CHRISTIAN AND CHINESE VISIONS OF THE WORLD

IN THE SEVENTEENTH CENTURY

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The purpose of this paper is to compare and contrast the conceptions of the world held by two civilizations which were entirely foreign to each other. China constitutes without doubt a unique case in the history of mankind. It is the only example of a highly developed civilization which produced great quantities of documents throughout a history in which it had almost no contacts with the West. If this very wealth and originality—as well as the system of writing—did not make access so difficult, Chinese studies would surely occupy a much larger place in comparative social and intellectual history.

It so happens that contact was first established with cultivated Chinese circles by Jesuit missionaries, who arrived in China from 1583 on. They introduced China not only to European religion but also to the basic elements of European science. There is abundant literature concerning the history of this first Jesuit mission in China, which lasted from the end of the sixteenth century to the year 1774, after the Jesuit order was dissolved. There are also works on the penetration of Western science into China during this period. Given the abundance of material, Chinese as well as Western, much remains to be done in these fields.

It is not the introduction of European science, nor the history of Christianity in China that I wish to treat here, but rather what Chinese texts teach us about Chinese reactions to these foreign ideas, and what differences—or even conflicts—between Chinese and Western traditions these reactions reveal. I shall dwell briefly on the history of science and at greater length on the ill-defined but fundamental domain of the most elementary philosophical and religious conceptions.

It is customary for us to consider science and religion two separate fields, and in fact they do not seem to us to belong to the same mental category. That is because, in the course of the eighteenth century, science emancipated itself from the tutorship of theology and the authority of the Church. To the missionaries who came to China between the end of the sixteenth and the end of the seventeenth centuries, such a separation would have seemed unjustifiable, and any contradiction between scientific and revealed truth inconceivable. That is what I should like to establish first of all: their whole teaching expressed one single vision of the world.

China was the first country with a developed civilization to receive a scientific contribution from Europe in modern times. Neither India, nor even Japan, where scientific as well as religious works of Western origin written in Chinese penetrat-

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ed for a short time before being proscribed, nor, it goes without saying, any other evangelized country, came into such early contact with European science. The first manual of Western geometry in Chinese was printed in 1607. Even earlier, in 1584, a map of the world had been engraved on stone. Copies of this map printed on paper spread quickly throughout China and beyond, to Korea and Japan. The algebraic notation of Viète, rectilinear and spherical trigonometry, logarithms, Aristotle's cosmology, Tychonic methods of astronomical calculations, and even certain data of modern astronomy were introduced in China from the end of the sixteenth century on.

The work of the Jesuit missionaries in transmitting a certain knowledge of Western science to China is admirable. Nor can the novelty from a Chinese point of view and the importance of a major part of this contribution be denied. But there are, in this regard, two errors to be avoided. The first consists in imagining that this scientific contribution was much more modern than it in fact was. The second is to believe that the Chinese had everything to learn from the West, and to attribute to obscurantism, xenophobia, and blind attachment to tradition the reticence or criticism which the missionary teachings occasioned now and again. Everywhere in the world, and not only in China, what is new runs up against tenacious resistance. In his Sciences de la nature en France au XVIIIème siècle, Daniel Mornet remarks that geocentric systems continued to appear in France up until 1771; they "vituperated Copernicus . . . and replaced his astronomy with systems less burdened with calculations and ellipses, even though the Sorbonne had long since given up condemning Galileo."

Why should we refuse the Chinese what we allow the French of the eighteenth century? The Chinese had a much greater effort of adaption to make, given the difference between the traditions. It is not the objections and the attacks which should excite astonishment, for they are to be expected, but rather the amazing capacity of numerous Chinese literati to receive and understand what the missionaries presented to them, and to judge it objectively. Some were enthusiastic about the proofs of Greek geometry. Matteo Ricci, the great Italian missionary who was the first to establish himself in Peking, writes in his memoirs of a Chinese who, in 1599, had understood all by himself the first book of Euclid's Elements in an as yet approximate translation, and who, he said, "did not accept any proof that was not done in the manner of Euclid."

The word "contribution" does not really fit the facts: if European science penetrated into China from the end of the sixteenth century on, it was less at the

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1 See Itô Tasaburō 伊東多三郎, "The Book Banning Policy of the Tokugawa Shogunate," Acta Asiatica, 1972, 22: 36-61. This ban was exercised without distinction from 1630 on, against scientific as well as religious works.

2 These two errors are precisely those made by George H. C. Wong in his article "China's Opposition to Western Science," Isis, 1963, 54: 29-49. See the critical essay by N. Swin, "On 'China's Opposition to Western Science,' " ibid., 1965, 56: 201-205. But neither clocks, needing daily adjustment and very frequent repair, nor even guns, which on occasion killed their crews by an unexpected explosion, could have justified such a fear.


4 Matteo Ricci, Della entrata della Compania di Gesù e Cristianità nella Cina, Book IV, Ch. 5, edited from the original MS by Pasquale M. D'Elia in Fonti Ricciane, II (Rome, 1949), 55.
initiative of the missionaries than at that of the Chinese themselves. They it was who spontaneously showed curiosity and interest, they who made inquiries and who contributed most efficiently to the joint effort to adapt and translate the books used in the Jesuit-run schools of Rome and Coimbra in Portugal.5

What we must not forget is that the missionaries did not come to China to teach European mathematics and astronomy, but to preach their religion. They were in fact reminded of this: in 1614 Valentin Carvalho, Jesuit provincial for China and Japan, issued an order that forbade teaching the Chinese mathematics or any other science but that of the Scriptures.6 True enough, the order was revoked soon after, but it bears witness to an underlying hostility toward such secular activities that never entirely disappeared.

