

Bouvet and Leibniz: A Scholarly Correspondence

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MANY CELEBRATED THINKERS AND WRITERS have been troubled by petitioners seeking to win approval for idiosyncratic interpretations of new ideas. Some of these importunate correspondents are negligible, but others offer an original perspective on familiar concepts. The Jesuit Joachim Bouvet was one such petitioner; he approached Leibniz with a complete philosophy built from Christian dogma, Hermetic magic, Chinese classics, and Leibniz's binary arithmetic. In the course of their correspondence Bouvet attempts to claim Leibniz's system for his international Christianity.

In September 1684 Father Philippe Couplet, a Jesuit missionary recently returned from China, was presented to Louis XIV at Versailles. Dressed as a Chinese official according to his actual rank and accompanied by a Chinese servant bearing an array of amazing gifts, Couplet drew flattering comparisons between Louis and the Chinese emperor—except, of course, that the French king was Most Christian while the heathen emperor had yet to be converted. Louis contributed to the mission in his lavish way and promised to fulfill a request made earlier by the mission's rector, Father Verbiest, that a *French* scientific mission be sent to Peking. Verbiest, a Fleming, and Couplet, a Belgian, felt that a strong French presence would counterbalance the Portuguese, who sponsored the sole official Jesuit mission in the capital. Because Couplet took care to have an interview with Louis's minister of finance Jean-Baptiste Colbert, action was relatively fast; the Jesuit superiors in France were ordered almost at once to prepare a six-man mission. Jean de Fontaney, an astronomer who felt a vocation to go to China, was designated head of the mission. At his instance other members were selected from among the scholastics at the Collège Louis-le-Grand.

Joachim Bouvet was one of the young Jesuit astronomers and mathematicians picked for this politically intricate mission. Hurriedly ordained a priest, he said his first Mass and embarked from Brest on 3 March 1685 together with his five companion missionaries and an embassy bound for Siam. His letters to relatives and the *Voiage de Siam* composed after the first leg of the journey reveal an observant spirit sensitive both to natural history—exotic birds, strange insects, the anatomy of a crocodile—and to the traditions of the different peoples he encountered.¹ One letter, as Bouvet's biographer Dehergne notes, is especially prognostic of Bouvet's later career.² After hearing some ancient "fables" of the Siamese, Bouvet wrote his mother (21 June 1686) that he felt a "secret joy" in recognizing veiled references to the Coming of Christ and other Christian vestiges which neither time nor the Prince of Lies had been able to erase. He sought and found further evidence in Siamese books which apparently preserved an imperfect recollection of Old Testament events.

The word "vestiges" (the same in Bouvet's French) was powerfully suggestive to a Jesuit traveling east in the late seventeenth century. During the one hundred and fifty years since Saint Francis Xavier died with his eyes turned toward China the Jesuits had carefully studied Chinese sacred books, the "King" as they called them, and discovered parallels with the Bible and the writings of the Church Fathers.³ While noting the history of early Christian proselytization in China, from the Nestorians in the ninth century to the Franciscans in the thirteenth, the Jesuits traced the Christian vestiges to an ancient revelation evident even in the aphorisms of Confucius. Jesuit novices intent upon China were exposed to the doctrine of vestiges from the start; that Bouvet was susceptible is clear from his precious vestige interpretation of the first Asian literature he examined.

After his arrival in China Bouvet had little leisure for pursuing speculative research into the Chinese classics. Like other Jesuits he quickly learned Chinese and became a skilled servant of the emperor, establishing a European-style pharmacy in the imperial city, translating European scientific treatises into Manchu, and, when Verbiest's death

¹Joachim Bouvet, *Voiage de Siam de Père Bouvet*, ed. J. C. Gatty (Leiden: Brill, 1963). The numbers given for Bouvet's letters refer to their numbers in Gatty's catalogue following the Introduction.

²Joseph Dehergne, *Répertoire des Jésuites en Chine de 1552 à 1880* (Rome: Institutum Historicum S.I., 1973), p. 674.

³George Dunne, *Generation of Giants: The Story of the Jesuits in China* (Notre Dame, Ind.: Univ. of Notre Dame Press, 1962), pp. 30–35.

left the emperor without a mathematics tutor, giving K'ang Hsi geometry lessons. Despite continued quarreling between the Portuguese and French Jesuits the mission seemed to be making progress; in 1692 Bouvet wrote enthusiastically that K'ang Hsi had granted permission for the spread of the Christian faith to all corners of his empire and had expressed the wish that all Christian denominations unite.⁴

The French missionaries returned periodically to Europe to maintain relations with their patrons and to procure new recruits. Father Le Comte visited France in 1691 and though expected back in China was retained by Louis XIV as confessor to the Duchess of Burgundy.⁵ Bouvet was next to leave; he received a special charge from the emperor to bring back Jesuit scientists for a Chinese Academy to be assembled on the model of Louis XIV's Académie Royale. Bouvet left in 1693 and after an eventful four-year journey arrived in Brest.

