

## **Excreted and left untreated? Human and animal waste: from Dunhuang to Laozi.**

In 1992, during excavations at the site of Xuanquanzhi 懸泉置, a relay post near Dunhuang 敦煌 at the intersection between the Han empire and the far western regions, archaeologists uncovered a privy. Located in the northern quarter of the site, its receptacle contained some two-hundred wooden strips dated to the Eastern Han.<sup>1</sup> These were hygiene sticks made of wood and bamboo, some wrapped in cloth or cotton wool. They functioned as proto-toilet paper. Among them seven sticks had remnants of human faeces.<sup>2</sup> Similar

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<sup>1</sup> For an overview of the site and the excavations, see Gansu sheng wenwu kaogu yanjiusuo, 2000; and Sanft, 2008-2009, pp.126-135. The postal station was functional ca. 111 BCE to 109 CE.

<sup>2</sup> These samples tested positive for several parasites. Most notable was the presence of Chinese liver fluke (*Clonorchis sinensis*), which can not be endemic to Dunhuang as it requires a wet and marshy environment. Archaeologists suggest these infectious parasites were transmitted by traders, soldiers or travellers on government business from as far away as the humid East Coast and Guangdong. See Yeh et al., 2016. See also Yeh and Mitchell, 2016.

strips were found at other sites in the region, including Maquanwan 馬圈灣, the site of a beacon fire tower and military station during the end of the reign of Han Xuandi 漢宣帝 (ca. 65-50 BCE).<sup>3</sup> That passing travellers or soldiers garrisoned at the north-western edge of the Han empire availed themselves of bamboo or wooden slats (*cechou* 廁籌 or *cejian* 廁簡) for a wipe after relieving themselves may seem a trivial addition to our knowledge of early Chinese sanitary habits. No mention is made of the practice in pre-Han transmitted texts, and it is tempting to think the custom came from elsewhere. The use of slats as wipes was known in India and may have become more widespread during the early medieval period as the Buddhist *vinaya* gradually entered China. For an unambiguous textual reference, we must wait for the Tang period *Fayuan zhulin* 法苑珠林 (Forest of Pearls in the Dharma Garden, completed in 668).<sup>4</sup>

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<sup>3</sup> Gansu sheng wenwu kaogu yanjiusuo ed., 1991, pp. 52-67; Hu Pingsheng, 2000; Lao Zhu, 2012. At Juyan 居延 slips with remnants of faeces were found at the Jiaqu houguan 甲渠候官 site (T50-T59).

<sup>4</sup> *Fayuan zhulin*, chapter 13 (CBETA p0383b18), where its use is associated with Sun Hao 孫皓 (r. 64-280) of Wu 吳 during the Sanguo period. Pei Qi's 裴啟 (4th cent. CE) *Yu lin* 語林 (Forest of Words) contains, potentially, a slightly earlier mention of a hygiene stick (籌), but his text survives only through fragments quoted in later texts. See *Yuhan shanfang ji yishu*, 75.27/1.7b. An early (indirect) reference to the use of paper occurs in Yan Zhitui's 顏之推 (sixth cent. CE) *Yanshi jiaxun* 顏氏家訓, V.18 (p.49): "If an old piece of paper happens to contain phrases and principles of the Five Classics or the names of worthy men, I would not dare use it for irreverent purposes (不敢穢用也)." I am indebted to Enno Giele and David McMullen for alerting me to these two passages. From the Yuan period onward coarse paper gradually substituted the use of bamboo or wooden slips. See Wang Zhixuan, 2010; and Zhou Lianchun, 2004, p.245.



*Fig.1 Personal hygiene sticks with faecal remains, excavated from a latrine at Xuanquanzhi.*

Courtesy of Ivy Hui-Yuan Yeh (Nanyang Technological University)

A find of wooden debris in a latrine near Dunhuang however also gives pause for reflection. Texts from pre-imperial and early imperial China are replete with instructions on how to cultivate the body and preserve its vital energies through diet and abstentions. They are generous with advice on how not to soil its inner purity and balance. But sources have far less to say about the body's effluvia and what happens to the waste, filth, dirt and muck human and non-human animals shed and excrete, or how to handle both the process and the product it leaves behind. The olfactory, tactile, and visual repugnance of what we excrete rarely invites comment.<sup>5</sup> Miniature terracotta models of latrines found in tombs

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<sup>5</sup> It is absent, e.g., in the discussion in Milburn, 2016. Milburn comments (p.450): "It is unfortunate that much of the research which has so far been carried out on scent and aroma in ancient China has focused exclusively on perfumes, since early osmological texts almost entirely describe unpleasant smells." It is unclear to me on

(so-called *mingqi* 明器) belong to the visual repertoire of the time, but scenes depicting the place where people relieved themselves or of humans and animals excreting are less common. Han murals depict banquets and feasts, and the kitchens that supply them, but not what happens to the physical needs of host and guests in between courses.

What happened to bodily matter out of place in a society where knowing one's place mattered so much? This essay brings together some of the evidence. In what follows I show how the biophysical and symbolic power and utility of stercory matter in early China hinged on its dichotomous nature: faeces and the locus of excretion connoted both negative and positive spheres. Excreta were deemed noxious yet also beneficial, they were to be renounced yet also reused. Along its way, the cycle from defecation to regeneration was subject to material, ethical and religious challenges and taboos. During the process of excretion, the body was vulnerable to external influences such as demonic illness, yet faecal matter of itself also had a healing power as medicine. Matter exuded served as matter absorbed to fecundate. What accumulated in the concealed domestic space of the latrine and pigpen ended up as sought-after matter infusing life into seeds, fields, and public productivity.

## **Latrines**

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what basis this claim can be made. The examples Milburn adduces are merely taxonomies of the senses based on Five Phase models or origin narratives in systematising (ritual) texts that plot out idealized sensory histories.

In the year corresponding to 581 BCE, the Marquis of Jin 晉 fell dead in his privy. In the *Zuozhuan* 左傳 record of the event, the verb (*xian* 陷) suggests that the unfortunate marquis stumbled into a waste hole in the ground. His servant followed his master in death once he had hauled him out of the privy:

In the sixth month, on the *bingwu* day, the Marquis of Jin wanted to taste the new grain. He had the official in charge of sacrificial grains present it and the cook prepare it. He summoned the shaman of Sangtian, showed him the new grain, and had him killed. When he was about to eat, he became bloated (*zhang* 張 = 脹), went to the privy (*ru ce* 如廁), fell in, and died. A eunuch had dreamed in the morning of ascending to heaven with the lord on his back. By midday, he was carrying the Marquis of Jin out of the privy. And then he was killed to attend his lord after death.<sup>6</sup>

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<sup>6</sup> *Chunqiu Zuozhuan zhu*, p.850 (Duke Cheng, year 10); tr. Durrant et al., 2016, vol.2, p.787. The episode is alluded to in the *Jiao Shi Yilin* 焦氏易林 (50/22 B 鼎之賁):

腫脛病腹 Swollen ankles and calves, a diseased belly

陷廁污辱 Falling into the latrine pit, soiled and disgraced

命短時極 Fate is short, my time has reached its end

孤子哀哭 An orphan mourns and wails.

See *Jiao Shi Yilin xin zhu*, p. 459.

