L. T. HOBHOUSE
MEMORIAL TRUST LECTURE
No. 20

HUMAN LAW AND THE LAWS OF NATURE IN CHINA AND THE WEST

by

JOSEPH NEEDHAM, F.R.S.
Sir William Dunn Reader in Biochemistry in the University of Cambridge formerly Director of the Sino-British Science Co-operation Office, Chungking

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HUMAN LAW AND THE LAWS OF NATURE IN CHINA AND THE WEST

1. *Introduction*

IN Western civilization the ideas of natural law (in the juristic sense) and of the Laws of Nature (in the sense of the natural sciences) go back to a common root.[1] What development, one may ask, paralleled this in the thought of the Chinese? Was it more difficult for them to reach the conception of Laws of Nature obeyed by every created thing? For without doubt one of the oldest notions of Western civilization was that just as earthly imperial lawgivers enacted codes of positive law, to be obeyed by men; so also the celestial and supreme rational creator deity had laid down a series of laws which must be obeyed by minerals, crystals, plants, animals, and the stars in their courses. Unfortunately, if one turns to the best books and monographs on the history of science, asking the simple question, when in European or Islamic history was the first use of the term 'Laws of Nature' in the modern scientific sense, it is hard to find an answer. By the eighteenth century it was, of course, current coin—most Europeans are acquainted with these Newtonian words of 1796:

> Praise the Lord, for he hath spoken,
> Worlds his mighty voice obeyed;
> Laws, which never shall be broken,
> For their guidance he hath made.

[1] In the following argument, in order to avoid confusion, I propose to reserve the expression 'natural law' for juridical natural law, i.e. that law which it is natural for all men to obey even in the absence of positive statutes; and 'Law or Laws of Nature' for law in the sense in which the term is used in the natural sciences.

But this could not, in fact, have been written by a Chinese scholar of the autochthonous tradition. Why?

The necessary discussion falls into four parts—first, an introductory description of the basic concepts; secondly, a brief account of the development of Chinese law and jurisprudence; third, a summarized history of the differentiation in Europe of the ideas of natural law and the Laws of Nature; and lastly, a comparison of the unfolding of thought regarding these matters in China and the West. The interest of the inquiry lies in the question whether there is anything here which could properly be classed among the factors in Chinese civilization which inhibited the indigenous rise of modern science and technology.

2. *Custom and Law*

Scholars unversed in the history of jurisprudence turn naturally to the well-known book of Maine. He first explains that the earliest law was the case-law of unwritten custom in primitive societies. These usages were not commands, and there was little sanction save the moral disapproval of the society if they were transgressed, but gradually a body of judgements grew up after the differentiation of society into classes, the *dooms* of Teutonic, or the θέμιστες of Homeric, chieftains. With the growth of State power, these judgements could more and more afford to overstep the bounds of the precepts which the society had formerly followed, and continued to follow, as being, for it, demonstrably based on universally acceptable ethical principles. And thus the will of the lawgiver could embody in codes of enacted statutes, not only laws which had as their basis the immemorial customs of the folk, but also laws which seemed good to him for the greater welfare of the State (or the greater power of the governing class) and which might have no basis in *mores* or ethics. This 'positive' law partook of the nature of the command of an earthly ruler, obedience was an obligation, and precisely specified sanctions followed transgression. This

is undoubtedly represented in Chinese thought by the term *fa*, just as the customs of society based on ethics (e.g. that men do not normally, and should not, murder their parents), or on ancient tabus (e.g. incest), are represented by *li*[a], a term which, however, includes in addition all kinds of ceremonial and sacrificial observance.[1]

We learn further that in Roman law two parts were recognized: on the one hand the civil coded law of a specific people or State (positive law), *lex legale*, in the later phrase; and on the other hand the Law of Nations (*jus gentium*), more or less equivalent to natural law (*jus naturale*). The *jus gentium* was presumed to follow the *jus naturale* if the contrary did not appear. Their identity was assumed in Roman law, though not very safely; for (*a*) some customs would certainly not be self-evident to natural reason, and (*b*) there were rules which deserved to be recognized by all mankind, but in fact were not (e.g. the undesirability of slavery). The traditional origin of this 'natural law' was the increasing residence at Rome of merchants and other foreigners, who were not citizens and therefore not subject to Roman law, and who wished to be judged by their own laws—the best that the Roman jurisconsults could do was to take a kind of lowest common denominator of the usages of all known peoples, and so attempt to codify what would seem nearest to justice to the greatest number of people. Thus it was that the conception of natural law originated. There are other slightly different versions of the process (cf. Buckland, Nettleship, Jolowicz) but for our purpose this will do. Natural law was thus the mean of what all men everywhere felt to be naturally right, and 'there came a time', as Maine says, 'when from an ignoble appendage of the *jus civile*, the *jus gentium* came to be considered a great, though as yet imperfectly developed, model to which all law ought as far as possible to conform'.

[1] The Chinese characters of the most important technical terms mentioned in this lecture will be found on the last page. The romanization adopted is that of Wade, with the substitution of the letter *h* for the aspirate apostrophe.

The distinction is found in Aristotle, who speaks of positive law as δίκαιον νομικόν and of natural law as δίκαιον φυσικόν. He says:

> Political justice is of two kinds, one natural (φυσικόν) and the other conventional (νομικόν). A rule of justice is natural when it has the same validity everywhere, and does not depend on our accepting it or not. A rule of justice is conventional when in the first instance it may be settled in one way or the other indifferently—though having once been settled it is not indifferent; for example, that the ransom for a prisoner shall be a mina, or that a sacrifice shall consist of a goat and not of two sheep, &c. . . . Some people think that all rules of justice are merely conventional, because whereas nature is immutable and has the same validity everywhere, as fire burns both here and in Persia, rules of justice are seen to vary. That rules of justice vary is not absolutely true, but only with qualifications. . . . But nevertheless there is such a thing as natural justice as well as justice not ordained by nature, and it is easy to see which rules of justice, though not absolute, are natural, and which are not natural but legal and conventional, both sorts alike being variable.
>
> (tr. Rackham)

The passage is very interesting, for it refers to the fact that quantitative and ethically indifferent matters can only be settled by positive legislation, and also trembles on the verge of speaking of Laws of Nature in the scientific sense. Now in the Chinese context there could hardly be a *jus gentium*, for owing to the 'isolation' of Chinese civilization there were no other *gentes* from whose practices an actual universal law of nations could be deduced, but there was certainly a natural law, namely, that body of customs which the sage-kings and the people had always accepted, i.e. what the Confucians called *li*[a].

3. *Chinese Jurisprudence*

These preliminaries having been completed, we may now proceed to an account of the main features of the history of law in Chinese civilization.

> The peoples of Western civilization [says Escarra] have lived throughout under the Graeco-Roman conception of law. The mediterranean

spirit, while central to the patrimony of the Latin peoples, has also inspired large parts of the law of Islam, as also of the Anglo-Saxon, Germanic, and even Slavonic, nations. In the West the law has always been revered as something more or less sacrosanct, the queen of gods and men, imposing itself on everyone like a categorical imperative, defining and regulating, in an abstract way, the effects and conditions of all forms of social activity. In the West there have been tribunals the role of which has been not only to apply the law, but often to interpret it in the light of debates where all the contradictory interests are represented and defended. In the West the jurisconsults have built, over the centuries, a structure of analysis and synthesis, a corpus of doctrine ceaselessly tending to perfect and purify the technical elements of the systems of positive law. But as one passes to the East, this picture fades away. At the other end of Asia, China has felt able to give to law and jurisprudence, but an inferior place in that powerful body of spiritual and moral values which she created and for so long diffused over so many neighbouring cultures, such as those of Korea, Japan, Annam, Siam, and Burma. Though not without juridical institutions, she has been willing to recognize only the natural order, and to exalt only the rules of morality. Essentially purely penal (and very severe), sanctions have been primarily means of intimidation. The State and its delegate the judge have always seen their power restricted in face of the omnipotence of the heads of clans and guilds, the fathers of families, and the general administrators, who laid down the duties of each individual in his respective domain, and settled all conflicts according to equity, usage, and local custom. Few indeed have been the commentators and theoreticians of law produced by the Chinese nation, though a nation of scholars.