Bouvet's advent produced an even greater éclat than Couplet's fifteen years earlier. Years of increased contact with China had made French aristocrats eager for novelties from the East. Bouvet did not realize this fully at first; at Court, however, he found his Chinese robes scrutinized by nobles who had for years been masquerading as mandarins and "pagodes" at balls and festivals.

Bouvet had to spend much time catering to this frivolous curiosity for he needed the support of courtiers to press his requests for aid before the king. Reading Leibniz's *Novissima Sinica* he found that the celebrated thinker, clearly a friend of the Jesuits, had a much more serious interest in China. Bouvet immediately wrote to Leibniz enclosing a copy of his eulogistic *Portrait historique de l'Empereur de la Chine*.⁶

Leibniz replied posthaste with a list of queries on China and exhortations to bring Chinese wisdom to Europe. He asked for facts about the Chinese characters and for the Lord's Prayer in as many Asian languages as Bouvet knew.⁷ Earlier Leibniz had told Landgrave Ernst von Hessen-Rheinfels that he was seeking to procure the Lord's prayer in all the languages of the world.⁸ The explanation he gave for this collecting

⁴Gatty, No. 44. Probably K'ang Hsi's wish was ironic: he was hoping that the *Jesuits* would unite.

⁵Dehergne, *Répertoire*, p. 146.

⁶It seems to have been part of the Jesuit program to convince Louis XIV that he was very like K'ang Hsi and K'ang Hsi that he was very like Louis XIV and both that they were ideal monarchs.

⁷Donald Lach, *The Preface to Leibniz' Novissima Sinica* (Honolulu: Univ. of Hawaii Press, 1957), p. 33.

⁸Franz Rudolf Merkel, *G. W. von Leibniz und die China-Mission* (Leipzig: L. P. Hinrichs, 1920), p. 429.

asserts the dialectic between faith and reason which underlay Leibniz's internationalism:

this would be a standard for comparison since we already know the Pater Noster in many languages; it would even be a point of religion [here Leibniz changes to Latin] that every tongue might praise God.

Leibniz's purpose in opening a correspondence with Bouvet was to satisfy his craving for knowledge about one great nation among the many disparate nations that must be brought together to make an intellectually unified Christian world.⁹

Other scholars channeled queries through Leibniz for Bouvet, and Leibniz sent four additional letters in the following three months. It was not until the eve of his departure for China that Bouvet had time to reply (La Rochelle, 28 February 1698).¹⁰ He included a Manchu translation of the Lord's Prayer, promised answers to Leibniz's questions, and the cooperation of appropriate specialists in China for further researches. Bouvet tried to satisfy Leibniz on the nature of Chinese characters:

do not doubt that one day we will arrive at an analysis which will reduce them [Chinese characters] to Egyptian hieroglyphs and demonstrate that they both are the writing used among the learned before the Flood.

Obviously Bouvet's occupation with vestiges had not died but had only been submerged during his years of service to the emperor. By linking the Chinese characters with the Egyptian hieroglyphs he expressed the idea of vestiges in international terms but with only a hint of the scale which the concept had acquired in his mind ("both are the writing used among the learned before the Flood"). Without elaborating Bouvet mentions the "kua," the trigrams of the *I Ching*, which, he claims, are the remains of a perfect system of philosophy developed and then lost long before Confucius. This was the first Leibniz had ever heard of these diagrams, but it was not to be the last.

Bouvet's return voyage to China took only seven months; during this time he wrote again to Leibniz assuring him he would expedite the desired studies (16 September 1699). But in the year that followed he was distracted by more disputes between the French and Portuguese

⁹The fruit of Leibniz's collecting may be seen in John Chamberlayn, *The Lord's Prayer in All Tongues* (London, 1705) which has a Preface by Leibniz.