六月丙午，晉侯欲麥，使甸人獻麥，饋人為之，召桑田巫，示而殺之，將食，張，如廁，陷而卒。小臣有晨夢負公以登天，及日中，負晉侯出諸廁，遂以為殉。

This passage contains the earliest reference to a *ce* 廁/廁 (OC *\*tsrhiH*) latrine or toilet. Latrines in early China generally appear in three locations: within a screened-off space inside a residence, in an annex to a building, or linked to the pigsty. They figure mostly in the private and domestic sphere, yet some early references suggest latrines for communal or public use were not unknown. The *Mozi* 墨子 (ca. 479-381 BCE) mentions the provision of a latrine on a city's defensive walls at intervals of one in every seventy metres:

On the outer side of the road [on a wall] build a screening wall. Every 30 *bu*, create a surrounding wall structure [for a latrine] one *zhang* high. Construct *hun* latrines for the people with walls of 12 *chi* [2.4 m?] or higher.<sup>7</sup>

於道之外為屏，三十步而為之圍，高丈。為民圂，垣高十二尺以上。

Elsewhere, the *Mozi* notes that on top of defensive walls *ce* toilets should be built at intervals of 50 *bu* with *hun* 圂 “pigsty-privies” below the wall (presumably to gather the

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<sup>7</sup> *Mozi jiangou*, 69.584-5; Sun Yirang's emends 圍 to read 圂. Zhou Lianchun suggests the *Mozi* could be the earliest textual reference to a public toilet of some sort. See Zhou Lianchun, 2014, pp.31-32, 34. The term *min hun* is not attested elsewhere.

excreta). Those entering a latrine should not be carrying anything.<sup>8</sup> One apocryphal story featuring Liu An 劉安 (?179-122 BCE) possibly refers to urban public toilets. After his death by suicide, Liu An allegedly rose up to the realm of the immortals with his entire household including his animals, and then was ordered by the afterworld authorities to tend to the capital's toilets (*duce* 都廁) for three years.<sup>9</sup>

*Ce* is one among several terms for a privy or latrine. *Hun* 溷/圜 (OC \**hwonH*) denotes a pigsty-privy. The graph is explained in the *Shuowen jiezi* 說文解字 as an associative compound (*huiyi* 會意) depicting a pig in an enclosure (象豕在口中).<sup>10</sup> Replica earthenware toilets of pigsty-privies are common funerary objects in tombs of the late Western and Eastern Han period.<sup>11</sup> More on these later. Another term for privy, *yan* 偃 (OC \**'jonX*) “the recliner”, appears in an analogy in the *Zhuangzi* 莊子: “When we inspect a house, we go around its sleeping quarters and ancestral shrines, but we also pay a visit to its toilet, all of which are mutable referents to the house as a whole.” Guo Xiang 郭象 (d. 312) glosses *yan* as *pingce* 屏廁 “screened-off, concealed toilet”<sup>12</sup> The *Zhouli* 周

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<sup>8</sup> *Mozi jiangou*, 52.521 (五十步一廁，與下同圜。之廁者，不得操).

<sup>9</sup> *Liu An bie zhuan* 劉安別傳 (Supplementary Biography of Liu An), quoted in *Qi dong ye yu*, 10.124. There are several versions of the story. The *Bao Puzi* 抱朴子 notes that he was made to tend to the Heavenly kitchens (*Tian chu* 天廚). See *Baopuzi neipian jiaoshi*, 20.350, and 20.356, note 54 (“Qu huo” 祛惑). *Taiping guangji*, 288.2290, speaks of the toilets of Heaven (*Tian ce* 天廁). See also Hu Wuting, 2010.

<sup>10</sup> *Shuowen jiezi zhu*, 6B.13a-b. See also Gong Liang, 1995a; and Li Xiangeng, 1991.

<sup>11</sup> Zhang Jianlin and Fan Peisong, 1987; Peng Jian, 2010; Fang Nansheng, 1996.

<sup>12</sup> *Zhuangzi jishi*, 23.805-7 (“Gengsang Chu” 庚桑楚); tr. following Mair, 1994, p. 233.

禮 uses the term *jingyan* 井匱 in its entry on the palace attendant (*gong ren* 宮人) who looks after the sleeping quarters of the king: he “maintains the (well and) latrine, removes what is unclean, and gets rid of its unpleasant odours” (為其井匱，除其不蠲，去其惡臭).<sup>13</sup> Commentators have glossed *jing yan* 井匱 as a variant for 屏匱. Yet 井 could equally refer to the impluvium through which water is gathered in a household well. This would locate the privy close to the well.

Several sources link the latrine etymologically with an expectation for cleanliness. The *Shuowen* and *Shiming* 釋名 both gloss 廁 as *qing* 圜 “privy” (homophonous with OC \**tshjeng* 清 “clear, clean”). *Qing* 清 regularly appears as an alternative term for *ce* in the Han.<sup>14</sup> An entry in the *Shi ming* reads:

*Ce* means “diverse”. This is to say that people have different (types) of latrines on top (on the floor above the pen?), it is not the case that they are of one and the same type.<sup>15</sup> Some are called *hun*, which is to say that they are muddy and soiled; some

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<sup>13</sup> *Zhouli zhengyi*, 11.420 (“Gong ren”). Similar tasks are handled by the “domestic valet” (*lipu* 隸僕). See *Zhouli zhengyi*, 60.2518. Zheng Sinong 鄭司農 (1<sup>st</sup> century CE) suggests that *yan* 匱 refers to a *lu ce* 路廁, a latrine concealed somewhere along a path or corridor in the palace (匱 being glossed *ni* 匿 in *Shuowen jiezi*, 12B.47b). See also Zhu Chenlu, 2017. The term *ping yan* 屏匱 occurs in *Zhanguo ce*, 30.1114 (Yan 2).

<sup>14</sup> Sun Yirang 孫詒讓 (1848-1908) speculates that since sanitary implements 清器 were kept “beside” the toilet, 清 came to be used interchangeably with 廁. See *Zhouli zhengyi*, 12.461.

<sup>15</sup> I remain uncertain about this reading; parsed alternatively: 言人雜廁，在上非一也 “That is to say there are different types of latrine, at the top they are not all of the same type.”

are called *qing*, meaning that these are places where filth is gathered [or: places that are utterly filthy]. It is appropriate to maintain and service them regularly so that they are dirt-free and clean. Some [latrines] are called *xuan* “roofed”; at the front there is a railing to crouch/hold on to; they resemble a palace carriage/canopy.

廁，雜也。言人雜廁在上，非一也。或曰溷，言溷濁也。或曰圍，言至穢之處，宜常修治，使潔清也。或曰軒，前有伏，似殿軒也。<sup>16</sup>

Other terms possibly referring to the privy appear in excavated manuscripts.<sup>17</sup> Wang Chong 王充 (ca. 27- ca.97 CE) refers to the privy as a *geng yi zhi shi* 更衣之室 “cloakroom”:

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<sup>16</sup> *Shi ming shu zheng bu*, 17.193 (no.75). 溷軒 is glossed as *ce wu* 廁屋 “roofed toilet” in *Hou Hanshu*, 67.2192. The resemblance between a walled toilet with roof and a curtained-off official chariot has led to speculation that high officials or indeed Emperor Han Wudi may have travelled with a mobile toilet or changing room. See Yan Aimin and Zhao Lu, 2019: 143-145.

<sup>17</sup> Some of these are subject to debate. The daybook found in Qin tomb no. 30 at Zhoujiatai 周家臺 (Hubei, Shashi 沙市, Guanju 關沮 district, dated c. 209-206 BCE) mentions a *zhu qiu* 築囚 “walled enclosure”. See *Guanju Qin Han mu jiandu*, p.125 (strip 299). Zhang Guoyan, 2018, suggests this could be a spirit that presides over the latrine, linking it to 囚 in the Fangmatan 放馬灘 tomb 1 (Gansu, burial post 238 BCE) strips (to mean a building containing a privy), or qiong 窮 in the Chu strips from Jiudian 九店 tomb 56. Cf. *Jiudian Chu jian*, p.51 (slip 203), and note p.116. Other scholars are critical of such conjunctures. Xing Hua and Zhang Xiancheng disagree on the grounds that it is hard to explain *zhu* adjectivally, the most recurrent terms for a privy in daybooks being *ping* 屏, *hun* 圜 or *ce* 廁. They speculate that the Zhoujiatai term may refer to avenging ghosts of convict labourers who perished during building construction. See Xing Hua and Zhang Xiancheng, 2019: 186-188.

Furthermore, it is universally the case that, among the things that humans loathe, nothing is worse than putrescence and stench; putrid and malodorous *qi* harms and damages the human heart. Therefore, when the nose smells stench, and the mouth eats something rotten, the heart will be impaired and the mouth will be put-off, and soon discomfort will set in and people start spitting and vomiting. Privies can be said to be malodorous; and the meat of fermented fish can be said to have a rotten stench, yet people willingly put up with privies, and do not consider them no-go areas, and for many rotten fish is a delicacy which they do not regard as a taboo. What the mind does not preserve is considered disgusting, and thus one does not take into account its good or bad qualities.

