

# Phosphenes and Inner Light Experiences in Medieval Chinese Psychophysical Techniques — A Preliminary Sondage

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Abstract: The findings of a preliminary sondage on phosphenes and other subjective inner light appearances as found in three medieval Chinese sources are presented: (A) *Commentary on the Inner Canon of the Yellow Court*, dating to the early 8th century CE: Its commentarial notes on visual phenomena, probably during a hypnagogic state, are specified and related to ancient physiological knowledge; (B) *Secret Advice by the Wise Lord of the Scripture on Great Peace*, Tang dynasty: Describes the procedure of “enlightening by maintaining unity”, a meditative technique in which coloured phosphenes are an integral part of the experience. (C) *Mister Chen’s Instructions on the Inner Cinnabar*, after 1078, Northern Song dynasty: A systematic elaboration of the hypnagogic state during a specific meditative technique. Phosphenes and hypnagogic hallucinations are taken as signs for the successful achievement of the first stage in a series of nine transformations.

Keywords: phosphenes, form constants, inner light experiences, hypnagogic states, medieval China, *Commentary on the Inner Canon of the Yellow Court*, *Secret Advice by the Wise Lord of the Scripture on Great Peace*, *Mister Chen’s Instructions on the Inner Cinnabar*.

## Introduction

Technical texts, mainly medical and Daoist writings, form the very fragmented material base for my current project “psychophysical techniques in ancient and medieval China”. They discuss know-how and techniques meant to influence one’s own mental states positively, to improve health and achieve longevity. In sexual body techniques, for example, this is thought to be possible by the use of a partner and sexual stimulation,<sup>1</sup> but such ideas underlie even more techniques like meditation and visualisation. This sondage uses the subject of phosphenes, the subjective inner light appearances, as a means to interpret one aspect of such techniques one step further.

## Why phosphenes?

Phosphenes were studied scientifically in Europe since the early 19<sup>th</sup> century. The term was coined in 1853 by Henri Auguste Serre (1802-1870) to mean “light appearances”.<sup>2</sup> Earlier, in 1819, Johann Evangelista Purkině (1787-1869) studied what he named “pressure figures”: these are pressure phosphenes, which appear when you close the lids and apply gentle pressure to the eyeballs.<sup>3</sup> Several researchers expressed their fascination while doing this during their childhood. Purkině says, the child follows the traces of the cheerful light, and is absorbed into the charming presence of the colours.<sup>4</sup> It seems worthwhile to keep in mind that such a positive emotional response is felt towards the phenomenon by the grown-up scientist.

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<sup>1</sup> Cf. Pfister, forthcoming 2007.

<sup>2</sup> Serre 1853, p. 8: “Nous avons donné le nom de *Phosphène* (de φως, lumière, et de φαίνομαι, paraître, apparaître) au phénomène de vision subjective qui se manifeste par l’apparition d’une image lumineuse dans la région orbitaire de l’œil méthodiquement comprimé à travers les paupières, et spécialement à l’image annulaire qui apparaît quand la compression s’effectue à l’aide de la pulpe du doigt.”

<sup>3</sup> Cf. Purkině 1819, 1823<sup>2</sup>. See below, *Figure 4*.

<sup>4</sup> Purkině 1823, pp. 10-11: “Freudig schwelgt der muntere Sinn des Kindes in der bunten Mannigfaltigkeit der einströmenden Aussenwelt; allenthalben formet er das Unbestimmte, weidet sich an der Wiederholung des Geformten; jeder Augenblick zählt

In older Arab and European theories of vision phosphenes played an important role, as one believed that they proved, like the gleaming eyes of animals active during the night, that an internal light is generated and emitted by the eye itself. This view was only given up in the 17<sup>th</sup> and 18<sup>th</sup> centuries.<sup>5</sup>

Subjective visual phenomena, both of endogenous and hallucinatory nature, were used for the interpretation of geometrical patterns and designs in prehistoric cave art, and brought into relation with altered states of consciousness. This work has provoked a controversy.<sup>6</sup>

Phosphenes are subjective light appearances which can be seen, when the visual system is stimulated by non-usual ways. Besides the pressure phosphenes already mentioned, which are easy to elicit, phosphenes may appear together with certain kinds of headaches, as a result of anaesthesia, or as a side effect in clinical pharmacology.<sup>7</sup> Certain meditative states of relaxation, and, most important to my present purposes, hypnagogic or hypnopompic states may induce them. Hypnagogic states are presleep or sleep onset phenomena, whereas hypnopompic states occur coming or leading out of sleep. In Italian both states could be called *dormiveglia*, and some authors use the collective term *hypnagogia*.<sup>8</sup>

Nowadays phosphenes can be generated by direct electrical stimulation of the optical nerve, on the surface or underneath the retina,<sup>9</sup> or by transcranial magnetic stimulation of the visual cortex.<sup>10</sup> Because even blind people see phosphenes, some research teams hope to assemble such artificially generated visual perceptions to a useful percept, in order to construct a visual prosthesis for the blind.<sup>11</sup>

The recent work of Philip Nicholson turned my attention to the problematic of subjective light experiences. He stimulated the current research, as he uses phosphenes seen during meditation to explain descriptions of light experiences in the *Rig Veda* and Daoist texts.<sup>12</sup> Under the proposition that in written sources specific light phenomena are described consistently in regard to certain characteristics and processes, it seems possible to recover the belonging experiential content and compare it to experiences in self-experimentation (as it was done by Nicholson), or in current scientific research.

The remainder of this paper discusses findings in three medieval Daoist sources and contrasts them with modern ideas about phosphenes. This is done in a dialogic mode, which should shed light on basic assumptions about vision, the nature of phosphenes, and other pertinent features.

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einen neuen Fund, offenbart neue und reichere Welten von Erscheinungen. Vor Allem aber verfolgt es gerne die Spur des heiteren Lichtes und vertieft sich in der Farben reizende Gegenwart.”

Kampmeier 1929, p. 580: “If the writer’s own experience is any criterion, many persons in their youth discovered by chance that slight pressure continued for a short time on the eyeballs would elicit luminous manifestations in the subjective optical foreground which resolved themselves into flickering or vibrating mosaic-like designs of great intricacy and beauty. Kaleidoscopic in their variety, and in their symmetry, delicacy and intangibility more fascinating than snow crystals, they have perhaps served many of us as a pastime.”

<sup>5</sup> Cf. Grüsser and Hagner 1990. See also Grüsser et al. 1989, pp. 291-296.

<sup>6</sup> Cf. Lewis-Williams 1986, 2002; Lewis-Williams and Dowson 1988; Dronfield 1996; Hodgson 2000. Vehement criticism in Helvenston and Bahn 2002.

<sup>7</sup> Cf. Cervetto, Demontis, and Gargini 2007.

<sup>8</sup> Mavromatis 1991, pp. 3ff. The term ‘hallucinations hypnagogiques’ was introduced by Maury 1848, p. 27, to denote appearances which are “leading to sleep”. Cf. Manford and Andermann 1998, for a review of clinical and neurobiological insights on complex visual hallucinations.

<sup>9</sup> Delbeke, Oozeer and Veraart 2003.

<sup>10</sup> Cf. Ray et al. 1998; Fernandez et al. 2002.

<sup>11</sup> Fernandez et al. 2002. This team describes a protocol using transcranial magnetic stimulation to systematically map the visual sensations induced by focal and non-invasive stimulation of the human occipital cortex. From the abstract: “Our results show that TMS is able to elicit phosphenes in almost all sighted subjects and in a proportion of blind subjects. Evoked phosphenes are topographically organized. Despite minor inter-individual variations, the mapping results are reproducible and show good congruence among different subjects. This procedure has potential to improve our understanding of physiologic organization and plastic changes in the human visual system and to establish the degree of remaining functional visual cortex in blind subjects. Such a non-invasive method is critical for selection of suitable subjects for a cortical visual prosthesis.”

<sup>12</sup> Cf. Nicholson 2002; 2001 [2003]; 2002 [2004]; 2004, 2005; Nicholson and Firnhaber 2004.

See also the older overview on the “world of inner light appearances”, as induced by diverse means, and in different cultures, by Knoll 1965. On inner light in general, see Eliade 1957.

