CHAPTER SEVEN

ELIXIRS AND ALCHEMY

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DESCRIPTION

Chinese alchemy (*jindan* 金丹, "Golden Elixir," or *lianjin shu* 煉金術, "art of refining gold") developed in two main branches along its two thousand years of documented history. The first branch, *waidan* 外丹 or "external alchemy," focuses on the compounding of elixirs through the refining of natural substances. The second, *neidan* 內丹 or "inner alchemy," aims to regenerate the primary constituents of the cosmos and the human person. Although the two designations are conventional (Robinet 1991), they are generally accepted in Chinese, Japanese and Western language studies.

Research on the history, doctrines and practices of *waidan* is limited by the number of available sources, along with the unknown or uncertain date and complex language of many documents. Despite these limitations and ambiguities, the received texts do provide evidence of a basic feature: their transmission and their relationship to the doctrinal and textual corpus show that the history of *waidan* has been characterized by a progressive shift of concern from the world of gods and demons to abstract cosmological speculation. This transition culminated around the sixth-seventh centuries, and not only affected the history of *waidan* but also paved the way for the rise of *neidan*.

HISTORY

EARLIEST REFERENCES. Virtually nothing is known about the origins of alchemy in China or about the people who first sought elixirs. Early scriptures ascribe their teachings and methods to revelations granted by immortals and divine beings, and do not provide reliable historical details. The belief in a medicine of immortality (*xianyao* 仙藥), typically found on remote mountains and islands (Needham et al.1976, 1-12), must have paralleled the early development of *waidan*, but reciprocal influences can hardly be assessed beyond their partially shared background.

Despite speculations on **Zou Yan**'s 鄒衍 (ca. 350-270 B.C.E.) role in the origin of alchemy, no extant source documents his relation to *waidan*, and

no text on the elixirs was ever ascribed to him. The writings of the cosmological school of thought (*Hanshu* 30), of which Zou Yan is traditionally considered the founder, dealt with numerology and astrology, and extant fragments of works attributed to him are mainly concerned with the theory of dynastic succession (Needham 1956, 236-38; Sivin 1995, 10-12). Equally questionable is the relevance of an edict by Emperor Jingdi (r. 156-141) issued in 144 B.C.E. which forbids the counterfeiting of gold (*Hanshu* 5; Dubs 1938-55, 1: 323). While some scholars have seen in this document the earliest allusion to alchemical processes in any civilization, the edict did not ban the making of elixirs but rather the private coining of money. According to Ying Shao's 應劭 (ab. 140-206) commentary, it abrogated a decree of the previous emperor who had allowed people to cast coins without authorization.

The earliest mention of alchemy in China occurs in connection with the *fangshi* 方士 ("masters of the methods"), specialists in cosmological and esoteric arts employed by rulers from the fourth century B.C.E. (Ngo 1976; DeWoskin 1981). Although few *fangshi* were skilled in elixir compounding, later tradition credits some of them with the transmission of alchemical texts and practices. The first is Li Shaojun 李少君 who, around 133 B.C.E., suggested that Han Wudi's attempts to attain immortality would have benefited from the transmutation of cinnabar into an elixir. Eating and drinking from vessels made of alchemical gold would prolong the emperor's life and enable him to meet transcendent beings (*Shiji* 28; trl. Watson 1961, 2: 39).

Elixir ingestion is first mentioned in the *Yantie lun* 鹽鐵論 (Discourse on Salt and Iron; Sivin 1968, 25-26), dating from ca. 60 B.C.E. Around the same time, details on alchemical texts emerge for the first time in connection with Liu Xiang's 劉向 (first c. B.C.E.) failed attempt at making alchemical gold (*Hanshu* 36; Needham et al.1976, 13-14, 35). Liu apparently was inspired by a work now lost, the *Hongbao yuanbi shu* 鴻寶苑秘術 (Arts from the Garden of Secrets of the Great Treasure), that contained techniques for conjuring spirits and for making gold along with "important methods by Zou Yan for prolonging life." Bibliographic sources confirm that this and other writings compiled under the patronage of Prince Liu An 劉安 of Huainan (180-122) included sections devoted to alchemy (Le Blanc 1985, 43-45; Roth 1992, 23-25; trl. of fragments in Needham et al.1976, 25-26). No explicit reference to alchemy appears in the *Huainanzi* 淮南子 (Writings of the Master of Huainan), but this work contains a passage on the natural evolution of minerals, a prominent notion in later *waidan* theory (see *infra*).

THE TAIQING TRADITION. Valuable documentation on the next historical stage of *waidan* is available in **Ge Hong**'s 葛洪 (283-343) *Baopuzi neipian* 抱朴子內篇 (Inner Chapters of the Master Who Embraces Simplic-

ity, CT 1185, 20 j.; trl. Ware 1966; also Feifel 1941-46), first completed around 317 and revised around 330. Born into a family of the southern aristocracy near present-day Nanjing, Ge Hong became a disciple of Zheng Yin 鄭隱 at the age of fourteen and studied under him for five years. He later served the imperial administration in various capacities. While Ge Hong acknowledges that he had not compounded any elixir by the time he wrote his *Baopuzi* (Ware 1966, 70), hagiographic accounts state that he retired to Mount Luofu late in life to devote himself to alchemical practices (see Ware 1966, 6-21; Davis 1934; Ôfuchi 1958; Chen 1980.)

In his work, Ge provides an overview of the religious, medical, exorcistic and esoteric practices prevalent in the southeastern region of Jiangnan, partly based on passages copied or summarized from scriptures that he had received from Zheng Yin (Robinet 1997, 78-113). Two chapters of the *Baopuzi* are especially devoted to alchemy. One (j. 4) focuses on the *Taiqing jing* 太清經 (Scripture of Great Clarity), the *Jiudan jing* 九丹經 (Scripture of the Nine Elixirs) and the *Jinye jing* 金液經 (Scripture of the Golden Liquor), whose methods are mostly based on minerals. The other (j. 16) contains recipes centered on metals. Ge Hong says that the ritual context of the two sets of practices was similar, but the scriptures were transmitted by different lineages (Ware 1966, 261). In addition, the *Baopuzi* quotes, summarizes or alludes to many other *waidan* methods, mostly from unknown sources (Needham et al.1976, 81-113).

References in later texts show that the three scriptures mentioned above formed the nucleus of the main alchemical corpus in early China. Their extant versions in the Daoist canon acquaint us with doctrines, rites and techniques of the early *waidan* tradition, named Taiqing 太清 (Great Clarity) after the Heaven that bestows their revelation (Pregadio 1991). Bearing no traces of re-editing by any single author or subtradition, these texts display a marked consistency in their main features: the same divinities confer their revelation; similar ceremonies regulate their transmission and the performance of their practices; communication with divine beings and expulsion of dangerous spirits are among the main purposes of the methods that they describe; and the major features of the techniques they expound are common to all of them.

Ge Hong's testimony also provides information on the history and nature of *waidan* in the early Six Dynasties. The three main texts, he says, were first brought to Jiangnan by Zuo Ci 左慈, a *fangshi* who had received them in revelation in Shandong at the end of the second century (Ware 1966, 69-70; Ngo 1976, 138-39). The *Baopuzi* closely reflects the interaction of the imported alchemical disciplines with the practices of the native southern tradition, which involved the ingestion of preparations based on plant products for exorcistic and therapeutic purposes (Yamada 1989). The elixirs shared

with them the power of healing illnesses and keeping away harmful spirits. At the same time, Ge Hong often emphasizes that alchemy grants access to higher spiritual realms and is therefore superior to healing, exorcism and other practices such as gymnastics, breathing or sexual techniques.

SHANGQING DAOISM AND ALCHEMY. Despite Ge Hong's claim, the alchemical practices described in the early *waidan* corpus and in the *Baopuzi* represent only an intermediate stage—both historically and doctrinally—between the local traditions of Jiangnan and the later developments in the religious history of the same area. For the history of Chinese alchemy, the first and most important of these developments were the Shangqing (Highest Clarity) revelations of 364-70. These led to a hierarchical rearrangement of the southern religious customs and their historical or legendary representatives which assigned *waidan* a place higher than that of ritual and exorcistic practices—in a way similar to Ge Hong's—but lower relative to the techniques privileged by Shangqing, especially meditation (Robinet 1984, 1: 35-48). Some earlier *waidan* figures (including Zuo Ci) found a place in the Shangqing rosters of semi-divine beings, and some Shangqing adepts did practice elixir compounding. The most distinguished among these was **Tao Hongjing** 陶弘景 (456-536) who experimented with *waidan* in the first decade of the sixth century (Strickmann 1979, 143-51). Descriptions of alchemical practices found in Shangqing sources, however, include traits obviously related to meditation: in this tradition, the symbolic features of *waidan* became one of several available supports for visualization practices. Their emphasis on the inner aspects of the alchemical work anticipates traits that later characterize *neidan* (Strickmann 1979, 169-78; Robinet 1984, 1: 176-80).