且凡人所惡，莫有腐臭。腐臭之氣，敗傷人心，故鼻聞臭，口食腐，心損口惡，霍亂嘔吐。夫更衣之室，可謂臭矣；鮑魚之肉，可謂腐矣。然而有甘之更衣之室，不以為忌；肴食腐魚之肉，不以為諱。意不存以為惡，故不計其可與不也。<sup>18</sup>

What little information on the privy that is preserved in early textual sources comes in the form of incidents and anecdotes set, mostly, among high society. The latrine forms the backdrop for some notable encounters, including an alleged romantic *rendez-vous*

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<sup>18</sup> *Lunheng jiaoshi*, 23.976 (“Si hui” 四諱). Alfred Forke (1867-1944) comments on 更衣之室: “a term strangely corresponding to the German word ‘toilet’”, adding, in another note, that (anno 1911) “most Chinese privies are so horrid, that even Chinese try to avoid them.” See Forke, 1911, p.382. For other occurrences of the term see Gong Liang, 1995b.

between Han Wudi 漢武帝 (r. 141-87 BCE) and his consort lady Wei Zifu 衛子夫 during an imperial tour.<sup>19</sup> In another episode Han Wudi receives general Wei Qing 衛青 in audience while squatting over a toilet.<sup>20</sup> Although evidence is too patchy to reconfigure a general “faecal habitus” among elites,<sup>21</sup> it is likely they had servants waiting upon them while emptying their bowels.

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<sup>19</sup> *Shiji*, 30.1978; *Hanshu*, 70.3949.

<sup>20</sup> *Hanshu*, 50.2318. See also *Wu za zu*, 3.1:58-59. Some have suggested Han Wudi received the general from a toilet next to his guarded and curtained private chambers, others suggest it happened in a built privy. Even the Qianlong emperor weighed in on what might have happened! A mural from an Eastern Han tomb at Anqiu 安丘 (Shandong), showing a raised dais surrounded by a screen or curtains could be the sort of arrangement the emperor found himself in while receiving his guest. See Sun Ji, 2008, p.255 (plate 55-5). Whether or not Han Wudi was squatting over a hole or sitting on a raised toilet is also subject to debate. See Yan Aimin and Zhao Lu, 2019. In one story Mencius disapprovingly finds his wife in a “squatting” (踞) position on her own in the house and accuses her of a lack of propriety. One wonders whether she was relieving herself. See *Han shi waizhuan*, 9: 7.322.

<sup>21</sup> A term coined by David Inglis, who blends Douglas with Bourdieu in his study of excretion in modern capitalist societies. See Inglis, 2001, 42-54.



Fig. 2 Privy and servant, Yinan, Shandong.

A rare image of a latrine in a mural from Yinan 沂南 (Eastern Han) shows a railed privy on a platform and sanitary utensils used to service it: a water container, a urinal jar and a servant who cleans up using a wooden board or spatula.<sup>22</sup> These sanitary implements, known as *xie qi* 褻器, are first mentioned in the *Zhouli*, where they are the responsibility of the *yu fu* 玉府 “storekeeper of treasures”, an official in charge of valeting the king’s clothing cabinet and sleeping quarters.<sup>23</sup> Squatting over an opening seems to have been the

<sup>22</sup> Shandong sheng Yinan Beizhai Han huaxiangshi mu bowuguan ed., 2003; line drawing in Sun Ji, 2008, p.248, plate 54-5. The *Sancai tuhui* 三才圖繪 (1609), 2.28a-b (“Gong shi” 2, p.1018), contains a drawing of a similar toilet with description.

<sup>23</sup> *Zhouli zhengyi*, 12.459-461. Another term for *xie qi* was *weiyu* 械窻. See Jia Kui’s 賈逵 (30-101 CE) commentary to *Zhouli zhengyi*, 12.461; and *Shuowen jiezi*, 6A.40b. See also Huang Zhanyue, 1996.

most common physical posture.<sup>24</sup> Squat toilets are preserved in Chu tombs in the Xuzhou 徐州 area, some of which had separate bathrooms and latrine compartments.<sup>25</sup> Evidence also suggests that wooden proto-toilet seats may have been used.<sup>26</sup>

Among the so-called *qing qi* 清器 “sanitary tools” (a variant term used by Zheng Sinong 鄭司農 in his *Zhouli* commentary), urinating jars have a tale to tell. *Chunqiu* period animal-shaped jars used for urinating have been preserved (archaeologists sometimes refer to these as *shouzi* 獸子 but there is no textual basis for the term).<sup>27</sup> In Han times these jars were known as *huzi* 虎子 “tiger-urinals” (they are first mentioned by Zheng Xuan 鄭玄 in his *Zhouli* commentary). Duan Yucai’s 段玉裁 (1735-1815) *Shuowen* commentary notes: “A tiger jar is used to empty one’s bladder, a *xingqing* ‘clean-sweep’ is used when

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<sup>24</sup> For an example of a figurine squatting over a toilet in a model building, see Guangzhou shi wenwu guanli weiyuanhui, 1981: 339 (plate 205).

<sup>25</sup> Xuzhou bowuguan and Nanjing daxue lishi xi, 1988; Zhou Xueying, 2001, pp.72-82. Another example of a squat-down lavatory inside a tomb was found at Bao’an shan 保安山 Tomb no.2. See Henan sheng wenwu kaogu yanjiusuo, 1996, p.128. A large toilet compartment (4.3m. X 3.8m) with three privies with urinal/excrement troughs was found in 2005 in a Han tomb in Xi’an. See Shaanxi sheng kaogu yanjiusuo, 2007. A good example of a pigsty privy showing a human figurine squatting down is kept at the Yulin Stone Mural Museum 榆林画像博物馆 in Yulin, Shaanxi. See Yan Aimin and Zhao Lu, 2019: 146 (plate 8).

<sup>26</sup> A wooden, lacquered toilet seat from a Western Han grave in the Chu region is kept at the Anji County Museum 安吉县博物馆 (Zhejiang province). See Zhejiang sheng wenwu kaogu yanjiusuo Anji xian bowuguan ed., 2007: 71 (plate 33). This tomb also contained a black, lacquered tiger-shaped urinal jar (cf. below).

<sup>27</sup> The oldest explanation for *shouzi* as a urinal bottle or pot is by Yan Shigu 顏師古 (581-645) in his commentary to *Hanshu*, 61.2687.

emptying one's bowels" (虎子所以小便也，行清所以大便).<sup>28</sup> An apocryphal story traces the origin of the tiger jar back to the famous Han general Li Guang 李廣 (died 119 BCE), who, during a mountain hunt, allegedly shot a tiger with one arrow, sliced off its head and used its body as a pillow. To display his might and disdain for the tiger he had a bronze pot cast imitating the shape of a headless tiger.<sup>29</sup> According to the same source, the Han court had luxury versions of the *huzi* made from jade, carried along by a servant whenever the emperor travelled.<sup>30</sup> The term remained current until the Tang when it became tabooed (Emperor Jing 景, d. 551, was named Li Hu 李虎).<sup>31</sup>

### **Fig, pens, and privies.**

Model toilets (*mingqi*) are common in the Han archaeological record. They have been recovered from tombs across Guangdong, Guangxi, Hunan, Hubei, Henan, Hebei,

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<sup>28</sup> *Shuowen jiezi*, 6A.40b. Another term for the 行清 was a *yu* 牖 “board”. See Meng Kang 孟康 (ca. 180-260 CE) and Xu Guang's 徐廣 (352-425) commentaries to *Shiji*, 103.2765; *Hanshu*, 46.2195.

<sup>29</sup> *Xijing zaji*, 5.123. A version of the story is also preserved in *Wenchang zalu*, 1.12b.

<sup>30</sup> *Xijing zaji*, 5.104.