散化五形變萬神

謂能變化點聽明離形去智同於大道先  
本後迹故假神托用神者隨應也散有五  
形變萬神

是為黃庭曰內篇

因中而得名也

琴心三疊舞胎仙

琴和也疊積也存三丹田使和積如一則  
胎仙猶胎息之仙猶胎在腹有氣但無息  
也

九氣映明出霄間

三田之中有九氣炳煥而無不燭大洞經  
云三丹田三元及三洞房合為九宮宮中  
有天皇九魄變為九氣化為九神也

神蓋童子生紫煙

觀照存思假目為事下文云眉號華蓋覆  
明珠神蓋眉也明珠目瞳也紫煙精妙氣  
也

是曰玉書可精研

文因迹始專則之道



詠之萬遍昇三天

精備神充名上三清

千災以消百病痊

精神俱故也

不憚虎狼之凶殘

無餘傷也

亦以却老年水延

唯此一章都說黃庭之道也

上有章第二

上有魂靈下關元

上魂天分也下關地分也魂靈無形關元

有實入法天地形象

左為少陽右太陰

左東右西卯生酉殺

後有密戶前生門

前南後北密戶後二竅言隱密也生門前

七竅言藉以生也為九竅

出日入月呼吸存

日月者陰陽之精也左出右入身有陰陽  
之氣法象天地之氣出為呼吸入為吸氣



Figure 1:  
Xiu Zhen Shi Shu 55: 4a-b (above), 5a-b (below)

(A) Commentary on the *Inner Canon of the Yellow Court*

The *Commentary to the Jade Canon of the Inner Sceneries of the Yellow Court* (*Huang Ting Nei Jing Yu Jing Zhu* 黃庭內景玉經註) was written by Master Liang Qiu 梁丘子, that is Bo Lüzhong 白履忠 (fl. 722-729, Tang), in the early eighth century CE. The *Canon* text itself is an early meditation manual to be recited aloud. As it uses extremely flowery language, it would remain highly obscure without the help of a commentary.<sup>13</sup>

Figure 1 shows the relevant passages<sup>14</sup>, as they are found in the 1445-46 edition of the *Daoist Canon* (*Dao Zang* 道藏):

- The double pages 4 and 5 contain thirteen seven character verses of the *Canon of the Yellow Court* (*Huang Ting Jing* 黃庭經), running from top to bottom.<sup>15</sup>
- They are coming together with the Liang commentary, always to their left, and one character deeper in the line.
- Verse 1:8 reads: “The spirit canopies and the pupils produce violet (or, purple) mist.” Master Liang Qiu’s comment runs as follows: “While one observes reflections, during the actualisation of thoughts (or, visualisation) false details are taken as fact. Below we read [in verse 6:4]: ‘The eyebrows are named ‘blossom canopies’, they cover the bright pearls.’ The ‘spirit canopies’ are (the bows of) the eyebrows. The ‘bright pearls’ are the pupils of the eye. The ‘violet (or purple) mist’ is a wondrous flow event of the essence.”<sup>16</sup>
- The ‘spirit canopies’ - *shén gài* 神蓋 - are identified by the commentary with the bows of the eyebrows, which would produce, together with the pupils of the eye, such ‘violet (or purple) mist’. The percept is treated as a coloured mist.<sup>17</sup> The text implies a subjective perspective, as it describes, and to some extent prescribes, what an adept eventually sees.
- Most notably, ‘blossom canopies’ - *huā gài* 華蓋 - is also the name of a star constellation (see Figure 2).<sup>18</sup> It consists of a long “stalk”, called ‘pole’ or ‘cross-bar’ - *gāng* 杠, and is branching into five singular blossoms, thereby forming an umbel. Like the Latin *umbrella* the word ‘canopy, umbrella’ - *gài* 蓋 - is used to denote the clustering of a blossom. The stars of the blossom form the Western constellation Cassiopeia.

<sup>13</sup> A French translation, which does not contain Liang Qiu’s commentary, is Carré 1999. On the meditative use of the manual, cf. Saso 1972. The existing commentaries, however, vary widely in their explanations of a given passage.

<sup>14</sup> *Commentary to the Jade Canon of the Inner Sceneries of the Yellow Court*, in *Xiu Zhen Shi Shu* 55, pp. 4a-5b.

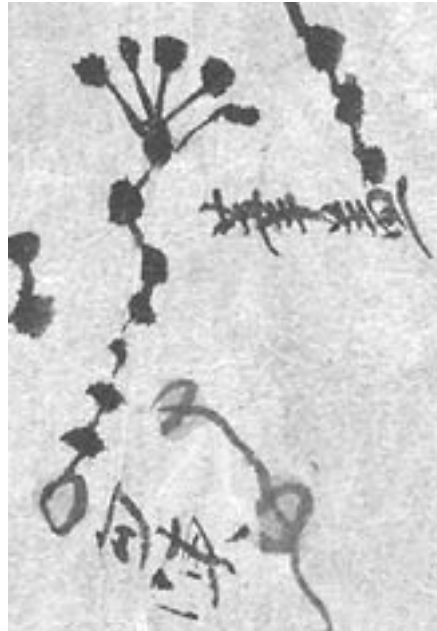
<sup>15</sup> At the conference in Lecce I speculated, that the interspersed drawings might be illustrations to the text and even depict phosphenes. However, I later discovered that many texts in the *Dao Zang* contain similar drawings, making this speculation untenable. Whereas the drawings remain unexplained, the interpretation of the passage as a phosphene description still stands. The uneven, but wide distribution of such drawings in the *Dao Zang* makes it unlikely that Needham’s suggestion, made for our text only, is valid. He thought, that these “curious little signs”, might be the “[p]ossible beginnings of symbolic notation in physiological alchemy”, but rightly remarks: “The text gives no clue to the meaning of the drawings.” (Needham 1983, pp. 85, 124 mentions and shows our Figure 1 on pp. 126-127 as Fig. 1592.)

<sup>16</sup> Text in Figure 1, p. 4b.5-8.

<sup>17</sup> The early Tang commentary of Master Wu Cheng 務成子 says of the ‘purple mist’ only, that it is a ‘radiating flow event of the eyes’, or maybe this should be translated as ‘the flow event of the eye-radiance’ (?). This leaves us with an ambivalent statement. The animation of the eyes is adduced to the pupils, literally called the ‘youngsters’, which are said to be the ‘spirits of the eye’. 神蓋謂眉也。童子，目神也。紫煙，即目光氣也。(Yun Ji Qi Jian 11, p. 11b.)

<sup>18</sup> Cf. *Dunhuang Star Map*, S. 3326. A discussion of this manuscript is found in Xia Nai 1982.

Combining the pictorial evidence of the star map with our commentary, we can assume, that brilliant beams of light, radiating from a central point into different directions, were described as umbels. By applying the same name to the glittering stars, to the flamboyant blossoms of flowers, and to the lights seen with the “inner eye” the text most subtly alludes to and unites micro- and macrocosmic details.



*Figure 2:*  
Cutting of *Dunhuang Star Map*, S. 3326.  
The vertical heading says *huā gài* 華蓋, ‘blossom canopy’.  
The three lower stars, appearing here as circles with grey filling,  
are originally colored with red ink.

- During meditation it is standard to ‘lower the eye(lids)’ - *lín mù* 臨目, that is, to keep the eyes half open and half closed.<sup>19</sup> As this implies a hypnagogic state, it is of technical importance, that Liang wishes to separate the normal percepts from the ‘false details’ - *jiǎ mù* 假目, which are likely to be taken as fact during such a state.
- The statement about the ‘wondrous flow event of the essence’ reveals some awareness on the part of the commentator, that these ‘false details’, or hallucinations, are somehow productions of the eyes. According to ancient Chinese physiological knowledge the ‘essence’ - *jīng* 精, a mucilaginous sap, nourishes not only the whole body, but is also especially important to the eyes and the visual function.<sup>20</sup> Therefore, ‘wondrous flow events’ or coloured ‘mists’ are likewise effects of this nourishing ‘essence’, flowing through the body. As such, they can be clearly and easily distinguished from the usual percepts, as well as from yet other appearances, like spiritual beings or jade maids seen or actively thought after during visualisation exercises.
- Please note, that the phenomenon is accompanied again by a certain fascination, as the light appearances are called ‘wondrous’ or ‘miraculous’.

<sup>19</sup> Cf. Wang Minhong 2001.

<sup>20</sup> Cf. Pfister, forthcoming 2007.