Of equal importance for the history of alchemy is the continuity between the Taiqing scriptures and the Shangqing *waidan* sources. Language, techniques and rites are largely the same. This suggests that earlier texts were modified upon their incorporation into the Shangqing corpus, leaving the original core untouched. With the possible exception of the high number of elixir ingredients, in fact, no *waidan* technique can be identified as typical of Shangqing. Particularly notable is that the firing processes used in its texts are the same as those described in the *Nine Elixirs* (cf. Sivin 1980, 268-70 for a different view).

The inclusion of alchemical scriptures and methods in the Shangqing textual and doctrinal corpus marked the first encounter between *waidan* and an established Daoist movement. Relations between Daoism and alchemy were formally reaffirmed at the beginning of the sixth century, when the texts of the Taiqing tradition were included in one of the Four Supplements of the Daoist canon.

THE *ZHOUYI CANTONG QI* AND THE RISE OF *WAIDAN* COSMOLOGY. By the time the Taiqing tradition gained formal recognition, other lineages in Jiangnan had given rise to new patterns of *waidan* practice that were to play an important role in the history of alchemy, and eventually lead to the demise of *waidan* itself. While the Taiqing and Shangqing alchemical texts emphasized the performance of rites, a large number of later sources borrowed the language and emblems of the ***Yijing*** 易經 (Book of Changes) and of correlative cosmology to describe stages of cosmogony and corresponding cosmological configurations. Related practices were based on the compounding of an elixir made of lead and mercury, which replaced the broader range of ingredients typical of Taiqing and Shangqing alchemy.

The scripture that had the greatest influence on this shift was the *Zhouyi cantong qi* 周易參同契 (Token for the Agreement of the Three According to the "Book of Changes;" trl. Zhou 1988, with a strong *neidan* bias; also Wu and Davis 1932). Traditionally attributed to the legendary immortal Wei Boyang 魏伯陽, the text in its original Han version probably was an apocryphon of the *Yijing*, containing cosmological speculations. During the Six Dynasties, the text circulated in Jiangnan (Pregadio forthcoming). Although some scholars have suggested that the received text was fabricated in the Tang (e.g., Fukui 1974, 29-30, and Chen G. 1983, 352-55), during the Six Dinasties the *Cantong qi* circulated in Jiangnan (Pregadio forthcoming). A poem by Jiang Yan 江淹 (444-505; trl. Waley 1930, 8), in particular, shows that it was used in connection with elixir compounding by 500 C.E. The text we have today was completed by about 700 C.E. (For more details on the early history of *Cantong qi* see the chapter "Inner Alchemy").

The **lineages** that transmitted the alchemical *Cantong qi* during the Six Dynasties are unknown, but early materials for the study of the cosmological aspect of *waidan* are found in the fragmentary corpus of texts attributed to the legendary Hugangzi 狐剛子. After the writings quoted in chapter 16 of the *Baopuzi*, these are the first alchemical works to favor metals—especially lead and mercury—over minerals (Zhao 1985; Chen 1983, 303-9). Hagiographic accounts that describe Hugangzi as the disciple of Wei Boyang, and as the teacher of Ge Hong, imply that his lineage originated in Jiangnan; citations of his works in the seventh-century commentary to the "Nine Elixirs" show that the body of writings ascribed to him developed during the late Six Dynasties. The continuity between the earlier and the later alchemical traditions of southern China is also demonstrated by the early Tang *waidan* commentary to the *Zhouyi Cantong qi zhu* (CT 1004), which includes quotations of methods attributed to Hugangzi along with references to the scripture of the "Nine Elixirs" (Pregadio forthcoming).

TANG ALCHEMY. Under the influence of the ***Cantong qi***, alchemy was transformed from an instrument for communicating with supernatural beings to a support for intellectual speculation on the principles of being and the cosmos. This new model of alchemical theory and practice is not only visible in a substantial portion of Tang and Song *waidan* works, but also was a requisite for the devopment of *neidan*, which shares portions of its system with *waidan* and borrows some of its vocabulary. While *waidan* and early *neidan* co-existed for about five centuries, *waidan* continued to predominate during the Tang, a time often called "the golden age of Chinese alchemy." The main trends of this period attest to the decline of the Taiqing tradition, paralleled by the growing importance acquired by doctrines and practices related to the *Cantong qi*.

No major original Taiqing works were produced after the Six Dynasties. The "Scripture of Great Clarity," consisting of three chapters in Ge Hong's time, was expanded to twelve chapters in the tenth century (*Nihonkoku genzai sho mokuroku* 日本國見在書目錄, sect. 37) and contained no less than sixty-two chapters in the Yuan canon (CT 1430, 2.2b). Materials added, however, consisted not only of alchemical methods but also of texts on *yangsheng* or Nourishing Life (Chen 1983, 491-96). The two main **Taiqing sources** dating from the Tang, then, consist of selections of *waidan* methods from these larger compilations. The better known is the *Taiqing danjing yaojue* 太清丹經要訣 (Essential Instructions from the Scriptures on the Elixirs of Great Clarity; *Yunji qiqian* 71; trl. Sivin 1968, 145-214), attributed to the physician and pharmacologist Sun Simiao 孫思邈 (581-682; see Sivin 1968, 81-144). His work is textually cognate with the other main Taiqing compilation of this period, the *Taiqing shibi ji* 太清石壁記 (Records from the Stone Wall of the Great Clarity, CT 881).

The decline of the Taiqing tradition resulted in a tendency to focus the alchemical process on two major practices: the refining of mercury from cinnabar and the conjunction of lead and mercury. The importance gained by the former is documented in the works of Chen Shaowei 陳少微, an alchemist active in the eighth century who claimed descent from Xu Xun 許遜. Chen provides an elaborate account of the formation, varieties and symbolism of cinnabar (Sivin 1980, 237-40), and outlines a complex method for its refinement. With no explicit mention of the *Cantong qi* and no obvious reference to its system, his description of the process uses cosmological language and emblems, notably, in the portions on the stages of firing (Sivin 1980, 270-74).

The increased importance of the cinnabar-mercury methods in Tang *waidan* was countered by advocates of the other main practice, based on the conjunction of lead and mercury. Some Tang sources show that the rise to prominence of the *Cantong qi* was paralleled by arguments concerning the relative merits of the two processes (Ren 1990, 415; Chen 1983, 277). These

sources reflect the importance progressively acquired by lead and mercury through their explicit rejection of cinnabar and mercury, with the usual rationale that *yin* (mercury) or *yang* (cinnabar) alone cannot produce the elixir. Historically, the lead-mercury theory was the successful model. Virtually all major doctrinal developments of Tang *waidan* are directly related to the supremacy gained by the tradition of the *Cantong qi*, whose representatives took alchemical theory to maturity.

Literati and emperors. The Tang period is also known for the interest in alchemy shown by literati and certain emperors. The former is visible in poems by Li Bo 李白 (701-762; Waley 1950, 55-56) and Bo Juyi 白居易 (772-746; Ho, Goh, and Parker 1974; Yoshikawa 1997), both attracted to the *Cantong qi*. Other poets—Meng Haoran 孟浩然 (689-740), Liu Yuxi 劉禹錫 (772-843) and Liu Zongyuan 劉宗元 (773-819)—also refer to elixir compounding in their works. The trend continued in Song and later times when the focus of interest shifted to *neidan* (Ho 1985, 195-203).

Imperial patronage of alchemical practices, an early example of which was seen with Li Shaojun, continued throughout and intensified in the Tang (Li 1994). During the Six Dynasties, several emperors had issued orders to compound alchemical medicines for their own benefit (Needham et al.1976, 117-19, 131-32). Under the Tang, the imperial fascination with alchemy resulted in the death of at least two sovereigns due to elixir poisoning. According to the materials collected by Zhao Yi 趙翼 (1727-1814) in his *Nian'er shi zhaji* 廿二史箚記 (Notes on the Twenty-two Dynastic Histories; 1799), Xianzong (r. 805-20), Wuzong (r. 840-46) and Xuanzong (r. 846-59) died after ingesting elixirs. Doubts, however, have been raised as to the exact circumstances of Xianzong's death (Barrett 1996, 78-79). Muzong (820-24), too, may have died of elixir ingestion, and Jingzong (824-27) certainly was involved in elixir compounding. Some alchemical sources also provide details on the emperors' relation to *waidan*: one of the compounds described in the *Tongxuan bishu* 通玄秘術 (Secret Arts for Penetrating the Mystery, CT 942, 14b-15a), for example, is said to have been presented to Yizong (r. 859-73).