The Lü Hsing chapter in the *Shu Ching* (Historical Classic) has been regarded as the oldest notice of a legal code in China, but it is very probably a fabrication of the Chin period (late third century A.D.). What is undoubtedly the oldest codification of Chinese law is that related in the *Tso Chuan* for 535 B.C. Here, at the beginning of the story, appears that uncompromising objection to codification which characterized Confucian thought throughout Chinese history. In the text we read:

In the third month the people of the State of Chêng made (metal cauldrons on which were inscribed the laws relating to) the punish-

ment (of crimes). Shu Hsiang wrote to Tzu Chhan (i.e. Kungsun Chhiao, prime minister of Chêng) saying, 'Formerly, Sir, I took you as my model. Now I can no longer do so. The ancient kings, who weighed matters very carefully before establishing ordinances, did not (write down) their system of punishments, fearing to awaken a litigious spirit among the people. But since all crimes cannot be prevented, they set up the barrier of righteousness, bound the people by administrative ordinances (chêng), treated them according to just usage (li[a]), guarded them with good faith (hsin), and surrounded them with benevolence (jen). . . . But when the people know that there are laws regulating punishments, they have no respectful fear of authority. A litigious spirit awakes, invoking the letter of the law, and trusting that evil actions will not fall under its provisions. Government becomes impossible. . . . Sir, I have heard it said that a State has most laws when it is about to perish.'

(tr. Couvreur)

The situation was repeated later in the same century. For the year 512 B.C. the *Tso Chuan* says:

In the winter the inhabitants of the State of Chin were forced to contribute a bushel of iron to make cauldrons on which the penal laws were inscribed. They were those of Fan Hsuan-Tzu. Confucius said, 'I fear that Chin is going to destruction. If its government would observe the laws which its founder prince received from his brother, it would direct the people rightly. . . . Now the people will study the laws on the cauldrons and be content with that; they will have no respect for men of high rank!'

(tr. Couvreur)

Thus from the beginning the supple and personal relations of *li*[a] were felt to be preferable to the rigidity of *fa*.

Nothing whatever is known of the provisions of these early codes, and the system which proved to be really the ancestor of all the later ones was that of Li Khuei. Li Khuei was a minister of the State of Wei about 400 B.C.; his code was called the *Fa Ching* (Juristic Classic). Although it has long been lost, the headings of its contents have been preserved; they concerned (1) robbery (*tao fa*); (2) brigandage (*tsei fa*); (3) imprisonment (*chhiu fa*); (4) procedure (*pu fa*); (5) miscellaneous matters (*tsa fa*); (6) definitions (*chü fa*).

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These divisions are found in all subsequent codes. In the first emperor's time, Hsiao Ho (d. 193 B.C.) added three *shih lü* sections as follows: (7) regulations concerning the census, the family, and marriage (*hou lü*); (8) regulations concerning taxation (*hsing lü*); and (9) regulations concerning military service (lit. the imperial stables) (*chiu lü*). The laws of feudal states other than Wei were then laid under contribution (such as the *Yueh Kung Lü* (Royal Regulations of the State of Yueh) drawn up by Chang Thang, and the *Chao Lü* (Regulations of the State of Chao) drawn up by Chao Yü), and the whole was built up into the great Code of the Han dynasty by Shusun Thung and other jurists. But it was completely lost long before the Sui. Nevertheless, a good idea of Han practice may be gained by reading the Hsing Fa Chih (Record of Law and Punishments) of the *Chhien Han Shu* (ch. 23). Each one of the later dynastic histories contains such a chapter.

The Chin, Liu Sung, Chhi, Liang, and other dynasties had codes, but nothing is known of them and all were lost before the Sui. From the indications which we have about them, however, it is certain that they followed the model of the *Fa Ching* and the Han Code in being almost entirely concerned with criminal matters and government ordinances regarding taxation. Civil law remained extremely undeveloped.

The only other main class of Chinese juristic writings was the series of books recording decisions in *causes célèbres*. Typical of these are the *I Yü Chhien Chi* (First Collection of Doubtful Law Cases) by Ho Ning, and the *I Yü Hou Chi* (Second Collection of Doubtful Law Cases) by his son Ho Mêng; both written between 907 and 960. Another Sung work of the same kind was the *Chê Yü Kuei Chien* (Tortoise Mirror of Case Decisions) compiled by Chêng Kho. 'But there lacked in China', says Escarra, 'that tradition of jurisconsults succeeding one another through the centuries, whose opinions, independent of the positive law and whatever its practical application might be, built up, on account of their

methodical, doctrinal, and scientific character, the "theory" or speculative part of law. China had no "Institutes", manuals, or treatises. A jurisconsult such as Thung Chung-Shu, liturgiologists like the elder and younger Tai, codifiers like Chhang-sun Wu-Chi . . . did not accomplish works parallel to those of a Caius, a Cujas, a Pothier, or a Gierke.' At the same time it must be recognized that in certain respects Chinese legal mentality was much ahead of the European. There was a remarkably early appearance of forensic medicine in China, with books of the type of *Hsi Yuan Lu* from the Sung (A.D. 1247 onwards). Given the pattern of Chinese thought, this was not an unnatural development, for the dictates of *li*[a] would assure (at any rate theoretically) the utmost possible effort being made to prevent the fixation of guilt on the innocent, and the overwhelmingly empirical character of the Chinese study of Nature would result in the compilation of all possible methods and tests which might enable the magistrate to decide a criminal case, though the standard of scientific criticism available was quite insufficient to sort out the sound tests from those which rested on a merely superstitious basis. But in comparison with the ordeals and primitive ideas still in use in Europe down to the eighteenth century, the Chinese practice was very much more civilized.

Summing up, we may remember that the distinction between natural law and positive law has left many traces in European legal terminology itself. The physic justice of Aristotle, so closely connected with universal morality, comes down to us as *jus*, *riht*, *droit*, *diritto*, *Recht*, and *pravo*—it is the *donné* of Geny, and China's *li*[a]. The nomic justice of Aristotle, laid down by specific legislative authority, comes down to us as *lex*, *law*, *loi*, *Gesetz*, &c.,—it is the *construit* of Geny, and China's *fa*. And in China, *li*[a] was, for the greatest part of history, enormously more important than *fa*.

4. *Development of the Ideas of Natural Law and Laws of Nature in Europe*

We turn now to the third part of the argument, the stages in the differentiation within Western civilization of the conceptions of natural law and the Laws of Nature.

There can be little doubt that the conception of a celestial lawgiver 'legislating' for non-human natural phenomena has its first origin among the Babylonians. Jastrow gives the translation of Tablet No. 7 of the Later Babylonian Creation Poem, in which the sun-god Marduk (raised to a position of central importance contemporaneously with the unification and centralization under Hammurabi, about 2000 B.C.) is pictured as the lawgiver to the stars. He it is 'who prescribes the laws for (the star-gods) Anu, Enlil (and Ea), and who fixes their bounds'. He it is who 'maintains the stars in their paths' by giving 'commands' and 'decrees'.

The pre-Socratic philosophers of Greece speak much of necessity (*ἀνάγκη*), but not of law (*νομός*) in Nature. But 'The Sun', Heracleitus says (*c.* 500 B.C.), 'will not transgress his measures; otherwise the Erinyes, the bailiffs of Dike [the goddess of justice] will find him'. Here the regularity is assumed as an obvious empirical fact, but the idea of law is present, since sanctions are mentioned. Anaximander, too (*c.* 560 B.C.), speaks of the forces of Nature 'paying fines and penalties to each other'. But the conception of Zeus Nomothetes in the older Greek poets pictures him as giving laws to gods and men, not to the processes of Nature, for he himself was not truly a Creator. Demosthenes, however (384 B.C. to 322 B.C.; living thus between the generation of Mo Ti and that of Mencius), uses the word 'law' in its most general sense when he says: 'Since also the whole world, and things divine, and what we call the seasons, appear, if we may trust what we see, to be regulated by Law and Order.'

Nevertheless Aristotle never used the law-metaphor, though, as we have already noted (p. 8), he occasionally

comes within an inch of doing so. Plato uses it only once, in the *Timaeus*, where he says that when a person is sick, the blood picks up the components of food 'contrary to the laws of nature' (*παρὰ τοὺς τῆς φύσεως νομούς*). But the conception of the governance of the whole world by law seems to be peculiarly Stoic. Most of the thinkers of this school maintained that Zeus (immanent in the world) was nothing else but *κοινὸς νομός*—Universal Law (e.g. Zeno, fl. 320 B.C.; Cleanthes, fl. 240 B.C.; Chrysippus, d. 206 B.C.; Diogenes, d. 150 B.C.). It seems more than likely that this new and more definite conception was derived from Babylonian influences, since we know that about 300 B.C. astrologers and star-clerks from Mesopotamia began to spread through the Mediterranean world. Among these one of the most famous was Berossus, a Chaldean who settled in the Greek island of Cos in 280 B.C. Zilsel, alert for concomitant social phenomena, notes that just as the original Babylonian conceptions of Laws of Nature had arisen in a highly centralized oriental monarchy, so in the time of the Stoics, a period of rising monarchies, it would have been natural to view the universe as a great empire, ruled by a divine Logos.

