SCIENCE AND SOCIETY
IN ANCIENT CHINA
CONWAY MEMORIAL LECTURE

SCIENCE AND SOCIETY IN ANCIENT CHINA

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BY

Dr. JOSEPH NEEDHAM

(Dr. Tuan, of the Chinese Embassy, in the Chair)

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SCIENCE AND SOCIETY IN ANCIENT CHINA

ALTHOUGH I believe that this lecture was announced under the title of Science, Mysticism, and Ethics in Chinese Thought, I would rather call it Science and Society in Ancient China. Many things will come into it — science, mysticism, ethics, yes; but also rationalism, technology, and the structure and organization of society, in that particular day and age — namely, Ancient China.

What I want to do is to try to sketch a sort of pattern of the organization of that society, in the course of which a number of points will come up of interest to a Conway Hall audience, naturally absorbed in problems of rationalism, ethics, and religion in social life. I am led to do this because, in my thinking on such subjects, I am always working towards a study of what I believe is one of the greatest problems in the history of culture and civilization — namely, the great problem of why modern science and technology developed in Europe and not in Asia. The more you know about Chinese philosophy, the more you realize its profoundly rationalistic character. The more you know of Chinese technology in the mediæval period, the more you realize that, not only in the case of certain things very well known, such as the invention of gunpowder, the invention of paper, printing, and the magnetic compass, but in many other cases (one of which, a very concrete and fascinating case, I am going to put before you), inventions and technological discoveries were made in China which changed the course of Western civilization, and indeed that of the whole world. I believe that the more you know about Chinese civilization, the more odd it seems that modern science and technology did not develop there.

That is the background of the general thought which I am going to put before you this afternoon. To begin with, I would like to say something about the origins of civilization in China; which means the origins of Chinese feudalism, growing up from about 1500 B.C. One must remember that it was always very distinct from the other great civilizations. We know that the river-valley civilizations of Mesopotamia and Egypt were closely linked together from an early date and, similarly, that the ancient civilization of the Indus valley had its connections with Babylonian civilization. The only great river-valley culture which did not have a close connection with these was the Yellow River civilization, that of the Huang-Ho, which became the cradle, especially in its upper regions, of the Chinese people. Actually, as I want to emphasize in a few minutes, that civiliza-
tion was linked by a number of strands with the Bronze Age in Europe. In spite of this, however, the Yellow River civilization was more independent than connected with the West.

The origins of this first form of Chinese society are very important, because one can see that Chinese philosophy goes right back to them. Great scholars like Granet, the French sinologist, have demonstrated that the origin of towns in China was probably connected with the beginning of the working of bronze, no doubt because the first metallurgists had to have installations of some complexity which required protection from the changes and chances of life in the villages of the primeval tribal community. Granet has traced the way in which the primitive pre-feudal society gave way to the feudal society of the towns of the full Bronze Age in China.

For example, we know that many of the poems contained in the Shihs Ching, the famous “Poetry Classic,” are ancient folk-songs. They still show us to-day something of the songs which were sung by the bands of young men and girls, dancing in those ancient reunion festivals at spring and autumn at which the process of mating was accomplished; the people coming together from their villages to these meetings, these fairs of spring and autumn. The first feudal lords captured the holiness of these places where the people congregated and transferred it to the sacred mound or temple of the feudal “State” in the town which was then first originated. During what we may call the high feudal period in China, which runs roughly from the eighth century to the second century B.C., the feudal lords were assisted and counselled by a group of men who afterwards became the school of philosophers which we know as the Confucian School.

The Confucian philosophers originated, then, as the counsellors of the feudal lords, and the chief characteristic of that school (not only Kung-futze himself but his great disciples Mêngtze and later on Hsüntze and many others) was a rationalist, ethical approach, embodying a profound concern for social justice as the Confucians understood it. There are many stories about Confucius which I might mention to you. Just by way of example, on one occasion, when Confucius was travelling in a chariot and wanted to cross a river, he and his disciples could not find the ford. He therefore sent one of them to consult with some hermits nearby asking for information as to the way across. The hermits, however, gave a sarcastic answer, saying: “Your master is so wise and clever, he knows everything, and must certainly know where the ford is.” Confucius was sad when this was reported to him and said: “They dislike me because I want to reform society, but, if we are not to live with our fellow-men, with whom can we live? We cannot live with animals. If society was as it ought to be, I should not be wanting to change it.”

The general characteristic of Confucian philosophy was thus entirely social — a feudal ethic, no doubt, but extremely social-minded. The Con-
fucians were quite convinced of the need to organize human society in such a way as to afford the maximum of social justice under feudal custom, and they were determined that it should be so organized. They differed, therefore, from other philosophical schools which were not interested in human society nor in how it should be organized. These hermits, to whom I have referred, may well have been early representatives of the school of thought which afterwards became known as Taoism. I suppose the two greatest currents in Chinese thought are the Confucian on the one hand and the Taoist on the other.

