Chapter 10
Chinese Culture, Islamic Culture, and Mathematics Education

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Introduction

Bishop’s 1979 paper opened up a fresh perspective on mathematical visualization and cognition in the Papua New Guinea (PNG) culture, a perspective so different from the one that we are used to in the (English) mathematics education literature. The paper illustrated how mathematics learning in a pre-technological culture could be so vastly different from that in a technological society. But looking back 30 years later, is Bishop’s paper already out-dated? It may be argued that every culture has gone through these phases of moving from a pre-technological stage to a technological one. The PNG pre-technological culture in the 1970s provided an interesting case because it co-existed with some advanced technological cultures elsewhere, thus allowing even contemporary researchers from those more “advanced” cultures to study it and to expose this transition to the Western world. But the PNG culture might have moved on with more exposure to and interaction with the “Western” culture, and as the majority of the regions around the world have by now finished this transition to a technological society, would Bishop’s work represent a mere documentation of the transition at a certain point in our history, and thus be of historical significance only?

As will be argued in the rest of this chapter, Bishop’s 1979 paper and his subsequent work have contributed much more to the mathematics education community than just providing an interesting documentation of a certain transition in the history of mathematics education. Bishop did not approach the PNG study with a deficiency model, where the subjects being studied were measured according to the most advanced (Western) education theory, exposing how far behind the subjects being studied were from the ideal. Rather, using the PNG data and data from other studies, Bishop’s perceptive observation and critical self-reflection expose and challenge our assumptions on the nature of mathematics, on mathematics cognition, and on mathematics teaching and learning, assumptions which we tend to take for granted since we are all products of our own cultures. This is not easy to achieve,
as “the fish is the last to know water”. Bishop was the pioneer “fish”, to stay with the metaphor, who became aware of the “water” around us, and he inspired other researchers to study the “water” in addition to studying the aquatic objects. Bishop’s work alerts us to the fact that mathematics and its teaching and learning are as much conditioned by culture as any other discipline, and sensitizes us not only to cultural differences that exist, but also to appreciate the strengths rather than the apparent inadequacies in cultures with which we are not familiar.

In 1988 when Bishop was editor of *Educational Studies in Mathematics*, he devoted a special issue of the journal to “Mathematics Education and Culture”. Bishop himself contributed a paper (Bishop, 1988), in which he conceptualized mathematics as a sociocultural phenomenon. He discussed the values associated with “Western” mathematics, which he argued was just “one mathematics” among many. Bishop was also one of the major figures behind the organization of the one-day programme (known as the Fifth Day Special Programme) on “Mathematics, Education, and Society” (MES) at the 6th International Congress on Mathematical Education (ICME-6) held in Budapest in the same year. The MES programme was organized around four sub-themes: Mathematics Education and Culture; Society and Institutionalized Mathematics Education; Educational Institutions and the Individual Learner; and Mathematics Education in the Global Village (Keitel, 1989). A large number of cultural factors relevant to mathematics education were examined in the MES papers, and the event prompted further research in this area.

Bishop’s 1979 paper said that it aimed at encouraging readers “to consider what might be the implications (of Bishop’s work) for the learning and teaching of mathematics” in the readers’ “own cultures and countries”. Responding to Bishop’s aim, some mathematics educators began to study the relationship between culture and mathematics education in different countries in the 1980s (Keitel, 1989), and the author of this chapter started to study the interplay between the Confucian culture and mathematics teaching and learning. Like many other students in the East Asian region, the author grew up in a community richly influenced by the Confucian culture and yet received a typical Western mathematics education at school. Many students in this situation had not realized that the Confucian cultural values that underlie the community were relevant to mathematics teaching and learning at all. But if the PNG culture has exerted such a significant influence on PNG students in their learning of mathematics, how can we not expect the Confucian culture to be influencing students in the East Asian region in their mathematics learning as well?

In this chapter, the influence of two major world cultures, namely, the Chinese culture and the Islamic culture, on mathematics teaching and learning will be discussed in order to address Bishop’s challenge. The “canonical curriculum” (Howson & Wilson, 1986) studied by students in all parts of the world (including the Chinese world, the Muslim world and the “Western” world) “was developed in Western Europe in the aftermath of the Industrial Revolution” (p. 19) and has a distinctive Greek origin. It is technique-oriented (Bishop, 1991), with a strong emphasis on rationalism. How do the religious Islamic culture and the secular Chinese culture accommodate such a “rational” education?