<sup>31</sup> For examples of *huzi* see Yangzhou bowuguan, 1988: 417-425, 405 (plate 3); Yuan Anzhi, 1990; Xing Lin 2021; for an example in bronze see Jiangxi sheng bowuguan, 1981, 426-428 (plate 5). From the Tang onwards another urinal jar was known as the *mazi* 馬子, which, according to some, was more suitable for female use. See Li Hui, 2003; and Feng Shuangyuan, 2006. Berthold Laufer shows an example of what he believes to be a male urinal bottle from the Han period. The piece is from the collection of Thomas B. Clarke, in a “sombre green” glaze and 15.6 high and 16 cm long; with a “small nozzle, globular below, and cylindrical above.” See Laufer, 1909, pp.117-118 (plate 26.1).

Guizhou and even further afield.<sup>32</sup> Some models show separate cabinets, perhaps for ladies and gents, or master and servants.<sup>33</sup> Many models show a privy annexed to a pigsty. Archaeologically they appear to be a phenomenon starting in the late Western Han with most samples dating to the Eastern Han. Some models show a pen and privy linked-up at ground level, others are designed over two floors with the lavatory upstairs and the pig pen underneath. Some pens are large enough to hold up to four or five pigs. Pigsty-privy models have been found both in elite tombs and tombs of lower status,<sup>34</sup> and continue to appear in tombs of (migrated Han) elites during the early Six Dynasties period, mostly in the middle and lower Yangzi region.<sup>35</sup> Why were such models taken into a tomb, along with miniature granaries, millstones, animal pens, and wells? Were they simply part of the post-mortem household furniture, did they serve as representative objects of the deceased's estate, or both? Armin Selbitschka has argued that burial figurines and models were not merely furnishings used to transform a tomb into a fortuitous afterlife dwelling but, instead,

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<sup>32</sup> A large collection is held in the Henan Museum in Zhengzhou. See Henan bowuguan ed., 2002, plates 62-72, 124-156. Laufer, 1909, pp.53-54, misidentifies a latrine as a grain-tower.

<sup>33</sup> For an example of a replica separate-sex toilet see Henan sheng wenhuaju wenwu gongzuodui, 1963: 134 (plate 22); with discussion and line drawing in Sun Ji, 2008, pp.247-248. For other examples showing double toilet compartments see Qian Pingxi, 1983: 22; Su Xisheng and Li Ruipeng, 1990: 94-95; Guo Qinghua, 2010, pp.125-137.

<sup>34</sup> For a list of relevant archaeological sites see Xiao Fan, 1986: 621-623; and Peng Wei, 1999.

<sup>35</sup> See Kieser, 2017. Up until the 1980s, archaeologists and historians of agriculture would regularly point out that the pigsty-privy could still be seen in rural parts of China.

recreations of the deceased's estate.<sup>36</sup> Privy models would then represent one among many other domestic utility-*mingqi*.

Possibly the oldest mention in texts of a pigsty-privy occurs in the *Guoyu* 國語 which records that King Wen's 文王 mother, Tai Ren 大任, gave birth to the future king while passing water in the pig pen (少溲于豕牢). Both Jia Kui 賈逵 (30-101 CE) and Wei Zhao 韋昭 (201-273) gloss *shi lao* 豕牢 as 廁 (Wei Zhao glosses *sou* 溲 as 便).<sup>37</sup> Pigsty-privies within residential compounds tended to be located at the back of the compound on the northern, *yin*-side of a dwelling.<sup>38</sup> A Qin-period daybook (*ri shu* 日書) recovered from Shuihudi 睡虎地 (Yunmeng county, Hubei) notes that locating a *hun* 圜 privy to the north-west is beneficial for the pigs, but not for humans. The north is said to be most auspicious. *Ping* 屏 latrines ought to be located behind rather than in front of a building.<sup>39</sup> A Han farming village excavated at Sanyuanzhuang 三元庄 (Henan, dated 140 BCE-23 CE; excavated in 2003) includes several examples of (roofed) brick latrines located north of a

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<sup>36</sup> See Selbitschka, 2015, esp. pp.38-40.

<sup>37</sup> *Guoyu*, 10.387-88 (Jin yu, 4). See also *Lienü zhuan*, 1.5b. This is one of the earliest attestations of *sou* 溲 “urine”. In his commentary to the biography of Chunyu Yi 淳于意, Sima Zhen 司馬貞 (679-732) notes: “discharging from the front is called passing urine; from behind it is called passing stool” 前溲謂小便; 后溲, 大便也. This is a case of a patient unable to *qian hou sou* 前後溲, i.e., pass urine and stool. See *Shiji*, 105.3781. The *Shi ming* uses the term 小便 in an entry on a urinary disease. See *Shi ming*, 26.280 (no.47). The *Shuowen* glosses *niao* 尿 as 人小便. See *Shuowen jiezi*, 8B.3a.

<sup>38</sup> Yang Hongxun, 2007, pp.172-173; Peng Wei and Yang Zhenhong, 2018, pp. 275-281.

<sup>39</sup> *Shuihudi Qin mu zhujian*, pp.210-211 (slips 14-15 verso, 19-23 verso; plates p. 104).

courtyard compound.<sup>40</sup> While difficult to generalize or test historically, we must assume that, as much as being inspired by geomancy (or hemerology), an important factor behind the choice of location of the latrine must have been the desire to prevent the stench from being blown into the living quarters.

The function of interlinked pig-pen privies has invited speculation. The most obvious hypothesis is that they were designed to produce, gather up and accumulate manure. The inference is that pigs were raised to produce manure.<sup>41</sup> Alongside miniature granaries that contain the seeds for new life and a continuous harvest, privy models, as receptacles of life-giving fertiliser, may therefore have been part of a symbolic repertoire of objects and images that imparted a desire for perpetuity and continuous regeneration in the afterlife.<sup>42</sup> Another theory, first put forward by Japanese scholars in the 1920s and adopted by the great historian of agriculture Amano Motonosuke 天野元之助 (1901-1980), held that these privies were designed to have pigs feed on human night soil among other domestic waste.<sup>43</sup> There are both single- and double-floor models showing humanure dropping into the pen, and models with an inside railing or lower wall structure to contain droppings from the privy. Pigs would then feed on excreta as they would from a trough.<sup>44</sup> In other examples, we see pigs simply roaming around in the pen.

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<sup>40</sup> See Kidder et al., 2012, 38.

<sup>41</sup> Liang Jiamian, 1989, p.199; Xiao Fan, 1986: 617-618.

<sup>42</sup> On granary models as symbols for inexhaustible nourishment in the afterlife, see Selbitschka, 2018.

<sup>43</sup> See Wang Qizhu, 1994, vol.1, pp.502-506; drawing on Xiao Fan, 1986. See also Chen Liangzuo, 1970.

<sup>44</sup> Some pigsty-privy models have troughs. See, e.g., Guangxi Zhuangzu zizhiqu wenwu gongzuodui et al., 2013: 59 (item no. M1:1). I am grateful to Armin Selbitschka for drawing this example to my attention.

Evidence suggesting that human excrements were routinely fed to pigs comes mostly from these figurines. Yet the feeding of human excreta and kitchen waste to pigs was not free from controversy. Some, albeit mostly later, sources corroborate that human waste was fed to animals, dogs and pigs in particular. The *Liji* 禮記 notes that animals raised in or near a privy were not favourite foodstuffs: “A gentleman does not eat the belly fat of a pen-fed pig” (*junzi bu shi hunyu* 君子不食圜腴). *Hun* 圜 here is often taken by commentators as a variant for *huan* 豢 “feeding”, both graphs having a distinct link with the pig. Zheng Xuan comments that *hun* includes pigs and dogs and adds that “some belly fat resembles human faeces” (*yu you si renhui* 腴有似人穢). Later commentators explain that the taboo in question concerns the eating of intestines.<sup>45</sup> Either way, there is a suggestion of impurity or pollution here.<sup>46</sup> Terms such as *hui* 穢 “filth, weed, faeces” and pigsty-related *hun* 溷 “foul, muddy” belong to an extensive vocabulary denoting forms of pollution in Warring States and Han texts.<sup>47</sup>

Wang Chong attempts to debunk a belief that humans who eat or drink soiled food will enrage Heaven and be struck down by lightening as a consequence. By contrast dogs

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<sup>45</sup> *Liji jijie*, 35.947 (“Shao yi” 少儀).