(B) *Secret Advice by the Wise Lord of the Scripture on Great Peace*

The *Secret Advice by the Wise Lord of the Scripture on Great Peace* (*Tai Ping Jing Sheng Jun Mi Zhi* 太平經聖君秘旨) is part of the later layers of the *Scripture on Great Peace* (*Tai Ping Jing* 太平經), and probably dates to the Tang dynasty.<sup>21</sup> The *Secret Advice* discusses at some length a meditative practice, called ‘maintaining unity’ - *shǒu yī* 守一.<sup>22</sup> This procedure is full of promises for the adept: Avoidance of wild animals, poisonous substances, harm and illness, substantial health and a long life span, and sorrowlessness, come together with a penetrating mind, which can travel afar, and discerns the inside of one’s body:

“If you desire to live long, you have to receive the flow events (*qì*) and to join the spirits (*shén*) with the essence (*jīng*), do no more let them leave your [bodily] form. Think of these three as joined and forming a unity. After a long time, it [the unity] will be refined (*bīn-bīn*), and of itself you see into your rump; the [bodily] form becomes gradually lighter; the essence is increasingly bright; the rays are increasingly fine; within the heart is great calm; delighted as if being joyous (euphoric) the flow events of the great peace respond. Refining your inside, returns an answer at the outside. Inwardly it brings forth longevity; outwardly it brings forth regulatedness. It is wrong to use sinewy force, as of itself emerges great peace!”<sup>23</sup>

The text reveals only a few details of the desired setting, but the following is said about a protected room for practice:

“Procedure of maintaining unity: To begin the contemplation (*sī*) you stay in a protected room; it is suitable to have double walls and thick masonry in order not to hear the sounds of noise and clamour (*xuān huá*).”<sup>24</sup>

This is technically important, as it shows concern for the avoidance of outside disturbances. Not only sounds, but also sunlight might disturb the experience. In this source there is no time of the day singled out for practising, but see text (C) below, which advises nocturnal activity.

“Procedure of enlightening by maintaining unity: While not yet being refined, close the eyes, dimly and darkly (*míng-míng*); within the eyes [then] there is no ray. Maintaining unity, repeatedly and for long, and the eye produces rays and brightness. Distinctly (*zhāo-rán*) one sees the four quarters [of space]. Follow the brightness to travel far away! Exhaust seeing the rump’s [inner] forms and appearances! The flock of the spirits is ready to assemble, therefore one is capable to change the [bodily] form and become [a] spirit.”<sup>25</sup>

<sup>21</sup> For the complicated textual history of the *Tai Ping Jing*, cf. Wang Ming 1979<sup>2</sup>, and the Appendix on the composition of the *Tai Ping Jing* together with the bibliography in Hendrichske 2006.

<sup>22</sup> Preference is given to this translation, introduced by Bokenkamp 1993, p. 46, over ‘guarding the one’ adopted by Livia Kohn 1989 in her overview of concentrative meditation under this name in various sources. See also Robinet [1979] 1995, pp. 183-211, on ‘garder le Un’.

<sup>23</sup> 欲壽者，當受氣尊神重精。夫人本生混/沌之氣。氣生精，精生神，神生明。本於陰陽之/氣，氣轉為精，精轉為神，神轉為明。欲壽者，當/受氣而合神精，不去其形。念此三合以為一。/久即彬彬，自見身中，形漸輕，精益明，光益精，/心中大安，欣然若喜，太平氣應矣。( *Tai Ping Jing Sheng Jun Mi Zhi*, pp. 1a.7-1b.2, shortened below to MZ; the slash / indicates the end of a line in the *Dao Zang*-edition.)

A partial translation (pp. 1a-3b.6) of the *Secret Advice* has been published by Kohn 1993, pp. 192-197. However, for the purposes of this paper all quoted passages were newly translated. Differences to this earlier translation are not highlighted. Nicholson 2004, p. 5, quoting Kohn 1993, pp. 194-195, has pointed out this passage as describing an “example of a light vision”.

<sup>24</sup> 守一之法，始思居閑處，宜重墻厚壁，不聞喧/譁之音。/ (MZ 4a.2-3; Wang Ming 1979<sup>2</sup>, p. 740.)

On ‘quiet rooms’ - *jìng shì* 淨室 - and ‘entering the room (for meditation)’ - *rù shì* 入室, cf. Engelhardt 1997<sup>2</sup>, pp. 71, 77, 148 n. 157, 151 n. 206, 171. Text (C) below calls it a ‘calm room’ - *jìng shì* 靜室.

<sup>25</sup> 守一明之法，未精之時，瞑目冥冥，目中無有/光。/守一復久，目生光明。昭然見四方，隨明而遠/行，盡見身形容。群神將集，故能形化為神。/ (MZ 1b.5-8; Wang Ming 1979<sup>2</sup>, p. 739.)

The adept sits in an unspecified posture, and closes the eyes to shut off retinal stimulation from daylight. Seeing ‘brightness’ - *míng* 明 - or ‘rays’ - *guāng* 光 - of light is thought to be impossible at the beginning of the exercise. Apart from (a) this ‘procedure of enlightening’ - *míng fǎ* 明法, which most probably can be interpreted as phosphene experience, one wants (b) to develop a kind of inward directed view, and (c) reorganise and influence the inner world of bodily ‘spirits’ - *shén* 神.<sup>26</sup>

These general aims are further accompanied by a statement on the movement of the light:

“Procedure of enlightening by maintaining unity: Being the root of a prolonged life span, ten thousand spirits can be ridden (guided), and you step out of the door of radiant brightness. On the occasion of viscid brightness by maintaining unity, as if fire begins to quicken, timely and carefully keep to it, do not let it escape! Beginning red, for long it will be a pure white; for long it will again be a bluegreen. A piercing brightness cuts into the distance, but it returns with regulated unity [maintained]. Inwardly nothing will not be enlightened, and hundred ailments are eliminated. Maintain it, never slacken, and you transcend your generation (*duò shì*) in exceeding gallop (*chāo téng*)!”<sup>27</sup>

Of course, the fast moving phosphenes are most likely to escape very quickly. They ‘pierce’ - *dòng* 洞 - into the darkness of the closed eyes, into the remoteness of the experienced space. Continued practice can bring them back. All this inner light is mapped onto and into one’s own body, the indistinct darkness thereby given a form to fill with light.

More specific forms of light experiences are described in a series of separate entries:

“Procedure of enlightening by maintaining unity: It is like the sun coming out, and of the brightness of the bright midday.

Procedure of enlightening by maintaining unity: The brightness has a pure bluegreen; if it is bluegreen and lucid (distinct), it is the brightness of the lesser *yáng*.

Procedure of enlightening by maintaining unity: Is the brightness a pure red, like the rays of fire, you transcend your generation.

Procedure of enlightening by maintaining unity: Is the brightness a pure yellow and bluegreen, these are the rays of median admixture, an excellent remedy of the *dào*.

Procedure of enlightening by maintaining unity: If it is a pure white like clear water, it is the brightness of the lesser *yīn*.

Procedure of enlightening by maintaining unity: Does the brightness possess a pure black (or, very dark violet), clear like peeking (*kuī*) into [dark] water, is the ray of greater *yīn*.

Procedure of enlightening by maintaining unity: Are the four quarters all dark and in the midst of the belly penetrates a shine (*zhào*), this is the brightness of the greater admixture, the course of a great flowing with the current (prosperity).”<sup>28</sup>

Very bright white phosphenes, followed by blue, yellow and red ones make up for the most part of elicited phosphenes. In a staccato style, characteristic for the text, these seven manifestations are brought into community-specific categories, as tabulated below:

<sup>26</sup> On bodily spirits, cf. Bumbacher 2001.

<sup>27</sup> 守一明法,長壽之根,萬神可御,出光明之門。/守一精明之時,若火始生,時謹守勿失。始赤,久久正白,久久復青。洞明絕遠,還以理一。內/無不明,百疾除。守之不懈,度世超騰矣。/ (MZ 1b.9-2a.2.)

On *duò shì* 度世, cf. Bokenkamp 1997, p. 409, who writes: “To “transcend one’s generation” means to live beyond one’s allotted lifespan and implies that one will ascend to heaven without having to pass through death.”