Since, as is known, the Stoic influence at Rome was great, it was inevitable that these very broad conceptions should have their effects in the development of the idea of a natural law common to all men whatever might be their cultures and local customs. Cicero (106 to 43 B.C.), of course, reflects this, saying: 'Naturalem legem divinam esse censet (Zeno), eamque vim obtinere recta imperantem prohibentemque contraria', and elsewhere: 'The universe obeys God, seas and land obey the universe, and human life is subject to the decrees of the Supreme Law.'

Curiously, it is in Ovid (45 B.C. to A.D. 17) that we find the clearest statements of the existence of laws in the non-human world. He does not hesitate to use the word *lex* for astronomical motions. Speaking of the teaching of Pythagoras, he says:

'in medium discenda dabat, coetusque silentum
dictaque mirantum magni primordia mundi
et rerum causas, et quid natura docebat,
quid deus, unde nives, quae fulminis esset origo,
Juppiter an venti discussa nube tonarent,
quid quateret terras, *qua sidera lege mearent*,
et quodcumque latet . . . .'

Most translators have failed to do justice to this remarkable statement; Dryden turned it thus:

What shook the stedfast earth, and whence begun
The Dance of Planets round the radiant Sun . . .

while King simply left the phrase out altogether. Elsewhere Ovid, complaining of the faithlessness of a friend, says that it is monstrous enough to make the sun go backward, rivers flow uphill, and 'all things proceed reversing nature's laws' (naturae praepostera legibus ibunt).

In this connection the origin and fate of the word 'astronomy' is interesting. As Zilsel points out, this compound term could not have been coined or used if there had not been a tacit recognition of quasi-juridical laws controlling the movements of the celestial bodies. Recently a special study has been devoted to the history of the word by Laroche. 'Astronomy' and 'astrology' were at first synonymous, and the former was familiar to Aristophanes as early as the fifth century. Later usage seemed to follow the chance preference of individual authors; Plato wanted to settle on the term 'astrology', but it was already acquiring the significance of 'astro-mancy'. In the fifth century Latin encyclopaedias for monks explain 'astronomy', literally translating the term, as the science dealing with the 'law of stars' (*lex astrorum*); but the significance might be rather that of the laws which the stars gave to every man in fixing his fate than that of the laws which they themselves had to obey in their motions.

Far more certain as another contributory line of thought was that which emanated from (or was transmitted from the Babylonians by) the Hebrews. The idea of a body of laws laid down by a transcendent God and covering the actions both

of men and of the rest of Nature is frequently met with, as Singer and many others have pointed out. Indeed, the divine lawgiver was one of the most central ideas of Judaism. It would be difficult to overestimate the effect on all occidental thinking of the Christian era of these ideas in the Hebrew scriptures—'The Lord gave his decree to the sea, that the waters should not pass his commandment'. Furthermore, the Jews developed a kind of natural law applying to all men as such, somewhat analogous to the *jus gentium* of Roman Law, in the 'Seven Commandments for the Descendants of Noah' (Isaacs).

We have spoken of the pre-Socratics and Stoics, but have not mentioned the most important scientific school of all, the Epicureans. It is remarkable indeed that Democritus and Lucretius, who so powerfully advocated natural and causal explanations, never spoke of Laws of Nature. There is only one place in the *De Rerum Natura* where Lucretius uses the term in its later sense. Denying the existence of chimaeras, he says that members of a body can combine only if they are adapted to each other; all animals are 'bound by these laws' (teneri legibus hisce). Zilsel acutely points out that on Epicurean theology Laws of Nature would be impossible in the strictest sense, since the gods had not created the world and took no interest in it; perhaps this was why the Epicureans spoke of principles but not of laws. Another point where the history of biology enters in is the work of Galen (A.D. 129 to 201), whose *De Usu Partium*, in which he seeks to demonstrate the teleological significance of every part of the human body, has been held to involve an approximation to the idea of Laws of Nature (Singer & Singer).

Christian theologians and philosophers naturally continued the Hebrew conceptions of a divine lawgiver. In the early centuries of Christianity statements in which laws of non-human Nature are implicit are not difficult to find. For example, the oratorical apologist Arnobius (*c.* A.D. 300), arguing that Christianity is nothing monstrous, says that since its introduction there have been no changes in 'the

laws initially established'. The (Aristotelian) elements have not changed their properties. The structure of the machine of the universe (presumably the astronomical system) has not dissolved. The rotation of the firmament, the rising and setting of stars, has not altered. The sun has not cooled. The changes of the moon, the turn of the seasons, the succession of long and short days, have neither been stopped nor disturbed.

We are still in the stage, however, before a sharp separation between (human) natural law and (non-human) Laws of Nature has come about. In the early centuries of the Christian era there are two statements of particular interest which show the ideas in their more or less undifferentiated state. In the *Constitution* of Theodosius, Arcadius, and Honorius of A.D. 395 there is a passage forbidding anyone to practise augury on pain of punishment for high treason: 'Sufficit ad criminis molem naturae ipsius leges velle rescindere, inlicita perscrutari, occulta recludere, interdicta temptare'—it is impious to tamper with the principles which keep the secret Laws of Nature from men's eyes. This is strikingly similar to the prohibition of the Chhan-Wei books of augury in China, but here its interest is that it suggests the existence of laws of Nature, connected with the course of human affairs, but not concerned with morality.

The second statement is a famous one of Ulpian, the eminent Roman jurist (d. A.D. 228) whose work occupies so large a part of the Justinian *Corpus Juris Civilis* of A.D. 534.

> Jus naturale [he says in the first paragraph of the *Digest*] est quod natura omnia animalia docuit . . . .
>
> Natural law is that which all animals have been taught by Nature; this law is not peculiar to the human species, it is common to all animals which are produced on land or sea, and to fowls of the air as well. From it comes the union of man and woman called by us matrimony, and therewith the procreation and rearing of children; we find in fact that animals in general, the very wild beasts, are marked by acquaintance with this law.
>
> (tr. Monro)

Historians of jurisprudence are at pains to explain that this never had any influence on subsequent legal thinking. This may well be the case, but it was accepted by mediaeval writers and commentators, and clearly expresses the idea of animals as quasi-'juristic' individuals obeying a code of laws laid down by God. At this point we are very close to the idea of the Laws of Nature as the divine legislation which matter (including animal life) obeys.

As the Christian centuries went on it was inevitable that natural law should come to be identified with Christian morality. St. Paul had clearly expressed it. St. Chrysostom (early fifth century) had seen in the Hebrew ten commandments a codification of natural law, and with the *Decretum* of Franciscus Gratianus (A.D. 1148) the identification, never afterwards departed from by orthodox canonists, was complete. It was moreover, as Pollock says, the universal mediaeval belief that commands of princes contrary to natural law were not binding on their subjects, and could therefore lawfully be resisted. This doctrine, summarized in the phrase 'Positiva lex est infra principantem sicut lex naturalis est supra', bore much fruit at the time of the rise of Protestantism, and the 'right of rebellion against un-Christian princes' had no small part to play in the beginnings of modern European democracy (Gooch). It is interesting to note how precisely it corresponds with the Confucian doctrine, expressed in Mencius, that subjects have a right to dethrone the ruler who ceases to act according to *li*[a]; and the similarity was certainly not lost upon European social thinkers who read the Jesuit Latin translations of the Chinese classics after A.D. 1600.

5. *Acceptance of the Legal Metaphor in Renaissance Natural Science*

But what of the scientists and their Laws of Nature? We are now in the seventeenth century, and with Boyle and

Newton the concept of laws of Nature, 'obeyed' by chemical substances and planets alike, is fully developed. Very little investigation has been made, however, of the exact points at which it differentiated from the synthesis of the schoolmen. The lexicographers say that the first use of the expression in its scientific sense occurs in the first volume of the *Philosophical Transactions* of the Royal Society (1665). Thirty years later Dryden inserts it gratuitously in his translation of the 'Felix qui potuit rerum cognoscere causas' of Virgil's *Georgics*—it has become a commonplace. Robson, in his excellent book *Civilization and the Growth of Law*, regarded it as a specifically seventeenth-century idea, present in the philosophies of Spinoza and Descartes as well as in the 'new, or experimental, philosophy' of the natural scientists. It is the merit of Zilsel to have disentangled very clearly the stages through which the idea at last came into its own. We find also in jurists such as Huntingdon Cairns a recognition of the parallel development in the seventeenth century of secularized natural law based on human reason, and the mathematical expression of empirical laws of Nature.