<sup>46</sup> Note too that tapeworm and blood fluke (schistosomiasis) transmit from pig to humans (eggs were found on the corpse at Fenghuangshan 鳳凰山 Tomb no.168 and Mawangdui Tomb no.1), so eating pigs raised in the privy will not have been overly popular. Perhaps the *Liji* instruction to avoid eating meat or fat from the belly of an animal is related to this. One of the reasons proper treatment of nightsoil was introduced in the 1950s was to control schistosomiasis, which was affecting the health of millions of peasants.

<sup>47</sup> See Yates, 1997.

and pigs who feed on waste (*fu chou* 腐臭) do not incur such wrath.<sup>48</sup> It is not clear whether Wang refers to rotten food waste or human excrement (or both), but later sources confirm a belief that consuming excrement or drinking urine invites punishment in the form of lightening. The *Taiping jing* 太平經 states that humans who eat human faeces and drink urine rank beneath dogs and pigs (犬豬之精所下). There is evidence of similar ideas surviving into the Tang.<sup>49</sup> Stories collated in later encyclopaedia also corroborate that pigs were fed human excrements. One tale, attributed to the (lost) Fuzi 符子 (Jin period?) but preserved in later collectanea, mentions a gift of a large pig to King Zhao of Yan 燕昭王 (?-279 BCE). This giant hog -- a “swine immortal” (*shi xian* 豕仙) transformed from a human— was gifted with the instruction: “unless you have a large cesspit, it won’t keep in it; unless you feed it human excreta, it won’t value it (非大圃不居，非人便不珍).<sup>50</sup> While, as we will see below, excrement was also thought to contain medicinal powers, it is unclear whether those properties were a factor in using human nightsoil as pig feed.

### **A liminal space**

Spatially, and mentally, the latrine was a transit zone between organized society and the ritually ordered household on the one hand, and forces that could threaten such

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<sup>48</sup> *Lunheng jiaoshi*, 6.299 (“Lei xu” 雷虛).

<sup>49</sup> *Taiping jing hejiao*, 117.655, 660.

<sup>50</sup> *Taiping yulan*, 903.5a (p.4007); a variant of the story appears at 931.5b-6a (p.4139). See also *Yiwen leiju*, 96.1669.

stability on the other. As a liminal zone, the privy is fraught with danger, taboo, pollution and, in some cases, death. The architecture of the pigsty-privy provided an escape route out of a residential compound when danger lurked. Like pretending to be drunk, feigning illness, or staying away from a banquet, “going to the privy” (*ru ce* 入廁) could be a strategy to get out of a perilous situation. Liu Bang 劉邦 famously got up to go to the toilet during the banquet at Hongmen 鴻門 (in 206 BCE) without parting officially from Xiang Yu 項羽 who stood ready to have him and his followers murdered on the spot.<sup>51</sup> From the latrine above a pig pen one could access, climb over, or jump off the encircling wall, or, less clinically, sneak out through the sewage hole that connected the upstairs latrine to the pig pen, or the pig pen to the outside, or both to the outside. The so-called *ce dou* 廁竇 “latrine hole, cavity”, according to a commentary in *Shiji* by Xu Guang 徐廣 (352-425), was a hole through which dirty refuse was drained away (*xiechu hui’e zhi xue* 瀉除穢惡之穴).<sup>52</sup> In Eastern Han *mingqi* it shows as a keyhole-shaped opening (round or oval at the top, square or triangular underneath) located at the bottom of the privy and/or pigpen.

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<sup>51</sup> *Shiji*, 7.313, 95.2654; *Hanshu*, 1A.26, 41.2068. For more examples see Zhao Lu and Yan Aimin, 2018. Another story surrounding Liu Bang, born a rustic, is that he would pull off the cap of Ru who presented themselves to him and then urinate in it (溲溺其中). See *Shiji*, 97.2692; *Hanshu*, 43.2105-6. In Modern Mandarin *ni guan* 溺冠 still serves as an expression meaning to despise intellectuals. Urinating in public was met with disdain, see, e.g., *Chunqiu Zuozhuan zhu*, p.1529 (Lord Ding, year 2); *Han Feizi jishi*, 10.587 (“Nei chu shuo, xia”); *Hanshu*, 83.3392; *Hou Hanshu*, 65.2148.

<sup>52</sup> See his commentary to *Shiji*, 103.2765.

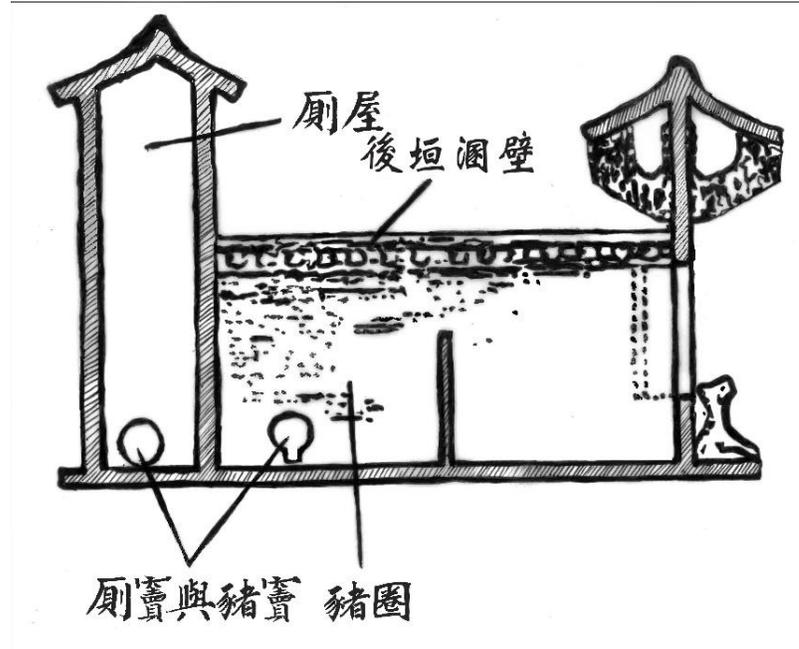


Fig. 3 “Latrine/pen holes”; Guangzhou, tomb 4007, Eastern Han; line drawing by John Donegan-Cross following Zhao and Lu (2018), 79.

The latrine hole was designed to be large enough to drain both fluid and semi-fluid dung and nightsoil while preventing the pigs from escaping. A number of documented incidents involving stray pigs suggest that some managed to get out.<sup>53</sup> That the pigsty latrine was known as a potential route in or out of a residence can also be gauged from calendrical texts. In the manuscripts found at Shuihudi, robbers who ply their trade on branch-days associated with the pig are said to have a piggish physiognomy and hide in the pigpen:

<sup>53</sup> For examples of pigs running loose or escaping from the privy, see *Han Feizi jishi*, 14.762 (“Wai chu shuo you xia”); *Hanshu*, 27B.1436, 63.2757 (pigs escaping from the latrine and destroying the stove). Yan Shigu comments here that a 廁 is a pen in which pigs are fed.

*Hai* [12<sup>th</sup> Earthly Branch] is the Pig. Those who steal have a big nose and are slender, they have a horse [i.e., long] spine, and their face is not complete. They have a discoloured spot/ blemish on their waist. They hide in the pig pen beneath the wall. You can catch them early in the morning but not at sunset. The names [used by the thief] are *tun gu xia gu ... hai*.

