The standardisation of texts resulting from printing stood in contrast to the inevitable corruption that was bound to be present in all hand-copied texts. The printing press does not guarantee freedom from textual errors, but the requirement for multiple proof-reading before sending to the press and the distribution of errata to correct mistakes after printing, paved the way for the improvement of future editions. The editorial functions of the early printers also brought about a degree of systematisation of book format not to be found in the age of scribes, and this gradually created a habit of systematic thinking by readers, as well as promoting the organisation of knowledge in many diverse fields.

The introduction of printing was very closely related to the religious reformation in Europe, and Martin Luther referred to it as 'God's highest and most exalted act of grace, whereby the business of the Gospel is driven forward.' Conditions for the reformation actually came into existence before he launched his protest in 1517, when a number of Bibles were already being printed in the vernacular. This encouraged a belief that Gospel truths could be learned and understood by ordinary men, and made possible national variations in worship in contrast to the international but standard forms of the Roman Church. The original motivation of the Protestant movement was to seek correction of abuses, particularly the Church's sale of indulgences, the scale of which had been enlarged by printing, since it had been used to produce large numbers of indulgences in what became a profit-making enterprise. However, the press enabled Protestant views to be circulated widely in the form of pamphlets, tracts, and manifestoes. Indeed, without the intervention of printing, Protestantism might have remained a local issue and not become a major movement which forever helped to end the priestly monopoly of learning, contributed to the overthrow of ignorance and superstition, and assisted Western Europe to escape from the Dark Ages.

Vernacular literature existed, of course, before the advent of printing, but printing had a profound influence on its development. The spoken languages of Western Europe developed into written languages before the 16th century, and gradually evolved into their modern forms by the 17th, by which time some written languages of the Middle Ages had disappeared, and Latin, once a lingua franca, was becoming used less frequently, and was later to become a dying language. The emerging national monarchies and chancelleries favoured this trend towards unified national languages, while authors tried to determine the best style through which to convey what they wanted to say; for their part publishers naturally encouraged the growing use of the vernacular which brought an expanding market. As books became easier to publish in national languages, printing stimulated the creation of new vocabularies, spelling, and punctuation of each, and, furthermore, promoted its use. Once fiction was printed and widely circulated, the common language became firmly established; this, in its turn, facilitated the eventual growth of specific national literatures and cultures, which, in turn, led to the realisation of a distinct national consciousness and nationalism.

The popularity of education and the spread of literacy were also closely related to the expansion of printing. As books became cheaper and easier to obtain, more people were able to gain access to the printed texts which eventually affected their outlook on the world and their position in it. And, naturally enough, easier access to printed material promoted the rise of literacy, which stimulated a still greater demand for more books. Moreover, early printed manuals and advertisements probably made it clear to many with an artisan background that profits and prestige could be acquired by printing such materials themselves, and this, of course, may have encouraged the spread of literacy among the artisan class. It is evident, too, that some of the manuals were primers for teaching oneself to read and write, thus extending the market for books still further. There is also some biographical evidence which suggests that printing may have opened up opportunities to men of humble origin to advance their social position.

(3) Effects of Printing on Chinese Book Production

In China as in the West, printing made possible more and cheaper books and other material with a wider range of subjects for a larger reading public; naturally enough, this all had a certain amount of influence on the modes of Chinese scholarship and society. When large-scale printing began to emerge in the 15th century, the output of a press was enormous; for instance nearly half a million copies of Buddhist books and pictures are known to have been printed in the eastern part of China in one small area alone over a period of less than half a century. Again, during the Sung dynasty, some six editions of the Buddhist Tripitaka, which required tens of thousands of blocks for each edition, were printed and distributed throughout the country and abroad. At about the same time, the Taoist canon was also printed.