¹⁰Gatty, No. 71.

missions. K'ang Hsi's donation of a separate residence for the French Jesuits, probably intended to promote peace by separation, only exacerbated the bitterness of the division. Even more serious, the rites controversy set Jesuit against Jesuit and involved the Dominicans and the Franciscans in the fray. A number of Jesuits, Bouvet among them, felt that Chinese converts to Christianity should be allowed to continue rites performed before ancestral tablets, while a few Jesuits and all of the mendicant orders opposed this leniency and contested the Jesuits' willingness to compromise Christian dogma with Chinese paganism. Bouvet was one of a group of Jesuits who presented a memorial to the emperor on 30 October 1700 asking his support against those who called Chinese rites heathen and forbade Chinese converts from continuing their practice.¹¹ On 8 November Bouvet, fired by this issue, sent another letter to Leibniz via Le Gobien, a European Jesuit with whom Leibniz corresponded.¹² In forwarding this letter Le Gobien added a brief preface explaining that K'ang Hsi had approved the Jesuit memorial and that Leibniz himself was correct when he supported the civic (as opposed to the religious) conception of the Chinese rites in the Preface to *Novissima Sinica*.

Bouvet's letter is the outburst of a man compelled to prove that Confucian thought has Christian underpinnings. He was not merely trying to enlist a potent ally in the rites controversy; he was attempting to unite Chinese philosophy with European philosophy before the eyes of a man certain to be impressed by such an ecumenical demonstration.

Bouvet starts with a pregnant encomium of the *I Ching*: "the most ancient work of China and perhaps of the world and the true source from which this nation had drawn all its wisdom and customs." But, Bouvet immediately adds, this work is imperfect, corrupt, full of injurious errors, the ruin of a greater knowledge. In the *I Ching* and its system of sixty-four hexagrams formed of broken and straight lines the first "legislator" Fo Hi gave the Chinese a perfect system of philosophy, but the true significance of the book is lost to the contemporary Chinese.

Bouvet does not elaborate on the Chinese idea of the *I Ching* or the reason why he rejected the Chinese opinions so thoroughly. The *I Ching*

¹¹François Bontinck, *La Lutte autour de la Liturgie Chinoise au XVIIe et XVIIIe siècles*, Publications de l'Université de Louvanum de Leopoldville, No. 11 (Louvain: Editions Nauwelaerts, 1962).

¹²Louis Dutens, *Gothofredi Guillelmi Leibnitii Opera Omnia* (Geneva, 1768), IV, Part I, pp. 146–51; Gatty, No. 78.

is a commentary on a series of three-line figures or trigrams formed of broken or straight lines laid atop one another. The eight trigrams are combined to yield sixty-four hexagrams, or six-line figures. The Chinese ascribed the invention of these figures to Fu Hsi (written Fo Hi by Bouvet), the legendary culture-bringer who is supposed to have derived them from the pattern of lines he detected in divination bones split by heating. King Wen, the founder of the Chou Dynasty, systematized the figures into a square of sixty-four and set down brief remarks on their individual significances. His son, the Duke of Chou, wrote on the role of each line in each figure and edited the result into the *Chou I*. Confucius, the Chinese tradition continues, received this heritage and composed at least two treatises, one on the outcomes (*T'uan Chuan*) and another on the figures (*Hsiang Chuan*). Further commentaries were attached; there were ten in all, the ten "wings" of the *I Ching*, by the end of the Han Dynasty. The book was complete when the hexagrams were placed in sequence with all the relevant parts of the commentaries under each hexagram. Thus crafted the *I Ching* could be used as a divinatory manual to be consulted with bone or yarrow stick oracle, and it was also a philosophical text susceptible of more commentary. On both these levels it figured in personal decisions and philosophical movements throughout Chinese history.

During the Sung Dynasty a revival of Confucian thought following years of Buddhist and Taoist dominance fostered a reinterpretation of the *I Ching*. Chou Tun-I, one of the revival's initiators, used the *I Ching* as the starting point for an excursion into metaphysics. The philosophers who followed him in the Sung and Ming, called collectively Neo-Confucians, were not much occupied with metaphysics but used the *I Ching* to project their own speculations. The Jesuit missionaries pronounced the Neo-Confucian philosophy "atheistic" and, devoted classicists that they were, looked back to the pure Confucian texts for the God the Neo-Confucians had forgotten.

Bouvet was willing to consider the *I Ching* a very ancient book and surely knew its traditional history, but he regarded the Neo-Confucian claim of having learned the book's true meaning as the vanity of heathens. He looked to the bare text and to the hexagrams below, where he thought the fundamental meaning must lie.

The Chinese could not know what riches they harbored in the *I Ching*. Comparing the text with the writings of "our ancient sages," Bouvet concluded that they all are repositories of a great and antique wisdom common to all peoples. The system of Fo Hi is

like a universal symbol invented by some extraordinary genius of antiquity—such as Hermes Trismegistus—in order to represent before the eyes the most profound principles of all the sciences.