<sup>28</sup> 守一明法,若日出之,明日中之明。/守一明法,明有正青,青而清明者,少陽之明/也。/守一明法,明正赤,若火光者,度世。/守一明法,明正黃而青者,中和之光,其道良/藥。/守一明法,正白如清水,此少陰之明也。/守一明法,明有正黑,清若闕水者,太陰之光。/守一明法,四方皆闕,腹中洞照。此太和之明/也,大順之道。/ (MZ 2a.3-2b.2; Wang Ming 1979<sup>2</sup>, pp. 739-740.)

category	colour	specifics	postulated effect
lesser <i>yáng</i>	pure bluegreen /blue	distinct	
median admixture	pure yellow & bluegreen/blue		remedy of the <i>dào</i>
lesser <i>yīn</i>	pure white	like clear water	
greater <i>yīn</i>	pure black	like peeking into [dark] water	
greater admixture	a shine/bright	in midst of belly	
—	sunlight/bright	very bright	
—	pure red	rays of fire	transcend one's generation

Unlike text (C), as we will see below, our *Secret Advice* does not specify any forms the inner light takes, it is satisfied to give colour names, and to speak about rays and shines. Five descriptions out of seven name pure colours; only one description lists a combination of contrast colours.<sup>29</sup>

One gets the impression that this meditation induces merely areolar- or ray-like phosphenes, but no geometric form constants, which associate to figurative percepts and may lead to figural hallucinations. Even so we find this general statement about a possible training effect during prolonged practice:

“Procedure of maintaining unity: Doing it skilfully, the intended effect can be observed. If you now daily practise skilfully, still and calmly, the spirits enlighten gradually to a ray: in the beginning like a glow-worm’s light (*yíng huǒ*), after a while similar to flashes of lightning (*diàn guāng*).”<sup>30</sup>

Obviously, the change from glow-worm’s light to lightning is one of intensity and movement pattern. Such training extended over hundreds of days, whereby hundred, two hundred and three hundred days counted as a small, middle or great ‘calming’ - *jìng* 靜 - respectively. This implies a relaxed, hypnagogic state. As a result, one expected to improve health, and the faculty to observe spirits.<sup>31</sup>

Contrarily, to see nothing is considered a kind of disorder and needs treatment:

“Procedure of enlightening by maintaining unity: Is there an outwardly darkness and an inwardly darkness, where nothing can be classified and discerned; this is human malady and muddle; quickly

<sup>29</sup> These inner light colour categories would align more or less with the traditional correspondences for natural colours: Lesser *yáng* (bluegreen, east), lesser *yīn* (white, west), greater *yīn* (black, north) follow the traditional pattern (compared after Porkert 1961, pp. 436-443 and 1962). But median admixture (yellow, center) is here reserved to a phosphene combination of yellow and bluegreen, rather than to yellow alone. ‘Pure red’ would be greater *yáng* (red, south), but this is not mentioned in our text. In addition, two different bright lights are given, which apparently could not be accommodated to the traditional correspondence scheme. Sunlight is sometimes described as ‘yellow’, sun beams as ‘yellow fluid’. These several bright, gleaming, pale, sunny-coloured phosphenes may well form the main part of the meditative experience, and perhaps therefore were enumerated in more detail than the five ‘pure’ colours.

Ray et al. 1998 induced the following colours with transcranial magnetic stimulation which may be quoted here for comparison: “Eight of fourteen described the phosphenes as spots of light in shades of grey, white, or green that varied among the subjects in their position in the visual field. The ninth subject experienced a spot of light having a faint purple center with a yellow halo. Bars of light in gray, white, or yellow were described by 4 subjects, and were oriented in different positions in the visual field of each subject. A grey triangle was consistently reported by one subject. All subjects reported that the visual images tended to persist only for the duration of the stimulation.”

<sup>30</sup> 守一之法，為善，効驗可觀。今日為善清靜，神/明漸光。始如螢火，久似電光。/ (MZ 6a.10-6b.1; Wang Ming 1979<sup>2</sup>, p. 743.)

<sup>31</sup> MZ 5b.7-10; Wang Ming 1979<sup>2</sup>, p. 742.



remedy it with recipes and cures. Lookout for the seven above-mentioned heads [of lights], and inwardly seek them yourself.”<sup>32</sup>

To bring oneself into a hypnagogic state in order to experience a specific colour or at least one of seven is maybe not overzealous. But ‘maintaining unity’ means more: because of it, humans may live long, transcend their generation, reduce disaster, cure illnesses, etc. But if the sky would no more ‘maintain unity’, it would lose its clarity, earth would lose its serenity, the sun its brightness, the moon its [white] essence, the stars their movement, and so on. More importantly, if spirits do not ‘maintain unity’, they no more live and develop, if humans do not ‘maintain unity’, they also do not subsist and procreate. “Unity forms the base, and ten thousand affairs are all in movement; if you know unity, ten thousand affairs are completed!”<sup>33</sup> The meditative concentration is naturalised by such analogy with continuous entities, which are apparently treated as eternal units. Thus generalised, practice empowers one to control worldly and otherworldly affairs. Phosphenes signalise progressive stages on this way.

### (C) *Mister Chen’s Instructions on the Inner Cinnabar*

*Mister Chen’s Instructions on the Inner Cinnabar* (or *Elixir*) (*Chen Xiansheng Nei Dan Jue* 陳先生內丹訣), probably written after 1078, preserve an elaborated teaching on a meditative practice with nine stages of transformation.<sup>34</sup> For reasons of shortness, this paper will only discuss its first stage, which is, however, unusually rich in details and inner light experiences. The setting for the meditative undertaking is detailed in the *Oral Instruction* (*kǒu jué* 口訣)<sup>35</sup> to the *First Cycle: Lowering of the Cinnabar* (*yī zhuǎn xià dān* 一轉下丹), which is translated here in full:

“At the beginning of the undertaking and putting one’s hand on, you must first nourish and harmonise the five storehouses [viscera]; you cannot neglect hunger or over-eat. If the heart [cinnabar] field [in the breast region] is calm and quiet, without sorrow and grief, you can enter the *dào* (begin the method). Usually, towards the end of the second night-watch or at the beginning of the third [i.e. towards midnight<sup>36</sup>], you must first clean yourself and gargle; in the calm room light a incense plate (*xiāng pán*).<sup>37</sup> Kneel and squat; close the eyes; actualise the spirits (*cún shén*); delay breathing, let its out and in be equal and adjusted. With the [tip of the] tongue rolled in stop up the pair of openings at the root of the tongue [i.e. the salivary glands]. Block up the breathing gradually to a halt, and you sense left and right the greater *yáng* channel, which has a double course. Flow events from the great molar are linked downwards with the greater *yáng*, enter the vertex gate (*dǐng*)

<sup>32</sup> 守一明法，有外閭內闔，無所屬，無所覩。此人/邪亂，急以方藥助之。尋上七首，內自求之。/ (MZ 2b.3-4; Wang Ming 1979<sup>2</sup>: 740.)

<sup>33</sup> MZ 7a.2-10; Wang Ming 1979<sup>2</sup>, p. 743. Quote: 一之爲/本，萬事皆行。子知一，萬事畢矣。/

<sup>34</sup> For a content summary and discussion of the text, as well as for details on its author, cf. Eskildsen 2001.

<sup>35</sup> The nine main sections of the text are divided into (a) two explications in different verse form, each accompanied by commentary, and (b) into the *Oral Instruction* (except for the ninth section). An alternative version of *Mister Chen’s Instructions on the Inner Cinnabar*, hereafter abbreviated as NDJ, is found under the title *Secret Instructions on the Nine Cycles of the Metal [Phase] Cinnabar* (*Jiu Zhuan Jin Dan Mi Jue* 九轉金丹祕訣), shortened to JZ. Again, the slash / indicates the end of a line in both *Dao Zang*-editions. The JZ-edition is only quoted in footnotes, when larger differences or additions have to be noted. The sign <sup>†</sup> stands for one or more additional characters as compared to NDJ, <sup>°</sup> for an omission. Superscript numbers indicate the number of additional or omitted characters as compared to NDJ.

<sup>36</sup> The night was divided into five ‘night-watches’ - *gēng* 更, therefore the indicated time would be before midnight. However, “there is considerable difficulty in obtaining detailed definitions of these watches in the various schemes which appear to have been current from time to time”, as Needham, Wang and Price 1960, say on p. 204 in their Appendix on *Chinese Horary Systems*.

<sup>37</sup> JZ 4a.5 定神<sup>†</sup>入室，燒香盤。“Concentrate the spirit(s) and enter the room, light an incense plate.”

Various utensils for burning incense are described in Bedini 1963, 1994. Incense trays, plates, or spirals allow one to measure time, but unfortunately our text does not specify the time needed for the exercise. The partitioning of the method, however, indicates awareness of measured parts of time following each other, and not an attitude to lose oneself in the experience.