There is no doubt that the turning-point occurs between Copernicus (1473 to 1543) and Kepler (1571 to 1630). The former speaks of symmetries, harmonies, motions, but never in any place of laws. Gilbert in his *De Magnete* (1600) does not speak of laws either, though he enunciates certain generalizations about magnetism for which the term would have been most suitable. Francis Bacon's position is complex; in the *Advancement of Learning* (1605) he speaks of the 'Summary Law of Nature' as the highest possible knowledge, but doubts whether it can be attained by man; while in the *Novum Organon* (1620) he uses the term 'law' as synonymous with Aristotelian substantial form. He had thus really advanced no further than the scholastics. Galileo, like Copernicus, never uses the expression 'Laws of Nature', whether in his 'Jugendarbeit' on mechanism of 1598 or in his *Discourses and Mathematical Demonstrations on Two New Sciences*

(1638), which was the beginning of modern mechanics and mathematical physics. What would later have been called laws appear as 'proportions', 'ratios', 'principles', &c. The same remarks apply both to Simon Stevin (whose works date as of 1585 and 1608) and to Pascal (1663); the law-metaphor was not used by them.

By a remarkable paradox, Kepler, who discovered the three empirical laws of the planetary orbits, one of the first occasions on which the Laws of Nature were expressed in mathematical terms, never himself spoke of them as laws, though he used the phrase in other connections. Kepler's first and second 'laws', given in the *Astronomia Nova* of 1609, are paraphrased in long expositions; the third, published in *Harmonices Mundi* (1619), is called a 'theorem'. Yet he speaks of 'law' in connection with the principles of the lever, and in general uses the word as if it were synonymous with measure or proportion.

Meanwhile, an important step in the clarification of the concept had been made by the Spanish theologian Suarez, who in his *Tractatus de Legibus* (1612) made a sharp distinction between the world of morality and the world of non-human Nature, maintaining that the idea of law applied only to the former. He opposed the Thomistic synthesis because it disregarded this distinction. 'Things lacking reason', he says, 'are, properly speaking, capable neither of law nor of obedience. In this the efficacy of divine power and natural necessity . . . are called law by a *metaphor*.' This was clear thinking, and reminds us of the difficulty which the Chinese had in extending the concepts of *li*[a] and *fa* to the non-human world.

In Descartes the idea of Laws of Nature is as well developed as later in Boyle and Newton. The *Discours de la Méthode* (1637) speaks of the 'laws which God has put into Nature'. The *Principia Philosophiae* (1644) concludes by saying that it has discussed 'what must follow from the mutual impact of bodies according to mechanical laws, confirmed by certain

and everyday experiments'. So also in Spinoza. The *Tractatus Theologico-Politicus* (1670) distinguishes the laws 'depending on the necessity of Nature' from laws resulting from human decrees. Moreover, Spinoza agrees with Suarez that the application of the term 'law' to physical things is based on a metaphor—though for different reasons, since Spinoza was a pantheist who could not have believed in the naïve picture of a celestial lawgiver.

Zilsel sees one essential component in the development of seventeenth-century Laws of Nature in the empirical technologies of the sixteenth century. He points out that the superior craftsmen of that time, the artists and military engineers (of whom Leonardo da Vinci was the supreme example), were accustomed not only to experimentation, but also to expressing their results in empirical rules and quantitative terms. He instances the small book *Quesiti ed Inventioni* of Tartaglia (1546) in which quite exact quantitative rules were given for the elevation of guns in relation to ballistics. 'These quantitative rules of the artisans of early capitalism are, though they are never called so, the forerunners of modern physical laws.' They rose to science in Galileo.

Here the most fundamental problem is why, after so many centuries of existence as a theological commonplace in European civilization, the idea of Laws of Nature attained a position of such importance in the sixteenth and seventeenth centuries. It is, of course, only a part of the whole problem of the rise of modern science at that time. How was it, asks Zilsel, that in the modern period the idea of God's reign over the world shifted from the exceptions in Nature (the comets and monsters which had disturbed mediaeval equanimity) to the unvarying rules? His answer, which must surely be in principle the right one, is that since the idea of a reign over the world had originated from a hypostatization into the divine realm of men's conceptions of earthly rulers and their reigns, we should look at concomitant social developments to reach an understanding of the change

which now took place. And indeed with the decline and disappearance of feudalism and the rise of the capitalist state there occurred a disintegration of the power of the lords and a great increase in the power of centralized royal authority. We are familiar with this process in Tudor England and eighteenth-century France; and while Descartes was writing, the English Commonwealth had taken the process even further towards an authority which was centralized but no longer royal. If, then, we may relate the rise of the Stoic doctrine of Universal Law to the period of the rise of the great monarchies after Alexander the Great, we may find it equally reasonable to relate the rise of the concept of Laws of Nature at the Renaissance to the appearance of royal absolutism at the end of feudalism and the beginning of capitalism. 'It is not a mere chance' says Zilsel, 'that the Cartesian idea of God as the legislator of the universe developed only forty years after Jean Bodin's theory of sovereignty.' Thus the idea, which had originated in a milieu of 'oriental despotism', was preserved in rudimentary form through two thousand years, to awake to new life in early capitalist absolutism. Yet this brings us face to face with the paradox that in China, where imperial 'absolutism' covered an even longer period, we hardly meet with the idea at all. How this could be affords the subject of this lecture.

For the present purpose, then, it suffices to say that between the time of Galen, Ulpian, and the Theodosian Constitution on the one hand, and that of Kepler and Boyle on the other, the conceptions of a natural law common to all men, and of a body of Laws of Nature common to all non-human things, had become completely differentiated. With this established we are in a position to see in what way the development of Chinese thought on natural law and the Laws of Nature differed from that of Europe.

6. *Chinese Thought on Natural Law and Laws of Nature*

The ancient Taoist thinkers (4th and 3rd centuries B.C.),

profound and inspired though they were, failed, perhaps because of their intense mistrust of the powers of reason and logic, to develop anything resembling the idea of Laws of Nature. With their appreciation of relativism and the subtlety and immensity of the universe, they were groping after an Einsteinian world-picture without having laid the foundations for a Newtonian one. By that path science could not develop. It was not that the Tao, the cosmic order in all things, did not work according to measure and rule, but the tendency of the Taoists was to regard it as, for the theoretical intellect, inscrutable. It would perhaps not be going too far to say that this was the reason why, when to them was consigned the care of Chinese science through the centuries, that science had to remain on a purely empirical level. Moreover, it is not irrelevant that their social ideals had less use than those of any other school for positive law; seeking to go back to primitive tribal collectivism, where nothing was formulated and written down, but everything worked well in communal co-operativeness, they could not have been interested in the abstract law of any lawgivers.

The Mohists, on the other hand, or rather the late Mohists, together with the Logicians, strove mightily to perfect logical processes, and made the beginnings of applying them to zoological classification and to the elements of mechanics and optics. We do not know why this scientific movement failed, perhaps it was because the Mohists' interest in Nature was too strongly bound up with their practical aims in military technology; at any rate these schools had no survivors after the upheavals of the first unification of the empire (230 B.C.). They seem to have approached no nearer than the Taoists to the idea of Laws of Nature. The proper translation of their technical term *fa* (identical with 'law' as used by the Legalists) in the logic of the *Mo Ching* (Mohist Canon) is a very debatable matter, but so far as can be seen the conclusion that the term was used by the Mohists in a sense fairly closely resembling the Aristotelian causes, holds good.