[亥，豕也。盜者大鼻而票（剽）行（脰），馬脊，其面不全，疵在〈要〉。  
臧（藏）于圜中垣下，夙得莫（暮）不得。●名豚孤夏穀口亥。<sup>54</sup>

Similar descriptions occur in parallel texts from Fangmatan 放馬灘 (tomb 1; Tianshui, Gansu) and Kongjiapo 孔家坡 (tomb 8; Suizhou, Hubei) where pig-day robbers hide among the excreta in the pigpen, red-eyed with long hair and a large nose.<sup>55</sup> Daybooks also identify avoidance days (*hun ji ri* 圜忌日) and good days for building a pigsty privy (*pinghun liang ri* 屏圜良日).<sup>56</sup> Stories of folk entering or escaping from a residential compound via the dirt hole figure alongside other narratives where piercing or scaling walls

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<sup>54</sup> *Shuihudi Qin mu zhujian*, p.220 (slip 80 verso). For *piaoxing* “slender” I follow Liu Xinfang, 2019: 65. The heavy dot above the name section is unattested in parallel versions found at Kongjiapo and Fangmatan. Donald Harper (personal communication 6/1/2022) suggests these dots are meant to purposefully mark this information as a distinctive part in each of the twelve entries.

<sup>55</sup> *Tianshui Fangmatan Qin jian*, p.85 (slip 41), p.91 (slip 77); *Suizhou Kongjiapo Han mu jian*, p.175 (slip 378).

<sup>56</sup> *Shuihudi Qin mu zhujian*, p.248 (“Rishu” 乙, slips 188-190) for the former; *Suizhou Kongjiapo Han mu jian*, p.160 (slip 232) for the latter.

is dismissed as untoward conduct. Mencius, most notably, disapproves of young people “boring holes” or scaling walls to meet each other clandestinely: “To go forward in a manner not following the Way belongs to the category of ‘boring holes’ (*zuan xue xi* 鑽穴隙)”<sup>57</sup>

As much as the privy could offer a way out of a difficult situation, it is also the recurrent setting for handling rivals. Some found their end in the privy, either stabbed or pushed into this dark and shady corner of the house, or being thrown to the pigs that scavenge in the vicinity of latrine pits.<sup>58</sup> Empress Lü 呂后 notoriously cut off Lady Qi’s 戚夫人 hands, tore out her eyes, burned her ears, numbed her with a poisonous potion and then threw her in the privy calling her “the human swine” (人彘), leaving the lady disgraced and polluted and her son, Emperor Hui 惠帝, given to drink.<sup>59</sup> Ending up locked away in

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<sup>57</sup> *Mengzi zhengyi*, 12.426-27 (3B.3). An early occurrence of someone (the pregnant queen of Xia 夏) escaping ‘through a hole’ 自竇 appears in the *Zuozhuan*. See *Chunqiu Zuozhuan zhu*, p.1605 (Lord Ai, year 1). Commentators are silent though on whether this is a hole in the privy. See also *Qianfu lun*, 34.464.

<sup>58</sup> For assassinations or threats taking place in the privy see *Shiji*, 9.410, 37.1600; *Hanshu*, 3.102; *Lienü zhuan*, 7.12. For suicides in the latrine see *Hou Hanshu*, 74A.2380. Cao Cao’s 曹操 (155-220 CE) father was killed in the privy; see *Sanguo zhi*, 1.11 (commentary quoting *Shi yu* 世語).

<sup>59</sup> *Shiji*, 9.397; *Hanshu* 27B.1397, 97A.3938; see also *Lunheng jiaoshi*, 6.300-301 (“Lei xu”). Commentators suggest the privy here was most likely a cave or pit structure in which pigs were kept. Another pigpen incident is that of Dongming 東明, taken from his mother and thrown into a pig pen where he was kept alive by the breath of the pigs. See *Lunheng jiaoshi*, 9.88 (“Ji yan” 吉驗).

the privy or falling into it also figures as a form of retribution or anomaly.<sup>60</sup> For a wild boar in need of something extra, the privy could offer good takings. In one anecdote, a wild boar (*ye zhi* 野豕) enters the privy in the Shanglin 上林 park after one of Emperor Jingdi's concubines had retired to the toilet.

The emperor signalled to Zhi Du 鄧都 (an official) to do something, but he refused to move, whereupon the emperor himself seized a weapon and was about to go and rescue her in person. Zhi Du flung himself on the ground before the emperor and said, “If you lose one lady in waiting, we will bring you another! The empire is full of women like Madam Jia 賈姬. But what about Your Majesty? Though you think light of your own safety, what will become of the temples of your ancestors and of the empress dowager?” With this, the emperor turned back, and the boar also withdrew.<sup>61</sup>

As a perilous and marginal space, the privy was haunted by ghosts. As the body opened itself up while excreting, it was vulnerable to demonic forces. Fragments of a late Western Han daybook excavated at the same site of Xuanquanzhi confirm that latrines were hiding places for inauspicious forces. The text contains an incantation to be pronounced when entering a toilet accompanied by the performance of ritual steps known

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<sup>60</sup> For a case where someone is killed and buried in horse dung, see *Chunqiu Zuozhuan zhu*, p.632 (Lord Wen, year 18). See also *Fengsu tongyi jiaozhu*, 9.423 (“Guai shen” 怪神), where the voice of a lost granddaughter is heard from underneath the privy waste.

<sup>61</sup> *Shiji*, 122.3132; tr. Watson, 1993, pp.380-381.

as the Pace of Yu 禹步.<sup>62</sup> Later Buddhist sources make mention of ghosts feeding on excrement.<sup>63</sup> Raimund Kolb has studied references to latrine demons from medieval to late imperial times, including the cult to a latrine goddess Zi Gu 紫(子)姑 and related deities.<sup>64</sup> The latter is first attested, possibly in the Jin period (265-420) but certainly from Tang times onwards (one tradition holds Zi Gu represents the spirit of the unfortunate lady Empress Lü threw to the pigs). The link between the pig and the toilet also survives in later lore where the latrine spirit sometimes appears in the shape of a pig.<sup>65</sup> By Song and Yuan times this pig-shaped latrine spirit was well embedded in popular belief. Exposure to it is usually a bad omen that results in death.

Several stories and metaphors associate the latrine with the lower domains of human morality. A poem in the “Jiu huai” 九懷 (Nine Longings), entitled “Tong lu” 通路 (“A Road to Beyond”) invokes the *hunce* 溷廁 privy as an image for virtue-less folk who soil access to the sages:

The Gate of Heaven, the Door of Earth/ yield no admittance to the wise/ The lawless  
soil the seat of power/ the virtuous are not looked upon.

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<sup>62</sup> *Dunhuang Xuanquan Han jian shizui*, p.182 (no.266).

<sup>63</sup> One example occurs in the *Chanyuan qing gui* 禪苑清規 (Pure Rules for the Chan Monastery, 1103), where the monk is urged, before relieving himself, to snap his fingers three times to warn off these demons. See Heirmann and Torck, 2017, p.141.

<sup>64</sup> Kolb, 2006.

<sup>65</sup> See e.g. *Taiping guangji*, 333.2648 (“Diao Mian” 刁緇).

天門兮墜戶，孰由兮賢者？無正兮溷廁，懷德兮何睹？<sup>66</sup>

According to the opening passage of his biography in *Shiji*, Li Si 李斯, the later chancellor to the First Emperor, was so disgusted at the sight of rats eating the filth in the privy of the clerk's quarters where he served during his youth, that it inspired him to become an able administrator and chief planner.<sup>67</sup> A similar link between hygiene and moral dirt appears in descriptions of non-Han people. The *Hou Hanshu* describes the people in the land of Yilou 挹婁 as pig raisers, dressing in pig hides and coating their skin with pig suet to protect against the cold. In summer they are naked with only a small piece of cloth covering their front and behind: “Its inhabitants are filthy and smelly and do not have hygiene; they construct the toilet in the centre (of their settlement) and then live around it in a circle” (其人臭穢不潔，作廁於中，圍之而居).<sup>68</sup> Again pigs are linked to human defecation.

In sum, the latrine appears as a sphere of moral alterity, a space that mandates to be visited, yet one that is also fraught with risk. It is a space where biological comfort can soon turn into distress, a place where the body momentarily dwells in private and is left unguarded, spied upon by demonic forces and left vulnerable to those intent on causing it harm.