The Jesuits of China themselves never missed a chance to insist on the secondary nature of their scientific as opposed to their religious teaching, which dealt with the most important and exalted truths. If the work of adaption and translation continued throughout the seventeenth century (the main part was in fact done during this period), it was only because science had in China shown itself to be one of the most effective means to attract educated people and convert them, as well as to obtain a foothold in the capital, at the Bureau of Astronomy, and maintain it even in times of crisis. But there was more: recognition of the rigor and precision of Western mathematics and astronomy could reinforce the authority of the religion. According to a simple line of reasoning, if what the “Western literati” said of the visible world proved to be accurate, what they said of the invisible world of angels, devils, hells, paradise, and the existence of a Creator God must be reliable as well.7

Secular science and religion lent each other mutual support. The first catechism printed in Chinese in 1584 mixes a much simplified version of the Genesis narrative with Aristotelian astronomical conceptions. That is but one proof of the bond between science and religion in the minds of the missionaries. This manual states that “on the second day, the Lord of Heaven created nine skies [beneath the Empyrean, dwelling place of all the saints and the elect of Paradise]. These skies envelop each other like the skin of an onion. The ninth sky, primum mobile, revolves with the speed of an arrow and makes a complete revolution in a day. The other skies move in accordance with it. The eighth is that of the fixed stars, which are like pegs on a board.” Next are the skies of Saturn, Mars, the sun, Venus, Mercury, and the moon. Created by an omnipotent God,

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5 For the content of these schoolbooks, see Willard J. Peterson, “Western Natural Philosophy Published in Late Ming China,” Proceedings of the American Philosophical Society, 1973, 117: 295-322.

6 Opere del P. Danielle Bartoli, della Cina (Torino, 1825), III, 150 (Ch. 63).

7 Certain Chinese seem to have accepted this reasoning. Ricci’s first pupil in mathematics estimated at least that scientific accuracy was one of the best weapons to combat absurd conceptions of Buddhism. See Fonti Ricciane, II, 54 (text by Ricci): “Being aware of our intention to eradicate the sect of the idols (i.e., Buddhism) and to spread the true religion of God, he said to the Father that it was not necessary to refute the doctrine of the idols, and that the important point was to teach mathematics; for if the Chinese had knowledge of the truths concerning heaven and earth, it would enable them to see by themselves the falsehood of the books of the idols.”
the universe is spatially finite and composed of a series of crystalline spheres, at the center of which, immobile, is the earth.\textsuperscript{8} The first manual of astronomy, printed early in the seventeenth century, fixes the distance of the earth from the ninth sky at the approximate equivalent of 323 million kilometers.\textsuperscript{9} This world is also temporally finite: "Some 5550 years ago," says the first catechism, "there was nothing else but the Lord of Heaven. He decided then to create the heavens and the earth in six days in order to show his beneficence." The perfect order which reigns in the universe is the most obvious proof of the existence of a Creator God: "In creating the world, the Lord of Heaven put each thing in its place. Had He not done so, there would be disorder. That is why the stars stay in the heavens and do not fall to earth to mix with the vegetation, and why the plants do not go up to the heavens to mingle with the stars.'"

The Lord of Heaven is all wisdom:

Knowing that fish could swim, he put them in water;
knowing that birds could fly, he put them in the air;
knowing that land animals could walk, he put them on earth.

The Aristotelian notion of natural place, that is, the place to which everything tends to return by its nature, is fused with the idea of divine Providence.\textsuperscript{10}

The missionaries propose an image of the world which depends on a static conception of order. By the systematic application of the principle of contradiction, scholastic reasoning permits a whole series of classifications. Thus it is that animate and inanimate, sensitive and insensitive, corporal and incorporeal, body and soul, etc., are set over against each other as absolutely irreconcilable. The great apologetic treatise of Matteo Ricci, printed for the first time in 1604,\textsuperscript{11} refers on almost every page to scholastic categories and modes of reasoning: efficient, formal, material, and final causes; the three souls: vegetative, sensitive, and rational; the four elements of Empedocles; the three types of inclusion; the seven forms of identity . . . all that logical apparatus makes it possible to argue and present a rational, structured, and well-defined image of the universe. This same reason, a faculty belonging exclusively to the human soul, entirely independent of matter, also makes it possible to discuss methodically the visible world and to demonstrate the truths of religion. Theology, cosmology, Aristotelian physics, and astronomy form a perfectly coherent whole in which it would be vain to look for the slightest contradiction.

Was there no evolution, one might ask, in the teaching of the missionaries between the end of the sixteenth century and, say, 1700? Was this not the very moment when Kepler, Galileo, Descartes, and Newton were laying the foundations of modern science? Certainly, but it was not until much later that religious schools were affected by these developments. The vast majority of common folk,

\textsuperscript{8} T'ien-chu sheng-chiao shih lu 天主聖教實錄 by Michele Ruggieri, Fonds chinois de la Bibliothèque nationale, 6815-6818, par. 4. The first version of this book, two copies of which are in the Roman Archives of the Society of Jesus, mentions the same details.

\textsuperscript{9} Ch'ien k'un ti-i 乾坤體義, MS copy in Seikado Bunko, 1: 6a. The dates of composition and printing of this work remain extraordinarily confused.

\textsuperscript{10} See Note 8 above.

\textsuperscript{11} T'ien-chu shih-i 天主實義 (Latin title Dei vera ratio), in T'ien hsueh ch'u han 天學初函 (First collection of Christian works, 1628; reprint, Taipei, 1965).
moreover, were unaware of them until the beginning of the eighteenth century. What is more, whatever might cause the Scriptures to be questioned was severely interdicted. When Buffon published his *Epoques de la nature* in 1778, he still felt himself obligated to explain for ten pages at the outset of the book that his conceptions could be reconciled with Moses.

In China one had to be extremely careful not to change positions on what had earlier been presented as eternal verity. The same prudence should have been exercised as regards the discordant chronologies of the Vulgate and the Septuagint, discords of which certain missionaries had inconsiderately informed the Chinese. For these reasons, there are no fundamental modifications, but only some changes in detail in the teaching of the Jesuits in China.