The mention of Hermes Trismegistus, presumed ancient Egyptian author of mystical essays, was daring for a Jesuit of the seventeenth century, even though several of the most prominent early Fathers had been Hermetists and Bouvet's contemporary Athanasius Kircher, Jesuit polymath, had published a treatise on Hermetism and natural magic.¹³ But Bouvet was not about to launch into a Hermetic and therefore a pagan interpretation of the *I Ching*; instead he was seeking a revelation common to the writings of Hermes and the figures of Fu Hsi under the assumption that they originated in the same remote era.

Bouvet's exposition of his insight is none too clear to the modern reader, but in its own context, bringing together so many ancient traditions, the exposition must have been exciting if not persuasive. Certainly Leibniz as he read through Bouvet's effusive letter was intrigued by his reconstruction of a character system preceding the earliest writing and number notations. The figures of the *I Ching* are, Bouvet announces, no less than metaphysical characters obedient to the rules of numbers, the proportions of geometry and of statics. Their sequence is a "double succession" (a progression of proportions) resembling the harmonic structure of music. This analogy to music is in itself decisive; for Bouvet the tonalities of music are the perfect mathematical representation of cosmic symmetry.¹⁴ The *kua* depict the proportions of cosmic tonalities in characters that display all the component sounds. This further implies, Bouvet adds with a glance at the Neo-Confucians, that the *kua* embody the principle of ancient Chinese music esteemed by Confucius but considered lost by his latter-day followers.¹⁵

Bouvet finds a deep similarity between the newly elucidated Chinese system and the ancient Greek number mysticism attributed to

¹³Renée Taylor, "Hermetism and Mystical Architecture in the Society of Jesus," in *Baroque Art: The Jesuit Contribution*, ed. Rudolf Wittkower and Irma Jaffe (New York: Fordham Univ. Press, 1972), pp. 63–97.

¹⁴Boethius's category of *musica mundana* extended upward by Christian writers from music of the spheres to an eternal hymn of praise sung by all the angels. Bouvet, again following Athanasius Kircher, views music as an index of the ultimate harmony and of Revelation made numerical. See Sir John Hawkins, *General History of the Science and Practice of Music*, 2 vols. (New York: Dover, 1963), I, 97–98.

¹⁵In Analects 3:25 and 18:9 Confucius laments the decline of music from the earliest times, implying a general decline in the state of the world rather than a loss of the music. While mistaking the particulars Bouvet holds a congruent view of the relation between music and nature.

Pythagoras and discussed by Plato. Cicero, the supreme pagan authority for a Jesuit, was perplexed by these thinkers, but Bouvet feels his own discovery has made them plain. In company with the Greeks he cites the Hebrew Kabala, not the degenerate modern Kabala (the Christian Cabala of the Renaissance) but the original Hebrew number-letter device of Moses and the Patriarchs received in direct revelation from God and transmitted to their descendants. Bouvet does not allude to any vulgar historical links between the Greeks, Hebrews, and Chinese. Because there is a fundamental *harmonia mundi* ringing in the ears of Christian and pagan alike—as a Christian and a Jesuit Bouvet knew this to be true—any primordial record made by human beings must contain some inkling of this universal rhythm. Possibly there was a time when the forebears of the Chinese were joined with the Hebrews in receiving a direct revelation. By detecting the music in the *kua* Bouvet restored them to their native kinship with the Pythagorean system and with the Kabala, and he argued strongly for the universality of a Christian inspiration.

Bouvet did not end his gleaning of the *I Ching* with this. The whole purpose of his effort was to perfect a means of catechising the Chinese. Shown this elementary and elemental sacred design in their honored hexagrams they would instantly accept the Christian message. From this point on, Bouvet's letter becomes a rites controversy polemic. Rather than damning the atheism of recent Chinese philosophy, Bouvet tells Leibniz that Christian missionaries should study the most ancient books. By "reestablishing the sciences of China" through the system of Fo Hi the missionaries would cause the full and spontaneous conversion of that populous nation. So much for the unsophisticated direct methods of the mendicant Friars!

Leibniz, in the midst of promoting a Protestant mission to China, replied in a letter now lost (1 November 1700) but mentioned in several of Bouvet's letters. Leibniz explained his binary notation system and asked Bouvet to apply it to the still unclear Fo Hi figures; he enclosed an enigmatic medallion and, as usual, requests for more information on China's human and natural history.¹⁶ One year later Bouvet wrote again to Leibniz describing his own progress into the arcana of most ancient China (1 November 1701)¹⁷ and followed this almost immediately with a long letter (4 November 1701).¹⁸

¹⁶Gatty, No. 110.

¹⁷Gatty, No. 79.

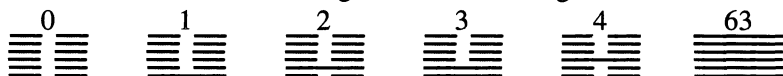
¹⁸Dutens, *Leibnitii Opera Omnia*, IV, Part I, pp. 152–64; Gatty, No. 107.