The Taoists were those who professed to follow a "Way" and, by this expression, "the Way," there is no doubt that they meant the Order of Nature. They were interested in Nature, whereas the Confucians were interested in Man. One might say that the Taoists felt in their bones, as it were, that until humankind knew more about nature it would never be possible even to organize human society as it should be organized. The Taoists have left us a number of very important and profound texts, among which the famous *Tao Teh Ching*, "The Classic of the Virtue of the Way," is one, and the writings of some philosophers such as Chuangtze, who may be considered the equal in his way of Plato. We have these writings still, perhaps in more or less distorted form, like all ancient writings, but in a form in which the thought can still be followed.

The Taoist hermits, who withdrew from human society in order to contemplate nature, did not, of course, have any scientific method for the investigation of nature, but they tried to understand it in an intuitive and observational way. If their interest in nature was such as I am suggesting, we ought to find they were associated with some of the early beginnings of science. And that is in fact the case, because the earliest chemistry and the earliest astronomy in Asia have Taoist connections. It is now well recognized that alchemy — which we may call the search for the philosopher's stone, or the drug or pill of immortality — goes back well into, and even beyond, the earliest imperial period in China. One of the earliest references to it occurs in the time of the Emperor Han Wu-Ti about 150 B.C., in which the magician Li Shao-Chin goes to the Emperor and says: "If you will sacrifice to the stove, I will show you how to make vessels of yellow gold and from these you may drink and achieve immortality." That is perhaps the earliest record of alchemy in the history of the world, and sacrificing to the stove is equivalent to someone saying to-day: "If you support my researches, I will, etc." In the second century A.D. there is on record the earliest book known in the history of science on alchemy, the work of Wei Po-Yang, in A.D. 140, called the "Union of the Three Principles," *San Tong Chi*. That is a date earlier than alchemy in Europe by about two hundred years.

I might perhaps now give you one or two quotations from Taoist writings, and I would like to do so from the *Tao Teh Ching*, just to show
you what is there. One of the queer things about the Taoists is their emphasis on the feminine, reminding us of Goethe’s “ewig weibliche”:

“The Valley Spirit never dies.
It is named the Mysterious Female.
And the doorway of the Mysterious Female
Is the base from which Heaven and Earth sprang.
It is there within us all the while;
Draw upon it as you will, it never runs dry.”

(Ch. 6; tr. Waley.)

This emphasis on the feminine may be regarded as a symbol for the receptive approach to nature characteristic of the Taoists. The feudal attitude to the organization of society was intensely masculine. The Taoists’ attitude in the investigation of nature was feminine in the sense that the investigator cannot approach nature with preconceived ideas. “The Sage is like Heaven and Earth, he covers all things impartially.” The impartial approach without bias, asking questions in a humble way, the spirit of humility in the face of nature, was understood by the Taoists, as when they speak of the “valley which receives all the water that flows down into it.” I believe they sensed that the scientist must approach nature in a spirit of humility and adaptability, and not with that masculine ordering sociological determination which the Confucians had. Here is the interesting passage in which it is said that the highest good of life is like water:

“The Highest Good is like that of Water,
The goodness of water is that it benefits the 10,000 creatures;
Yet itself does not scramble
But is content with the places that all men disdain.
This is what makes water so near to the Way.”

(Ch. 8; tr. Waley.)

“He who knows the Male, yet cleaves to what is Female,
Becomes like a ravine, receiving all things under Heaven,
And being such a ravine
He knows all the time a power he never calls on in vain. . . .
He who knows glory, yet cleaves to ignominy,
Becomes like a valley, receiving all things under Heaven,
And being such a valley
He has all the time a power that suffices. . . .”

(Ch. 28; tr. Waley.)

Then, again, there is a fine story in Chuangtze which shows what the Taoists meant by “the Way” or the “Order of Nature.” His disciples were trying to find out what he meant by the Tao, and said: “It surely can’t be in those broken tiles over there?” He replied: “Yes, it is in those broken tiles.” The disciples asked a series of such questions, and ended by saying: “It surely can’t be in that piece of dung?” But the reply was: “Yes, it is everywhere.” That may be interpreted in a religious mystical sense, as referring to the universal operation of a creative force, but the connection of Taoism with the beginnings of science shows, I think, that we should interpret it in a naturalistic way; the idea of the Order of Nature permeating everything.
With this idea in view, you may also notice another story in Chuangtze — the famous one about the butcher and the King of Wei. The King, observing his butcher cutting up a bullock for the table, noticed that the man did it with three strokes of his hatchet, so he asked how was he able to do that. The butcher answered: “Because I have been studying all my life the Tao of the bullock. I who have studied the Tao of the animal can do it in three strokes and my hatchet is as good as it was before. Others do it in fifty strokes and then blunt their axes.” Here we have an indication of primitive anatomy, a beginning of the understanding of the nature of things.