It was long thought that certain missionaries had made the Copernican system known to the Chinese in the middle of the seventeenth century. But a closer examination has recently revealed that the data in favor of this hypothesis are unsubstantial and that there is nowhere in either the texts of missionary origin or in the Chinese literature of the period the slightest self-evident proof of the introduction in China of the heliocentric theory.

Not that the missionaries never mentioned the name of Copernicus: they did, but without saying a word about his system, and presenting him simply as an honorable predecessor of Tycho Brahe. Nor is it true that they said nothing of the discoveries made by Galileo with his telescope—lunar mountains, sunspots (recorded by the Chinese as early as the beginning of our era), the satellites of Jupiter and Saturn—but they did so in such a fashion as to remove from these discoveries their dangerous originality. They were but curiosities, which simply showed the new instrument to be capable of more precise observation. The only innovation in the history of Jesuit astronomy in China, a field studied so masterfully by Nathan Sivin, came with the introduction of Tycho Brahe’s system from 1630 on (it made the planets turn round the sun, while remaining faithful to the orthodox theory of the central and immobile position of the earth) and, in 1742, with the adoption of elliptical orbits for the sun and moon, while the planets retained their circular orbits. It was only in 1760, fourteen years before the suppression of the Jesuit order, that the system of Copernicus was explained for the first time in China; *De revolutionibus orbium celestium* had been removed from the Index in 1757. For the Chinese, it was a new and interesting model, which unfortunately showed once again that Westerners were incapable of holding a definite position.

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13 On all these questions, see the remarkable study and restatement by Nathan Sivin, “Copernicus in China,” *Studia Copernicana* (Warsaw), 1973, 6: 63-122.
Thus the missionaries proposed to China a conception of the world which, as Alexandre Koyré says, displayed, "from the ontological point of view, a finite structure, hierarchically ordered and qualitatively differentiated." This Christian cosmos is the very one on whose ruins modern physics has built its edifice, substituting for the finite and heterogeneous world of tradition a world opened out onto a space which is infinite, unified, and governed by universal laws.

But it is time to turn to the Chinese, inheritors of traditions completely unrelated to those in Europe. Whereas the missionaries presented China with a vision of the world which one might call orthodox, if not monolithic, on the Chinese side we are confronted by such a great richness and variety of traditions, tendencies, and currents (as in Europe), that it is difficult to speak about them in a categorical or definite fashion. In spite of this, however, a certain number of ideas held in common apparently makes it possible to speak of a Chinese vision of the world. In attempting to show in what ways Chinese conceptions differed from European ones, I have relied on Chinese texts from various sources, dating for the most part from the seventeenth century. A few quotations are taken from works whose aim was the criticism of Christianity and, on occasion, of European science. The latter texts, although polemical, express fairly widespread ideas which concurred with those of other texts.

The universe was never conceived in China as an object fabricated once and for all by an artisan, as the image of the Christian texts puts it. Heaven and earth took form spontaneously over time. Consider a most evocative text by an author who died in 1618:

“What did our universe resemble in the beginning of its formation?” someone asked. “That is something,” said Master Lü, “that is not easy to represent.” Nonetheless, pointing to a basin in front of his library, he had it filled with water and sand. He had numerous stones and pieces of tile thrown in, and then he mixed that with a few grains of cereal and some beans. Finally, he had the fluid, formless mass turned and kneaded. “There,” he said, “is what the world must have looked like in the period of chaos. Three days from now, when we come back, we shall be able to see the beginning of our universe.” When the day came, a separation had occurred, and the lightest elements had floated to the surface. “There,” said he, “is heaven during the period of the first phase. As for the formless mud which has settled to the bottom, that is the earth during the period of the second phase. The pieces of tile and the stones which stick out in the middle are the mountains.” After that, the grains of cereal and the beans began to germinate, and after one month small insects dove and swam on the surface of the water. “There,” said he, “is the appearance of man and innumerable species during the period of the third phase. . . . The transformational activity of the energy will grow from day to day, becoming with each passing day more prodigious, and then it will weaken from day to day until all the vital mechanisms reach their limit. Even if heaven and earth are not yet destroyed, when we come to this last phase of the evolution, we shall

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14 This description appears with different phrasing in various of Koyré’s writings, for instance in From the Closed World to the Infinite Universe (Baltimore, 1957), p. 2.
have entered once again upon a period of chaos."\(^{15}\)

It is the continuous and imperceptible action of heaven and earth themselves, or rather of yin and yang, on all beings which governs their development and decline. The germination, growth, flowering, and withering of the plants, in particular, are proof of this action. Thus instead of the static conception we find in Aristotle—each thing in its place and a place for each thing—instead of divine Providence, it is the idea of universal dynamism which predominates. The movement of the cosmos is indispensable to its maintenance. “If there were no celestial revolution,” says Lu Shih-i 陸世儀, an author of the seventeenth century, “the universe would be destroyed.”\(^{16}\) All is flux and energy in movement, two notions fused in the single term ch'i 氣 in the Chinese. This ether, pneuma, or universal energy-matter is omnipresent and has an inherent principle of order. It condenses to form visible entities, and these entities return to it when they dissipate. Nothing is lost, nothing created in the universe. Such is the only physical theory to be found in China, expounded in a clear manner from the eleventh century on.\(^{17}\) All the rest is numerological speculation or explanation by means of symbols. Physical theory, symbols, and numerology were, however, frequently associated.