*mén*), and arrive at the palace of the mud ball (*ní-wán gōng*). That means doing one sequel.<sup>38</sup> Now open the eye for quite a long time. Close the eyes again and actualise the spirits. Roll in the tongue as before, wait till the flow events arrive at the palace of the mud ball, then stop. Practise every night three times like this. Practise several nights, or a decade, or half a month. Gradually you sense the flow events arrive at the palace of the mud ball, afterwards flowing into the brain [marrow] (*nǎo*), descending to the twelve rings of the multi-storied pagoda (*chóng lóu*), passing the clamp of the backbone (*jiā jǐ*), and run to the gate at the tailbone (*wěi lǚ*).<sup>39</sup> Above, it enters the heart and is linked to the gallbladder. You sense it lukewarm in the midst of the breast, and subtly sense imagination and thought to be agreeable and mild. Thus is the lowering of the true flow events. If practising like this for several nights, one afterwards feels the flow events gradually moving towards the heart. Afterwards you subtly sense it lukewarm, or the flow events of the heart's tip are subtly moved (aroused), but there is a lukewarm flow event, which leaves the heart behind and ascends, passes the multi-storied pagoda, and enters below the tongue. Gradually you sense some bitterness in the mouth. This is then the flow event of the central yellow. Going out from the gallbladder, *yīn* and *yáng* being greatly mixed, soon you have the representation of the lowering of the cinnabar. After it was like this, at the beginning of the nightly practice, have a person standing outside the gate [of the house], who keeps off entering persons, as well as cats, dogs, and the like. The reason is, that one fears to startle each other all of a sudden. If you come to practise every night three sequels, you need at times in front of your seat, placed crosswise, one [small] table, when you suddenly, during the moving of the flow events, feel that rump and limbs gradually enlarge. The refined spirits (*jīng shén*) gush up and sparkle (*téng-téng*), gradually you see living quarters (*zhù zhái*) and walled cities (*chéng shì*).<sup>40</sup> Sky and earth are within your body. On one body you sense ascending the filling up of the sky, and descending the blocking up of the earth.<sup>41</sup> If you know no more the whereabouts of hands and feet, then quickly press the table with your hands. With closed eyes you merely sense at the heart's tip a lump of radiant brightness, ball-shaped like the sun, which suddenly tumbles and falls; this then is the lowering of the cinnabar. After the lowering of the cinnabar you cannot casually open the eyes. Little by little bring back the refined spirits. Return the four limbs, hands and feet. Then you're again the old; sometimes one senses in hands and feet some light tingling (*má*). Fix some time on the sobering (*dìng xīng*), afterwards open your eyes. Eat some ginseng soup. Then sleep until the coming of the day (morning). Eat porridge meals. Relax for one or two days. This is the effect of the lowering of the cinnabar: After the lowering of the cinnabar the hundred ailments are abolished, and you remain without the bitterness of malady and adversity."<sup>42</sup>

<sup>38</sup> JZ 4a.7-9: 閉息漸覺左右太陽經,有兩道,氣大牙根上貫二太陽,次入頂門。覺二氣/交合,即為一次。却閉眼良久,亦閉目。<sup>o2</sup> “Block up the breathing, gradually you sense left and right the greater *yáng* channel, which has a double course. Flow events [from] the great molar are linked *upwards* with the two greater *yáng* [courses], enter *thereupon* the vertex gate. If you sense the two flow events uniting, this means doing one sequel. Now *close* the eye for quite a long time, also close the eyes.” - Italics added to highlight differences. ‘Upwards’ is inserted at the place of ‘downwards’ in NDJ. The last sentence seems to be corrupt, with its repetition of the verb ‘to close’.

<sup>39</sup> These current medieval Chinese names for locations in the body (cf. Despeux 1994) can be identified as follows:

- The ‘vertex gate’ - *dǐng mén* 頂門 - names the vertex point of the skull, considered to be a gate for flow events.
- The ‘palace of the mud ball’ - *ní-wán gōng* 泥丸宮, i.e. the brain; *ní-wán* 泥丸, here literally rendered as ‘mud ball’, and possibly alluding to the brain's consistence, means also *nirvāṇa*, ‘extinction’.
- The ‘(twelve rings of the) multi-storied pagoda’ - *chóng lóu shí'èr huán* 重樓十二環 - stands for the trachea, which is formed by 16-20 cartilaginous rings (*Cartilago cricoidea*).
- ‘Clamp of the backbone’ - *jiā jǐ* 夾脊 - refers to the region of the hips, below the kidneys, treated as a pass, forming a clamp on both sides of the spine.
- The ‘gate at the tailbone’ - *wěi lǚ* 尾閭 - is the coccyx, again considered as a gate for flow events.

<sup>40</sup> JZ 4b.8-5a.1: 至/每夜行三兩次,時於坐前橫一几,忽然氣衝/覺身體漸大。精神騰騰,漸見屋舍人物山河/皆在/我身之內。<sup>o10</sup> “If you come to practise every night three *double* sequels, you [need] at times in front of your seat, placed crosswise, one [small] table, when suddenly the flow events *push you forward*, you feel that rump and limbs gradually enlarge. The refined spirits gush up and sparkle, gradually you see *rooms and buildings, human beings, mountains and streams*, which reside all in one's own body.” - Italics added to highlight differences.

<sup>41</sup> JZ omits ten characters.

<sup>42</sup> 口訣: /行持下手之初,先須以飲食養和五藏。不可/失飢過飽,心田安靜,無憂無愁,乃可入道也。/凡於二更盡三更初,先須洗漱,於靜室燒香/盤。膝坐,閉目,存神,候息,出入勻調。以舌倒卷/塞定舌根兩竅。閉息漸次,覺左右太陽經,有/兩道,氣從大牙根下貫太陽,入頂門至泥丸/宮,即為一次。却閉眼良久,再閉目,存神。依前/卷舌,候氣至泥丸宮,即止。如此每夜行三次。/行數夜或旬日或半月,漸覺氣到泥丸宮,後/流入腦,下重樓十二環,過夾脊,串尾閭到。上/入心貫膽。覺胃中溫溫,微覺意思和暢。乃是/真氣降也。如此又行數夜,後漸覺氣到心。後/微覺溫溫,或心頭氣微動,却有溫氣,後心而/上,過重樓,入舌下。漸覺口中微苦,乃是中黃/之氣。自膽而出,陰陽大和,將有降丹之象也。/如此之後,每夜行持之初,令一人在門外,以/絕入來之人及貓狗等,恐忽然相驚故也。至/每夜行三次,時須於坐前橫一几,忽行氣間

• Time: *Towards midnight.*

If someone's usual sleep rhythm is to go to bed before midnight, the late hour to begin the exercise might imply a hypnagogic state; the adept would probably be sleepy, or in a pre-sleep mood, and therefore more susceptible to phosphene experiences, etc. And even without closing the eyes outside light will be minimal.

• Location: *A special chamber, secured by another person.*

The intention is to reduce as far as possible outside disturbances, after some progress has been made. This is of technical importance, as it is well known that a person without or with reduced external stimuli is likely to be easily scared, or at least more easily irritated by outside happenings or intruders.<sup>43</sup>

• Pre-conditions: *Normally filled belly; calm, unoccupied mind; body cleaning and gargling.*

This helps to reduce potentially disturbing sensations arising from within one's own body, like belly sounds, feeling of fullness, etc. Thought contents should be kept minimal, in order to concentrate. Preparatory gargling is necessary, because the anticipated taste changes can be discriminated better with a fresh feeling in the mouth. Body odour or food remains in the mouth might distract concentration.<sup>44</sup>

• Position: *Kneeling; closed eyes.*

The eyes are kept closed in order to minimise stimulation of the retina by light. The kneeling position prevents falling asleep during the exercise. Maintenance of the upright posture allows similar blood flow as in a standing position, which in comparison to lying on the back might well influence the experience.<sup>45</sup>

• Tongue positioning: *Tip of tongue rolled towards the sublingual fold (Plica sublingualis) in order to cover the ducts of the sublingual gland.*

In the commentary to the third verse, "on the red lotus leaf's underside the cinnabar cavities are storing", we find a community-specific theory on the link between inner flux and psychic events:

"The left of the paired openings below the tongue connects to the heart, the right connects to the gallbladder. If true flow events (*zhēn qì*) flow and gush, spiritual brightness will permeate. If therefore the human body is agitated, the saps below the tongue dry up, and their true flow events are used up. At the beginning of the first cycle, the blocking of the paired openings with the tongue causes the true flow events not to leak to the outside, whereby the spiritual waters permeate."<sup>46</sup>

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/覺身體漸大。精神騰騰，漸見住宅與諸城市/天地皆在身內。一身上覺充天，下覺塞地。手/足皆不知所在，乃急以手按几。閉目只覺心/頭一塊光明團團如日，忽然墜落乃是丹降/也。丹降之後，不可便開眼，漸漸收拾精神。却/歸四體手足。却復舊，或覺手足微麻。定省多/時，然後開眼。喫人參湯。乃睡至來日。喫粥食。/將息一二日。乃丹降畢功也。丹降之後，百病/消除，更無疾厄之苦也。/ (NDJ 3b.2-4b.9, cf. JZ 4a.2-5a.7. Cf. Eskildsen 2001, pp. 4-7 for a paraphrase.)