In the 4 November letter Bouvet demonstrates that Leibniz's binary system and the *I Ching* are identical. The binary system, invented to provide a more exactly descriptive numeral notation, consists of writing a given number as a sum of powers of two. Each number is set down in a place notation as in the decimal system; thus in binary symbolism the decimal number 2 is 10 ($2^1 + 0$), the decimal 14 is 1110 and so on. Leibniz usually wrote the binary numbers out to five digits, placing zeros where there were no significant numerals in front ($2 = 10 = 00010$), and carrying the progression out to 2^5 ($100000 = 32$). He did this to illustrate the value of the notation in disclosing the inner workings of the numbers as they increased; in fact he was sure that in the binary notation he had the rudiments of a mathematical "real character," that is, a way of writing numbers that would represent them exactly as they are.¹⁹

Bouvet in his 4 November 1701 letter asks Leibniz to bring the progression out to 2^6 (64) and array the symbols in order down the page from 1 to 63:

000000	0
000001	1
000010	2
000011	3
000100	4
111111	63

Then take the zeros, symbols of nothingness and imperfection, and substitute broken lines, leaving the ones as straight lines:



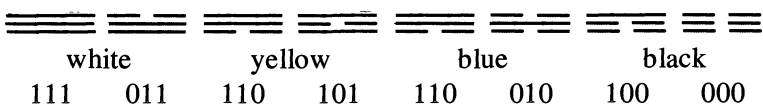
Break the table at 32 and move the 32 figure to the top opposite the zero symbol. Bend each facing line of symbols outward at the center, joining the top and bottom to form a complete circle. Compare the result with the authentic Chinese hexagram table (Bouvet had enclosed one) and "see if you can notice any difference, or if you do not find there all that marvellous harmony which is found in your binary table."

Bouvet had shown Leibniz that the *I Ching* and the binary system are identical and that the *progression géométrique double* underlies both systems. This is, Bouvet repeats, the system of the magic squares.

¹⁹Leibniz, "De progressionem dyadica," *Opusculum et Fragmenta Inédites de Leibniz*, ed. Louis Couturat (Paris: Félix Alcan, 1903), p. 278, note 1.

Others who have studied the demonstration²⁰ have not appreciated the force it exercised on the imaginations of both men. Bouvet thought it evidence of a revelation uniting all higher spirits in early times; Leibniz considered it proof that his binary system was a real character able to subsume very different natural characters. It confirmed his belief that mathematical symbolism is more comprehensive than other symbolic systems, and that there can be one mathematical character more fundamentally descriptive than any other. Both men were impressed by the *configurative* aspect of the demonstration: Leibniz's binary line to the sixth power became with the slightest manipulation the circle of hexagrams used by Chinese diviners squatting on the streets of Peking. What more dramatic demonstration, amid all the pagan forgetfulness, of some Supreme Configuration to all knowledge, accessible to pious reason?

Bouvet proceeds to the implications. In the first binary degree of the figures, where a single broken line faces a complete one, there exists only the opposition of perfection to imperfection. Leibniz had read the separation of binary 1 from 0 as an "emblem of the creation"²¹ and would have sympathized with Bouvet's interpretation of the first two figures. In the second degree there are four figures $\equiv, =, \equiv, =$ which correspond to the two superior genres and their subordinates in formal logic.²² In the third degree the development becomes finer still: Bouvet identifies the expansion of the figures with the generation of colors. Light and dark are the primaries, yellow and blue, a diminution of light or a brightening of dark respectively, are the secondaries.²³ The fine qualities of the colors can best be portrayed in a third degree diagram of eight figures:




This expresses the subtle relations among colors more precisely than words, which deceive the reader into thinking that "yellow" is a simple

²⁰ Arthur Waley, "Leibniz and Fu Hsi," *Bulletin of the London School of Oriental Research*, 2 (1921), 165–67; Donald Lach, "Leibniz and China," *Journal of the History of Ideas*, 6 (1945), 436–55; Dennis Mungello, *Leibniz and China* (Honolulu: Univ. of Hawaii Press, 1976).

²¹ Louis Couturat, *La logique de Leibniz d'après des documents inédits* (Paris: Felix Alcan, 1901), pp. 273–78.

²² The Thomistic version of Aristotelian genus emphasized that the diversification of categories cannot be extraneous but must be subordinate to unity—hence the *kua* satisfied Bouvet's logical and theological biases.