Here are some texts that speak better than I can: “From the time prior to [the formation of] our universe until the time after it will have ceased to exist,” says the author I have just cited, “there is the flowing of one single energy. If that energy ceased to make its effect felt, even for the briefest instant (the time it takes to sigh or wink an eye), this universe would be immediately destroyed. In plants, from germination to withering, one single energy circulates. If its action were discontinued for even the briefest instant, the vital process would be interrupted immediately. (So it is also for animals, from the embryo to death.) It is that energy on which the permanence of our universe and its innumerable beings relies.”\(^{18}\)

T'ang Chen 唐甄, an author who lived from 1630 to 1704, in a chapter entitled “Universal Vision,” evokes the prodigious transformations constituted by the passage of the universe from chaos to order and from order to chaos, as well as the chain of living beings which is constantly interrupted and rejoined. These are phenomena, he explains, which cannot come to an end, and which must therefore have a motor which knows neither life nor death. He goes on with this comparison:

On the night of the full moon in the first month of spring [on the Lantern Festival], those who like to make lamps construct some of them with paper coverings and make figures to turn inside them. Carriers of flags blowing in the wind and of war bells which resound, men bearing armor, helmet and halberd,

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\(^{16}\) Lu Shih-i 陸世儀 (1611-1672). Suu-pien lu chi-yao 源辨錄輯要 (ed. by Chang Po-hsing 張伯行 at the beginning of the 18th century), chapter 14 (四庫全書總目提要 ed.), 5: 2b, col. 4; 若予旅副乾神allah.

\(^{17}\) Theories concerning inevitable condensation and dissipation of universal energy were formulated by Chang Tsai 張載 (1020-1077) in his Cheng meng 正蒙.

\(^{18}\) Lü K'un che-hsueh hsuan-chi, p. 46.
cavalry and infantry follow on each other's heels, turning without stopping. It seems to be a marvellous mechanism. But there is nothing marvellous about it at all: if one takes away the lamp, everything stops; if one puts it back in its place, all the personages pass once again as if they were flying. It is the [heat of the] lamp which sets them in motion. The alternation of chaos and order, interruption and renewal, birth and death—all these are produced by an agent analogous to the [heat of the] lamp which makes the figures move. Were it not so, once all life had come to an end, all seeds disappeared, all influx of energy exhausted, all would have been said and done, and nothing could ensure the inexhaustible transformations of the universe. 19

For one of the most famous philosophers of the seventeenth century, Wang Fu-chih 王夫之, our impression of permanence in nature comes from the continuity of the functions, not from the substances, of things. The sun, but also the moon, which is traditionally associated with it, are constantly renewed as regards their substance, all the while preserving the same form throughout the ages: "The water of a river and the flame of a lamp today are similar to those of yesterday, and yet they are neither the same water nor the same flame. Our hair and our nails grow every day, and our nails and hair of yesterday go their way. These are things we can easily observe because they are close to us. But we do not notice that our skin and flesh grow every day, while our old flesh and skin go their way. In like manner, we doubt that the sun and the moon of today can be other than those in antiquity." 20

Matteo Ricci, who died in Peking in 1610, was mistaken in believing the Chinese to be pantheists. 21 They do not animate a universe of inert matter with a divine power inherent and omnipresent in nature; rather, they see everywhere in action a universal, in-flowing energy which acts on the biological cycle and on the annual cycle of the seasons. The inanimate, as much as the animate, is in continuous transformation.

Heaven and earth have a history. They formed over the ages and must therefore enter some day a period of decline. Moreover, they never stop changing, but because of the incommensurability between the extreme brevity of human life and the very long duration of these transformations, we cannot perceive them directly. Only fossils and the tilt of the rocks of mountains bear witness to ancient upheavals. The filling up of the valleys reveals the slow erosion of the higher parts of the landscape. 22 These were the ideas of Wang T'ing-hsiang 王廷相 at the beginning of the sixteenth century, but can be found earlier in China. This conception of the evolution of the universe has its counterpart in the idea of the history of mankind. Wang Fu-chih, cited above, imagines the Chinese of high antiquity to have been similar to the tribal peoples of his period. The people of more distant ages, he says, "were like animals, holding themselves...

19 T'ang Chen 唐甄, Ch'ien shu 潛書, 上下, (ed. Wu Tse-min 吳澤民; Peking, 1955, repr. 1963), chapter 29, p. 100.
20 Wang Fu-chih 王夫之 (1619-1692), Ssu-wen lu wai p'ien 思問錄外篇 (Ch'uan-shan i shu 船山遺書 ed. of 1866), 30: 28b-29a.
21 See D'Elia, I, 109, 116.
upright, making some kind of grunt when they were hungry, and throwing away what was left of their food when they were full."23

Only periods of long duration are compatible with the idea of evolution. They were excluded by Christian theology, which fixed the moment of creation several thousand years before the coming of Christ. Buffon, in 1749, gave the age of the earth as 74,832 years, the length of time which he deemed necessary for its recooling. A Chinese text of the seventeenth century sets the formation of the universe some twenty million years back in time.24 True enough, this figure is derived by means of numerological theories. But the idea of spontaneous and progressive formation of the universe seems to have been shared by all Chinese. And for its part, Buddhism contributed since an early time to Chinese notions of incommensurable cosmic periods and of the plurality of worlds. I should like to recall in this regard a text by a Chinese author of the thirteenth century to which Dr. Joseph Needham has drawn attention: "Heaven and earth may well be immense, but they are in space no more than a small grain of rice. . . . It is as though space were a tree and our universe one of its fruits, or as if space were a kingdom and our universe a single man in this kingdom. . . . How unreasonable it would be to suppose that there are no heavens and earths other than the heaven and earth we are living in."25

A Buddhist monk, in a work probably published around 1638, estimates that space, the worlds, and their beings have neither beginning nor end if one considers them, not in themselves, individually, but as a whole. They are, from this global point of view, eternal. They proliferate without cease and pass through successive phases of formation, stability, and degradation, and return to nothingness over the course of incalculable cosmic periods. The worlds being inexhaustible in number, while this one is in the process of formation, that one is in the process of degradation; while this one is in the phase of stability, another is returning to nothingness. . . . That this world is winding down does not mean that all the others are doing likewise . . .