<sup>43</sup> See Knoll 1965, p. 382; Eichmeier and Höfer 1974, p. 29 say sensory deprivation can be accompanied with anxiousness, somatic afflictions, temporal or spatial disorientation, and visual hallucinations. Mavromatis 1991: 82 states: "On the cognitive-affective level, hypnagogia is characterized by receptivity and susceptibility to suggestions (paralleled on the physiological level by a sensitivity to external and internal stimuli), (...)."

Compare Eskildsen 2004, pp. 104-105, for a Quanzhen text which warns from frightening experiences.

<sup>44</sup> Already Maury 1848, p. 29, notes: "L'attention ne devant être provoquée par rien, afin de ne point arrêter la manifestation du phénomène, il est nécessaire qu'aucun objet ne frappe les yeux, qu'aucun son trop bruyant ne tienne l'oreille occupée, qu'aucune odeur trop forte n'agisse sur l'odorat. De là, la nécessité absolue de l'occlusion des yeux pour que les hallucinations aient lieu." See above, text (B) for similar precautions against disturbances.

<sup>45</sup> Nielsen 1995 proposes an upright position, where the head is unsupported to induce hypnagogic imagery.

<sup>46</sup> {紅蓮葉下藏丹穴。}/舌下兩竅左通心，右通膽。真氣流注，以通/神明。故人身不安，則舌下液乾以其真氣/耗也。一轉之首，以舌閉其兩竅，使真氣不/泄於外，以通其神水也。/ (NDJ 1b.3-7; cf. JZ 2a.6-9.)

By closing off the ducts of the sublingual gland one expects to induce inner flows, called ‘true flow events’ - *zhēn qì* 真氣, leading eventually to ‘spiritual brightness’ - *shén míng* 神明, here probably a state of being flooded with inner light. As in many other psychophysical technique, leakage is considered to be detrimental to life-giving flows, and a dry mouth, the stopping of saliva production is seen as a result of ‘being not calm’, or ‘agitated’ - *bù ān* 不安.<sup>47</sup>

• Breath regulation: *Gradually blocking up respiration.*

Slowing down the expiration, sometimes accompanied by counting heart beats and other counting measures for the period of breath retention, is a common Daoist method. It is used to concentrate on inner events, and therapeutically.<sup>48</sup> In our text it is related to a sensation of the flows of the ‘greater *yáng* channel’ - *tài yáng jīng* 太陽經 (see *Figure 3*). The pressure change in the head, caused by the breath retention, probably together with sensations felt at the tip of the tongue, is interpreted as the pulsation coming from both sides of the mouth, from the direction of the molars, and furthermore reaching out to the crown of the head and brain. As can be seen in *Figure 3*, a downward linking (as it is mentioned in NDJ) would go from the cheek towards the back of the shoulder and run along the outer parts of the arm, whereas an upward linking (as proposed in JZ) connects the cheek with the ear.



Figure 3:  
The hand greater *yáng* channel of the small intestine<sup>49</sup>

JZ 2a.6-7 varies the commentary: °自兩竅°通心,兩竅通液。°人有病/者,則舌下°津液乾而其真氣耗°。°From the paired openings [below the red lotus, that is the tongue] there is a connection to the heart; the paired openings let the [body] saps permeate. If a person has an illness, the salivary saps below the tongue dry up, and their true flow events are used up.”

<sup>47</sup> For a tentative interpretation of some implications of the term *shén míng* 神明, cf. the short study Pfister 2006. Medieval knowledge on the salivary glands and considerations about leakage are discussed in Pfister forthcoming 2007.

<sup>48</sup> Cf. Engelhardt 1997<sup>2</sup>, p. 169, and Needham 1983, SCC 5.5, pp. 142-147, on techniques to ‘block up the flow events (or flow of respiration)’ - *bì qì* 閉氣.

<sup>49</sup> Illustration taken from *Classified Medical Classics: Illustrated Wing 3*, p. 79.

• Postulated events during hypnagogic state:

(a) *Sensations of flow events.*

A detailed description of the inner circulation can probably also be taken as prescriptive: the adept is oriented at the outset on what kind of sensations to expect, and can visualise the inner streams accordingly. Flowing from the trachea downwards along the spine to the tailbone, upwards into the brain marrow, and also connecting to the heart and gallbladder inner streamings make themselves felt during the exercise.

A lukewarm feeling in the breast region comes together with mild thought content. Such signs are taken as feedback, and help the adept through the continuing process. When the flow events arrive at certain locations, this is a clear indication that one has made some progress in the process of ‘lowering the cinnabar’.

Bits of a very general topographic knowledge of certain bodily regions and postulated interrelationships between them display an intention of the text-producing collective to explain the experienced phenomena in relation to human physiology. The commentary attempts to give a precise description of the circulating flux:

“At the beginning of putting one’s hand on, block the paired openings below the tongue; do not let the flow events leak to the outside. The flow events to the left and right of the paired openings enters by itself and is moving upwards. At the left it is connected to the left greater *yáng* [channel], and it enters into the brain [marrow]. Left and right pass together the brain [marrow] and arrive at the centre of the vertex; at the place of the commissure of the palace of the mud ball [either the *Pons* and/or the *Medulla oblongata*] they descend to the twelve rings of the multi-storied pagoda [trachea] and enter the heart;<sup>50</sup> they are transmitted to the gallbladder and push open the gall’s openings (*dǎn qiào*). This causes that the quickening flow events (*shēng qì*) from the midst of the gallbladder are moving upwards, following the heart’s and gall’s veins (*mài*), which are connected to the tongue’s openings. This causes the tongue to sense a bitter taste. As soon as the quickening flow events pour and gush, the lowering of the cinnabar takes place.”<sup>51</sup>

(b) *Bitter taste in the mouth.*

As the flux of the ‘quickening flow events’ - *shēng qì* 生氣 - is gushing upwards, a bitter taste is caused in the mouth; again the commentary elaborates the point:

“The name of the quickening flow events of the heavenly unity is: central yellow. Its flow events are stored in the gallbladder, and are considered to be root and origin of dispositions and life mandate. Its taste is bitter, as the roots and stalks of I don’t know which flowers and trees are bitter as well.<sup>52</sup> Recognize from that, the ten thousand beings without quickening flow events are not capable to live. The remedy of the inner cinnabar: First of all block the paired openings below the tongue, which are inwardly connected with the quickening flow events in the gallbladder. Coming between throat and

<sup>50</sup> JZ 3b.1-4 alters to: 其左邊<sup>o</sup>之氣<sup>o6</sup>貫<sup>o7</sup>於左太陽而入腦。<sup>o12</sup>右/邊之氣貫於右太陰而入腦,左右俱過腦/而入頂,泥丸宮合成一處下重樓十二環/入心,(...) “The flow events to their left side are connected with the left greater *yáng* [channel] and enter the brain [marrow]. The flow events to their right side are connected to the right greater *yáng* and enter the brain [marrow]. Left and right pass together the brain [marrow] and enter the vertex; at the place of the commissure of the palace of the mud ball they descend to the twelve rings of the multi-storied pagoda and enter the heart.” - Apparently JZ tries to correct the somehow garbled text of NDJ in these sentences. It seems however clear, that both texts wanted to neatly describe the symmetrical courses of the greater *yáng* channel on both sides of the head. If NDJ intended to make a point about a different and specific left course (on the heart side), remains undecidable.

<sup>51</sup> 下手之初,先閉舌下兩竅,不令氣泄於外。/左右兩竅之氣,自內而上行,左貫左太陽/而入腦。右(→左\*)右俱過腦至頂心,泥丸宮合成/一處下重樓十二環入心,經傳入膽,衝開/膽竅。使膽中生氣上行,隨心膽之脉,貫於/舌竅。使舌覺有苦味。乃是生氣流注,欲降/丹也。/ (NDJ 2b.8-3a.4; cf. JZ 3a.9-3b.6; \* emendation after JZ.)