With the Legalists (*Fa Chia*) and Confucians we are in the realm of pure sociological interest, for neither of these schools had any curiosity about Nature outside and surrounding man. As we have seen, the Legalists laid all their emphasis on positive law (*fa*), which was to be the pure will of the law-giver, irrespective of the generally accepted morality, and capable of being quite contrary to it if the welfare of the State should so require. But the law of the Legalists was at any rate precisely and abstractly formulated. As against this the Confucians (*Ju Chia*) adhered to the body of ancient custom, usage, and ceremonial, which included all those practices, such as filial piety, which unnumbered generations of the Chinese people had instinctively felt to be right—this was *li*[a], and we may equate it with natural law. Moreover, it was necessary that this right behaviour be taught, rather than enforced, by paternalistic magistrates. Confucius had said that if the people were given laws and levelled by punishments, they would try to avoid the punishments but have no sense of shame; but that if they were 'led by virtue' they would spontaneously avoid disputes and crimes. The *Li Chi* (Record of Rites) speaks, in symbolism appropriately taken from hydraulic engineering, of good customs as dykes or embankments, saying that while it is easy to know what has already happened it is difficult to know what is going to happen. Good customs, therefore, more flexible than formulated laws, prevent disturbances before they arise, while laws can only operate after they have arisen. Hence one can understand the point of view which after the victory of the Confucians over the Legalists came to dominate Chinese thinking, that since correct behaviour in accordance with *li*[a] always depended on the circumstances, such as the status of the acting parties in social relationships, to publish laws beforehand which could take insufficient account of the complexity of concrete circumstances was an absurdity. Hence the severe restriction, which we have already noted, of codified law to purely criminal provisions.

7. *The word* Lü (*Regulations, and Standard Pitch-Pipes*)

Throughout this lecture I have had to make what I hope is not too wearisome an insistence upon the distinction between *li*[a] and *fa*. Neither of these words was easily applicable to non-human Nature. But there was one ancient Chinese word which does seem to link the spheres of non-human phenomena and human law. This word is *lü*. In the Chinese legal codes (p. 11 above), it stands for 'statutes' and 'regulations'. This sense is undoubtedly quite old, as the phrase in *Kuan Tzu* may witness: 'the laws serve to distinguish each person's portion and place, and to put a stop to quarrels.' Here the idea is very close to that of μοῖρα and the other Greek entities discussed by Cornford. But the word had also a quite different meaning, namely the series of standard bamboo pitch-pipes used in ancient music and acoustics, and the twelve semitones which these pipes represented. What could have been the connection between the laws of sound and the laws of human lawgivers?

The word *lü* has as its right-hand phonetic a sign which was certainly in the most ancient times a hand holding a writing-implement, and for its radical the word *chhih* which meant a step with the left foot (paralleling *chhê*, a step with the right foot). This suggests an original connection with the notation of a ritual dance. Later on, since the twelve semitones were made to correspond with the months of the year, the word came to mean a calendrical date, and thus is found associated with the word *li*[c] in titles of chapters on calendrical science, such as the Lü Li Chih of the *Chhien Han Shu*. The question at issue is how the conception of laws, statutes, or regulations can have been derived from, or even associated with, the word for the standard musical tones.

Perhaps the etymological considerations just mentioned hold one clue. It would not be so far a step from the directions for music and ritual dancing laid down by a diviner or priest-magician (indeed a shamanistic *wu*) to the directions

for conduct of other behaviour, especially organized military behaviour, laid down by a temporal ruler. There was a logical analogy between what dancing would do against the spirits and what drilling and weapon-practising would do against human enemies. Some kinds of dances certainly involved the carrying and brandishing of weapons (Granet). It is thought that originally there were five stations around the dancing-floor which in time gave their names to a certain quality of sound, according to the instrument stationed in each place, and later to a difference in pitch.

A general connection is obvious between the musical notes on the one hand and the directions for ritual dancing and for military activity on the other. But there is nothing here which suggests that the Chinese ever thought of the semi-tone intervals of the standard pitch-pipes as originating from, or constituting, any kind of law in the non-human phenomenal world. The fact that what we now regard as a branch of physics stood at the origin of a word which took on the sense of human legal regulations, may have several probable explanations, and does not, in short, mean that Chinese thinking therefore here contained the elements of the conception of Laws of Nature.

8. *The Word* Tu (*Degrees of Celestial Motion*)

If, at this stage, a reader should happen to glance at the astronomical chapter of the *Shih Chi* (Historical Records), written about 90 B.C., he might well come upon the following passage:

> 'As for me (Ssuma Chhien refers to himself), I have studied the memoirs of the historians, and have examined the movements (of the heavenly bodies). During the past hundred years it has never happened that the five planets have made their appearances without (from time to time) moving backwards, and when they move backwards they are at the full and change their colours. And moreover, there are definite times when the sun and moon are veiled or eclipsed, and when they move to the north or the south. These are *general laws*.'
>
> (tr. Chavannes)

In the light of the whole discussion of this lecture, he will then turn to the Chinese text fairly certain that whatever Ssuma Chhien actually said, he did not speak of general laws in the sense of the scientific Laws of Nature. Now the actual expression he used is *tu*; *tzhu chhi ta tu yeh*, and this word therefore demands notice.

The primary meaning of *tu* is 'degree of measurement', and that this is overwhelmingly its commonest use appears not only from the lexicographers but also from the indexes or concordances which have been made for many of the most important ancient Chinese books. Its etymology, such as might be deduced from oracle-bone forms, does not throw any light on how it came to mean this. Nevertheless, its significance may be that of 'law' especially when it is found in combinations such as *chih tu*, 'government *tu*', or *fa tu*, 'legal *tu*'. Couvreur gives examples of these uses from the *I Ching* (Classic of Changes), where the former combination occurs, and from the *Shu Ching* (Historical Classic), where *tu* occurs alone in the sense that certain people had 'gone beyond the bounds' or 'transgressed'. There is of course a close semantic connection between 'law' and 'measure', for every law has a certain quantitative aspect; 'How far', we say, 'is it true that such-and-such an action comes under the scope of such-and-such a provision of the law?'—'Measures must be taken, by means of by-laws, to curb such-and-such a practice which is growing up.' But this quantitative aspect tends to remain metaphorical until legislators set out to make positive law, independent of morality, as for instance when the first Emperor Chhin Shih Huang Ti began to regulate the gauge of chariot-wheels. Still, there are to be found, among the writings of the philosophers of the Warring States period, numerous analogies between law in human societies and the carpenter's square, the compasses, and the plumb-line.

More important is the fact, pointed out by Couvreur, that *tu* may be considered a definite technical term for the movements of the heavenly bodies. The word was used throughout

Chinese history for the $365\frac{1}{4}$ degrees into which the celestial sphere was divided, and for many other scales of divisions, such as the 100 parts of a day or night as shown by the clepsydra (water-clock). Revealing is the phrase used by Tung Chung-Shu in his *Chhun Chhiu Fan Lu* of about the same time as Ssuma Chhien, where he says 'Thien Tao yu tu'; the *Tao* of Heaven has its regular measured movements. The general conclusion to which we must come is that on the strictest standards of the philosophy of science Chavannes was not justified in translating the word *tu*, standing alone, as 'general laws'. It would have been preferable to say: 'These phenomena all have their regular measured (or measurable) recurrent movements.'

One wishes that it were possible to ask of Ssuma Chhien the question, In using the word *tu*, measured degrees, did you mean it to have the undertone of 'law'? If so, whose law? I believe that it is exceedingly unlikely that he would reply 'The laws of Shang Ti' (the ruler above); and almost certain that he would say it was 'tzu-jan tu', natural measured movement, or 'Thien Tao tu', the movements of the *Tao* of Heaven.

9. *The Expression* Chi-Kang (*Nexus of Natural Causation*)

Still keeping within the realm of ancient Chinese astronomical thought, there is to be found, in an obscure fragment of early date, a discussion very much to our purpose. This is the so-called *Chi Ni Tzu*, contained in the famous collection of fragments made by Ma Kuo-Han. We do not even know whether *Chi Ni Tzu* was a real person, or simply a character invented by whoever it was who wrote the *Chi Jan* chapters or book attributed to Fan Li. Fan Li himself was a historical person, a statesman of the southern State of Yueh in the fifth century B.C., but from the internal evidence, the discussions which *Chi Ni Tzu*, Chi Yen, carried on with King Kou Chien of Yueh can hardly have been written

before the time of Tsou Yen (late fourth century B.C.). There seems indeed no reason why part at least of these chapters should not be a Han fabrication, but it has to be admitted that they contain rather archaic material, such as the names of the gods of the five elements, and in view of their origin they may perhaps be placed in the late fourth or early third century B.C., and considered to embody a southern tradition of naturalism. In any case their exact date and provenance do not affect the present argument.

