chapter one

The Paths of Innovation

An Exchange of Riches

▼ *Ships old and new still travel the Spice Routes. A modern Omani container ship enters the port of Muttrah, where a traditional Arab dhow is already anchored. Many technological advances in ship building and navigation were made through trading links.*

Over many centuries the Silk and Spice Routes, two of the greatest trade routes in our history, wound their way across Asia, linking its people and those of Europe in a network of paths and highways, cities, towns and ports. Kingdoms and empires rose and grew fat from the proceeds of the rich trade that passed back and forth along the routes. Some of these civilizations lasted for many hundreds of years, while others held only momentary glory, soon extinguished by a more powerful people eager to wrest the trade from their control.

The Silk Route crossed Asia by land, its paths stretching over some 8,000 km. Starting from the ancient Chinese capital of Changan (modern Xi'an), it made its way north-west along the length of the Great Wall of China, dividing into two to skirt the Taklamakan Desert and using several high passes to cross the snow-covered peaks of the Pamir Mountains, one of the mountain ranges in Central Asia that form the 'Roof of the World'. Travellers then moved through the lands of Afghanistan and Iran, and on to the Mediterranean Sea. The valuable goods were then transferred to ships bound for Europe.

▶ *A view of the Moluccas island of Tidore seen from Ternate. The Moluccas or Spice Islands were the only source of cloves and nutmeg until the 18th Century.*

The sea lanes that made up the Spice Routes spread out around Asia over a distance of 15,000 km. Their focal point was the famed Spice Islands, the string of Indonesian islands known today as the Moluccas, the only place where the sought-after pungent cloves and nutmegs grew. From here the Spice Routes fanned out over the China Seas to China and Japan and westwards to India and beyond. To reach Europe and the Mediterranean, the merchandise was carried up the Persian Gulf or the Red Sea and overland via cities such as Petra, Palmyra and Alexandria.

The convoys of ships and the camel caravans were piled high with the luxuries of the East that were so much in demand in the cities further west: not only spices and silks, but perfumed woods, rare animals and plants, and ivory. These were exchanged for western goods such as lengths of cotton and woollen cloth, coral, amber, gold and silver.

However, rare and exotic goods were not the only items to be carried up and down the Silk and Spice Routes. They also acted as paths for the exchange of knowledge: ideas on new technology and scientific skills, languages, art and religion. Some of the most fundamental technologies – among them writing, weaving, agriculture and riding skills – evolved and developed in this way. This book looks at the part that the trade of the Silk and Spice Routes played in spreading information on science, technology and inventions all over the world.

▲ *Rare and prized objects were traded across great distances from the earliest times. This necklace found in Wiltshire, England dates from 1750-1500 BCE. It is made from amber brought from the Baltic. Amber was also traded eastwards from there deep into Asia.*

◀ *Part of the Pala d'Oro in the Basilica of St Mark's, Venice, begun in 1005. From the 12th to 16th Centuries, the city-states of Venice and Genoa became extremely rich because they had a virtual monopoly in the trade coming into Europe from the Silk and Spice Routes.*

▲ *The Ptolemy cameo, dated to 278 BCE. It shows the head of Alexander the Great and his Bactrian queen, Roxana. From 336-323BCE, Alexander conquered most of Western Asia, leading to a great exchange of ideas between Greek, Persian and Indian cultures.*

▲ *14th Century porcelain vase produced in China during the Mongol Yuan dynasty (1264-1368). The Mongols controlled most of the rest of Asia at this time and trade flourished. Significantly, this vase is the first piece of porcelain on record to reach Europe.*

Technology, Civilization and Empire

Technology is the tool of civilization and, in turn, technological advances contributed to the growth of civilization and the empires that went with it. The discovery and increasing use of iron demonstrates this process. Iron smelting first developed in Asia Minor in about 1500 BCE and the knowledge spread from there from about 1200 BCE. When agricultural implements such as hoes and ploughs, as well as weapons, could be made of iron, the effect on the society and economy of the region was enormous. With the increase in agricultural productivity came a surplus of food which led to economic development and state-building. Trade increased, resulting in a greater demand for the craftsmen needed to produce the goods for the trade. The new iron tools also made it possible to build bigger and better ships, which in their turn enabled longer sea journeys to be made and increased trade and colonization.

With this growth in trade and technology there came a need for political reorganization. Local tribal chiefs and their clans were replaced by kingdoms and then empires. These new empires enforced law and order which then took the process further, making possible long-distance trade by land and sea. With the thousands of merchants, soldiers and sailors who criss-crossed their way through Asia and Europe came a constant exchange of scientific and technological ideas, innovations and inventions.

It was the existence of three strong empires in about 100 BCE that finally enabled a land route, the Silk Route, to operate effectively right across Asia: the Roman Empire in the West, the Chinese Empire of the Han Dynasty (202 BCE-220 CE) in the East with the Parthian Empire in Persia (Iran, c. 247 BCE-224 CE) between the two. All three were looking to expand their interests both politically and commercially and, having done so, had the power to administer and maintain them. The Romans, too, encouraged the Spice Route trade from the Red Sea to India in an attempt to bypass the Parthians. The Romans and Parthians were long-time rivals for power in Western Asia so both were reluctant to give each other the profits that resulted from trade.

Conflict and competition such as this between empires and kingdoms, cities and towns set the pattern of trade and communications along the Silk and Spice routes throughout their history. In times of war or political uncertainty, fewer people would risk the dangers of travel over any great distance. The collapse of the Han Dynasty in 220 CE led for a while to a virtual halt in trade between China and the West. In general, the stronger the empire, the better the communications and the greater the exchange of information. However, these elements are interlinked. The success of one contributes to and feeds off the growth of the others. At times, it is almost impossible to separate them out into cause and effect.

▲ *Stone column, engraved with one of the first written codes of laws, the Code of Hammurabi, King of Babylonia (c. 1792-1750 BCE).*

► *Ruins of Persepolis in Iran, capital of the ancient Persian Empire of the Achaemenid dynasty. The Achaemenids ruled from 550 to 330 BCE, excelling in the technology of engineering and warfare, which helped them to maintain their large empire.*