In trying to show you the pre-scientific element in Taoist philosophy I have mentioned alchemy and astronomy and referred now to anatomy. That is well established, but what is not so clearly seen is the full nature of the division between the Taoists and the Confucians. I want to go on to emphasize this, because I think it is vital for the understanding of primitive society in China, both pre-feudal and feudal.

In the *Tao Teh Ching* you will find a number of passages which appear to be against knowledge. For example, in the nineteenth chapter:—

“Banish wisdom, discard knowledge.
And the people will be benefited a hundredfold.
Banish human kindness, discard morality,
And the people will be dutiful and compassionate.
Banish skill, discard profit,
And thieves and robbers will disappear.
If when these three things are done
They find life too plain and unadorned,
Then let them have accessories,
Give them Simplicity to look at,
The Uncarved Block to hold.
Give them Selflessness
And Fewness of Desires.”

(Ch. 19; tr. Waley.)

“Banish wisdom, discard knowledge” surely sounds odd, for the Taoists were among the earliest thinkers.

But we have just the same story at the end of the Middle Ages in Europe. W. Pagel, the historian of science, has demonstrated how in the seventeenth century and the time of Galileo the theologians in the Christian Church were divided into two camps, on the one hand the rationalists and on the other the mystical theologians. They were equally divided about their attitude to the new science which was growing up by the work of men like Galileo. You will remember that the rationalist theologians refused to look through Galileo’s telescope, because, they said: “If we see what is written in Aristotle, there is no point in looking through the telescope. If we see what is not written there, it can’t be true.” That was a very Confucian attitude. Galileo corresponded rather to the Taoists, who had an attitude of humility towards nature and were anxious to observe without pre-conceptions. Now, the mystical theologians were in favour of science because they believed that things could happen if people did things with
their hands. The mystical theologians were backward in one sense because they believed in magic, but they believed in science, too, for in the early stages magic and science are closely connected.

If I believe that by taking a wax statue of the chairman and sticking pins in it I can cause him evil, I am adopting a belief for which there is no foundation, but I do at any rate believe in the efficacy of manual operations, and science is therefore possible. The rationalist theologians and the Confucians were against using their hands. There has, in fact, always been a close connection between this rationalist anti-empirical attitude and the age-old superiority complex of the administrators, the high-class people who sit and read and write, as against the low-class artisans who do things with their hands. Just because the mystical theologians believed in magic, they helped the beginning of modern science in Europe, while the rationalists hindered it.

It is the same story in ancient China. When the Tao Teh Ching says "Banish wisdom," it means Confucian wisdom. When it says "discard knowledge," it means discard social knowledge, discard scholastic Confucian "knowledge." You will find several passages in Chuangtze where he says: "What are all these distinctions between princes and grooms? I will not have my disciples observe such absurd distinctions." So here we are coming upon a political element. I want to establish my point. Banishing wisdom, discarding knowledge, means, in ancient Taoism, the offensive against Confucian ethical rationalism, the knowledge of the counsellors of the feudal princes, and does not mean banishing the knowledge of nature, because that was just what the Taoists wished to acquire. They did not, of course, know how to do it, because they did not develop the scientific experimental method, but they wanted it.

Thus we come upon a remarkable political factor. Before I speak further about it, I would like to emphasize the previous point once more, because it is interesting for those concerned with the history of ethics and mysticism.

We cannot say that all through history rationalism has been the chief progressive force in society. Sometimes it undoubtedly has, but at other times not so, because in the seventeenth century in Europe, for example, the mystical theologians gave a good deal of aid to the scientists. After all, natural science was then called "natural magic." So in ancient China it is quite clear that Confucian ethical rationalism was antagonistic to the development of science, whereas Taoist empirical mysticism was in favour of it. When they spoke about the Tao, "holding on to the one," etc., you have a stage in which religion is hardly separated from science, because the one may be the One of religious mysticism, or the universal Order of Nature as we understand it in the scientific sense. It probably means both things, and here we stand at the beginnings of both. Fêng Yo-Lan made one of the best remarks on the subject when he said: "Taoist philosophy is the only system of mysticism which the world has ever seen which is not fundamentally anti-scientific."
Now let us examine further the political element. We have seen that phrases such as "Banish wisdom, discard knowledge . . ." are to be interpreted in the light of "I do not wish my disciples to understand these absurd distinctions between princes and grooms"—i.e., class-distinctions. The Taoists were against feudal society, but not exactly in favour of something new. They were in favour of something old, and wanted to go back to the primitive tribal society before feudalism—as they themselves put it, "before the Great Way decayed" (ch. 18). Before the Great Way decayed, "before the Great Lie began," there were none of these class distinctions. One does not have to read far in Chuangtze to find how surprisingly outspoken he is. He says, practically in so many words, that the little thief is punished, but the big thief becomes a feudal lord, and the Confucian scholars are quickly flocking around his doors, wanting to become his counsellors! There can be no doubt that the Taoists were enemies of feudal society, and what it was they wanted, I think, was the primitive tribal society before the differentiation of classes into warriors, lords, and people.