Instances of elixir poisoning are also documented in other milieux. It has been suggested that Chinese alchemists either ignored the toxicity of some ingredients, tried to neutralize it with antidotes, or interpreted symptoms of poisoning as collateral effects (Ho and Needham 1970; Ho 1985, 184-87). In some instances, as indicated by Michel Strickmann (1979, 136-38), deadly preparations may also have been consciously ingested by alchemists as a means to accelerate their ascension to the ranks of celestial bureaucracy.

The shift to *neidan*. Although elixir poisoning is sometimes designated as a reason for the decline of *waidan* after the Tang, the shift to *neidan* was

the result of a much longer and more complex process. As shown by some texts that emphasize their close relation, *waidan* and early *neidan* developed together throughout the Tang (Needham and Lu 1983, 218-29). Not only did *waidan* inspire the rise and growth of *neidan*, but influences also occurred in the opposite direction, with *neidan* contributing to the priority accorded to lead-mercury processes in *waidan* and influencing its language accordingly. The association between *waidan* and *neidan* is visible in a number of Tang and later texts, difficult to classify under either label because their doctrinal aspects apply to both.

On the other hand, most *waidan* sources since the Song consist of anthologies from earlier works (Needham et al.1976, 196-208) or deal with metallurgical methods (*huangbai shu* 黃白術). Imperial interest in alchemy continued, with Zhenzong (r. 997-1022) establishing a laboratory in the Imperial Academy, and Wang Jie 王捷 offering the emperor "artificial gold and silver amounting to many tens of thousands of cash" (Needham et al.1976, 184-85, 186-90). Texts were written and elixirs also were compounded later (Ho 1985, 210-17), but after the Tang virtually the whole soteriological import of alchemy was transferred to *neidan*.

Texts

THE *WAIDAN* CORPUS. *Waidan* literature consists of works devoted to doctrinal foundations, descriptions of single methods, anthologies, commentaries on earlier texts, and writings on *materia medica*. About one hundred *waidan* works are contained in the Daoist canon, including some in the *Yunji qiqian* (CT 1032; Lagerwey 1982, xlv). Certain sources have come down to us also outside of the canon (Zhang 1981, 25-30), but many have been lost (Chen 1963, 398-419).

Two studies by Ho Peng Yoke (1979) and Chen G. (1983, 285-381) illustrate useful techniques for dating alchemical texts (see also Sivin 1968, 59-80). This is a significant issue since no more than ten sources bear reliable dates, and at present only two dozen or so of the others can be dated with adequate accuracy. Until more work is done along the lines set by these studies, the best way to deal with the *waidan* corpus as a whole is to classify texts according to broad historical stages and subcategories based on content, genre and relation to known lineages and trends. Historical studies of alchemical terminology can also help in dating sources and establishing groups of cognate texts, but so far only one pioneering attempt has been made in this direction (Chen 1983, 1-283).

The following survey is loosely arranged according to the above criteria. More detailed systematic overviews of the *waidan* literature include Needham et al.1976, 50-220; Zhang 1981; Zhao 1989; Meng 1993a, 41-117; and

the relevant entries in Ren and Zhong 1991. For an annotated bibliography of research in Western languages see Pregadio 1996.

TAIQING TEXTS AND THEIR RECEIVED VERSIONS. The early *waidan* corpus is based on the three main works summarized by Ge Hong in *Baopuzi* 4. The first is the ***Taiqing jing***. The original text is lost, but Ge Hong's summary matches quotations in the *Taiqing jing tianshi koujue* 太清經天師口訣 (Oral Instructions of the Celestial Master on the Scripture of the Great Clarity, CT 883, 15 pp.), which dates from the Six Dynasties (Pregadio 1991, 571-74). Although the "Oral Instructions" does not make a reconstruction of the whole process possible, the text includes significant materials such as those on the ritual of transmission and on the preparation of the crucible.

The second scripture is the ***Jiudan jing*** or *Nine Elixirs*, extant in two versions: in the *Huangdi jiuding shendan jingjue* 黃帝九鼎神丹經訣 (Instructions on the Scripture of the Divine Elixirs of the Nine Tripods of the Yellow Emperor, CT 885), which also has an anonymous commentary in nineteen chapters dating from the latter half of the seventh century; and in the *Jiuzhuan liuzhu shenxian jiudan jing* 九轉流珠神仙九丹經 (Scripture of the Liquid Pearl in Nine Cycles and of the Nine Elixirs of the Divine Immortals, CT 952, 2 j.), written no later than the early Tang (Meng 1993a, 103-6). The *Nine Elixirs* is one of the few texts that describe a complete alchemical process, from the preliminary rites to the ingestion of the elixir (Pregadio 1991, 582-606). It includes an introduction on the revelation of the methods, the properties of the alchemical medicines and various ritual rules, and the methods for making two preliminary compounds and the Nine Elixirs.

Ge Hong's citations from the third text, the ***Jinye jing*** or *Scripture of the Golden Liquor* (Ware 1966, 89-91), are extremely synthetic and are not arranged in the correct sequence. The method becomes clearer in the received version, with a commentary, found in the first chapter of the *Baopuzi shenxian jinzhuo jing* 抱朴子神仙金汋經 (Scripture of the Golden Liquid of the Divine Immortals, by the Master Who Embraces Simplicty, CT 917, 3 j.; Meng 1993a, 67-69; Pregadio 1991, 574-78). The other two chapters include the whole j. 4 of the *Baopuzi*. Quotations in the *Xiaodao lun* (Laughing at the Dao; Kohn 1995, 127-29) from both text and commentary show that the present version took shape before 570 C.E.

The ***Sanshiliu shuifa*** 三十六水法 (Methods of the Thirty-six Aqueous Solutions, CT 930, 12 pp.) is concerned with preparations used as intermediate stages in the compounding of elixirs, and is often cited in the texts mentioned above. The received text (trl. Ts'ao, Ho, and Needham 1959, exc. last sect. on ritual) contains fifty-nine methods for the solution of forty-two minerals (Needham et al.1980, 167-210; Meng 1993a, 91-96). Quotations in the commentary to the *Nine Elixirs* show that the methods for the

last seven substances were added to those for the first thirty-six (one of which is missing in the current text) before the end of the seventh century.

Another early method of the Golden Liquor is found in the ***Taiqing jinye shendan jing*** 太清金液神丹經 (Scripture of the Divine Elixir of the Golden Liquor of the Great Clarity, CT 880, 3 j.; see Chen 1983, 289-92; Meng 1993a, 57-59). While the process described in the *Jinye jing* was bestowed by Yuanjun on Laozi, the present version was revealed by the Great One (Taiyi). The first part of the text (1.1a-14b) shares passages with the *Nine Elixirs* and may include portions from as early as the Han. It is centered on a section in verses (1.13a-14b) said to have formed by the spontaneous condensation of *qi* (pneuma, energy), and later translated into a language comprehensible to humanity by the immortal Yin Changsheng 陰長生. The third and final chapter dates from the early sixth century and contains an imaginary description of Western countries that produce minerals and other drugs (see Maspero 1950).

SHANGQING *WAIDAN* TEXTS. The Shangqing textual corpus contains two important *waidan* works. The first is the ***Taiji zhenren jiuzhuan huandan jing yaojue*** 太極真人九轉還丹經要訣 (Essential Instructions on the Scripture of the Elixir Reverted in Nine Cycles, by the Perfected of the Great Ultimate, CT 889, 7 pp.). It contains the recipe of the Elixir of the Nine Cycles, two methods for compounding minor drugs and an account of five *zhi* 芝 ("fungus;" supernatural plants that only adepts can recognize as such) planted on Maoshan by the Shangqing saint Mao Ying 茅盈. The three parts were appended to Mao Ying's revealed biography from earlier sources (Robinet 1984, 2: 389-98), then separated from it to form the present text. The main method (Strickmann 1979, 146-50, 170) is cast as a revelation by Xicheng Wangjun 西城王君 (i.e., Wang Yuan 王遠), but this is the only explicit mark of its connection with the Shangqing tradition. Alum, nodular malachite, quartz, cinnabar, realgar, orpiment and mercury are heated in six stages of nine days each. Firing is then interrupted for ten days, and started again for thirty-six days. The extremely detailed instructions on the luting mud make up about one third of this text.

The second work is the ***Taiwei lingshu ziwen langgan huadan shenzhen shangjing*** 太微靈書紫文琅玕華丹神真上經 (Supreme, Divine and Veritable Scripture on the Elixir Flower of Langgan, from the Sacred Writ in Purple Characters of the Heaven of Great Tenuity, CT 255, 8 pp.). It was once part of the *Lingshu ziwen* 靈書紫文, one of the main Shangqing scriptures (Robinet 1984, 2: 101-10; trl. Bokenkamp 1997, 331-39). The *Langgan shangjing* is divided into four sections, the first of which describes an elixir obtained from fifteen ingredients. While techniques and language of this portion are close to those of the Taiqing scriptures, the other three sections describe a meditation practice in typical Shangqing

imagery. The elixir obtained at the end of the first stage undergoes further refining and is finally planted under the earth. The tree generated from this seed is equivalent to the *langgan* 琅玕 tree that grows on Mount Kunlun, and eating its fruits confers immortality (Schafer 1978; Strickmann 1979, 134-36, 176).