"It is," adds this Buddhist monk,
as with a city and its houses. If it happens that some of them burn down in one section, they will afterwards be rebuilt as before. . . . Seen from afar, the city will not have changed, and one will not distinguish the houses which have been destroyed from those which have not been; in like manner, one cannot distinguish in finite space between those worlds which have always been there, those which have been destroyed and those which have not yet been destroyed

23 Wang Fu-chih, p. 44b.
24 Yang Kuang-hsien 楊光先 (1597-1669), Pi hsieh lun 開邪論, in Pu-te-i 不得己 (Collected works hostile to the missionaries; the sense of the title is "At last I must give vent to my anger"), 1: 20b-21a: "From the 57th sexagenary year in the Yuan-shou era of the Han (1 B.C., believed to be the year of the birth of Jesus) to the 36th sexagenary year in the Shun-chih era (1659), 1660 years have passed, whereas from sexagenary year 1, the settling of the world, up to the present, one counts a total of 19,379,496 years . . . If Jesus is the Lord of Heaven, all the periods preceding Emperor Ai of the Han (r. 6-1 B.C.) have been deprived of Heaven [i.e., of God]."
From the point of view which reconciles all differences, space, beings, and worlds are infinite... and therefore without beginning or end.\footnote{26}
The author of this text reproaches Matteo Ricci with carrying his calculations regarding the universe and its beings to their logical conclusion in an absurd manner because he has recourse only to discursive knowledge and self-evident facts. Whence the obscure and incomprehensible conceptions in which Ricci is trapped, according to the monk. Whence also Ricci’s erroneous supposition of a Lord of Heaven without beginning or end, capable of producing the universe and its beings.

One thing in particular struck the Chinese in the teaching of the missionaries: that was the endless distinctions and the radical and arbitrary compartmentalization they introduced into nature. This appeared in particularly salient fashion in the great work of Father Ricci, Concerning the True Idea of God 天主實義, printed for the first time in 1604 and reprinted regularly thereafter right down to 1938. This book, the most widely read of all Christian works in Chinese, had constant recourse to scholastic procedures in order to attack the conceptions of the literati at the same time as those of Buddhists. Ricci had understood very well that one of the greatest obstacles to evangelization was the universally accepted thesis in China of the unity of the world. According to a formula repeated \textit{ad nauseam} by Chinese authors: “Heaven, earth, and all beings of every species are of one substance 天地萬物一體” or, if one prefers, “form a single body.” Thus any conversion presupposed persuading the Chinese that souls and spirits exist entirely independent of matter, and that there is a fundamental distinction between Creator and creation. But nothing in the Chinese traditions resembled in the least the radical opposition between the perceptible and the rational, nor suggested the absolute distinction between an active spirit and inert matter. Chinese ideas all tended in the opposite direction. “The body and soul,” says Huang Tao-chou 黃道周, a philosopher who died in 1646, “are not two fundamentally distinct entities.” Spirits and gods have always been considered by the Chinese as composed of \textit{ch'i}. Most Chinese critics of Christianity reproach the missionaries for instituting, as they say, “a heaven beyond the heaven,” and one of them declares: “If heaven had been created by a God, it would be a mere thing without knowledge, incapable of giving birth to all beings.”\footnote{27} This amounts to saying that heaven would conform to the Christian thesis that there is a radical separation between creation and Creator, between inert matter and spirit. The universe would no longer contain either its own principle of regulation or inherent energy.

Ricci explains in his great treatise that there is a basic difference between the natures of man and animal. Man alone possesses, in addition to the vegetative soul of plants and the sensitive soul of animals, the third soul, the rational soul. “Animals,” says Ricci, “are merely endowed with a spirit which leads them mysteriously to accomplish the orders of the Lord on High.”\footnote{28} As recalled by an

\footnote{26} Yuan tao p'i hsieh shuo 原道闡術 by the monk T'ung-jung 通容, in \textit{P'o hsieh chi 確邪集} (1639; Japanese ed. of 1855), 8: 6a-7b.

\footnote{27} P'i hsieh lun, 1: 19b. For the citation from Huang, see Ming ju hsueh an 明儒學案 (Taipei, 1970), 56: 11b, cited in D'Elia, II, 181n4.

\footnote{28} T'ien-chu shih-i, p. 465.
Exposition of the Essential Truths of Religion in Chinese, printed in 1670, this rational soul does not come to us from our parents but is given to us by the Lord of Heaven on the fortieth day after conception for male and on the eightieth day for female children. This is an example of the many radical distinctions that struck the Chinese as absurd and quite arbitrary. The sharp separation between man and animal taught by Christianity goes against the classical tradition of the Chinese: “Very little separates man from the animals,” writes Mencius ca. 300 B.C., pointing out the importance of the slim difference, which derives not from the capacity to reason but from an innate moral sense and its development through education.

Scholastic thought is entirely founded on the principle of contradiction. It has been said that scholasticism was the art of repeating oneself without contradicting oneself. It sets against each other contradictory, mutually exclusive qualities. The Chinese, interested above all in the mechanism of change, recognize only complementary opposites, waxing and waning in the course of their passage through phases. They sought to describe in clear and simple fashion the transformations of the universe with the aid of two fundamental forms of energy, the yin and the yang, whose infinitely varied combinations are responsible for the differences between phenomena.

One of the principal novelties introduced in China by the Jesuit missionaries was a geometric representation of the planetary system. The Chinese had continued to use a type of astronomy generally comparable to that of the Babylonians, that is, to note astronomical phenomena and to generate concordance cycles and predictions by numerical procedures. The Chinese, moreover, had but a rudimentary geometry; it was in algebra that they had made the most remarkable progress, the apogee of this art having been reached in the twelfth and thirteenth centuries. It would appear that although there was not a categorical refusal to imagine geometric models in the Chinese tradition, it seemed impossible to reduce the explanation of underlying principles of nature to simple visual representations.

To illustrate the Chinese attitude, I shall call on the testimony of a certain Yang Kuang-hsien (1596-1669). He was perhaps the most stubborn of all the adversaries of European science and religion; his ignorance and pretension to astronomical competence brought him nothing but ridicule.

When the thesis that the earth was round was reintroduced into China around 1600 after a period of oblivion, it caused general shock and surprise. This was...