For example, in that passage I read to you just now—"Banish wisdom, discard knowledge"—it says: "If the people find life too plain and unadorned, give them Simplicity to look at, the Uncarved Block to hold." These are odd expressions. It occurred to me one day, when thinking about this, that it might mean, not what European translators usually think it means—namely, the One of religious mysticism—but the oneness of primitive society before the differentiation of classes. When you get that clue you find some very interesting other clues quickly following. Besides the "Uncarved Block," the Taoists are often using other symbols of homogeneity, the "Post," "the Bag," "the Log," "the Bellows" (important in bronze founding), and a word which is translated "Chaos." Throughout Taoist thought you have this feeling that society has been spoilt, "messed about," and that one ought to go back to primitive simplicity—i.e., before the differentiation of classes, before the first feudal lords. "The greatest carver is he who does the least cutting" (ch. 28).

A very curious thing is to be noticed here. If we read the books containing the most ancient legends of China, like the Shan Hai Ching, the Shu Ching, the Tso Chuan, and the Kuo Yu, for example, we find that many of the earliest legendary kings, such as Yao and Shun, are supposed to have fought with men or monsters—it is not quite clear whether animals or men—but the extraordinary fact is that the names of these beings which they fought and destroyed have just the same sort of ring—Huan Tou, the empty bag; Tao Wu, the stake or post which has not been carved up. This is a curious coincidence, because it suggests that the beings against whom the first kings fought were really the leaders of that primitive tribal society resisting the first differentiation of classes—great rebels who had to be beaten down. You also get names like San
Miao, Chiu Lei, etc. (the Three Miao and the Nine Lei), which suggest that there may have been confraternities in that primitive society. Moreover, the legends attribute to all these earliest rebels great skill in metal-working. It looks as if the earliest kings or feudal princes recognized bronze metalurgy to be the basis of feudal power over the neolithic peasantry, because of the superior arms which it rendered possible, and therefore they appropriated the technique of metal-working. It looks as if the pre-feudal collectivist society which developed metal-working resisted the transformation into class-differentiated society, and under the legendary labels we should perhaps see the leaders of that society which resisted the change. There is another phrase to be found alongside these curious phrases—"returning to the root." That has been translated in a religious sense, but I am not sure that it has not a double political meaning, because in the Shu Ching (the "History Classic") you find a phrase "the root was kept in check and could not put forth shoots" side by side with a remark about the hosts of Kun flying away. Kun was one of the most prominent of these early rebels.

I am now directing attention to the political significance of Taoist philosophy. Throughout the centuries in China there have been secret sects of various kind, adepts of peasant type—secret societies, of course—and even now to-day, in China, secret societies are still important. All through Chinese history it is always jokingly said: "Confucianism is the doctrine of the scholar when in office, and Taoism is the attitude of the scholar when out of office," because the scholars have always been in and out of office, in the mandarinate and the Civil Service. In general, Taoism has always been connected with movements against the Government, and in all dynasties—Tang, Sung, Ming—it has been of political significance. I want to draw particular attention to this because it is a thing which is very little appreciated by many who study Taoism in Western Europe.

A book such as the Tao Teh Ching, on account of the laconic and lapidary style of ancient Chinese, is susceptible of many interpretations. Western scholars, perhaps following the classical commentators such as Wang Bi, have always adopted the mystical interpretation, but it is interesting to see what a modern Chinese scholar, aware of the political interpretation, makes of a passage. Here I give Chap. 11, translated first on the mystical theory and then on the political theory:—

(a) "Thirty spokes together make one wheel And they fit into nothing at the centre; Herein lies the usefulness of a carriage. Clay is moulded to make a pot And the clay fits round nothing; Herein lies the usefulness of the pot. Doors and windows are pierced in the walls of a house And they fit round nothing; Herein lies the usefulness of a house. Thus while it must be taken as advantageous to have something there, It must also be taken as useful to have nothing there."

(Tr. Hughes; Waley's translation is very similar.)

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