CHAPTER 2

THE HISTORICAL DEVELOPMENT OF SCIENCE AND TECHNOLOGY IN ASIA

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Having established the fundamental relationships between science and society in Chapter 1, Chapter 2 shows that the history of science and technology in Asia is at least as old as society itself.

Three commentators reinforce the idea that Asian science and technology predates modern Western traditions. **Irfan Habib** traces it, via trade routes, from Southeast Asia, through the Indian Subcontinent (the Tamil kingdoms), and into Europe (on the backs and in the minds of Arab traders, thinkers and writers).

Aqueil Ahmad relates the evolution of scientific and technological thought in Asia to "phases of modernization" in Asian cultures. He elucidates the impact of colonialism on Asian thought and institutions. But he implies that science and technology policy makers must look beyond the region's past. They must strike a balance in the "costs and benefits" of science and technology, in order to direct the best of mankind's knowledge to meeting basic human needs for food, shelter, nutrition, health and education. And, he asserts, Asian societies must develop a "critical mass" of trained specialists who are qualified to nurture the fruits of S & T for development purposes.

Abdus Salam reinforces this theme by asserting that science and technology is the "...shared heritage of all mankind--South and North, East and West." He charges policy makers to spark a renaissance in Third World science and technology through the development of scientific literacy and career ladders for Third World scientists.

Chapter 2 develops the historical context for a discussion of Asian science and technology. Above all, it demonstrates that that context incorporates "eastern" as well as "western" influences. It provides sufficient detail for readers to engage in meaningful discussions of five major topics:

1. Trace the development and exchange of scientific thought from Southeast to West Asia and from the 1st Century B.C. to the 9th Century A.D.

2. Refute the notion that Asians, as a people, were unscientific before the advent of European science.

3. Explain why Asian societies, once ahead of Europeans in scientific thought, are now lagging behind the West in technology transfer and the development of creative science.

4. Articulate the role of basic science, as well as technology transfer and adaptation, in development.

5. Identify two priorities for Asian policy makers to spark a renaissance in Asian science and technology.

Later chapters will talk about the relative significance of "indigenous technologies" and "imported technologies" (usually from industrialized countries and, often, from the West). Therefore, this chapter is designed to give the reader a comprehensive foundation on the origins of scientific thought in Asia. Without that foundation, a naive reader might fall into the trap of assuming that Asia represents a great vacuum in which scientific thought remains to be invented, or into which scientific ideas and new technologies have to be imported from abroad.

At the same time, this chapter introduces the relationship between science and technology. It presents the theme carried throughout this volume that sound development is equally dependent on both science and technology. This chapter prepares the reader to come to grips with the basic concept of science and technology policy in Chapter 3.

Readers may find the following eight questions as useful guides for their study of Chapter 2. Instructors may find them useful for group discussion:

1. What centres of science and technology existed in Asia before the colonial period?

2. **Exemplify Habib's statement that such centres have shifted from one cultural area to another throughout history.**

3. **What centres of science and technology have existed (at any time) in your country? What is their status now in terms of quality of learning and research?**

4. **Where do most of the scientists from your country go to fulfill their career goals? What career opportunities are there for these people in your country?**

5. **Explain Salam's assertion that, "In the long run, in the conditions of today, technology unsupported by science, simply cannot flourish."**

6. **How much basic science and creative research is conducted in your country? What is the relationship between basic science and applied technologies for development?**

7. **How heavily is your country's government involved in science, technology and education? How closely allied are these activities with those in the productive sector?**

8. **What is the role for policy makers in stimulating a renaissance in Asian science and technology?**