*For stabilisation of language and rise of nationalisms, see Chapter 1, pp. 29 ff.
*Among the persons who spearheaded the Strasbourg reformation, one was the son of a shoemaker and another the son of a blacksmith. Although of humble background, they were steeped in the new learning through their access to the printed page; see Einstein (1), p. 371.
*For the development of national languages and printing, see Steinberg (1), pp. 210 ff; Felbric & Marin (1), pp. 319 ff; Einstein (2), pp. 117 ff.
As everywhere else in the world, religion had proved to be a motivating force for the use of printing. But once the techniques became more sophisticated, the dominance of religious literature was gradually overtaken by secular subjects and the percentage of religious publications declined in China as it was later to do in Europe. Thus as early as the +10th century Feng Tao borrowed the art of printing from the Buddhists to reproduce standardized Confucian texts, instead of carving them on stone, and since then, the printing of Confucian classics, histories, and other works intensified. Thus when a large printing project was started by the Sung government in +988, only some 4000 wood blocks were kept in the National Academy, but by 1005, when the emperor inquired about the project, Hsing Pin (1+930–1010), then Director of the National Academy, reported that the wood blocks at the Academy numbered 100,000, representing all kinds of classics, histories, and their commentaries. This is indeed most impressive; it means that printing by this central government agency alone increased as many as twenty-five times within a period of less than twenty years.

Printing blocks could be used again and again, and sometimes lasted for several hundred years until they either deteriorated or were destroyed. There is very little information about how many copies were printed from the same block, because they were re-used so often, though it appears that the number varied a great deal, from a few in the case of a scholarly work of limited circulation to tens of thousands of a popular text in great demand. However, one modern writer claims that thirty copies were usually printed for the first impression, and each new block could be used to print up to 15,000 copies, or 25,000 after retouching.

In one bronze movable type edition of a Sung encyclopaedia, *Thái Phế Yếu Luân*, in 1000 chüan, reprinted in 1574, a run of 100 copies is mentioned in the colophon. If this figure for a particular reference work applies to other large sets, no fewer than 100 copies for each new title or each new block may be reckoned to have been produced at that time. This may also be true of other times, since the mode of printing did not change very much until the middle of the 19th century.

While no clear record of copies printed for a block edition is available, we know more precisely the cost of production and how much was saved by the application of printing. There are detailed listings of various costs for certain printed editions, including materials, labour, and the charges for renting blocks. For example, the complete works of a Sung scholar, Wang Yü-Cheng (1+954–1001),

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*See Wu Ch’iu (OSC ed., 1885), ch. 15, p. 144.
*See Lo Chih-an (1+), p. 619.
*See description in Chih-an T’o-hwa-ling (1+), p. 15, item 1; a movable type edition was not normally reprinted by the same method but more often was reprinted with woodblocks.
*In the case of another encyclopaedia, *Ku Ch’iu Hsü Chi Ch’ieng*, which included over 100 million words in 5000 volumes, sixty-six copies were printed with bronze movable type for the first impression in 1+75–5; and 100 copies were reprinted with lithography in 1+890. Another large set, the *Wu Yang T’ou Chi Chou P’ien P’i Lo Hsiu* in 114 titles, was printed in 500 copies in c. 1574. Also 500 copies of a collection of poetry were printed with earthenware type by Ch’iu Ch’iu-Liang in 1+87–8; see pp. 209, 209, 216 above.

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*Note: The cost of materials and labour for printing the *Hsiao Ch’iu* by Chih-an Kuang of the Sung dynasty, printed c. +1753. The total on the back of the book says it used 450 blocks and 500 sheets of paper and was sold for 500 cash. Original copy preserved at the Nakanishi Bunko, Tokyo.

**Hsiao Ch’iu Ch’i:** thirty *chüan* in eight *tike*. printed at Huang-chou in 1+147, contains 155,448 characters on 432 blocks. The cost of production included 250 pieces of cash for 448 sheets of printing paper, eleven sheets of blue cover paper, and eight large sheets of paper; 500 cash for ink and for renting blocks and brushes; and 450 cash for binding; with a total cost of 1156 cash for labour, rent, and other expenses.
except for paper. The set was sold for 3,000 pieces of cash per cop[y]. These figures give an average unit cost of about one piece of cash for the cost of each block with tools, and another piece of cash for the labour of printing and binding one leaf. The retail price in this case was about 600 pieces of cash per t'ueh, while that of other works during a similar period ranged from 300 to 400 pieces of cash. Another case is that of a Yinian gazetteer of Nanking, Ch'ien-Lung Hsin Chih, in fifteen ch'ian in thirteen t'ueh, the printing of which cost a total of 7,717,869 taels of silver in the Ch'ing-Thung currency. There is no mention of how many copies were printed, but the cost seems rather high. In Ming times, printing costs were much lower. Carving was only twenty pieces of cash per 100 characters around 1450, when the thirteen classics and the seventeen standard histories were published by Mao Chin (1430–1490), who printed in his famous shop Chi Ku Ke; some 600 titles with over 200,000 carved blocks. In the latter part of the Ch'ing dynasty (around 1875), the cost of preparing transcriptions and printing in Hsuan was about fifty to sixty pieces of cash per 100 characters; this increased to eighty to ninety later in the 19th century and to 150 at the beginning of the 20th. The pay of women cutters in Hsuan, Chi-nan, and Kuangtung is said to have been extremely low, only twenty to thirty pieces of cash per 100 characters. Printing was of course much cheaper than the time-consuming process of hand copying. For instance, the text (pai wen) of a collection of Confucian classics contains nearly a million words, and if a copyist could write as many as 10,000 characters a day, it would still take 100 working days to complete one copy. Carving on blocks was slower, but in the end it produced more copies for more cheaply. How much the price was reduced by printing may be illustrated by comparing the cost of a hand-copied manuscript with that of a printed edition at a comparable time.