29 Chiao yao hsu lu 敦要序錄 by Father Verbiest. See Hsu Tsung-tse's 徐宗澤 note in his Ming Ch'ing chien Yeh-su-hui-shih i chu t'i yao 明清間耶穌會士譯著提要 (Taipei, 1958), pp. 162-163. According to the Fathers of the Church, the giving of a soul by God is fixed for both male and female children on the eightieth day following conception.

30 By ca. 1300 the Chinese knew of the so-called Pascal’s triangle of binomial coefficients, a method for approximating polynomial roots later known as Horner’s method, a process for resolving systems of quadratic equations, and a theorem for resolving combined congruences. See N. Sivin (ed.), Science and Technology in East Asia (New York, 1977), p. 209.

31 Su-k'u ch'üan-shu tsung-mu t'i yao 四庫全書萃目提要, ch. 106, note on Sabatino de Ursis, Pao tu shuo 表度述 (1614): “At that period, the theory of the roundness and small size of the earth astonished a great many people when they first heard of it.”
not so much because it contravened a well-defined geometric representation of the universe, but because it conflicted for some people with a body of traditional notions rich in social and cosmic implications: the high and the low; movement and rest; that which is circular, like heaven, and that which can be divided by perpendicular lines, such as inhabited areas; receptive yin and active yang. All these oppositions reflected two fundamental kinds of being whose collaboration was indispensable both for universal harmony and the human order. But these traditional conceptions did not prevent the majority of the educated, and especially of those literati who were interested in Western astronomy and geography, from adopting the idea of the round and immobile earth, with its grid of meridians and parallels like those of the celestial sphere. But as for Yang Kuang-hsien, in a text written in 1662 he still does not believe the thesis of Western barbarians according to which, as a Chinese formula puts it, “beings are spread out across the surface of the earth like ants.”

He piles argument upon argument of a physical nature against what he considers to be an absurdity:

I never heard of people standing perpendicular to the earth or upside down. Only snails and flies are capable (of such acrobatics) . . .

Consider a two-story house: I shall stand upright on the second floor; if Father Schall [author of a small treatise about the earth and the pet hate of Yang Kuang-hsien] is capable of holding himself upside down under the floor, I will believe in the existence of the antipodes. Otherwise, the Brazil of the Far East on the 360th meridian is not the Brazil of the Far West on the first meridian . . . If the earth is a globe, how is it the seas do not empty out? I should like to ask Father Schall, who is so fond of extraordinary things, whether he has ever seen round water, water which stands erect on a wall, or water which floats on a surface without flowing downwards . . .

Moreover, Schall had placed the lands of the West on top of the sphere and the Chinese almost at the lower end, thus placing Europe in the position of sovereign and China in that of subject. “We may say that this is the epitome of impoliteness,” adds Yang; “to us it is a sign of the greatest disdain.”

Who would dream of reading Yang Kuang-hsien other than to amuse himself at Yang’s expense? But in skimming through the text which I have just cited, we come suddenly on this surprising passage: supposing the world is round, “I will ask Father Schall whether this little sphere floats in space or whether it is fixed in some fashion. If he thinks it floats in space, it must of necessity be set in motion by the flux of cosmic energy and move unceasingly like the heavens, finding itself back in the same position after having made a complete revolution in one day.”

This conclusion, which is for us quite unexpected, is in accord with the Chinese idea of universal energy. Contrary to the evolution of thought in the West, where the geometric model of the universe led to the conclusion that the earth must turn on an axis (this was the reasoning of Aristarchus of Samos, and Copernicus), the regular Chinese idea that the movement of heavenly bodies demonstrates the

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32 This phrase is also found in Sung Ying-hsing (1587-after 1645), Sung Ying-hsing i-shu ssu-chung (Shanghai, 1975), p. 101.
33 Nieh ching 聲鏡 (Mirror to monsters, preface dated Summer 1662), in Pu-te-i, 2: 67b-72a.
34 Ibid., p. 69a.
nature of the whole universe led Yang to conclude that, if the earth is round, it
cannot be immobile but must turn on an axis. (I recall in this connection that as
clear as the first century before our era, there existed in China an idea, never
entirely abandoned, of an unusual displacement of the earth toward the four
cardinal points, accompanied by a vertical movement).35

The same conception of cosmic flux to which Yang Kuang-hsien refers is
already found in the renowned eleventh-century philosopher Chang Tsai 張載,
who explains that the sun, the moon, and the planets are slowed in their move-
ment by the influence of the earth to an extent that depends on their own constitu-
tion.36 In the seventeenth century, Wang Hsi-shan 王錫阐, a Chinese author
who was very well informed about Western astronomy, suggests that the planets
are attracted by a certain point on the sphere of the fixed stars as iron is attracted
by a magnet.37 We are in the presence of the idea that celestial bodies influence
each other from a distance. In the West and in China the most generally accepted
premises are radically different: opposed to a geometric model animated from
without is the idea of a universal energy inherent in nature.

It is not only the geometric representation of the universe which is involved in
the Christian vision of the world; but a more general conception which fixes the
limits of space, time, species, and the number of souls. In his great treatise Con-
cerning the True Idea of God, Ricci distinguishes between what has a beginning
and an end, such as corporal beings, what has a beginning but no end, such as
souls, and what has neither beginning nor end, a quality which belongs exclusively
to God.38 The Aristotelian cosmology with its concentric heavens expressed
both the perfection and the limitation of the universe. This conception seemed to
the Chinese unacceptable. “The Westerners,” says one of them, “speak of twelve
concentric heavens which form a ball that lies always in the lap of the Lord of
Heaven. I do not know,” he adds ironically, “on whom the Lord of Heaven
leans.”39

They claim, writes another author, “that the universe has a limited number of
layers [these are the crystalline spheres of Aristotle] and that it has a definite size
in all directions. . . . One gets the impression of absolute determination to erect
walls in the Great Void to partition it off. How could the Great Void receive
them? . . . They simply say that the Lord of Heaven is inconceivable, and that it
would be a great crime to conceive Him. But they have never had the faintest
inkling of what Buddhism calls inconceivable.” There are two sorts of inconceiv-
able: one is that absolute beyond the discursive to which the Buddha attains