TANG COMPILATIONS. Two Tang anthologies, textually related to each other (Sivin 1968, 76-79) and valuable for the study of the relations between alchemy and pharmacology, have survived as witnesses of the Taiqing tradition. The first is the ***Taiqing danjing yaojue*** 太清丹經要訣 (Essential Instructions from the Scriptures on the Elixirs of the Great Clarity; *Yunji qiqian* 71), a compilation of methods attributed to Sun Simiao (trl. Sivin 1968, 145-214; see also Needham et al.1976, 132-38). The text contains more than thirty recipes, chosen by Sun from among those that give clear directions and that he himself had tested. The second work is the ***Taiqing shibi ji*** 太清石壁記 (Records from the Stone Wall of the Great Clarity, CT 881, 3 j.), edited in 758 or 759 on the basis of an earlier version ascribed to Su Yuanming 蘇元命 (or Su Yuanlang 朗), who is also traditionally associated with the rise of *neidan* (Baldrian-Hussein 1989-90, 165-67). The *Shibi ji* consists of a collection of over sixty recipes (Meng 1993a, 46-48), many of which describe the medical properties of the elixirs. The third chapter is mainly concerned with the rules and effects of elixir ingestion (Needham and Lu 1974, 282-94 passim).

The nineteen-chapter **Commentary to the *Nine Elixirs*** (*Huangdi jiuding shendan jingjue*, CT 885, 20 j.; Pregadio 1991, 560-70; Meng 1993a, 59-61) is also partially rooted in the Taiqing tradition. This *summa* of pre-Tang alchemy elaborates on the major themes of the *Nine Elixirs* through a large number of quotations from other works. The mentions of personal and place names, the use of measures of weight and volume, and the avoidance of tabooed characters show that the commentary dates from the latter half of the seventh century (Pregadio 1991, 608-13). The introductory chapters concern the general principles and the ritual features of the alchemical practice. Sections on elixir compounding describe methods for preparing the crucible, obtaining aqueous solutions of various minerals and making other preliminary preparations. Several chapters focus on single substances and their use in elixirs. Substantial portions of the introductory chapters consist of passages quoted from the *Baopuzi*, while the main identifiable sources of the methods are the lost works attributed to Hugangzi and almost all descriptions of the ingredients come from Tao Hongjing's *Bencao jing jizhu* 本草經集注 (Collected Commentaries on the Canonical Pharmacopoeia; ca. 500 C.E.).

Works by Chen Shaowei. Two works by Chen Shaowei, originally a single treatise written about 712, are the best examples of the importance

acquired by cinnabar-mercury methods during the Tang (Needham et al.1976, 141-43; Meng 1993a, 71-74). The first, entitled *Dadong lian zhenbao jing xiufu lingsha miaojue* 大洞煉真寶經修伏靈砂妙訣 (Wondrous Instructions on Fixing Cinnabar, Supplementary to the Scripture of the Great Cavern on Refining the Real Treasure, CT 890, 4 + 21 pp.), describes a method for refining cinnabar in seven stages. The product of each cycle can be ingested or used as the main ingredient of the next cycle. The second text, *Dadong lian zhenbao jing jiuhuan jindan miaojue* 九還金丹妙訣 (Wondrous Instructions on the Golden Elixir Ninefold Reverted, Supplementary to the Scripture of the Great Cavern on Refining the Real Treasure, CT 891, 17 pp.), describes how the product of the seventh stage is refined into a Reverted Elixir (*huandan* 還丹) through an elaborate firing method. The descriptions of the varieties of cinnabar and the firing system are among the most interesting features of Chen Shaowei's works (Sivin 1980, 237-40 and 270-74).

***Waidan* commentaries to the *Zhouyi cantong qi*.** Most *waidan* sources since the eighth century belong to the cosmological tradition. Among them are the only two surviving *waidan* commentaries to the *Cantong qi* (Pregadio forthcoming). The *Zhouyi cantong qi zhu* (CT 1004, 2 j.) interprets passages of the *Cantong qi* as being concerned with a lead-mercury compound called Elixir of Correct Yang (*zhengyang dan* 正陽丹). Mentions of place names as well as citations of earlier sources and avoidance of tabooed characters, suggest that this anonymous commentary dates from ca. 700 C.E. (Chen 1983, 377-78). The received version lacks its second half, but internal evidence suggests that the commentary originally treated the entire scripture. It also bears traces of connections with the earlier *waidan* tradition: references to the *Nine Elixirs* and to writings of Hugangzi suggest that its roots lie in the *waidan* lineages of Jiangnan during the Six Dynasties.

The second Tang commentary is the *Zhouyi cantong qi* (CT 999, 3 j.), ascribed to Yin Changsheng. Although highly cosmological in content, occasional mentions of actual practices show that it originated in a *waidan* environment and probably in the seventh century (Chen 1983, 377). The text's dating is supported by textual correspondences between the recension of the *Cantong qi* included here and the one found in the other Tang commentary mentioned above. Moreover, as shown by Meng (1993b: 5-30), citations of the *Cantong qi* in Tang texts match the readings of both recensions.

TANG DOCTRINAL TEXTS. Several *waidan* works of the Tang, also loosely related to the *Cantong qi*, are concerned with the doctrinal foundations of alchemy. There is first the ***Zhang zhenren jinshi lingsha lun*** 張真人金石靈砂論 (Treatise of the Perfected Zhang on Metals, Stones and Cinnabar, CT 887, 10 pp.), whose author, Zhang Jiugai 張九垓, is also said to have written a commentary to the *Zhuangzi*. Dating from between 742 and 770, the text divides into twelve sections that describe several sub-

stances or compounds with their cosmological associations, functions in alchemical methods and actions on the human body (Needham et al.1976, 143-45; Meng 1993a, 76-78; Kaltenmark 1974-75). It is one of the earliest datable sources to criticize the use of cinnabar as the main elixir ingredient and advocate processes based on lead and mercury.

Alchemical doctrine is also the subject of two mid-Tang texts that discuss the "theory of categories". The first, entitled ***Wei Boyang qifan dansha jue*** 魏伯陽七返丹砂訣 (Wei Boyang's Instructions on the Cinnabar Obtained in Seven Cycles, CT 888, 7 pp.), dates from before 806 and includes a commentary compiled sometime before the middle of the twelfth century (Ho 1979, 26-27). Its opening portion is also found in the ***Cantong qi wu xianglei biyao*** 參同契五相類秘要 (Secret Essentials of the Five Categories, from the *Token for the Agreement of the Three*, CT 905, 6 pp.), which has a commentary by Lu Tianji 盧天騭 (dat. 1111-17; see Ho 1979, 19-27; trl. Ho and Needham 1959; also Needham et al.1980, 317-20; Meng 1993a, 63-65). The two texts are remarkable in that they describe relations between several substances but do not emphasize the role of lead and mercury.

The latter substances, however, feature prominently in a group of four cognate texts, including the *Tongyou jue* 通幽訣 (Instructions for Penetrating into Obscurity, CT 913, 28 pp.), probably by Chen Shao 陳邵; the *Huandan zhouhou jue* 還丹肘後訣 (Practical Instructions on the Reverted Elixir, CT 915, 3 j.); the *Hongqian ru heiqian jue* 紅鉛入黑鉛訣 (Instructions for Compounding Red Lead [= Real Mercury] and Black Lead [= Real Lead], CT 941, 6 pp.); and the *Yuqing neishu* 玉清內書 (Inner Writings of the Jade Clarity, CT 947, 22 pp.). The four texts share several passages and cite the same sources. While portions of them may be from as late as the Song period (Sivin 1980, 232), the *Yuqing neishu* provides a definite indication of its date in the sentence "at present, in the Great Tang..." (3b), and the *Huandan zhouhou jue* includes a postscript dated 875 (3.10a-11b). The four texts deal with theories concerning cinnabar, mercury, lead, the cycles of heating, the principle of alchemical "projection" and other topics. With their abstract language and their frequent allusions to natural substances as emblems of cosmological principles, they are among the best examples of texts showing facets of alchemical theory that apply to both *waidan* and early *neidan*.

TANG TEXTS ON *MATERIA MEDICA*. Only a few Tang alchemical works on *materia medica* are extant. The *waidan* text closest in format and style to the standard pharmacopoeias is the *Jinshi bu wujiu shu jue* 金石簿五九數訣 (Instructions on an Inventory of Forty-Five Metals and Minerals, CT 907, 10 pp.), concerned with substances used as elixir ingredients (Needham et al.1976, 138-40; Meng 1993a, 53-54; Pregadio 1997). While entirely neglecting their medical properties, its entries describe places of

origin, shapes and properties of the samples, many of which come from foreign countries or from the periphery of the Tang empire. The work dates from after 686.