In the Nei Ching chapter we find the following:

'The King of Yueh said "Since you discuss human affairs so brilliantly, perhaps you can tell me whether natural phenomena (wu) have diabolical or auspicious meanings (in relation to man)?"

Chi Ni answered: "There are the Yin and the Yang. *All things have their chi-kang* (i.e. their fixed positions and motions with regard to other things in the web of Nature's relationships). The sun, moon and stars signify punishment or virtue, and their changes indicate fortune and misfortune. Metal, wood, water, fire, and earth conquer each other successively; the moon waxes and wanes alternately. *Yet these normal* (*changes*) *have no ruler and governor* (mo chu chhi chhang). If you follow it (Heaven's Way) virtue will be attained; if you violate it there will be misfortune. . . . All affairs must be managed following the source of Heaven and Earth and the Four Seasons with reference to the Yin and Yang. If these principles are not carefully used, State affairs will get into trouble. Man when born does not know the day of his death. If you want to change the normality of Heaven and Earth you will simply unleash mischief, fall into poverty and shorten your life. Thus the sage rejects bribes and obtains a (good) response, but the mass of foolish men strive after wealth and honour (at all costs), not knowing what direction they should take."

The King said: "Excellent".' (tr. auct.)

Here it would have been easy for the unwary to translate *chi-kang* as Laws of Nature. Forke wisely used the words 'bestimmte Wandlungen', fixed changes. Yet the lexicographers admit the meaning of (human) laws for this expression.

It is obvious that we have to deal here with an analogy

from textiles; both words have the silk radical. *Chi* combines 'silk' with 'self', it comes from an uncertain bone graph and means 'to disentangle silk threads one from the other, to put in order, to regulate, rule, law, norm, regular series, cycle of years, conjunction of the sun and moon, inscribed annals'. We know that the cycle of years in question is the Jupiter cycle, and significantly *Chi Ni Tzu* speaks about this, giving it as twelve years, elsewhere in the fragment. *Kang* combines 'silk' with 'net' and the ancient graph shows for the phonetic a net and a man. From its original meaning of the cord forming the selvedge of a net it came to mean 'rule, regulate, dispose, put in order, direct', especially when used with *chi*. The analogous word *wang*, though restricted more closely to the meaning of 'net', came to imply punishments, and hence law, perhaps because of its analogical use in chapter 73 of the *Tao Tê Ching*. On the basis of these undertones the translation of the expression *chi-kang* in the above quotation is adopted.

It is striking that a number of the interpretations of the words in question imply an active verb, to disentangle, to set in order, to rule, to make (?) laws. But *Chi Ni Tzu* very kindly relieves us from the anxiety as to whether the idea of a 'disentangler' or lawgiver was at the back of his mind, by saying in an immediately following sentence that these normal motions in the universe have *no* Master or Governor. This express denial seems to exclude the idea of a Setter in Motion. It is the first time that we have met with it, but it will not be the last.

Moreover, the conception of a net is close to that of a vast pattern. There is a web of relationships throughout the universe, the nodes of which are things and events. Nobody wove it, but if you interfere with its texture you do so at your peril. In the following pages we shall be able to trace the later developments of this web woven by no weaver, this Universal Pattern, until we reach, with the Chinese, something approaching a developed philosophy of organism.

10. *The Neo-Confucian term* Li[b] (*Principle of Organization*)

So far, then, we have not found in Chinese thought any clear evidence of the idea of law in the sense of the natural sciences. Still keeping to the schools which considered themselves Confucian, we must turn to the Neo-Confucians of the Sung dynasty. Chu Hsi, and the other thinkers of his group, made a great effort to bring all Nature and Man into one philosophical system, and the principal concepts with which they worked were *Li*[b] and *Chhi*. The latter corresponded approximately to matter, or rather to matter and energy, and the former was not far removed from the Taoist conception of the Tao as the Order of Nature, though the Neo-Confucians also used the term *tao* in a slightly different and technical sense. *Li*[b] could be described as the ordering and organizing principle in the cosmos. For this word Bruce, Henke, Warren, and more recently Bodde, all adopted the translation 'law', but in my judgement they were not justified in doing so, and in view of the great confusion which it is liable to cause, this reading should be given up.

The word *Li*[b], in its most ancient meaning, signified the pattern in things, the markings in jade or the fibres in muscle; as a verb it meant to cut things according to their natural grain or divisions. Thence it acquired the common dictionary meaning, 'principle'. It undoubtedly always conserved the undertone of 'pattern', and Chu Hsi himself confirms this, saying:

> '*Li*[b] is like a piece of thread with its strands, or like this bamboo basket. Pointing to its rows of bamboo strips, the philosopher said: One strip goes this way; and pointing to another strip: Another strip goes that way. It is also like the grain in the bamboo—on the straight it is of one kind, and on the transverse it is of another kind. So also the mind possesses numerous principles (*li*[b]).'
>
> (tr. Bruce)

Li[b], then, is rather the order and pattern in Nature, not formulated Law. But it is not pattern thought of as something

dead, like a mosaic; it is dynamic pattern as embodied in all living things, and in human relationships and in the highest human values. Such dynamic pattern can only be expressed by the term 'organism', and Neo-Confucian philosophy was in fact a scheme of thought striving to be a philosophy of organism.

We seem to be in presence, then, in the latter part of the twelfth century, of a point of view rather similar to that which Ulpian had expressed in Europe nearly a millennium before, and which had been incorporated into the Justinian *Digest*. But the profound difference is that while Ulpian had spoken quite uncompromisingly of *law*, Chu Hsi relies chiefly on a technical term the primary meaning of which is *pattern*. For Ulpian (as for the Stoics) all things were 'citizens' subject to a universal law; for Chu Hsi all things were elements of a universal pattern. On the whole, it does not appear that it is possible to find more than traces of the concept of Laws of Nature in the greatest of Chinese philosophical schools, the Neo-Confucians of the Sung. Their emphasis was on something different, though no less important ultimately for the natural sciences.

11. *The Word* Tsê (*Laws or Rules*)

Another word which it has often been tempting to translate as 'Laws of Nature' is *tsê*. But one can easily find instances of the denial or doubt that Nature works according to *tsê*. The first I will give is from a passage in that part of the *Chhu Tzhu* (Elegies of Chhu) which contains the poetical writings of Chia I, and therefore dates from about 170 B.C.

> 'Heaven and Earth are like a smelting-furnace, the forces of natural change are the workmen (tsao hua wei kung), the Yin and the Yang are the fuel, and the myriad things are the metal. Now it runs together (ho), now it disperses (san), sometimes moving and sometimes resting. But *there is no fixed law* (an yu chhang tsê), and in the thousand changes and the myriad transformations there is no definite norm (wei shih yu chi) . . . .'
>
> (tr. Forke)

The second is from the commentary of Wang Pi on the *Chou I* (Book of Changes), and must therefore date from the close neighbourhood of 240 A.D. Explaining the twentieth *kua*, *kuan*, meaning 'view' or vision, he says:

> 'The general meaning of the Tao of *kuan* is that one should not govern by means of punishments and legal pressure, but by looking forth one should exert one's influence (by example) so as to change all things. *Divine law has no sanctions* (Shen tsê wu hsing chê yeh). *We do not see Heaven command the four seasons*, and yet they do not swerve from their course (Pu chien thien chih shih ssu shih, erh ssu shih pu thê). So also we do not see the sage ordering the people about, and yet they obey and spontaneously serve him.'
>
> (tr. auct.)

This is perhaps the most illuminating passage of all. We have a flat denial of the conception of orders issued to the four seasons (and hence the courses of the stars and planets) by some celestial lawgiver. The thought is extremely Chinese. Universal harmony comes about not by the celestial fiat of some King of Kings, but by the spontaneous co-operation of all beings in the universe brought about by their following the *internal* necessities of their own natures. One begins to see how deeply rooted in ancient Chinese ideas was the Neo-Confucian philosophy of organism. In Whitehead's idiom, the 'atoms do not blindly run' as mechanical materialism supposed, nor are all entities specifically directed on their paths by divine intervention, as spiritualistic philosophies have supposed; but rather all entities at all levels behave in accordance with their position in the greater patterns (organisms) of which they are parts. *Tsê* never meant anything like the Laws of Nature in the Newtonian sense, and such an interpretation cannot properly explain the thought about *li*[b] of the Neo-Confucians.