²³ The colors were properties of objects rather than of light and were grouped with other properties, tones, odors, metallic qualities.

state when in fact it is compound and complex. From here the generation of color tones proceeds through degrees out to the sixth power. By symbolizing pure white light with the hexagram  Bouvet actually demonstrated the composite nature of white light without the help of a prism.

Of course the colors are just an example; Bouvet uses them to suggest how ideas themselves can be arranged into figures and measured against each other. Aristotle's degrees of quality are further discriminated by this system into sixty-four more refined units. Here Bouvet's essential conservatism is made evident: the optimum science is an extension of antiquity with pagan errors removed. And although the Chinese circle of hexagrams reflects a universal system this does not mean that France ("ma chère patrie") is inferior to China. To counteract the accusations that the Jesuits were pumping up China and its idolatry at the expense of Christendom Bouvet offers Leibniz an astonishing conclusion.

Fo Hi, the author of the *kua*, was not Chinese; the Chinese themselves admit this. By Bouvet's analysis the first Chinese character of Fo Hi's name breaks down into two separate characters, "jen," or "git" in Bouvet's transcription, meaning "man" and "kou," Bouvet's "kirca," meaning "dog"—"man-dog," a man with the diligence of a dog in searching out the hidden causes of things. Bouvet recalls that an Egyptian hieroglyph showing a man with the head of a dog was used to represent Hermes, the inventor of the hieroglyphs, therefore Fo = Hermes.²⁴ The character *hsi* (Bouvet's "Hi") is, according to Bouvet, used in Chinese books to signify "tai hao," "very great" or "thrice great," hence Fo Hi = Hermes Trismegistus. Bouvet equates this mythical sage further with Zoroaster and the prophet Enoch, reflecting medieval genealogies of wisdom.

Bouvet needed only to look into Kircher's *Oedipus Aegyptiacus* to find a contemporary Jesuit source in which Hermes is associated with Orpheus, Plato, Homer, and other pagan sibyls who had foreknowledge of Christ's coming. Kircher holds that the hieroglyphs are themselves "writings" of Hermes far deeper than the Hermetic books and he reads the hieroglyphs using a method very like Bouvet's.²⁵ Bouvet had carried Kircher's method over to Chinese characters and used it to enlist Fo Hi in Kircher's worldwide roster of prophets receiving the same archaic revelation.

²⁴The "dog" is in fact a jackal and the figure represented is Thoth, not Hermes.

²⁵This concept of the hieroglyphs extends back to the ancient Greeks. See George Boas, ed. and trans., *The Hieroglyphs of Horapollo* (New York: Pantheon, 1950).

The Chinese end of the revelation is, however, defective. Fo Hi constructed the sixth degree of the hexagrams to evoke the six days of the Creation in its progressive multiplicity (2^0 to 2^6), much as Leibniz's binary generation evoked the diversification of the *plenum*. The mystery of the seventh day, God's day of repose and man's for thanking God, is lacking in the Chinese system; it is for the Jesuits to remedy this defect.

For the rest Bouvet gives Leibniz some curious details about strange beasts and requests more information on the binary system to pass on to the emperor. He then dissects some Chinese characters according to the same principle he used to clarify Fo Hi, as he had been unable to procure a Chinese dictionary or emblem book for Leibniz.

A year later, not having received a reply to his letters, Bouvet wrote again to Leibniz.²⁶ Since the 1701 letter Bouvet had been proceeding into the most ancient Chinese books with his binary hexagram language. Like any good Chinese thinker he intends to write commentaries on the Chinese classics. He begs further guidance from Leibniz, whom he eulogizes profusely, and hints that the philosopher should use his influence with Father de la Chaize, confessor to Louis XIV, to gain further missionaries to the work. The intellectual excitement of the 1701 letter gives way to timid urgency.

There remains one more letter from Bouvet to his prized but unresponsive correspondent.²⁷ It speaks yet further about the presence of Christian beliefs in the most ancient Chinese books. Only the political turbulence of Chinese history has prevented these ideas from surviving intact. Bouvet consigns the "popular" Egyptian hieroglyphs to a status lower than the "philosophical" Chinese characters. The man who in his youth proclaimed the impending reduction of Chinese characters to Egyptian hieroglyphs now elevates the elite culture of Jesuit China over vulgar Egypt. Once the emperor and the literati are convinced that their beliefs are but an incomplete Christianity they will advance into the fold, restoring the broken communion among men of learning and faith. Bouvet labors ardently for the consummation. To this letter he received no response. If he sent any more letters to Leibniz they have not survived.

Despite his failure to sustain the correspondence Leibniz was not unimpressed by Bouvet's diagrams. In 1698 he wrote to Schulenburg initiating him into the binary arithmetic and mentioning the "emblem of

²⁶Gatty, No. 100.