The *Shiyao erya* 石藥爾雅 (Synonymic Dictionary of the Mineral Materia Medica, CT 901, 2 j.) is a lexicon of terms used in *waidan* (Needham et al.1976, 151-57). Compiled by Mei Biao 梅彪 in 806 C.E., it contains over six hundred synonyms of mineral, vegetal, animal, human substances and laboratory instruments. The second chapter includes names and synonyms of elixirs, names of alchemical methods and a list of about one hundred texts that is sometimes useful for dating purposes. Chen Guofu's notes on this work (1983, 383-442) and Wong Shiu Hon's repertoire of *waidan* and pharmacological terms (1989) provide a wealth of supplementary materials on alchemical nomenclature and bibliography.

The *Danfang jianyuan* 丹方鑑源 (Mirror-Origin of the Alchemical Methods, CT 925, 3 j.), finally, was compiled by Dugu Tao 獨孤滔 in the middle of the tenth century. It is a later version of a text entitled *Danfang jingyuan* 丹房鏡源 (Mirror-Origin of the Chamber of the Elixirs), written in the middle of the eighth century and partially preserved in the *Qianhong jiageng zhibao jicheng* 鉛汞甲庚至寶集成 (A Complete Collection on the Perfect Treasure Made of Lead and Mercury, *jia* [= Real Mercury] and *geng* [= Real Lead], CT 919, 5 j.). The *Danfang jianyuan* includes short notes on the properties of about 240 substances classified into 25 sections according to their nature, appearance or color (Fung and Collier 1937; Needham et al.1976, 180-81; Meng 1993a, 65-67). Both versions are available in a critical edition compiled by Ho Peng Yoke (1980), based on a Japanese manuscript that derives from a portion of the Daoist canon re-engraved after 1445 (see Barrett 1994).

SONG AND LATER TEXTS. Not unexpectedly, the boundary between *waidan* and *neidan* becomes very subtle in one of the main Song texts on alchemical theory, the *Danfang aolun* 丹房奧論 (A Profound Treatise on the Chamber of the Elixirs, CT 920, 16 pp.). After a preface dated 1020 and signed by its author, Cheng Liaoyi 程了一, the 16 sections of the work describe various facets of the alchemical doctrines. *Waidan* undoubtedly is behind this treatise (Meng 1993a, 100-3), but some of its notions and terms seem to anticipate the *Wuzhen pian* 悟真篇 (Essay on Awakening to the Truth), a major *neidan* text written about fifty years later.

The *Danfang xuzhi* 丹房須知 (Essential Knowledge for the Chamber of the Elixirs, CT 900, 14 pp.) bears a preface dated 1163. Its author, Wu Wu 吳務, also wrote a *neidan* text, the *Zhigui ji* 指歸記 (Pointing Back to Where One Belongs: A Collection, CT 921, 3 + 9 pp.). Divided into twenty sections which describe, in logical sequence, the steps necessary to compound an elixir based on lead and mercury, this is one of the few *waidan* cosmological works that provides details on alchemical ritual (Meng 1993a, 69-71;

Sivin 1980, 289-90). However, the *Danfang xuzhi* consists almost entirely of quotations from other sources—including a *neidan* work, the *Ruyao jing* 入藥鏡 or "Mirror for Compounding the Medicine"—and even the process it describes may have been constructed based on descriptions found in earlier works. (Modern reprints of the *Daozang* lack one page of this text; see Boltz 1993, 92.)

Apparently the latest *waidan* text in the Daoist Canon is the *Chunyang Lü zhenren yaoshi zhi* 純陽呂真人藥石製 (The Preparation of Medicinal Stones, by the Perfected Lü of the Pure Yang, CT 903, 11 pp.). According to Ho Peng Yoke and Chen Tiefan (1971), rhymes and plant names suggest a date of compilation around 1400 (see also Ho 1979, 28-51). The text, which we can read in a fine, poetical translation (Ho, Lim, and Morsingh 1973), gives descriptions of 67 plants, one of which is missing in the received version (Needham et al.1976, 147-48; Meng 1993a, 106-11).

Worldview

MAIN FEATURES. The definition of alchemy varies according to the emphasis given to its religious, spiritual, intellectual, technical or proto-scientific features. Most scholars, however, agree that the purpose of the alchemical practice is to accomplish a transmutation that affects not only the elixir ingredients but also the person who achieves it. As part of this larger process, the practice provides ritual and symbolic support to understanding the origin and nature of the cosmos and gaining access to the forces that govern its functioning, represented either as supernatural beings or as abstract notions. Thus the elixir represents both the authentic state of the cosmos and the knowledge acquired by the adept.

This definition also applies to Chinese alchemy, but within this common frame *waidan* writings differ in the emphasis that they give either to religious and ritual features or to the principles of cosmological thought. Early writings of the Taiqing tradition stress the performance of rites and ceremonies before, during and after compounding, and describe the elixirs as tools for summoning benevolent gods or expelling noxious spirits. From the Tang period onward, the majority of *waidan* texts related to the *Cantong qi* stress the cosmological import of elixir compounding and feature a large set of abstract notions.

TIME, MATTER AND THE ELIXIR. The two main methods of Chinese alchemy—the refining of mercury from cinnabar, and the conjunction of lead and mercury—share an important characteristic. In the first method, mercury (*yin*) is extracted from cinnabar (*yang*) and is added again to sulphur (*yang*). This process, that typically takes place in nine or some-

times seven cycles of refining, yields a substance entirely devoid of *yin* components. In the second method, the refining of mercury from cinnabar is only one part of the process. Here the elixir is obtained in two main stages: "real" mercury (*yin*) and lead (*yang*) are first extracted from cinnabar and native lead, respectively, then joined to produce the elixir. In both instances, the final product of the alchemical work is said to represent Pure Yang (*chunyang* 純陽), the stage before the division of the One into the two (Robinet 1995, 194, 216).

The association of the elixir with Pure Yang plays a basic role in relating the alchemical process to the Chinese view of cosmogony. In agreement with views shared by both Daoism and the Chinese cosmology, alchemy conceives of the cosmos as the outcome of a spontaneous process that takes place in stages. In one of its classical formulations, cosmogony involves the progression from Nonbeing to Oneness, followed by the emergence of the two complementary principles *yin* and *yang* which, in turn, join and generate the differentiation of the myriad beings. This process has three closely connected implications that are central to the worldview of alchemy and inspire its main practices:

1) the unfolding of the process causes entities to be progressively removed from the original principle;
2) the generation of the cosmos brings about the emergence of time—the notion of time is implicit in the idea of generative stages and becomes explicit once the cosmos is generated and time is a measurable entity;
3) inversion, return or reversion (*fan* 返, *huan* 還) to the original state can be effected by a reversal in the cosmogonic process, i.e., by re-enacting its stages in inverse order.

All main *waidan* practices revolve around these notions. Through cyclical refining, the ingredients revert to their original condition and yield their pure essences (*jing* 精). The elixir is matter devoid of temporal qualities and is thus equivalent to Pure Yang, the state before the emergence of time. With the process known as "projection" (*dian* 點), often performed at the end of an alchemical procedure, a small quantity of elixir confers its own properties to any substance added to it. This final act sums up the symbolism of the alchemical work: the cosmos is restored to its original, timeless state, and the adept gains access to the corresponding state of timelessness or immortality.

ELIXIR COMPOUNDING IN THE TAIQING TRADITION. The two main *waidan* traditions develop these basic notions in different ways and associate them with different practices. The Taiqing tradition is based on a rather simple cosmological model not explicitly described in received sources. It emphasizes the ritual function of the crucible, highlighted throughout the Taiqing and relevant Shangqing texts which state that

failure in the compounding of elixirs is due to mistakes made when preparing the reaction vessel.

The crucible, made of two superimposed halves, must be hermetically sealed to avoid dispersion of *qi* and re-create within it the conditions of the cosmos during the first stages of its generation. Several Taiqing works describe the preparation of a luting mud spread on the outer and inner surfaces of the crucible and at the point where its two halves meet. The compound is known as Mud of the Six-and-One (*liuyi ni* 六一泥) or, to underline its importance in the alchemical process, Divine Mud (*shenni* 神泥). The commentary to the *Nine Elixirs* says that "six and one is seven: the sages keep this secret, and therefore call it Six-and-One" (*Huangdi jiuding shendan jingjue*, 7.5a), but significantly adds that the mud has this name even if the number of its ingredients is different from seven.