<sup>52</sup> JZ 2b.9-10 augments: 其味苦,<sup>o7</sup> 故人之膽氣味亦/苦。如草木之根華其<sup>o</sup> 味亦苦。 “Its taste is bitter, because the flow events of the gallbladder of a person are also bitter. Similar to the roots and flowers of herbs and trees, is its taste bitter, too.”

tongue, they have a subtly bitter taste; these are quickening flow events passing freely. Afterwards beg the spirits to build the cinnabar.”<sup>53</sup>

It is not clear to me what might cause this bitter taste, but it could well be an effect of the hypnagogic state. There are reports of olfactory and gustatory phenomena accompanying visual percepts during such states.<sup>54</sup> However that may be, our text gives much importance to the bitter taste by interpreting it repeatedly as a crucial sign, which marks the achievement of a free-flowing life force in one’s body.<sup>55</sup>

(c) *Changed body image, enlarging limbs.*

Changes of the body image are discussed in the comment to the second verse of the introductory poem: “Mountains and streams, space and time (*yǔ zhòu*) trickle through the nifty body hull.”<sup>56</sup> It says:

“During the lowering of the cinnabar, the spirit(s) (*shén*) wander(s) to the outside of the [earthly] quadrants (*fāng wài*). Are *yīn* and *yáng* greatly mixed, one forgets one’s bodily form. Sky and earth, mountains and streams, the six conjunctions (space directions) (*liù hé*) and the ten thousand beings are within my body. My body resides outside of sky and earth.”<sup>57</sup>

Add to this the remarks quoted above from the *Oral Instruction*, that “sky and earth are within your body”.

Such wanderings of the spirit(s) are state typical outcomes of hypnagogic relaxation. Andreas Mavromatis notes what fits well with the above indications of text (C):

“In the light-to-middle hypnagogia, when physical relaxation is considerable but mentally there is an awareness of external reality, body schema distortions and floating or drifting are reported.” And: “(...) not infrequently the hypnagogist may lose his body schema altogether or that events outside himself are experienced ‘as something happening to and around his body’.” “[T]wo consecutive processes [are] characteristic of sleep onset: a disintegration of the various parts and functions of the ego, and a diminution of the ego’s differentiation.” “(...), in the progression of hypnagogia the boundaries of the ‘body ego’ (body schematization and identification) ‘begin to be blurred and to become fused with the external world . . . perceptions are localized as sensations in a particular bodily region and at the same time as processes in the external world. . . . (..).”<sup>58</sup>

(d) *The small table used for reality checking when bodily outlines blur.*

Our text advises to put a ‘small table’ - *jī* 几 - in front of one’s seating mat in order to reach out to it, when - because of the raising flow events - one is pushed forward, or when

<sup>53</sup> 天一生氣名曰中黃。其氣藏於膽，以為性/命之根元。其味苦，至如無知花木根蒂之/味亦苦。乃知萬物非生氣，不能生也。內丹/之藥，先閉舌下兩竅，內通膽中生氣，至喉/舌之間，有微微苦味，是生氣通流。然後求/神為丹也。/ (NDJ 2a.4-9; cf. JZ 2b.8-3a.3.)

JZ 3a.1-3 alters the final sentences: 至喉舌之間，微覺<sup>o</sup> 味苦，是/丹氣流通。然後汞水<sup>T3</sup> 凝結而成丹也。“Coming between throat and tongue, you subtly sense the taste bitter; these are the cinnabar’s flow events passing freely. Afterwards the quicksilver fluid (*hóng shuǐ*) coagulates and builds the cinnabar (elixir).”

<sup>54</sup> Mavromatis 1991, p. 35 “Hypnagogic smells vary from a ‘horrible stench’ to the smell of a rose that ‘smelt much nicer than ever a real rose could smell’, and they are often, but not always, accompanied by an appropriate visual image. Some hypnagogic smells are so realistic that, for instance, people may get out of bed to make sure that they have not left the oven on (...). Maury and Leaning also reported gustatory images.” Klüver 1969<sup>2</sup>, p. 48 “As regards taste, it happens for example that all food taken during the mescal states tastes “like water” or that saliva has the taste of good wine. But in general, changes in the olfactory and gustatory fields seem to be rather infrequent.”

<sup>55</sup> Compare Eskildsen 2004, pp. 102-110, on “sights, sounds, tastes, and sensations” as ‘signs of proof’ - *zhèng yàn* 證驗 - in Quanzhen Daoism. As such they were often interpreted as “resulting from the aid of kind immortals”. Interestingly, only sweet and no bitter taste (of the saliva) is reported as confirming experience in Eskildsen’s textual selection.

<sup>56</sup> { 山河宇宙透靈軀。 } (NDJ 1a.7; cf. JZ 1a.9.)

<sup>57</sup> 丹降之時，/ 神遊方外，陰陽太和，至忘其形。天地山可 (→河\*) / 六合萬物 在我身之內。我身在天地之外。/ (NDJ 1a.9-1b.1; cf. JZ 2a.1-3; emendation after JZ 2a.2.)

<sup>58</sup> Mavromatis 1991, pp. 78, 168-169.

one has the feeling of gradual enlargement of rump and limbs.<sup>59</sup> One should quickly press this table while loosing proprioceptive sensibility of the whereabouts of hands and feet in order to regain immediately a sense of distinct bodily outlines. Alterations of bodily dimensions or disturbances of the body image likewise are frequently seen and characteristic features of hypnagogic states.<sup>60</sup>

(e) *Phosphene experiences, auto-symbolic phenomena.*

The opening verse defines the effect of the ‘lowering of the cinnabar (elixir)’, and is followed by a comment:

“[Verse 1:] The first cycle’s effect resembles a precious pearl.

[Comment:] The true waters of the heavenly unity are collecting in the gallbladder. *yīn* and *yáng* blend and unite, lower and build the cinnabar (elixir). Its form is like the drop of a dew pearl.”<sup>61</sup>

In this physiologic alchemy some special inner fluids are accompanied by flashes of light, which are here compared to dewdrops, and a bit further on to a radiant lightball:

“However, if you feel in the midst of this a dot of radiant brightness like the sun, it is the lowering of the cinnabar.”<sup>62</sup>

From the passage of *Oral Instructions* quoted above, we repeat the sentence:

“With closed eyes you merely sense at the heart’s tip a lump of radiant brightness, ball-shaped like the sun, which suddenly tumbles and falls; this then is the lowering of the cinnabar.”

In the inner observational space of the breast region phosphene flashes are apparently felt at the ‘heart’s tip’ - *xīn tóu* 心頭, which is about pointing to the pit of the stomach.<sup>63</sup> All four quotes take phosphenes as indicators of a successful first cycle.<sup>64</sup> Moreover, the light mental relaxation, which lets one see *flashes of light* and *clouds of colours* (found in texts (A) and (B) as well) is complemented now not only by *drifting*, *swelling*, *floating* (see (a), (c) and (d) above), which indicate a middle stage of relaxation<sup>65</sup>, but also by

<sup>59</sup> Archeologically found Sui dynasty models of ‘small tables’, and especially small tablelike furniture to lean on while sitting on a mat, are discussed in Yang Ailing 1996. Such a reclining device might well be intended in our text as well.

<sup>60</sup> Mavromatis 1991 discusses body schema/image alterations and/or disturbances on pp. 36, 78, 168-169, 219, 225, 232. He notes p. 36: “Feelings of bodily distortion or ‘body image disturbances’ include the enlargement or shrinkage of parts of the body, the blurring of bodily outlines or parts of it, ‘mouth distortions’, weightlessness. Sartre notes that ‘one’s body is but vaguely felt, and even more vaguely, the contact with the bed sheets and mattress. The spatial position of the body is but poorly localized. Orientation is confused. The perception of time is uncertain’.” Klüver 1969<sup>2</sup>, p. 46 says of the mescaline experience, that limbs feel either abnormally heavy or light. A similar alteration of the body image is frequently mentioned as *qīng shēn* 輕身, ‘(sensation of a) light body, a lightened body’ in old and medieval Chinese texts, cf. Pfister forthcoming 2007.

<sup>61</sup> {一轉之功似寶珠。} 天一真水藏之於膽。陰陽和合降而為丹。/狀如露珠一顆。/ (NDJ 1a.4-6; cf. JZ 1a.9, 1b.6-8.)

JZ 1b.7 slightly reformulates the last sentence: <sup>†3</sup>初降之狀如露<sup>°</sup> 一顆<sup>†10</sup>明珠。(…) “Its form at the beginning of the lowering is like the bright pearl of a drop of dew.”

<sup>62</sup> 只覺此中一點光明如日,乃丹降也。/ (NDJ 1b.2.) JZ 2a.3-4 writes instead: 只覺心中一點光/明<sup>°2</sup> 乃<sup>†</sup>是丹降也。 “However, if you feel in the midst of the heart a dot of radiant brightness, this then is the lowering of the cinnabar.”

Let us note in passing, that Robinet 1995, p. 175, cites a text of Zhang Boduan, which similarly phrases the light experience as ‘une parcelle de lumière divine’ - *yī diǎn líng guāng* 一點靈光, and where the circulation of the inner light is emphasized.

<sup>63</sup> Nielsen 1995 proposes that attention should be directed to an observational space in the head or chest region.