In the early 14th century during the latter part of the Ch'ing dynasty, the charge by a professional copyist was about 1000 pieces of cash per ch'ian of about 5000 to 10,000 characters. This is confirmed by the copying cost of some of the Buddhist sutras found in Tunhuang, the charges on which are sometimes given in
Printing did not result in much change in the physical appearance of the book, except perhaps for some special features of the printed page. The evolution from the roll form to the flat binding, in the late 9th or early 10th century, was primarily because of the inconvenience of opening the paper rolls for reading; it was not necessarily a result of printing. The special features that were added to the printed page, and which do not appear on manuscripts except for those copied from a printed edition, include such signs in the body of the block as the center line, the ‘fish tail’, and the ‘elephant trunk’ at the centre of the block to mark the fold. The cutter’s name and the number of characters on the block are also sometimes indicated.

An important feature of a printed book is the addition of the printer’s colophon (phai chi) or trade mark in the book, which can normally be found on the back of the title page, or at the end of the table of contents. It is a boxed square either in an oblong shape or in designs of a gourd, a tripod, or a round stamp providing such information as the date, place, printer’s name and occasionally a note on the process of printing and an advertisement of the printer (Fig. 1239). However, the most visible change in the appearance of a printed book was the calligraphic transformation sometime in the middle of the 16th century of the text from a regular written to a printed style. This printed text, called the Sung style (Sung ti chi), is characterised by a formalised and stereotyped construction, with more straight lines than curves. It is easier for block cutters to carve and has been followed by printets ever since, though with slight variations from time to time. The metal type used in modern printing is developed from this style.

The expansion of printing activities naturally resulted in the establishment of printing centres throughout the country. Wherever skilled block cutters and sponsors were available, more printing facilities were located. Under the Sung, as we have seen, printing centres included Hangchow (in Chekiang) and Kaifeng (in Honan), capitals of the Sung; Chuen-an and Chuen-yang (in Fukien), where trade editions had been known for centuries; and Mei-shan (in Szechuan), a cultural centre until the Ming. Of some 1,500 Sung editions of which the location of printing can be identified, more than 90 per cent are known to have been printed in provinces where such centres were located. Indeed, it has become clear that factors such as political status, economic strength, cultural tradition, and the availability of materials, were responsible for the prosperity of the printing industry.

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* Some of the earliest printings of Buddhist works are in the roll form; see discussion of book-binding on pp. 267 ff. above.
* See Eern and translation of such colophons in Poen Ming-Sun (1), pp. 29 ff.
* Among fifty-six printing shops under the Sung, fifty-five are known to have been located in Hangchow, Chuen-an, and Chuen-yang; see Poen Ming-Sun (1), p. 167.
* Of the 124/8 total, 614 (49%) were printed in Hangchow (modern Chekiang), 931 (75%) in Fukien, 193 (15%) in Chuen-chou at Hsi and Hsi (modern Chiang and Chiangsu), 171 (14%), in Chuen-chou (modern Honan), and 142 (11%) in Chuen-chou (modern Szechuan); see Poen (5), p. 11, table 1.