The figures one and six are related to Heaven and Earth, respectively, but the function and name of the mud become clearer in light of the descriptions of cosmogony as a process that takes place in seven stages. A well-known passage of the *Zhuangzi* outlines the process in reverse, starting from the phase immediately preceding manifestation and receding to its most remote inception (Graham 1981, 55). This passage forms the basis of the elaborate description of each phase that opens j. 2 of the *Huainanzi*. Another passage of the *Zhuangzi* represents the same process by different imagery: the seven stages are portrayed as seven openings pierced in the body of Emperor Hundun (Chaos) by the Emperor of the North and the Emperor of the South (emblems of duality), causing his death that corresponds to the state of differentiation (see Graham 1981, 98; Girardot 1983, 150-52; Le Blanc 1989).

Symbolically, the seven ingredients of the Mud of the Six-and-One close the seven openings that caused the death of Emperor Hundun, and allow the alchemist to create conditions in the crucible that are similar to those of the primordial state of chaos. Through the action of fire, the essences of the ingredients rise to the upper half of the vessel and are collected by the alchemist who adds them to other substances to make pills.

Descriptions of the effects of elixir ingestion give, as much as do ritual sequences associated with the alchemical process, a clear impression of the religious features of the Taiqing tradition. Ingestion of the Nine Elixirs, for example, results in the attainment of the state of perfected or immortal, ascension to heaven and longevity. Divinities such as the Jade Maiden (Yunü 玉女), the Ministers of the Mountains (Shanqing 山卿), the Officers of the Moorlands (Zewei 澤尉), the Count of the Wind (Fengbo 風伯) and the Master of Rain (Yushi 雨師) come to offer protection and become one's attendants. Vermilion birds and phoenixes hover above the alchemist, while harmful demons and entities—the Hundred Ghosts (*baigui* 百鬼), the Three

Corpses (*sanshi* 三尸), the Nine Worms (*jiuchong* 九蟲), mountain demons (*chimei* 魑魅) and water sprites (*wangliang* 魍魎)—do not dare to approach the adept, who acquires control over them. Diseases like convulsions and leprosy are healed, and adepts become able to beget children even in old age. Magical powers are acquired: one can cross water or pass through fire; coins smeared with an elixir return to their owner within a day of spending. Some elixirs can also be worn at the belt, rubbed on the eyes, or smeared on the doors of a house to gain the constant protection of the gods (CT 885, ch. 1; see also Ware 1966, 76-78.)

Similar statements also appear in the *waidan* texts of the Shangqing corpus. The Flower of Langgan grants communication with immortals and divine beings (CT 255; trl. Bokenkamp 1997, 336). The Elixir of the Nine Cycles signifies the first step of attainment: the Golden Elixir is transmitted by emissaries of the Great Ultimate (Taiji) after the adept has ascended into the Great Void (CT 889, 3b).

ELIXIR COMPOUNDING IN THE COSMOLOGICAL TRADITION. The system of correspondences and the use of cosmological patterns acquire primary importance in sources related to the *Cantong qi*. With a marked innovation in the language and the conceptual system of alchemy, the main underlying notion in these sources is that of *xiang* 象 (image), through which the ingredients, the laboratory instruments, the heating cycle and the elixir itself symbolize elements of the cosmological framework. This feature becomes so important that two Tang texts related to the *Cantong qi* go as far as to state that "compounding the Great Elixir is not a matter of ingredients, but always of the Five Agents" (CT 935, 3a), and that "you do not use ingredients, you use the Five Agents" (CT 915, 2.4b).

The description of the alchemical process in these sources is based on three sets of emblems: (1) the lines, trigrams and hexagrams of the *Yijing*; (2) the Five Agents together with the associated categories of entities and phenomena; and (3) alchemical symbols proper. These and other emblems allow *waidan* cosmologists to establish parallels between the alchemical process and facets of the cosmos, and to correlate the stages of elixir compounding to those of cosmogony. Exploiting the customary system of correspondences among different patterns, parallel elements drawn from different series of emblems can be used interchangeably, which accounts in part for the intricate and obscure language of the texts.

Waidan cosmologists emphasize an important feature of the cosmogonic process: the change of polarity that occurs at its final stage, after the original *yin* and *yang* principles join each other and produce differentiation. When the process is complete, the original *yin* and *yang* are enclosed within entities of the opposite sign. At the last stage of cosmogony, therefore, *yin* entities enclose *zhenyang* 真陽 (real/true/perfect Yang), and *yang* entities enclose *zhenyin* 真陰 (real/true/perfect Yin). The resulting state is designated as

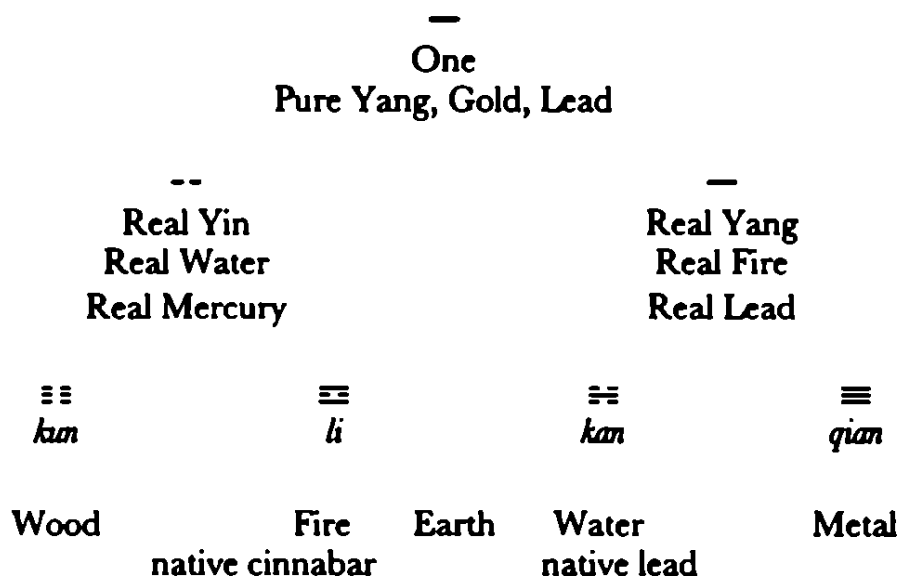
"*yin* within *yang*" and "*yang* within *yin*." This process—and its reversal—are featured in the texts, which represent it by all three sets of emblems mentioned above:

(1) In terms of *Yijing* emblems, **the One** is represented by the single unbroken line — or by the trigram *qian* ☰. Its *yin* and *yang* aspects are represented by the single broken line -- or the trigram *kan* ☵, and by the single unbroken line or the trigram *qian* ☰, respectively. Authentic *yang* contained within *yin*, and authentic *yin* contained within *yang*, are represented by the trigrams *kan* ☵ and *li* ☲. When the alchemical process is described through these emblems, it consists in drawing the inner lines out of *kan* ☵ and *li* ☲ to restore *qian* ☰ and *kan* ☵ and in joining them to recreate the single unbroken line that represents the One, or Pure Yang.

(2) In terms of the **Five Agents**, the alchemist inverts the standard "generative" sequence (Wood-Fire-Earth-Metal-Water), and produces Metal — from Water ☵, and Wood -- from Fire ☲. The reversal of the normal sequence neutralizes the yin-yang shift that takes place at the end of the cosmogonic process. The original *yin* and *yang* principles extracted from Fire and Water are called Real Water and Real Fire, respectively, to distinguish them from their common counterparts.

(3) In proper alchemical terminology, the **original *yin* and *yang*** are represented by Real Mercury and Real Lead, respectively. Real Mercury is refined from native cinnabar (*yang* containing Real Yin), and Real Lead (occasionally called "silver," *yin* 銀) is refined from native lead (*yin* containing Real Yang).

Some relations and associations among the different sets of symbols used in *waidan* are shown below:



The essential feature of these multiple, but substantially identical, representations is that each stage of the cosmogonic process is associated with a cosmological configuration (in the table above, Oneness, Yin-Yang and the Five Agents). Accordingly, each stage of elixir compounding represents the cosmological configuration which matches each stage of the cosmogonic process. Since the alchemical process re-enacts the cosmogonic stages in reverse, at each stage the corresponding cosmological configuration is discarded, and the alchemist takes a further step towards Oneness.

Exploiting the possible relations among these sets of emblems, other associations are possible and are used in the texts. Real Lead and Real Mercury, in particular, are also denoted as Metal and Wood, Metal and Water or Metal and Fire (Meng 1986, 84-86). The table above also shows that the Golden Elixir is often styled "Lead," based on the association between Pure Yang and Real Yang; vice versa, refined lead is often called Golden Flower (*jinhua* 金華).

OTHER DOCTRINAL DEVELOPMENTS OF THE COSMOLOGICAL TRADITION. *Waidan* cosmological texts introduce other elements into alchemical doctrines, most importantly a particular view of time. Developing a notion first expressed in the *Huainanzi* (Major 1993, 212-16; Sivin 1980, 224) but virtually ignored in pre-Tang alchemical sources, these texts often state that elixir compounding reproduces the process through which nature spontaneously transmutes minerals and metals into gold. While the natural process requires thousands of years, alchemy accelerates it by compressing time, relying on the correspondences among cycles of different length (Sivin 1977; Sivin 1980, 245-48, 264-79). In particular, various texts belonging to the tradition of the *Cantong qi* state that the Natural Reverted Elixir is achieved in 4320 years, a figure corresponding to the number of watches or double hours (*shi* 時) contained in one year (360 days x 12 watches). The same cosmological cycle, therefore, can be reproduced by one year of work in the laboratory.