²⁷Gatty, No. 107.

the creation'' but not the hexagrams.²⁸ Either Leibniz had not received Bouvet's 1697 letter yet or it had not precipitated any conclusions he cared to make public. In his reply to a tract by Duillier during the Newton-Leibniz calculus controversy Leibniz does develop a "universal language" by substitution of letters for numbers but does not resort to Fo Hi.²⁹ The arrival of the hexagram chart along with Bouvet's instructions for generating the same out of Leibniz's binary table did not have a visible effect until early 1703. On 7 April of that year Leibniz asked the French savant Fontenelle to withhold an article on binary arithmetic from publication in the *Mémoires de l'Académie Royale* and promised another, briefer article containing an account of the system "which the Reverend Father Bouvet announced to me—it is he who deciphered the enigma of Fo Hi with the help of our binaries. . . ."³⁰ Leibniz originally had feared that the public would disdain the binary system if it appeared to be without practical applications, but Bouvet's accomplishment at least made the system seem useful.

The *Explication de l'Arithmétique Binaire* published in the Académie's *Mémoires* that year is the first full report of the binary system. Leibniz advances the binary notation as a method for analyzing numbers but too awkward for everyday arithmetical operations, and he refers only guardedly to geometric progressions and to Pythagoras. After Bouvet's prolific letters the few pages Leibniz bestows on the figures of Fo Hi seem parsimonious. In explaining the accord of straight and broken lines with binary numerals Leibniz limits himself to the table of eight trigrams. He reduces all of Bouvet's reasoning on the grades of tones, colors, and ideas to the vague sentence, "there may indeed be found therein something considerable about numbers and ideas." He gives Bouvet full credit for applying the binary system to the figures and with a polite but stiff bow to the Jesuit mentions that Bouvet is strongly moved to extend his findings.

Leibniz had sifted the formal features of Bouvet's discovery from the cosmic network that appeared among the figures. Though Leibniz gave Bouvet proper credit he made it known that the technical matter and not the spiritual connection was primary. The rest was Jesuitry, and for Leibniz, whose reluctance to publish his own writings is well known,

²⁸Dutens, *Leibnitii Opera Omnia*, III, 349–54.

²⁹Ibid, pp. 359–67.

³⁰A. Foucher de Careil, *Lettres et Opuscules inédites de Leibniz* (Paris: Librairie Philosophique de Ladrangé, 1845), pp. 224–28; Dutens, *Leibnitii Opera Omnia*, III, 390–94.

the appearance of Bouvet's speculations in print under his own name was unconscionable.

After the 1703 publication the mutual concerns of the two men diverged radically. Leibniz's path was straighter and shorter. The binary hexagrams were to him just an application of his greater system, an exotic example but an example just the same. In his remaining thirteen years of life he recurred to the hexagrams at least twice. In a letter to his long-time friend the Jesuit des Bosses, upholding the Jesuit side of the rites controversy, Leibniz explained the binary-hexagram system and included a restricted table of the array.³¹ In the final year of his life he wrote a long and critical review of Chinese philosophy in a letter to Nicholas Remond, a councilor of the duc d'Orléans.³² The final (fourth) section is a study of the Fo Hi topic. Here Leibniz laments that notices of his binary system have been few and its dissemination quite limited. Bouvet discovered it in the figures of Fo Hi, which proves that the "art of combinations" was known to the ancient Chinese. In later times the figures' true use was forgotten and they became mystical symbols, like Kircher's Egyptian hieroglyphs, often interpreted but little understood. The early Chinese exceeded their modern descendants in science and in piety. With this allusion to the contemporary warfare between the Ancients and the Moderns (ammunition for the Ancients) Leibniz left Fo Hi forever.

Between his contact with Bouvet and his death Leibniz made no further advances toward the use of the binary system to devise a universal language of mathematics, one of his aims in creating the system. In 1703–4 he compiled a series of encyclopedic tables and outlined some logical classification schemes similar to those of Wilkins and Delgarno.³³ The *I Ching* did not enter into his ruminations; instead he pondered the old European systems again and again. While he reached many curious and a few monumental conclusions about man and nature the global entity he planned and traced never took shape. The student of the infinity of numbers was not likely to accept a lesser infinity for man.

Bouvet had departed along the line of lesser infinity but for him it extended slightly further in real time, to 1728. For a few years following 1703 Bouvet's surviving letters are again filled with complaints about

³¹K. I. Gerhardt, *Die Philosophische Schriften von Gottfried Wilhelm Leibniz* (Berlin, 1875), II, 382–83.

³²Dutens, *Leibnitii Opera Omnia*, IV, Part II, pp. 169–215.