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* 參考字

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* 附記
books available at a low price to a large readership that could not otherwise afford to buy or easily gain access to them.4

(4) The Influence of Printing on Chinese Scholarship and Society

In many respects, Chinese culture has had an expansive literary or bookish tradition, characterized among world civilisations by its productivity, continuity, and universality. It is unique in the volume of its output, the length of the period covered, and its uninterrupted and widespread intellectual transmission. From very ancient times, an enormous amount of literature and documents was produced and transmitted, and the production of historical records and annals has continued almost without interruption to the present day. As to magnitude, a single work rather frequently ran to millions of words. Written words were revered and from antiquity books were assiduously read and studied not only by the Chinese but also by other peoples of East Asia throughout a prolonged period of history, and this bookish tradition contributed to the production of more written and printed pages in Chinese than were produced in the West until about the end of the 17th century.6 It also contributed to the early invention in China of paper and printing, which became important vehicles for sustaining the Chinese cultural heritage throughout the centuries.

The power of printing in mass production, distribution, and preservation stimulated the revival of classical learning and changed the mode of scholarship and authorship under the Sung dynasty. While the Thang promoted Buddhism and Taoism, and produced poetry that is prized as the gem of the period, the Sung became one of the great ages in Chinese history for its scholarly achievements in critical studies of classical works, art, archaeology, material culture, and science. The restoration of Confucian learning was reflected in such scholarly activities as new interpretations and the large-scale printing of Confucian classics, studies in classical philology, textual criticism, as well as compilation of voluminous general and local histories, bibliographies, and catalogues. The revived interest in Confucianism was an obvious victory of Chinese traditional thought and political philosophy. The work of Chu Hsi (1130–1200) and other Sung scholars who founded Neo-Confucianism, became the guiding principle of Chinese society until the end of the 19th century, when it was challenged by Western thought and institutions.

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4 See commercialization of Sung printing in Poon (2), pp. 157ff.
5 More than 10,000 separate titles, or over half a million volumes (shih), produced before the late Ming period, are known to have been registered in Chinese bibliographies and other sources before printing was widely used in Europe in the late 15th century; see estimate by Yang Chia-Lu (6), p. 27. Both Swingle (1), p. 111, and Lassenette (1), p. 729, suggest that by 1700 or even 1800, more pages, written and printed, existed in Chinese than in all other languages put together.
6 朱熹
As we have seen, when printing first appeared in China, it was motivated by the need for great quantities of Buddhist texts. Not until two or three hundred years after its invention did the Confucian classics and other scholarly literature appear in print, and there were those two great projects for printing the Confucian learning begun in the 10th century signal the revival of Confucian learning. Both the Nine Classics sponsored by the prime minister Feng Tao (1 + 682–654) of the Later Thang, and the printing started privately in + 953 by Wu Chao-p (d. + 967) of the Later Shu state, were significant in several ways. The initiative of Feng Tao made the National Academy the official agency for printing classics, histories, textbooks, and other volumes to be distributed at the national level. It also made the government one of the most influential agencies in printing. The Wu Chao-p project became a typical case of Confucian scholar preaching the moral values of private enterprise in printing. From this time on, almost all printing engaged in by the government, by private families, and by commercial agencies was dominated by the Confucian scholars.

The revival of Confucian learning gave impetus to the flourishing schools and academies which supplied candidates for the civil service examinations which were themselves based on Confucian writings and ideas. As a result three or more institutions of higher education were set up in the Sung capitals, Kiao-feng and Hang-chow: the National University (Thai Huieh), which had an average enrollment of about 2000 students who had passed the entrance examinations; the National Academy (Kuo Tzu Chien), which enrolled about 200 children of officials; and the School of Four Gates (Soo Men Huieh), which had an average of 500 students from ordinary families. On the local level there were during the Sung period over 1000 official and private schools and academies distributed through almost all the prefectures and counties of the country. The National Academy played the key role in the central government's printing, and many of the local schools and academies also engaged in printing textbooks, dictionaries, histories, philosophical writings, and medical works. In fact, under the Sung, no fewer than 250 titles are known to have been printed by the Kuo Tzu Chien, and over 200 such works were printed by local academies.