35 As Needham points out (III, 224), this conception is found in a text of the first century
B.C. “From the winter solstice on, the earth, which is in an upper position to the north, moves
about 30,000 lì [appr. 15,000 km.] to the west. From the summer solstice on, it moves
the same distance to the east. At the time of the two equinoxes, it is in intermediary positions.
The earth is in ceaseless motion, but human beings are not conscious of this. They are like pass-
engers on a big ship, the scuttles of which are closed; they are not aware of anything, yet still
the ship is moving” (translated from T’ai p’ing yü lan 太平御覽, 36: 3a; Peking, 1960 ed.,
p. 169-170).
37 T’ien-chu shih-i, 1: 389.
38 Tso p’ei 佐閟 (Aid to the refutation), in P’o hsieh chi, 4: 38a-38b.
after incalculable cosmic periods; the other is time and space, for time and space are infinite. Whatever limits we impose on them, there is always a beyond: "On the eyelash of an animal so tiny it can make its nest on the lash of a mosquito, there is room for a kingdom." The author evokes the possibility of the indefinite contraction and expansion of space and time by mentioning the titles of two Chinese tales. One is the story of a woodcutter who is absorbed for so long in listening to the songs and music of Taoist immortals that he suddenly notices the handle of his axe has had time to disintegrate. The other is the story of a poor scholar who receives from an immortal a pillow—one of those rigid parallelepipedal pillows customary in the Far East—which enables whoever rests his head on it to have the most wonderful dreams in the world. The scholar falls asleep just as some millet is put on to boil. He begins by dreaming that he enters the pillow, and then that he marries a rich and beautiful girl. He wins the highest grade in the examinations, becomes imperial commissioner in command of a region, distinguishes himself in a great victory, and is minister for thirty years. He has five sons, all of whom enter the service of the state, and ten grandsons, who all make good marriages. He himself dies when he is more than eighty years old. When he awakens, the millet is not quite cooked. "Have I been dreaming?" he asks. "The affairs of this world," responds the immortal, "are no different."

The same author goes on to say that "the Western barbarians affirm that the present and the past can be considered as hermetically sealed... They even go so far as to pretend that this present world, from antiquity to our days, is but seven thousand years old, and that there was no world before that... To speak in this manner is to admit a present but no past... They also say that there is a finite number of souls and that there is no life other than that of those souls."40

The conclusion that emerges from the various texts which I have just cited is that Chinese conceptions are in every regard the opposite of those taught by the missionaries. Over against the idea of a stable, finite, and heterogeneous world, the Chinese set at once a world homogeneous and evolving, in a space and time which are without fixed limits. The open and unified world of modern physics would undoubtedly have shocked the Chinese less than the one presented them by the missionaries.

One does not find in China that fundamental distinction, established by the Greeks and inherited by Christianity, between an incorruptible and perfect celestial world, infallibly obedient to the laws of geometry, and an imperfect sublunary world subject to corruption, realm of the qualitative and approximate. Fontenelle remarked quite astutely that the Chinese knew nothing of this distinction: "It is not so long ago," he wrote in his *Entretiens sur la pluralité des mondes*, which appeared in 1686, "that all our philosophers thought themselves empirically justified in maintaining that the heavens and all celestial bodies were incorruptible and incapable of change; and at the same time, at the other end of the earth, there were other men who saw stars dissolving by the thousands: that

40Ibid., 23a-24a.
is rather different.41 I need not recall the well-known and ancient interest of
the Chinese in novae, appearances and disappearances of stars, meteors, and
sunspots.

In general, the Chinese judged in terms of their own traditions what the Euro-
pean missionaries brought. What appeared to fit these traditions—or rather what
could be easily integrated—was accepted; the rest was unacceptable. We may say
that, all things considered, the Chinese proved quite reticent vis-à-vis the theology
but fairly open to the scientific contribution of the West.

Two bibliographical notices written shortly before 1782 on two works of
missionary origin seem to me to summarize this position rather well: “There can
be no doubt,” says one of the notices, “that the Europeans are far ahead of our
predecessors in the precision of their astronomical calculations and the ingenuity
of their instruments. But neither has any heterodox sect ever gone so far in the
domain of exaggerations, falsehoods, absurdities, and improbabilities. In choosing
to use their techniques and their talents but to prohibit the diffusion of their
doctrine, our dynasty has demonstrated profound wisdom.”42

Here is the other notice, concerning a treatise on astronomy in dialogue form
printed in 1615:
The work is preceded by a preface by Manuel Dias, in which he leaves aside his
own specialty [astronomy] and exalts the work of the Lord of Heaven. He
even alludes there to what he calls the twelfth immobile heaven, which he
makes the dwelling place of all the saints and the site of Paradise. Those who
worship the Lord of Heaven can ascend into it. It is enough to please fools and
touch their hearts. As a matter of fact, in his desire to use the exactitude of his
calculations and his deductions in order to prove the existence of a Lord of
Heaven, he goes to much trouble to deceive people. But as far as everything
that has to do with astronomy goes, it is incontestably superior to our old
methods. Let us therefore set aside these absurd and deceitful theories, and let
us retain only those methods which are precise and based on proof. So far as
the absurdities in the text itself are concerned their suppression would some-
times render the text incomprehensible, and so we may leave them in while
refuting pernicious conceptions as we have just done.43