12. *Non-action and Laws of Nature*

The affirmation that Heaven does not *command* the processes

of Nature to follow their regular courses is linked with that root idea of Chinese thought, *wu wei*, non-action, or unforced action. The legislation of a celestial lawgiver would be *wei*, a forcing of things to obedience, involving imposition of sanctions. Nature shows a ceaselessness and regularity, yes, but it is not a *commanded* ceaselessness and regularity. The Tao of Heaven is a *chhang Tao*, the Order of Nature is an unvarying order, as Hsün Tzu says, but that is not the same thing as affirming that anyone ordered it to be so.

Thus in the *Li Chi* (Record of Rites) there is an apocryphal conversation between Confucius and Duke Ai of Lu. The Duke asked what was the most valuable thing to note about the ways of Heaven.

> 'The Master replied: "The most important thing about it is its ceaselessness. The sun and moon follow each other round from east to west without ceasing; such is the Tao of Heaven. Time goes on without interruption; such is the Tao of Heaven. *Without any action being taken*, all things come to their completion; such is the Tao of Heaven (wu wei erh wu chhêng, shih Thien Tao yeh)." '
>
> (tr. Forke)

Here again, then, is a denial, if an implicit one, of any heavenly creation or legislation. It should be noted, in passing, that although the concept of *wu wei* was emphasized particularly by the Taoists, it was part of the common ground of all ancient Chinese systems of thought, including that of the Confucians.

It may be worth while following this digression a little further. It is not at all difficult to find passages which confirm the conception of Heaven acting according to *wu wei*; it runs throughout the *Tao Tê Ching* (e.g. ch. 37), where we find the significant statement (in ch. 34) that though the Tao produces, feeds, and clothes the myriad things, it does not lord it over them (*erh pu wei chu*), and asks nothing of them. The idea is, in fact, a Taoist commonplace, and appears in such books as the *Wên Tzu* and many later writings. The

Lü Shih Chhun Chhiu affords us a little further information into the working methods of the Tao of Heaven. In ch. 17 we read:

> 'The operations of Heaven are profoundly mysterious (Thien chih yung, mi). It has water-levels for levelling, but it does not use them; it has plumblines for setting things upright, but it does not use them (yu chun pu i phing; yu sheng pu i chhêng). It works in deep stillness . . .
>
> Thus it is said, Heaven has no form and yet the myriad things are brought to perfection. It is like the most impalpable of featureless essences, and yet the myriad changes are all brought about by it. (So also the sage is busied about nothing, and yet the thousand executives of State are effective in the highest degree).
>
> This may be called the *untaught teaching*, and the *wordless edict* (tzu nai wei pu chiao chih chiao, wu yen chih chao).'
>
> (tr. auct.)

Such a conception is undeniably sublime. But it is profoundly incompatible with the conception of a celestial lawgiver. The movements of the celestial bodies proceeded, in the one case, according to teachings which no one had ever taught, and according to edicts which no one had ever issued or even put into words. But the Laws of Nature which Kepler, Descartes, Boyle, and Newton believed that they were revealing to the human mind (the very word 'revealing' is symptomatic of the spontaneous background of occidental thought) were edicts which had been issued by a supra-personal, supra-rational being. The fact that this was later generally recognized to be a metaphor does not mean that it may not have had great heuristic value at the beginning of modern science in Europe.

I conclude, therefore, that 'law' was understood in a Whiteheadian organismic sense by the Neo-Confucian School. While one could not say that 'law' in the Newtonian sense was completely absent from the minds of Chu Hsi and the Neo-Confucians in their definition of *Li*[b], it played a relatively minor (perhaps very minor) part, and the main component was 'pattern', and hence pattern living and

dynamic to the highest extent, and therefore 'organism'. In this philosophy of organism all things in the universe are included; Heaven, Earth, and Man have the same *Li*[b].

13. *The Position of Buddhist Thought*

What of Buddhism? It had been against Buddhist philosophy, which had entered China in the 2nd century A.D., that the Neo-Confucians, in reacting, had produced their great synthesis. Buddhist philosophy, while denying the existence of a soul or spirit which could persist after the dissolution of the skandhas (*yün*), i.e. the material and mental components of the individual, nevertheless retained the Hindu or Brahminical theory of transmigration. Hence the doctrine of karma (*yin yuan*) which stated that 'as soon as a sentient being (man, animal or god) dies, a new being is produced in a more or less painful and material state of existence, according to the karma, the desert or merit, of the being who has died. . . . The karma of the previous set of skandhas, or sentient being, determines the locality, nature, and future of the new set of skandhas, of the new sentient being' (Rhys Davids). In this way morality, as the Buddhists conceived of it, was set right at the heart of the universal scheme of things, and this was the Law (*fa*) of which one hears so much in connection with Buddhism.

There is no doubt that with its conception of karma Buddhism emphasized very strongly cause and effect in Nature, even though with a purely moral reference. Here we are still in the primitive undifferentiated stage of law, and there is a certain similarity between the ancient Indian conception of the virtues and vices of an individual having their inescapable result in the endowment with which another linked individual begins his or her existence, on the one hand, and the ancient Chinese conception of the effect of the virtues and vices of human leaders having their inescapable results in natural calamities or the behaviour of the weather, on the other. Human morality was still inextricably bound up with

the phenomena of non-human Nature. 'The operation of karma', Streeter rightly said, 'was conceived not juristically as the punishment of a continuing ego, but naturalistically in terms of a law of cause and effect, which was thought of as mechanistically as in the physical sciences.'

One might therefore be tempted to suppose that the Law of the Buddhists could have led rather easily to the development of the idea of Laws of Nature dissociated from the moral-ethical element. In an interesting paper Rhys Davids maintained that besides animism, another fundamental belief should be distinguished in primitive religious thought —he suggested the name 'normalism'. By this he meant all those ancient beliefs which concerned, not souls, spirits, gods, or demons, but certain 'laws' of cause and effect, or certain regular patterns of action in the universe. In this second category he included the Tao of the Taoists, and the apparently rather similar idea of Rta (motion, rhythmic motion, order, cosmic order, moral order, the right) found in the Indian Vedas, and also the Yin and Yang hypothesis— none of these were ever personified or personifiable—and lastly the Buddhist law of karma. But this does not take us as far as the Laws of Nature in the true scientific sense, for which conception order, pattern, causality, regularity do not quite suffice. Indeed, Berriedale Keith categorically denies that Buddhist philosophy ever thought of extending to the non-moral sphere a strict applicability of its belief in causality. I would suggest that one basic reason why the law of karma could not lead to a scientific conception of the Laws of Nature was because of the parallel doctrine (not, indeed, strictly speaking Buddhist, though China derived it from India through Buddhist channels) that the visible world was illusion, maya (*mi*). It was precisely from the pains and miseries inherent in existence in this visible world of Nature that the Buddhists desired to set men free. The last thing, therefore, to which their philosophy could invite, was a dispassionate study of the phenomena of non-human Nature—

that was in fact the Wheel of Illusory Existence from which they offered a way of escape. Hence it is not surprising that neither in India nor in China did the idea of Laws of Nature arise from this source.

14. *Judicial Trials of Animals; Contrasting European and Chinese Attitudes to Biological Abnormalities*

Before concluding, we may glance at a striking illustration of the difference in outlook between China and Europe in the matter of nature and law. It is generally known that during the European middle ages there were a considerable number of trials and criminal prosecutions of animals in courts of law, followed frequently by capital punishment in one form. Evans has gone to the trouble to collect a large amount of information on these cases, building on the earlier work of Berriat St. Prix, Menebrea, and von Amira. Their frequency follows a curve with a well-marked peak at the sixteenth century, rising from three instances in the ninth to about sixty in the sixteenth, and falling to nine in the nineteenth century; and it seems doubtful whether this is due, as Evans suggests, to lack of adequate records for the earlier periods. The peak corresponds to the witch-mania (Withington). The trials fall into three types: (*a*) the trial and execution of domestic animals for attacking human beings (e.g. the execution of pigs for devouring infants); (*b*) the excommunication, or rather anathematization, of plagues or pests of birds or insects; (*c*) the condemnation of 'lusus naturae', e.g. the laying of eggs by cocks. It is the last two which are most interesting for the present theme. In 1474 a cock was sentenced to be burnt alive for the 'heinous and unnatural crime' of laying an egg, at Basel; and there was another Swiss prosecution of the same kind as late as 1730. One of the reasons for the alarm involved was perhaps that 'œuf coquatri' was thought to be an ingredient in witches' ointments, and that the basilisk or cockatrice, a particularly venomous animal, hatched from it. But the interest of the

story lies in the fact that such trials would have been absolutely impossible in China. The Chinese were not so presumptuous as to suppose that they knew sufficiently well the laws laid down by God for non-human things to obey, to enable them to indict an animal at law for transgressing them. On the contrary, the Chinese reaction would undoubtedly have been to treat these rare and frightening phenomena as *chhien kao* (reprimands from heaven), and it was the emperor or the provincial governor whose position would have been endangered, not the cock's. Let us quote chapter and verse. In the long Wu Hsing Chih (Discussion of the Five Elements) in the *Chhien Han Shu* (History of the Former Han Dynasty) there are several references to sex-reversals in poultry and in man. These were classified under the heading of 'green misfortune' (*chhing hsiang*) and thought of as connected with the activities of the element Wood. They forboded serious harm to the rulers in whose dominions they occurred.