Printing no doubt also had some positive relationship with the Chinese civil service examination which recruited educated personnel for service in the government. The beginning of this system can be traced back to the Han or earlier, but it was not fully utilized until Thang and Sung times. It was, indeed, under the Sung that the system was further perfected, the number of participants greatly increased, and it was at this time that the number in the government of those holding the highest degree, the doctoral graduates (chih-shih), was more than double that of the previous dynasty. The growth of the general scholarly population during the Sung was even more impressive. The number of chih-shih quadrupled from early Sung to late Sung, reaching a total of over 40,000 for the entire period. Yet to become a candidate for the doctoral examination was no easy task; one had to have passed the qualifying examination on the prefectural level and to have received the degree of "presented man" (chih-jen). Even so, the number of chih-jen is estimated at 200,000 for the 12th century, and 300,000 for the 13th. Including students at the various institutions of higher learning and local schools and academies, the total intellectual population of the Sung must, therefore, have been very large.

Examinations at all levels emphasized literary, historical, and scholarly knowledge, based on Confucian doctrines. The books used in preparation for these examinations included Confucian classics, histories, reference works such as dictionaries and encyclopaedias, as well as examination aids such as model essays, and pocket editions which could be taken into the examination halls. The demand for such materials for reading and study seems to have been one of the major reasons for the large-scale printing of textbooks and other required material during the Sung dynasty. The initiation of the two large printing projects for the Confucian classics, mentioned earlier, was certainly stimulated by the convenience and economy of printing.

The definite relationship between printing and the civil service examination is further attested by the fact that the more successful doctoral candidates there were in a specific region, the larger was the proportion of imprints produced in that area. For example, the top five provinces in the eastern, southeastern, western, and central regions, which produced eighty-four per cent of the holders of the doctoral degree during the Sung, printed ninety per cent of the books during the same period. On the other hand, one poor province in the southwest, which produced...
the fewest graduates, also printed the least titles. This correlation between books and examinations clearly indicates the way printing contributed to the popularisation of education and advancement of scholarship. The reverse is, however, also true; the examination system promoted the expansion and prosperity of the printing trade.

The civil service examinations provided a fair system for recruiting into government service the qualified people from various social strata and from different geographical regions. An intelligent person of humble origin could climb the ladder of competitive examinations and eventually become one of the top administrators in the Chinese bureaucracy, and the general fairness of the system is confirmed by the fact that a clear majority of the successful candidates under the Sung came from families without any background of official connections. The distribution of books to relatively poor and humble people to a certain extent facilitated their upward movement from the lower strata of society by way of the examination system, and was helped, in spite of the increasing disparity between rich and poor, by the fact that printed books cost much less than manuscripts.

While printing in the West has primarily been a business for profit, it had strong moral implications in Chinese society. It was considered a positive merit for an individual to preserve and disseminate knowledge, and rulers were politically rewarded for such action by receiving public support. Reverence for ancient literature was one of the basic elements of Confucian teaching, and the story of the burning of the books by the First Emperor of the Chin dynasty in 213 BCE has been emphasised by Confucian scholars as the most flagrant crime in history. From Han times onwards, almost all rulers who adopted Confucianism as state doctrine, chose to recover and preserve ancient books when they succeeded to the throne, a procedure that was also considered a virtue which brought honour to the family and to the individual.

Ye Hsü-Huai, author of the celebrated work on books and printing, opened his book by citing a number of cases in Chinese history to illustrate how printing of books was crucial to gaining prosperity, to preserving fortunes during times of disorder, and to commanding respect from others. Furthermore, attention to the reliability and correctness of a text by block-cutters and printers was particularly emphasised; failure to observe this would be punished, by spiritual if not by human powers. Evidently, printing in China was not primarily for profit; moral

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* The province of Kuei-chou (modern Kueichow) had 103 graduates and printed only two titles.
* The names of successful candidates in the two examination lists of 1148 and 1158 show about forty per cent of them were descendants of lower official who held lower grades, but some sixty per cent came from families with no history of civil service employment in the paternal line for three previous generations; see Kawak (1), p. 69.
* The stories in the Ming and Ch'ing periods, see Hsiao Po (12), pp. 21-22.
* The stories include one in Wu Chao-yi, private printing of the Confucian classics, which resulted in political status and wealth for his family and descendants after the conquest of the Shu state by the Sung dynasty in 975, while other powerful families were executed or otherwise punished; see Ye Hsü-Huai (4), pp. 1-2.
* Hung Miao (+1128-1184) said that four block-cutters were struck by lightning for having changed the text of a book on medical preparations; see Wuy Chou Chih (TIMC), p. 1b.