The base unit used to match cycles of different length is the heating cycle of the elixir, known as ***huohou*** 火候 or "fire times." While the Taiqing texts describe simple cycles based on the distance of fire from the crucible, those related to the *Cantong qi* use a remarkably more complex system, where the phases are represented by the twelve "primary hexagrams" of the *Yijing*:

Each hexagram corresponds to a stage of heating, which is first increased and then progressively decreased. In two passages of the *Cantong qi*, the pattern of the twelve primary hexagrams is used to represent and trace the constant presence of the One (the unbroken yang line) through the rise and

fall of time cycles, represented by the twelve hexagrams. The heating of the elixir, therefore, is based on the very rhythms which manifest the presence of the One in cosmic change. As those rhythms bring minerals to perfection in the earth's womb, so they transmute the ingredients into an elixir in the alchemical laboratory (Pregadio 1995, 160-64).

Another new element besides time concerns space. The alchemical instruments are built and arranged in the laboratory according to standard spatial configurations. The three stages of the alchemical altar, for example, represent heaven, humanity, and earth, and the reaction vessel itself is a microcosm, with its size and shape determined on the basis of correspondences to the macrocosmic order. The obvious purpose of these arrangements and shapes is to place the alchemist at the center of the cosmos (Sivin 1980, 279-92).

A third, but ultimately less important new element is the so-called "**theory of categories**" (*lei* 類), according to which *yin* and *yang* couples of substances are said to interact only if they share special affinities (Needham et al.1980, 305-23). Examples of *yin-yang* dyads include cinnabar and mercury, realgar and orpiment, sulphur and mercury, cinnabar and vinegar, and even cinnabar and bronze coins, but not lead and mercury. The prominence acquired by the lead-mercury symbolism in the tradition related to the *Cantong qi* may explain why the theory of categories stands as a rather isolated element in the elaborate construction built by *waidan* cosmologists.

WAIDAN AND DAOISM. The relation of *waidan* to Daoism has raised perplexities since early times, as documented in the *Baopuzi* where Ge Hong discusses elixir compounding in the light of the *Laozi* (Ware 1966: 267-68). The existence of two main subtraditions in *waidan* require that each be examined separately, but in general *waidan* authors describe their undertaking as grounded on elements of the Daoist religion. Thus alchemical writings are revealed by Daoist divine beings (including Laozi and Yuanjun) or immortals; during elixir compounding, Daoist gods are invoked as recorded both in early texts, such as the *Nine Elixirs*, or in later documents, such as the *Danfang xuzhi*, according to which the alchemical altar is protected by an invocation to Xuanyuan huangdi Taishang laojun 玄元皇帝太上老君 (trl. Sivin 1980, 289-90). In an intriguing passage of a late Tang text, moreover, the alchemist is requested to wear the robes of a *daoshi* and utter an invocation to Dadao tianzun 大道天尊 before he ingests the elixir (CT 942, 18b-19a).

The cosmological content of *waidan* provides additional evidence in light of the central role played by cosmology in connecting the different traditions and practices of Daoism to each other (Robinet 1997, 260). Repeated references to the *Daode jing* in the *Cantong qi* and other cosmological texts

show that relations between *waidan* and Daoism also occurred where *waidan* had intellectual speculation and the search for *gnosis* as its prime motive. The *waidan* perspective on the cosmogonic process as taking place in stages, on the related cosmological configurations (which imply a sequence of states on non-being and being), and on the symbolic inversion of this process is the same view that inspires Daoist disciplines as different as individual meditation and communal ritual. The notion of time expressed in the cosmological *waidan* texts, moreover, has much in common with those underlying Daoist ritual (Schipper and Wong 1986).

Nonetheless, the peculiarities of *waidan* also expose its limitations as a Daoist discipline. Although no Daoist text rejects *waidan* for not being part of Daoism, some traditions, texts and authors (e.g., those of Shangqing) assign external alchemy a low place in their classifications of Daoist practices. Similarly the *Daojiao yishu* 道教義樞 (Pivotal Meaning of Daoist Teachings, CT 1129; Robinet 1993, 49) places *waidan* lowest among four degrees of Daoist practice, well below concentration and the attainment of wisdom, and even below precepts. The *neidan* author Li Daochun 李道純 (ca. 1290) also ranks *waidan* at a low level in the elaborate arrangement of Daoist disciplines found in his *Zhonghe ji* 中和集 (Central Harmony: A Collection, CT 249, 2.12b-17a). Common to these traditions and texts is the view that the highest form of Daoist practice is an exclusively spiritual process with no need of external supports such as *waidan*. They implicitly criticize the excessive preoccupation of *waidan* with the material aspects of the cosmos, or even for the cosmos itself as a manifest entity. To them, elixir compounding does not go beyond the purification of matter and the elixir only symbolically represents the cosmogonic stage of the One (Pure Yang), so that its compounding does not grant access to the higher states of Non-being.

Practice

RITUAL FEATURES IN EARLY *WAIDAN*. Rites and ceremonies have been part of *waidan* since its earliest recorded beginnings. According to Li Shaojun, the alchemical process begins with an offering to the furnace to request assistance from the divinities. Virtually all pre-Tang texts describe ceremonies performed at various stages of the practice. The following description of *waidan* ritual in eight stages is based on directions given in the *Nine Elixirs*, supplemented by other texts of the Taiqing tradition, Shangqing materials and the *Baopuzi*.

(1) *Retirement and purifications*. Retirement and the undergoing of purifications (*zhai* 齋) are preliminary to elixir compounding. The adept withdraws to a mountain or a secluded place with one or more attendants. During the time of *zhai* he and his helpers observe various interdictions—such as those against approaching filth, mourning and houses inhabited by women of marriagable age—and perform ablutions (*muyu* 沐浴). Purifications may last between one week and one hundred days. They are performed before receiving the methods, buying the ingredients and compounding the elixirs. Pure liquor is poured in a watercourse on the first day of purification to pacify the *qi* of the earth.

(2) *Ceremony of transmission* (*chuanfa* 傳法). After the purification practices are completed the adept receives texts and oral instructions. Master and disciple seal a pact (or "covenant," *meng* 盟) and announce their intention of compounding the elixir to the gods. According to the *Nine Elixirs*, the disciple throws golden figurines of a man and a fish into an eastward-flowing watercourse. Gold, silver, hemp fabric, silk or a jade ring shaped as a dragon are mentioned in other texts among the pledges offered by the disciple to the master. The two smear their mouths with blood or cinnabar to seal their alliance. Then a seat is arranged for the Mysterious Woman (Xuannü 玄女). The master asks permission to hand down the alchemical methods, and waits for a sign of consent: a clear sky and the absence of wind.

(3) *Protection of space*. Talismans (*fu* 符) yield protection from demons and wild animals. They are worn by the alchemist on his own body, affixed at the four directions, placed along the path that leads to one's dwelling, thrown in the furnace or made into ashes and drunk with water before compounding the elixirs.

(4) *Construction of the laboratory*. See below.

(5) *Choice of time*. Favorable days for buying the ingredients and starting the preparation of the elixirs are determined through traditional methods of computation. Examples of auspicious days include those at the beginning of a sexagesimal cycle, and those defined by two cyclical characters whose associated Agents are in a relationship of "sovereign and assistant" (*wang-xiang* 王相). The *Nine Elixirs* and other texts also list days on which the alchemical work should not be started.

(6) *Kindling the fire* (*qihuo* 起火). Before the actual commencement of the operations, an invocation is addressed to the divinities. In the *Nine Elixirs*, the disciple offers food and drink to Dadao jun, Laojun and Taihe jun. He asks them to watch over the practice and favor the compounding of the elixir, and states that after ingesting the elixir he expects to have audience at the Purple Palace (Zigong 紫宮), live an unending life, and become a perfected.

(7) *Compounding the elixir.* The ceremony for kindling the fire marks the end of the preliminary rites and the beginning of the actual compounding. The alchemist is helped by his assistants, whose tasks include pounding the ingredients and watching over the fire. Three sources mention a preparation called Pellet for Driving Away Demons (*quegui wan* 卻鬼丸), used together with the Talisman for Driving Away Demons (*quegui fu*) to protect the compounding. Almost all ingredients of the Pellet are vegetable substances, the apotropaic properties of which are described in the pharmacopoeias (*Taiqing danjing yaojue*; Sivin 1968, 208-9); the corresponding talisman is reproduced in the commentary to the *Nine Elixirs* (CT 885, 5.9a-10a).