As regards the second of the three types of prosecution mentioned above, it is interesting that the European mediaeval attitude wavered. Sometimes the field-mice or locusts were considered to be breaking God's laws, and therefore subject to prosecution and conviction by man, while at other times the view prevailed that they had been sent to admonish men to repentance and amendment.

15. *Varying Conceptions of Deity*

In Europe natural law may be said to have helped the growth of natural science because of its universality. But in China, since natural law was never thought of as law, and took a special name, *li*[a], it was very hard to think of it as in any way applicable outside human society, although it was relatively much more important than natural law in Europe. When order and system and pattern were visualized as running through the whole of Nature, it was not as *li*[a] but as the *Tao* of the Taoists or the *Li*[b] of the Neo-Confucians, both of

which were rather inscrutable, and neither of which had a juristic content.

Again, in Europe positive law may be said to have helped the growth of natural science because of its precise *formulation*, and because it encouraged the idea that to the earthly lawgiver there corresponded in heaven a celestial one, whose writ ran wherever there were material things. In order to believe in the rational intelligibility of Nature, the Western mind had to presuppose (or found it very convenient to presuppose) the existence of a Supreme Being who, himself rational, had put it there.

This brings us back to the Taoists. The Taoists, though profoundly interested in Nature, distrusted reason and logic. The Mohists and the Logicians fully believed in reason and logic; but if they were interested in Nature it was only for practical reasons. The Legalists and Confucians were not interested in Nature at all. Now this gulf between empirical nature-observers and rationalist thinkers is not found to anything like the same extent in European history, and as Whitehead has suggested, this was perhaps because European thought was so dominated by the idea of a supreme creator being, whose own rationality was the guarantee of rational intelligibility in his creation. Whatever may be the needs of mankind now, such a supreme God had inevitably to be personal. This we do not find in Chinese thought. Even the present-day Chinese translation of Laws of Nature is *tzu-jan fa*, 'spontaneous law', a phrase which uncompromisingly retains the ancient Taoist denial of a personal God, and yet is almost a contradiction in terms.

Here we cannot investigate the ancient Chinese conceptions of God. An immense literature exists on the subject, since the Christian missionaries in the last few centuries engaged in great debates as to the correct translation of European terms; most of this is now not worth the paper on which it is written, since at that time sinological studies were in their infancy. We know that the most ancient terms for

God in Chinese were *Thien* (Heaven) or *Shang Ti* (The Ruler Above), though other terms were used, e.g. *Tsai* (Governor) in *Chuang Tzu*. *Thien* is undoubtedly an anthropomorphic graph (presumably of a deity) in its most ancient form, and *Ti*, though not absolutely clear, is distinctly anthropomorphic also. So, I think, is *Tsai*, which is related to a character meaning 'demon'. Much sinological work is being done on the extent to which there was in ancient China a personalization of these conceptions, and it is hard to summarize such conclusions as have been reached. Many theories are in the field: Creel, for instance, thinks that *Shang Ti* was a transcendentalization of the function of the emperor (or bronze-age High King); Granet considers that he was a personification of the calendrical order of the seasons; another view, represented by Fitzgerald, looks upon him, and upon Thien, as symbols of the Original Ancestor. Creel expresses the now generally received opinion that *Shang Ti* is the older of the two, being associated with the Shang dynasty, while *Thien* is a rather later Chou dynasty term. Tai Kuan-I believes that the name *Shang Ti* was taken over from the Miao peoples by the Chinese. But in any case two things are clear: (*a*) that the personalization of God in ancient Chinese thought, however far it went, did not include the conception of a divine celestial lawgiver imposing ordinances on non-human Nature; and (*b*) that the highest spiritual being known and worshipped was not a Creator in the sense of the Hebrews and the Greeks. It was not that there was *no* order in Nature for the Chinese, but rather that it was not an order ordained by a rational personal being, and hence there was no guarantee that other rational personal beings would be able to spell out in their own earthly languages the pre-existing divine code of laws which he had previously formulated. There was no confidence that the code of Nature's laws could be unveiled and read, because there was no assurance that a divine being, even more rational than ourselves, had ever formulated such a code

capable of being read. One feels, indeed, that the Taoists, for example, would have scorned such an idea as being too naïve to be adequate to the subtlety and complexity of the universe as they intuited it.

It is extremely interesting that modern science, in so far as since the time of Laplace it has been found possible and even desirable to dispense completely with the hypothesis of a God as the basis of the Laws of Nature, has returned, in a sense, to the Taoist outlook. This is what accounts for the strangely modern ring in so much of the writing of that great school. But historically the question remains whether natural science could ever have reached its present state of development without passing through a 'theological' stage.

In the outlook of modern science there is, of course, no residue of the notions of command and duty in the 'Laws' of Nature. They are now thought of as statistical regularities, valid only in given times and places, descriptions not prescriptions, as Karl Pearson put it in a famous chapter. The exact degree of subjectivity in the formulations of scientific law has been hotly debated during the whole period from Mach to Eddington, and such questions cannot be followed further here. The problem is whether the recognition of such statistical regularities and their mathematical expression could have been reached by any other road than that which Western science actually travelled. Was the state of mind in which an egg-laying cock could be prosecuted at law necessary in a culture which should later have the property of producing a Kepler?

16. *Conclusion*

To sum up, therefore, I would say that the conception of the Laws of Nature did not develop from Chinese conceptions of law in general, for the following reasons. First, the Chinese acquired a great distaste for precisely formulated, abstract, codified law from their bad experience with the School of Legalists during the period of transition from

feudalism to bureaucratism. Secondly, when the system of bureaucratism was definitely set up, the old conceptions of *li*[a] proved more suitable than any others for Chinese society in its typical form, and therefore the element of natural law was much more important relatively in Chinese than in European society. But the fact that so much of it was not put in formal legal terms, and that it was overwhelmingly human and ethical in content, made it impossible to extend its sphere of influence to any form of non-human Nature. Thirdly, the available ideas of a supreme being, though certainly present from the earliest times, became depersonalized so early and were so lacking in ideas of creativity that they prevented the development of the conception of precisely formulated abstract laws ordained from the beginning by a celestial lawgiver for non-human Nature, and capable, because of his rationality, of being deciphered or reformulated by other lesser rational beings using the methods of observation, experiment, hypothesis, and mathematical reasoning.

The Chinese world-view depended upon a totally different line of thought. The harmonious co-operation of all beings arose, not from the orders of a superior authority external to themselves, but from the fact that they were all parts in a hierarchy of wholes forming a cosmic pattern, and what they obeyed were the internal dictates of their own natures. Modern science and the philosophy of organism, with its integrative levels, has come back to this wisdom, fortified by our new understanding of cosmic, biological, and social evolution; though who shall say that the Newtonian phase was not an essential one? And lastly, always in the background stood the concrete forces of the social and economic life of Chinese society, out of which arose the transition from feudalism to bureaucratism mentioned above, and which could not but condition at every step the science and philosophy of the Chinese people. Had these conditions been basically favourable to science, the inhibiting

factors considered in this lecture would perhaps have been overcome. But all we can say of that science of Nature which then would have been developed is that it would have been profoundly organic and non-mechanical.

CHINESE CHARACTERS FOR THE CHIEF TECHNICAL TERMS REFERRED TO

chhi (vapour, subtle matter)	氣
chi-kang (nexus of natural causation)	紀綱
fa (positive law)	法
li[a] (good customs, *mores*)	禮
li[b] (Neo-Confucian principle of organization)	理
li[c] (calendar)	曆
lü (regulations, and standard pitch-pipes)	律
Tao (the Order of Nature)	道
tsê (rules or laws)	則
tu (degrees of celestial motion)	度

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