<sup>64</sup> Eichmeier and Höfer 1974, pp. 16, 20 report that such light patterns are taken by Asian insight schools as a sign for deep meditative states, or as guiding to a deepening of meditation.

<sup>65</sup> Cf. the three-stage model of the hypnagogic syndrome, as presented in Mavromatis 1991, pp. 77-80. He says, p. 78: “Flashes of light and colour spots and clouds seem to belong to the light stage and appear as the subject begins to relax and withdraw at sleep onset or as he [sic] begins to awake at the hypnopompic end. Vividness, luminosity and intensity of colour are also dimensions that increase in accordance with the depth of the state.”

Manford and Andermann 1998, pp. 1819-1820, follow up on the same line: “The content of the hallucinations is dramatic; they are usually in vivid colours and may evolve from simple spots of light through geometric patterns to complex images, or they

hypnagogic *hallucinations*. The following specification repeats once again the *Oral Instructions*:

“The refined spirits (*jīng shén*) gush up and sparkle (*téng-téng*), gradually you see living quarters (*zhù zhái*) and walled cities (*chéng shì*).”

Heinrich Klüver stated in 1942 that there exist four different *form constants* in mescaline or hypnagogic hallucinations, namely:

(i) checkerboard, lattice, fretwork, honeycomb,
(ii) cobwebs,
(iii) tunnel, funnel, alley, cone, and
(iv) spiral. <sup>66</sup>

Figure 4 shows some of Purkině’s illustrations of pressure phosphenes, and some of the form constants.<sup>67</sup>

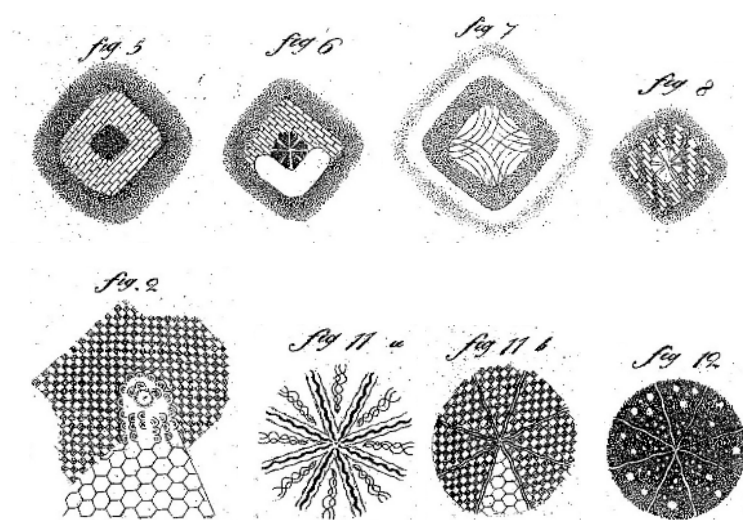


Figure 4:  
Purkině’s pressure phosphenes, 1823: Figs. 5-8 (above), 2, 11a-b, 12 (below).

Self-repeating form constants, or tessellopsia, like checkerboard and lattice can easily be visually re-interpreted as brickwork, and associated with walls of houses, forming now all kinds of figurative hallucinations, natural scenes, faces and figures.<sup>68</sup>

may be complex from the outset. Sufferers [sic] often see human figures or faces (sometimes torsos without heads or vice versa); animals (real or bizarre), sometimes in miniature (Lilliputian hallucinations) or scenery of outstanding beauty. (...) The emotional reaction to the images may be neutral, pleasant fascination or extreme fear.”

<sup>66</sup> Klüver 1969<sup>2</sup>, pp. 66-68. Checkerboard and lattice are also called *tessellopsia* “to reflect the repeated geometry of the descriptions (from the Greek-derived Latin word *tessera*, a small tile used in mosaics)”, cf. ffytche and Howard 1999, pp. 1250 (quote), 1255-1256 (discussion of tessellopsia).

<sup>67</sup> For more drawings of electrically induced phosphenes, cf. Eichmeier and Höfer 1974. See also the frontispice with croquis of hypnagogic hallucinations by D’Hervey de Saint-Denys 1867, to which he explains, p. 421: “A peine certaines personnes ont-elles fermé les yeux pour s’endormir, qu’elles aperçoivent comme un fourmillement d’images capricieuses qui sont l’avant-garde des visions mieux formées, et qui annoncent ainsi l’approche du sommeil. Tantôt, ces hallucinations représentent des objets déterminés, quelque fantasques et défigurés qu’ils puissent être; tantôt, ce ne sont que de petites roues lumineuses, de petits soleils qui tournent rapidement sur eux-mêmes, de petites bulles de couleurs variées qui montent et descendent, ou bien de légers fils d’or, d’argent, de pourpre, de vert-émeraude, qui semblent se croiser ou s’enrouler symétriquement de mille manières avec un frémissement continu, formant une infinité de petits cercles, de petits losanges et d’autres petites figures régulières, assez semblables à ces fines arabesques qui ornent les fonds des tableaux byzantins.”



And this is precisely what happens in our text (C), which speaks of “living quarters and walled cities” (NDJ), or “rooms and buildings, human beings, mountains and streams” (JZ), which would correspond to a even deeper mental relaxation than the “radiant brightness”, “ball-shaped like the sun”, which displays the typical quick movement of phosphenes, as it “suddenly tumbles and falls”.

As this deeper stage of mental relaxation is considered the culmination and achievement of the first cycle in *Mister Chen's Instructions on the Inner Cinnabar*, we can now appreciate the care Chen Pu took to guide his disciples through the meditative process systematically. He managed in the eleventh century CE (1) to give many practical indications on breathing, the posture, time and necessary furniture; (2) to sort out the main features of the hypnagogic state, like the phosphenes, hypnagogic hallucinations, the distortions of the body image; (3) to point out valuable signs of success, like the bitter taste in the mouth, the light flashes, the emerging figures and forms; and last but not least, (4) to make an attempt at theoretical explanation of processes with the means of psychophysiological knowledge of his time and place. The main features of the hypnagogic state were considered to be only of preparatory character, and not taken as an end in itself.

## Outlook

Consciousness studies focused in recent years more and more on “the view from within”, that is, on subjective states, first-person accounts, introspection, and the like.<sup>69</sup> Thereby it is of considerable interest to see how cognitive abilities may be constituted by proprioceptive sensibility, certain actions, and environmental manipulation.

Subjective light appearances, with their characteristic form constants, are probably generated by the primary visual cortex, and seem to have universal character.<sup>70</sup> Their descriptions can be assessed in written documents of many periods and peoples.

We have seen in medieval Chinese examples, that subjective light appearances were clearly differentiated from usual percepts, and even taken to be ‘false details’. According to ancient culture-specific physiological opinions, one assumed them to be productions of a body sap, called ‘essence’. With elaborated theoretical considerations one thought to explain processes of the body, together with the emerging light patterns, mainly through the analysis of inner flux and streaming, which links up localities in the rump. Postulated events in the body seemed to have specific outcomes if one followed such outlines of one’s thought community, as seen in our textual examples. The inner light with its quickening force, an overflowing *élan vital*, which at times leads to overwhelming experiences, running through the whole body, could not but give one the impression to be invigorated. Life is a sparkling and gushing flow event! The techniques require deliberate avoidance of outside disturbances and rigorous effort over

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<sup>68</sup> Knoll 1965, pp 363-364, speaks of the associative process of the visionary which forms figurative visions out of geometrical light patterns. Eichmeier and Höfer 1974, p. 4 state that houses, animals and people are typical features of the concrete third phase of the hypnagogic process, which are not seen in the preceding phases which have subspecific or geometric light patterns. They quote p. 16 Swami Sivananda from Rishikesh with the words: “You can see beautiful gardens, palatial buildings, rivers, mountains, golden temples, sceneries so lovely and picturesque as cannot be adequately described.” Mavromatis 1991, p. 15, says that visual phenomena like “circles, diamonds, and other small regular shapes’ [are] often developing into complicated structures, faces, scenes or landscapes.” He quotes experiences, where somebody sees “... the brilliant sunlit street of some Eastern city, ...” (p. 17), “[s]trange and beautiful buildings of coming ages ...” (p. 21), and comments: “More urbane landscapes are also reported in the form of outstanding buildings of unusual construction as well as of common streets and buildings.” (p. 25). See also his Figures 2.7, 2.8, 2.9 (pp. 22-23).

<sup>69</sup> Cf. Varela and Shear 1999.

<sup>70</sup> A mathematical model for the spontaneously generated patterns in the primary visual cortex, which are subjectively seen as geometric hallucinations, is given by Bressloff *et al.* 2001.

extended periods of time. The beliefs were practically and individually oriented, and thought to be techniques of the self and its survival.

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