(8) *Consecrating and ingesting the elixir.* Ge Hong's *Baopuzi* refers to a ceremony not mentioned in other sources, performed after the final transmutation of the Elixir of Great Clarity into gold. In this rite, the adept offers different quantities of the elixir to the Dipper, the Great One, the Lord of Great Clarity and several other gods including those of the doors, the house and the village. A portion of the elixir must be abandoned in the city market for the benefit of those who cannot devote themselves to its compounding. The elixir is ingested at dawn, facing the rising sun, after another invocation to the gods (see Ware 1966, 80-81).

LABORATORY AND LABORATORY INSTRUMENTS. Texts of all periods provide details on the Chamber of Elixirs (*danshi* 丹室, *danwu* 丹屋, *danfang* 丹房) and its instruments. The laboratory should not be raised over an old well or a tomb and must be at some distance from the ground; it is about ten meters long and five meters wide, and has doors facing all directions except north (CT 889, 1b). According to another text, the Chamber is built near a stream on a mountain or in a secluded place; it has only two doors, facing east and south; the roof is covered with leaves and the walls with mud, and only the alchemist and his attendant may enter (CT 255; trl. Bokenkamp 1997, 335). In a method found in the commentary to the *Nine Elixirs*, the furnace is placed at the center of the laboratory, with the ingredients and the scriptures arranged over a layered platform at the western side, and talismans affixed at the four sides (CT 885, 7.3b).

Descriptions of laboratory instruments vary not only according to the methods but also among texts of different dates and subtraditions. In general, a platform or "altar" (*tan* 壇) consisting of three tiers is placed in the center or along a wall of the Chamber. It is made of earth and has eight openings on each tier. A mirror and a sword are hung nearby. The furnace (*lu* 爐) or stove (*zao* 灶) is arranged on the highest tier of the platform. The simplest type of stove has a cylindrical shape with a large opening on the top for the fire and several smaller ones on the sides to let air through. Chaff, charcoal and horse manure serve as fuel. The crucible (*fu* 釜) is placed over the stove or sometimes inside it.

According to some texts, the reaction vessel is a *ding* 鼎, a term which usually denotes an iron tripod but also refers to several instruments of different shape and function, and may even be a synonym for the simple clay crucible. The tripod can be open or closed with a lid, and can have legs or not. It is placed inside the furnace so that it does not touch its base (hence its name, *xuantai* 懸胎 or "suspended womb"). Sometimes the tripod contains a crucible, and in this case can be made of two parts, a higher one containing water (to keep the reaction vessel cool) and a lower one holding fuel, or vice versa. In addition to these basic tools, the alchemical apparatus also includes instruments for sublimation, distillation, steaming and condensation, as well as various smaller utensils such as pestles and spoons (see Needham et al.1980, 1-167; Ho 1985, 204-9; Chen 1983, 26-84; Zhao 1989, 123-66).

The crucible is usually made of clay and has two parts, joined to each other by their mouths (hence the name *shuangfu* 雙釜 or "double crucible"). According to CT 883 (3a-b), the same type of crucible is used to compound the Elixir of Great Clarity, the Nine Elixirs, the Golden Liquor, the Reverted Elixir and the Elixir Flower of Langgan—i.e., all the main elixirs of the Taiqing tradition. Red clay is pounded, sieved, steamed for one day and added to vinegar, forming a mud. One then boils thirty pounds of oak bark for one day, eliminates the sediments, and fries the remaining portion to obtain a reddish-black lacquer. This is then spread on the inner part of the crucible, so that it does not break when placed on the fire. Both the *Shibi ji* and the *Danjing yaojue* describe yet another type of crucible whose lower half is made of iron while the upper part is made of clay (Ho 1985, 206; Sivin 1968, 166-68).

The earliest method for the luting compound is found in the *Nine Elixirs* (1.3b-4a), where the Mud of the Six-and-One is prepared with alum, Turkestan salt, lake salt, arsenolite, oyster shells, red clay and talc. The seven ingredients are pounded, heated for nine days and nights, pounded again, sieved and placed in an acetic bath. The crucible is spread with this mud; then another mud is prepared by placing a lead-mercury compound in another acetic bath with the addition of white lead. The crucible is luted with this mud as well, and is finally left to dry in the sun for ten days. A similar method is described in the *Taiqing danjing yaojue*, which gives details on each ingredient (trl. Sivin 1968, 160-68).

SUBSTANCES AND METHODS. The actual compounding of the elixir is the main stage in the ritual sequence of the alchemical process. *Waidan* texts display a large variety in their choice of ingredients and methods, as well as their nomenclature which often involves the use of synonyms and secret terms. What follows is only a sampling from methods more frequently described or mentioned in the texts. More detailed surveys are

found in Zhao 1989, 123-66, 167-213; and Meng 1993a, 132-200. Many specific methods are analyzed in the works of Needham, Ho, Sivin, Meng, Zhao and others. Useful works on *waidan* terminology include Needham 1974, 154-87; Needham et al.1980, 4-7; Chen 1980, 13-284; and Wong 1989.

Aqueous solutions (*shuifa* 水法) are often prepared as intermediate stages during elixir compounding. The main source on these methods is the *Sanshiliu shuifa* (CT 930). To make a solution of cinnabar, for example, one pound of cinnabar is placed in a cylinder of fresh bamboo together with four ounces of chalcanthite (copper sulphate) and four ounces of saltpeter. The openings of the bamboo tube are sealed with lacquer, and the tube is left in an acetic bath. The solution is ready in thirty days.

The acetic bath (*huachi* 華池, lit., Flowery Bath) exists in several varieties (Wang 1964). According to the commentary to the *Nine Elixirs* (CT 885, 17.6a-b), during compounding one uses a bath containing boiled wheat, yeast, the unidentified "white-azure stone" (*qingbai shi* 青白石), powdered lead, powdered cinnabar and steamed red glutinous millet. The bath should be compounded in an auspicious position inside the laboratory, away from women and domestic animals.

The preparation of the Golden Liquor (*jinye* 金液) is described according to different recipes (Meng 1993a, 156-65). The earliest is summarized, in an almost incomprehensible way, in the *Baopuzi* (Ware 1966, 89-91). According to the clearer version in the *Jinzhuo jing* (CT 917, j. 1), the main ingredients are powdered gold and mercury. They are placed with aqueous solutions of saltpeter and realgar in a bamboo cylinder that is tightly sealed and immersed in an acetic bath. In one hundred days gold and mercury liquefy and form a Golden Water (*jinshui* 金水) and a Mercurial Water (*hongshui* 汞水). No firing is required. The Golden Liquor can be transmuted into gold and used to cast swords, or—in a way reminiscent of Li Shaojun's early method—to make dishes and cups that confer immortality to those who eat and drink from them.

The most typical processes in Chinese alchemy are those known as *huandan* 還丹 or **Reverted Elixirs** (sometimes translated as "cyclically transformed elixirs"). This term refers to several different methods, two of which are most important: the refining of mercury from cinnabar, and the conjunction of lead and mercury. The earliest description of the refining of cinnabar is found in the *Nine Elixirs* (CT 885, trl. Ware 1966, 78-79), and its most elaborate method is given in the works by Chen Shaowei. The history of the lead-mercury compound reflects the development of the entire Chinese alchemical tradition. In the chapter devoted to methods based on metals, Ge Hong's *Baopuzi* contains a brief description of a lead-mercury amalgam which is only an intermediate stage during the preparation of another compound (Ware 1966, 274). In the Taiqing tradition, the lead-

mercury amalgam is not used as an elixir but as a supplementary substance in the compounding of other elixirs, either to lute the crucible together with the Mud of the Six-and-One, or as the highest and lowest layers in the crucible together with the ingredients of each elixir (CT 885, 1.3b and passim). The compound is used for the same purpose in the writings ascribed to Hugangzi (CT 885, 11.7a-b and 12.3a-b; Zhao 1985, 205).

The rise of the lead-mercury compound to the full status of elixir is related to the *Cantong qi*, which alludes to it in several passages. One of them (Zhou 1988, 122-23) contains a poetical description of the amalgam of refined lead (the Golden Flower, *jinhua*) and refined mercury (the Liquid Pearl, *liuzhu*) in vivid *waidan* terms. Another (Pregadio 1995, 166-67) focuses on the refining of lead—preliminary to its conjunction with refined mercury—and mentions the colors it takes at each stage: black, white, yellow and red (interestingly, the same color sequence is also typical of Western alchemy: *nigredo*, *albedo*, *citrinitas* and *rubedo*). The status of this method was further enhanced when *neidan* came to replace *waidan*. Thus, the southern lineages which, during the Six Dynasties, produced the alchemical version of the *Cantong qi*, ultimately led to the decline of *waidan*, but laid the foundations for the continuation of the arts of the elixirs in new forms.

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