³³Paolo Rossi, *Clavis Universalis: Arte Mnemoniche e Logica Combinatoria* (Milan: R. Ricciardi, 1960), pp. 248–49.

national rivalries and the rites controversy. In a letter of 3 December 1707 to a native Chinese Jesuit Bouvet wonders if Leibniz ever received his letters.³⁴ In these years, too, Bouvet began a furious correspondence with other Jesuits in China, notably Prémare and de Mailla, on the *I Ching*. His technique of analysis, called “figurism” from the search for Christian figures in pagan writings, spread to other Jesuits but never gained official recognition.³⁵ This did not prevent him from composing long commentaries on the *I Ching* and other books. In 1707 he told Prémare that, God willing, he would demonstrate that not only the Chinese characters but all the major alphabets of the world stem from the hexagrams.³⁶ He petitioned the emperor K’ang Hsi with his ideas and forwarded a prospectus to the Jesuit General. His concepts expanded rather than grew; apocalyptic and messianic figures entered his writings. Bignon, Leibniz’s Jesuit correspondent in Europe, received a letter from Bouvet in 1723 reminding him of a dissertation on the *I Ching* that Bouvet had sent him twenty years earlier and offering to send another, culminating work on the subject.³⁷ In his last year he urged his preoccupation upon the disdainful Father Souciet with the rumble of a receding storm:

The *I Ching* turns entirely on mysterious numbers together with the motions of the stars, from the time of the Prophets until the two advents of the Messiah. The divine numbers of this mysterious period are precisely the same which are found in the Apocalypse of Saint John.³⁸

The numerological framework of Bouvet’s edifice was exposed with the falling away of age. One wonders, though, what inner experience accompanied this outward display.

History has paid more attention to Leibniz because his universe and universals belong to that world of discourse which is the modern world. Bouvet still lived in a cosmos where God could intervene and leave an imprint of His presence made ever more apparent up to the Day of Judgment, expected soon. Leibniz’s papers were collected, edited, published, quoted, and although some still lie in the archives at Hanover Leibniz’s thought is accessible. Bouvet’s conclusions were ridiculed

³⁴Gatty, No. 110.

³⁵“ . . . to bypass the letter in order to penetrate to the spirit, such was the aim of the Jesuit figurists” (Virgile Pinot, *La Chine et la Formation de l’Esprit Philosophique en France* [Paris: Paul Geunther, 1932] p. 347).

³⁶Gatty, No. 101.

³⁷Gatty, No. 40.

³⁸Gatty, No. 100.

immediately after his death by Father Régis, the first translator of the *I Ching* into a European language.³⁹ The manuscript of his major work may be lost, and the content of his minor writings, catalogued as a matter of course by Sommervogel, Pfister, and other Jesuit bibliographers, is quite unknown. After the first major editions of Leibniz's writings—Kortholt and Dutens in the eighteenth century—the correspondence with Bouvet and the letters mentioning Fo Hi vanished from later even more extensive compilations. The nineteenth- and twentieth-century editors of Leibniz have felt even more strongly than the philosopher himself about the dubious value of Bouvet's researches.

The final attitude of the Church toward Bouvet is best summarized by the report of a Lazarist Father who joined the mission of his order, successor to the defunct Jesuit mission in China during the late eighteenth century. When two older Fathers saw the young man cramming himself with Chinese lore preparatory to assuming his duties they conspired to keep from his sight a copy of Bouvet's long treatise on the *I Ching*, saying, "if this book falls into his hands he will lose his reason [se cassera la tête] and spend all his time in reveries like so many before him."⁴⁰ This is consistent with the image of Bouvet's end left by the Scottish trader John Bell who called on the Jesuit "convent" in Peking during the last year of Bouvet's life, seeking his aid in negotiating a pact. He found only Bouvet, wrapped in reveries, a Faustian figure.

The *ignis fatuus* of the Kabala, Hermes, and the hieroglyphs has always been considered a light followed only by bewildered minds. Science, the light of Leibniz, is brighter and illuminates a straighter path—or so the particular development of European culture has assumed. But looking at individual lives and their interactions in letters and in life it is difficult to judge so readily. Both Bouvet and Leibniz constructed universes and filled them with their own light; for a moment at least they illuminated each other.

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³⁹Jean Baptiste de Régis, *Y-King, Antiquissimus Sinarum Liber* (Stuttgart, 1834).

⁴⁰Letter from J. Lamiot (Lazarist missionary) from Peking, 1812–13, *Mémoires de la Congrégation de la Mission*, 27 vols. (Paris, 1876), VIII, 422. Cited in Gatty, p. 33.