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Fig. 123. Moral reward to a sponsor of printing. Picture depicts a private printing enterprise owned by Ch'ing I.

For printing and social mobility of the Ming and Ch'ing periods, see Hsiao Po (12), pp. 21-22.

Ye Hsü-Huai, because he printed good books from the Confucian, Buddhist, and Taoist canon.

From Yen Chih Wu T'ieh On.
obligations became an important factor in Chinese society to promote and develop it (Fig. 1234).

(5) SOME CONCLUDING REMARKS

Generally speaking, paper and printing served similar purposes in the East and the West, but have different impact upon their respective societies. Paper, however, seems to have played a more important role in China than in the West. Unlike printing, which was scarcely mentioned in Chinese literature, paper was written about and praised for its qualities and usefulness from very early times. Emperors bestowed it upon scholars and officials as the highest honour and reward, and along with brush, ink, and inkstone, it was one of the scholar's four treasures. Thus paper was no ordinary commodity, but was always associated in Chinese society with prestige and scholarship.

The very early use of paper for writing and for books in China was an epoch-making step in the history of civilization. Without paper, certainly, no printing could have taken place and, as we have seen, in China paper also had other profoundly important effects; it helped sustain the Chinese cultural tradition, it was instrumental in refining Chinese art, it helped smooth the path of government and transactions in the business world, and played a not insignificant part in improving various household and other daily activities. With the adoption of paper, people everywhere have found their lives much easier, more convenient, better served.

Printing played a similar role in book production in China and in Europe, but the scale and pattern of its influence on the two societies was different. Certainly it made similar contributions in both to the reduction of costs, increase of productivity, and accessibility to a large public, as well as providing the standardisation of texts and a greater chance of their survival. But otherwise printing developed in different directions using different procedures. In the West, the printing press underwent a gradual mechanisation and sophistication, eventually growing into a powerful publishing industry with mass production and distribution; in China, on the other hand, printing was continuously carried on as a handicraft, without significant change in technology until modern times.

As to the impact of printing on intellectual life and society, there were again some similarities between East and West. In both printing promoted culture, widened the scope of subjects that interested scholars, helped shift the bias from religious to classical learning, it popularised education, spread literacy, and enriched art and literature; though it did so to a different degree in each. But in the West printing also stimulated intellectual unrest and promoted the development of national languages and their use in literature; in China, on the contrary, it facilitated the continuity and universality of the written language and thus became an important vehicle for sustaining the cultural tradition. This is seen especially in the printing of the Confucian classics and similar material for the civil service examinations, and therefore acted as an important element in the relative stability of Chinese culture and society.

There was another difference. While Chinese culture always had an extensive literary tradition, at the close of the Middle Ages Western civilisation possessed only a very limited legacy of books. Yet as Europe emerged from the Dark Ages, the intellectual awakening resulted in a great demand for books. As soon as printing was available, it was utilised for book production to the maximum extent. In this respect, it was unlike printing in China, which has always produced an optimum number of copies for immediate use without excessive accumulation of copies in stock. Furthermore, Chinese printing was generally sponsored by government and private agencies without pecuniary motivation, whereas the European press was usually operated as a trade for profit. The different motives for printing seem also to have been responsible for different effects of the invention on society.

In general, printing in Europe from the 16th century onwards was vigorously expanded, supporting many drastic and radical changes in thought and society. On the other hand, the progress of printing in China and other nations in East Asia was comparatively slow and constant with modest changes occurring within a stable tradition. These diversities reflect the distinctive characters of Eastern and Western cultures, especially their attitudes towards material life. Chinese society has long been dominated by the Confucian doctrine, which concerns itself primarily with proper human relationships and social order by way of moral teachings and ethics rather than with pursuance of material advance and extreme changes in society. The high degree of social and cultural stability over long periods in Chinese history, especially from the 14th to the 19th century, contrasts greatly with the constant turmoil of life and intellectual unrest during the same period in the West. Such different environments in China and the West were certainly bound to affect the role of printing, and in this sense printing was not only shaped by the political and social conditions of the time; it also exerted an equal effect on these conditions.