An example of a belief that affects mathematics education is the attribution of success and failure in mathematics (e.g. attribution to effort versus innate ability).

Although 'culture' is a crucial concept in this study, it is not the intention of this paper to offer a comprehensive definition of the term. Rather, the brief discussion and examples above are meant to indicate the level of depth we are referring to when the term 'tradition' is used and to stimulate discussion on what cultural values and beliefs are relevant to a discussion on mathematics education. Indeed, one important purpose of this study is exactly to identify the aspects in our cultural values which have impact, directly or indirectly, on mathematics education.

I.3 WHAT ARE 'EAST ASIA' AND 'THE WEST' ?

This study is on the cultural traditions in East Asia and the West. In using the terms 'East Asia' and 'the West', we do not merely refer to geographic areas. Our contention is that cultural divisions are much more meaningful than political or geographic divisions in explaining differences of educational practices in mathematics. East Asia and the West in this study are therefore cultural demarcations rather than geographic divisions, roughly identified as the Chinese/Confucian tradition on one side,

and the Greek/Latin/Christian tradition on the other. We acknowledge that neither of these 'poles' is well defined, as with any label given to any culture. But we use the two terms to point to the scope that we want to confine ourselves to in this study.

In identifying these two 'poles', we are not claiming that the two cover all major cultural traditions in the world. Nor are we implying that these two are the most important human traditions. For example, it has been pointed out that there is a distinctive East European tradition in mathematics education which is definitely worth studying. Equally worth studying are traditions in South Asia (in particular that of India) and Africa. However, it would not be possible for a single ICMI study to cover all important traditions worldwide. What we hope to achieve, by choosing these two poles for study, is a balance between using pertinent examples to study the relationship between cultural traditions and mathematics education on the one hand, and choosing two major traditions that have attracted attention in the field of mathematics education on the other. More justifications on the choice of the two traditions will be discussed in section II.

I.4 What do we mean by a comparative study?

To compare means to identify similarities and differences, and to interpret and explain the similarities and differences identified. It may not be as easy as it is conceived. Given two things or concepts, there may exist infinitely many aspects of similarities and differences, and hence in a comparative study, we are always confining the comparison to a particular theme or some particular themes. For our study therefore, we are comparing practices in mathematics education (as defined in I.1 above) along the theme of *cultural traditions* (as described in I.2 above). Reminding ourselves of this obvious point is important. In studying mathematics education in different countries, we will definitely come across important aspects of mathematics education that are of interest to us. But in deciding which of those aspects should be included in our study, we have to ask ourselves whether or not those aspects are related to this theme of cultural traditions. Some aspects of mathematics education which we deem to be related to different cultural traditions will be discussed in Section IV.

After we have identified similarities and differences within a certain theme, the next question is what to do with them. A simple juxtaposition of similarities and differences does not in itself explain. There is a need for analysis based on certain theoretical frameworks, or in the absence of a suitable theoretical framework, a need for the establishment of one, based on the differences and similarities observed. More about how this comparative study is operationalised will be discussed in Section III.

II. THE RATIONALE FOR THIS STUDY

II.1 Why is this comparative study important?

Pressures and needs from outside mathematics education. Rapidly developing information and communication technologies have an enormous influence on mathematics, science, production, society, politics, education and even lifestyle. Increasing globalisation is encouraging the assumption of universalism in mathematics education. The increase in journals and books about mathematics teaching, the multitude of conferences in every part of the world, the availability of materials via the World Wide