### **Manure and humanure**

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<sup>66</sup> *Chuci jin zhu*, p.314; tr. Hawkes, 1985, p.271.

<sup>67</sup> *Shiji*, 87.2539.

<sup>68</sup> *Hou Hanshu*, 85.2812 (“Dong Yi liezhuan” 東夷列傳).

Waste that ended up in the latrine or pigsty-privy was not wasted. Excreta transmuted into a source of enrichment; what was discarded (*fei* 廢) was a source of bounty (*fei* 肥). Nineteenth- and early twentieth-century Western and Japanese visitors to China reported on the sight of humanure and air redolent with the stench of human excreta. They were struck by the way such waste was domesticated.<sup>69</sup> Sir John Francis Davis (1795-1890), who was to become the second governor of Hong Kong, wrote:

Every substance convertible to manure is diligently husbanded. The cakes that remain after the expression of their vegetable oils, horns and bones reduced to powder, together with sooth and ashes, and the contents of common sewers, are much used. [...] All sorts of hair are used as manure, and barber's shavings are carefully appropriated to that purpose. [...] Dung of all animals, but especially night soil, is esteemed above all others; which appears from Columella to have been the case among the Romans.<sup>70</sup> Being sometimes formed into cakes, it is dried in the sun, and

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<sup>69</sup> One estimate puts the volume of nitrate produced from human waste in China in 1910 at 6800 metric tonnes daily (compared to 1360 in America). See Worster, 2017, p.17. Worster comments: "Excrement became the peasant's savings account" (p.25). See also Xue Yong, 2005.

<sup>70</sup> *De Re Rustica*, Book II.14; Columella (4-70 CE) comments that human excrement "should be mixed with other refuse of the farmstead, for by itself it is naturally rather hot and for that reason it burns the ground." Chen Fu's 陳旉 *Nongshu* 農書 (Writings on Agriculture; preface, 1149) makes a similar point: "Nor should you use night-soil, which rots the young shoots and damages human hands and feet, producing sores that are difficult to heal" ("Shan qi genmiao pian" 善其根苗篇 "Chapter on taking care of the roots and shoots"). See Bray, 2012, p.308. Many other *nongshu* however praise the use of nightsoil as manure.

in this state becomes an object of sale to farmers, who dilute it previous to use. They construct large cisterns or pits lined with lime-plaster, as well as earthen tubs sunk in the ground, with straw over them to prevent evaporation, in which all kinds of vegetable and animal refuse are collected. These, being diluted with a sufficient quantity of liquid, are left to undergo the putrefactive fermentation and then applied to the land.<sup>71</sup>

The American agricultural scientist Franklin H. King (1848-1911) made notes on the use of human excreta during a tour of East Asia in 1909. His photographs show manure boats in Suzhou ferrying human waste out of Shanghai destined for the fields and stone-baked receptacles and pits in which human waste was held.<sup>72</sup> Human excrement was a sought-after agricultural commodity, as if “the productive value of excrement” was “inversely proportional to the animality of its origins.”<sup>73</sup> Its collection and agricultural use only became a sanitary concern in the last few decades of the Qing after the introduction of Western concepts of public health.<sup>74</sup>

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<sup>71</sup> Davis, 1840, vol.2, 375-376. The busy gathering of dung also caught the eye of George Leonard Staunton during the Macartney mission to the Qianlong court (1793). See Staunton, 1797, vol.2, p.474.

<sup>72</sup> King, 1911, pp.193-204.

<sup>73</sup> Laporte, 2000, p.120.

<sup>74</sup> See Yu Xinzong, 2010. Conversely, European cities only developed systems to conserve human waste and use it as manure from the mid-eighteenth century onwards in response to perceived advantages in Asian agriculture. Chemically synthesized fertilizers, however, soon became the mainstay in European and North American farming. See Ferguson, 2014.

While the nightsoil- and manure trade is well documented for late imperial China,<sup>75</sup> evidence suggests that its history goes back to early times. Oracle bone inscriptions of the Shang period (1200-1045 BCE) already mention human waste, dung or excrement, and include an early form of the graph for human excrement *shi* 屎 (showing a person squatting over droppings of excreta):<sup>76</sup>



*Fig.4 Oracle bone graph for 屎 (Jiaguwen heji 甲骨文合集; CHANT 0009)*

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<sup>75</sup> Xue Yong, 2005. Nightsoil trade intensified with urbanisation. As Li Bozhong 李伯重 has shown, there is some Song evidence that Jiangnan peasants shifted nightsoil from urban areas to the countryside, but it is not until the late Ming that the nightsoil trade intensified. Hangzhou was known for its high-quality nightsoil since its residents had a diet rich in protein (meat and fish) producing a higher nitrogen content in their excreta. In Old Beijing nightsoil was graded depending on the wards it came from (rich versus poor). Nightsoil collection not only provided an agricultural commodity, it also provided a type of sewage system for urban areas (large-scale urban sewage was only introduced in major cities in the 1980s). See also Xu Yamin, 2005.

<sup>76</sup> Hu Houxuan, 1955; Wang Qizhu 1994, pp.199-200; Kolb, 1994, pp. 111-113. For further Shang references to manuring the fields see Yang Shengnan and Ma Jifei, 2010, pp.153-55. The homophone 矢 (OC \*syijX) appears commonly in texts from the late Chunqiu period onwards.

The *Xunzi* notes that the duties of the Director of the Marketplace (*zhi shi* 治市) included disposing of dung and nightsoil.<sup>77</sup> Manure was traded, albeit perhaps not at official markets. The “Statutes on finance” (*jin bu li* 金布律) among the Qin materials held at the Yuelu 嶽麓 Academy (dating to the late third cent. BCE, post 221 BCE) contain an entry that acknowledges and legalizes the trade of tiles, earthen bricks, and manure (*fen* 糞) from individual workshops or residences (rather than the official market). Qin authorities seem to have condoned local and small volume trade of manure, probably because of its relatively low-value or to avoid having to transport it in bulk to market over a distance.<sup>78</sup> There is also evidence of sales of nightsoil among the Juyan 居延 slips.<sup>79</sup> A mnemonic character sequence in the Han primer *Ji jiu pian* 急就篇 (attributed to Shi You 史游, ca. 48-33 B.C.E.) reads *ping ce qing hun fen tu rang* 屏廁清溷糞土壤 (“closet, privy, toilet, latrine, dung, soil, humus”) suggesting people made the link between the use of nightsoil and the treatment of soil.<sup>80</sup> Although nightsoil collection and dung picking were nowhere

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<sup>77</sup> *Xunzi jijie*, 9.169-70 (“Wang zhi” 王制). The text states that this official is in charge of “keeping things clean” (*xiu cai qing* 脩採清), which need not necessarily refer to nightsoil; however, commentators have interpreted it as such on the basis of the *Shuowen* gloss 清 for 廁.

<sup>78</sup> *Yuelu shuyuan cang Qin jian*, vol.4, p.109 (slips 124-126); translated in Korolkov, 2020, 570-571.

<sup>79</sup> *Juyan Han jian shiwen hejiao*, slip 255.3 (p.422; a sales receipt for nightsoil).

<sup>80</sup> *Ji Jiu pian*, p.50. Yan Shigu’s commentary articulates its value as compost.

as prevalent in early China as it would become in the urbanised centers of late imperial times, excreta were clearly viewed as an agricultural commodity early on.<sup>81</sup>

The generic character denoting fertilizer, *fen* 糞, as Hsu Cho-yun points out, was the same as that for dung.<sup>82</sup> A passage in the *Wu Yue Chunqiu* 吳越春秋 notes how in ancient times fruits would sprout from nightsoil relieved by humans in the wilds. In the story King Wu is discouraged from eating roadside melons on the grounds that they are polluted. During the height of the legendary Xia dynasty, his advisors insist, people ate fresh melons and opened their bowels on the roadside where the melon seeds would sprout again.<sup>83</sup> Fertilising the soil (*fen tu* 糞土) is listed alongside land reclamation, tillage, and planting among the merits of Houji 後稷 “Lord Millet”.<sup>84</sup> Reference to the use of liquid or

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<sup>81</sup> Echoing the value of the nightsoil trade, turning waste into treasure, or faeces and urine into precious metals, becomes a topic in several stories from medieval times onwards. Ariel Fox discusses the equivalence between bodily excretions and notions of value and money. See Fox, 2016.