This hostility toward Christianity must not cause us to forget that there were,

41 Cited by Needham, III, 441. Needham, who asserts that the echoes of Chinese concep-
tions in Europe may have contributed to the abandonment of the crystal spheres theory, cites
in another place (III, 442) the very sinophile Rosa ursina by Christopher Scheiner (Bracciani,
1630): “The peoples of China . . . have never taught in any of their innumerable and flourishing
academies that the heavens are solid; or so we may conclude from their printed books, dating
from all times during the past two millennia. Hence one can see that the theory of a liquid heav-
en is really very ancient, and could be easily demonstrated; moreover one must not despise
the fact that it seems to have been given as a natural enlightenment to all peoples. The Chinese
are so attached to it that they consider the contrary opinion (a multiplicity of solid celestial
spheres) perfectly absurd, as those inform us who have returned from among them.”
42 Su-k’u ch’ien-shu tsung-mu ti-yao, ch. 125, bibliographical note on Huan-yü ch’üan
寶有砧 by Francisco Furtado (1628).
43 Ibid., ch. 106, note on T’ien wen luéh 天問譜 by Manuel Dias (1615). This text has been
cited by Paul Demiéville in his remarkable paper “Les premiers contacts philosophiques entre la
especially at the beginning of the seventeenth century, several eminent literati who were won over to the faith by the religion of Europe. But it would be hard to allow that these conversions, however sincere, led to a complete change, devoid of the slightest error of interpretation, between two systems of thought belonging to different civilizations. Around 1620, the successor of Ricci, Father Longobardo, wishing to determine what one of the most famous converts of the day really thought, discovered that, true believer though he was, he was also a thoroughgoing heretic! Chinese who sympathized with Christianity praised it in terms of Chinese philosophy and attributed their own conceptions to it.

Even in the scientific field the Chinese rejected European philosophical implications. Even if the most competent of them praised the ability of Western astronomy to explain the celestial motions and tried to improve on the theory, they did not leap the essential gap and accept a God of rationality. They were willingly eclectic, but felt a certain dissatisfaction with regard to the Western contribution. “In my opinion,” writes the astronomer Wang Hsi-shan, “Western astronomy is excellent, but only in the precision of its measures, and not in any profound comprehension of the universal order.” “The Westerners are very skilled in fathoming and measuring,” writes Fang I-chih 方从智, a famous philosopher of

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44 Niccolò Longobardo, *Traité sur quelques points de la religion des Chinois*, printed in Paris in 1701 by the Missions étrangères. This is the first book to convey to Europe an approximate idea of neo-Confucian philosophical conceptions; it inspired Leibniz. See p. 96: Yang T'ing-yun 楊廷雲 (1557-1627), one of the most famous converts of that period, presented to the Peking Fathers some treatises he had written in Chinese, among them Hsi-hsueh shih-chieh chu-chieh 西學十誡注解 (Annotated explanation of the Ten Commandments; mentioned by Fang Hao 方豪 in Ch'ung-kuo t'ien-chu-chiao shih jen-wu chuan 中國天主教文人物傳 (Hong Kong, 1967, I, 138). “Still,” Longobardo writes, “although a few good things that he heard from our Fathers are contained in this explanation, there are nevertheless several arguments which originate in the sect of the Literati and clearly show the nature of their feelings. . . . He says in the Preface that everything consists of one single substance which is the Lî (the principle of order inherent in universal energy), and that there is no difference between things except in outlook and accidental quality.” Yang T'ing-yun said in the same preface that all China’s ancient sages were reincarnated angels. He also noted (Longobardo, p. 97) that “Yeh Ko Lao (Yeh Hsia-ko 葉氏可, 1562-1627, one of the most effective protectors of the missionaries) says that the Lord of What is Above or Lord of Heaven has been incarnated several times in China through the bodies of Yao, Shun, Confucius, several kings, and even ordinary people. He could therefore have been incarnated likewise in the Occident through the body of Jesus, as the Jesuits claim.” Thus “Jesus Christ is to the West what Confucius or any other distinguished literatus is to China. . . . This same Doctor Michel (Yang) also says in this text that the doctrine of Confucius is perfect in every point and is the same as the doctrine of God.”

45 One generally finds in the Chinese a willingness to integrate into their tradition foreign contributions that are easily assimilable. A rather striking example of this attitude is that of Mei Wen-ting 梅文鼎 (1633-1721), who was, along with Wang Hsi-shan, one of the astronomers of this time best acquainted with Western science. Mei on European astronomy is quoted in Ch'ou-jen chuan 虧人傳 (Notes on astronomers and mathematicians of all the epochs, ed. Juan Yuan, 1799; Wan yu wen-ku ed.), 39: 473. He is asked: “The order of heaven cannot be understood except over a long period of time [that is, through surveys spanning many centuries]. Precision can be obtained, so far as astronomy is concerned, only through [successive] readjustments. But now that the new [Occidental] astronomy has penetrated China, shall we change fundamentally our methods, adopting [those of the Westerners]?” “If we have recourse to the new astronomy,” answers Mei Wen-ting, “it is because we mean to turn what is best in this astronomy to account, and thus palliate the shortcomings of our old methods.”

46 Ch'ou-jen chuan, 34: 422.
the seventeenth century, "but unskilled in penetrating the imponderable."

Here, in conclusion, is an opinion which summarizes that of most Chinese literati rather well. Speaking of missionaries, a certain Chang Ch’ao 张潮 writes in 1699: "They are extraordinarily intelligent, those people. Their studies concern astronomy, the calendar, medicine, and mathematics; their customs are loyalty, good faith, constancy, and rectitude; their skill is marvellous.... The conceptions of the great West are surely far ahead of other doctrines. It is simply a shame that they speak of a Lord of Heaven, a crude and obnoxious conception that leads them into absurdities and which our literati have a great deal of difficulty accepting. If they could only put aside this conception, they would be very close to our Confucian tradition."48 Here is a hasty judgment: like many Chinese, the literatus Chang Ch’ao is ready to become a Christian provided that one does not speak to him of a creator God. But Chang’s judgment is grounded in his own system of values and representations, his own field of knowledge and morality. He is rejecting the European vision of the world.

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48 Preface to the Hsi-fang yao-chi 西方要紀 (Summary on Western countries; in Chao-tai ts‘ung-shu 代筆書, collection 1, printed 1697), p. 5. This book was written collectively by Fathers Buglio, Magalhães, and Verbiest.