<sup>82</sup> Hsu, 1980, pp.6-7. Fertilizing practices from the Song onwards have been studied recently in Du Xinhao, 2018.

<sup>83</sup> *Wu Yue Chunqiu*, 5.11b (“Fu cha nei zhuan” 夫差內傳). Note that early Daoist precepts explicitly forbid relieving oneself at liberty. E.g. the *Laojun yibai bashi jie* 老君一百八十誡 (The 180 Precepts Spoken by Lord Lao; 3<sup>rd</sup>-4<sup>th</sup> century CE) note that one has to find an appropriate spot and should not defecate on “living grasses” or in water. See Rols, 2021, p. 444 (precept no. 152).

<sup>84</sup> *Huainanzi honglie jijie*, 18.596 (“Ren jian xun” 人間訓); 20.670 (“Tai zu xun” 泰族訓); *Shuoyuan jiaozheng*, 5.96 (“Gui de” 貴德). In a (late) Western Han chapter of the *Guanzi* 管子, *fen tu* appears as a near metonym for agriculture in general: “Hunger and cold, frost and starvation arise from agriculture 起於糞土 (i.e., the inadequate use of fertilizer).” See *Guanzi jiaozhu*, 78.1388 (“Kui du” 揆度).

solid nightsoil and animal waste to improve soil quality is increasingly prevalent by mid-Warring States times, alongside the use of green waste, ash and river mud.<sup>85</sup> In the *Lüshi chunqiu*'s "Shang nong" 上農 chapter, a rural prohibition stipulates not to "bring out manure" (*chu fen* 出糞) before the land is defrosted and plowed.<sup>86</sup> The "Monthly Ordinances" (*yueling* 月令) note that in late summer burnt grass cuttings flooded with water are used to "manure the fields and pastures" (*fen tian chou* 糞田疇).<sup>87</sup> According to Mencius one hundred *mu* tilled by an expert farmer using fertiliser would feed nine mouths but in years plagued by natural disasters no fertiliser would be sufficient.<sup>88</sup> Xunzi ranks manuring among the tasks of farmers and the general masses (*nongfu zhongshu* 農夫眾庶) rather than those in leading positions.<sup>89</sup>

"Fertilizing/dressing seeds" (*fen zhong* 糞種) with liquid concoctions derived from animal bones is recorded in the *Zhouli*.<sup>90</sup> The *Fan Shengzhi shu* 汜勝之書 credits Yi Yin

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<sup>85</sup> Li Yaguang, 2009, pp.115-117, 139. Dong Kaichen and Fan Chuyu, 2000, pp.130-132. Other methods to strengthen the soil included fallowing to allow soil to recover and plowing greens into the soil as fertiliser.

<sup>86</sup> *Lüshi chunqiu jiaoshi*, 26.1711 ("Shang nong" 上農).

<sup>87</sup> *Lüshi chunqiu jiaoshi*, 6.312 ("Ji xia ji" 季夏紀); *Liji jijie*, 16.459 ("Yue ling" 月令).

<sup>88</sup> *Mengzi zhengyi*, 10.338-39 (3A.3).

<sup>89</sup> *Xunzi jijie*, 10.183 ("Fu guo" 富國).

<sup>90</sup> *Zhouli zhengyi*, 30.1181-1188 ("Cao ren" 草人). Similar treatments of seeds and seedlings with dung concoctions were known in ancient India. E.g., the *Arthaśāstra* (redacted between 150 BCE and 300 CE) notes: "Cuttings for propagation are smeared at the cuts with honey, ghee, and pig's fat mixed with cow dung; and bulbous roots with honey and ghee. Stony seeds are smeared with cow dung." See Olivelle, 2013, 2.24.24 (p.154).

伊尹 with the invention of this technique.<sup>91</sup> Wang Chong mentions a similar technique in which seeds are soaked in boiled horse dung (*ma shi* 馬屎) to keep insects at bay.<sup>92</sup> The widespread use or sight of fertilizers is further evinced by the fact that the Warring States philosophers start to make metaphorical reference to it. One passage attributed to Mencius remarks that “people know how to fertilize their fields, but none know how to fertilize [i.e. cultivate] their hearts” (人知糞其田，莫知糞其心).<sup>93</sup> And the *Xunzi* compares disciples of influential teachers with leaves fertilizing the roots:

Where the water is deep, whirlpools and eddies form. When the plant sheds its leaves, they fertilize its roots. When disciples make profit (from office) they should remember their teachers”

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<sup>91</sup> *Fan Shengzhi shu* (cf. Hsu, 1980, p.290). See also Cao Longgong, 1984, pp.6-12; and Xiao Fan, 1987. Another entry in the *Fan Shengzhi shu* describes the use of silkworm manure on hemp: “When the plants grow to one Chinese foot high, manure with bombyxine excrement at the rate of three *sheng* per plant. Failing bombyxine excrement, use well ripened manure from the pits (i.e. privy; 溷中熟糞) instead. The rate is then one *sheng* per plant.” See Shi Shenghan, 1959, 4.8.2 (p.23). Soil and seed manuring with goat and silkworm dung also appear in the *Qimin yaoshu* 齊民要術, with some references attributed to the *Fan Shengzhi shu*. *Qimin yaoshu* also mentions the use of well-aged manure (*shu fen* 熟糞) from the privy. See *Qimin yaoshu jiaoshi*, e.g. 1.38, 1.48, 2.55.

<sup>92</sup> *Lunheng jiaoshi*, 16.716 (“Shang chong” 商蟲).

<sup>93</sup> Transmitted in *Shuoyuan jiaozheng*, 3.66-67 (“Jian ben” 建本). The passage continues by stating that “fertilizing the heart” changes a person’s behaviour and enables one to fulfill one’s desires; it defines *fen xin* as “studying widely and consulting many” (*bo xue duo wen* 博學多聞).

水深而回，樹落則糞本，弟子通利則思師。<sup>94</sup>

Apart from its properties as fertilizer, animal excrement (*shi* 屎/矢) was known for its medicinal and apotropaic powers. The use of dog excreta to ward off demonic influences occurs in the Shuihudi daybooks. Faeces and/or urine of rats, sheep, dogs and pigs as well as chicken droppings are applied medicinally in the Mawangdui *Wushier bingfang* 五十二病方 (Recipes for Fifty-two Ailments).<sup>95</sup> In a story in the *Han Feizi*, a lady and her housemaids cover up an affair by making her lover storm out of the bedroom naked and dishevelled to simulate a demon. Next the poor husband is told to bath in excrement to exorcise himself from this so-called demonic delusion.<sup>96</sup> Medical formularies excavated at Wuwei 武威 (Gansu; excavated in 1972, dating to the early Eastern Han) contain a coldness remedy that involves fumigating or burning the excrement of white sheep (*bai yang shi* 白羊屎).<sup>97</sup> There is also evidence of the use of children's urine to treat the effects of poisonous plants, and of a belief that pigs and dogs do not perish from poisoned arrows because they feed on excrement, an idea that echoes Wang Chong's observations

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<sup>94</sup> *Xunzi jijie*, 14.264 (“Zhi shi” 致士); tr. Knoblock, 1988, vol. 2, p.209.

<sup>95</sup> Relevant passages are collated in Lü Yahu, 2010, pp.349-53. See also Harper, 1998, pp. 282, 286, 288, 294, 296; and Harper, 1996, entries 23, 33, 57, 67.

<sup>96</sup> *Han Feizi jishi*, 10.579 (“Nei chu shuo xia” 內儲說下).

<sup>97</sup> The procedure, which involves digging a pit in which to burn sheep dung and having the patient sleep on top of it, is unattested and the text poses translation problems. See Yang and Brown, 2017: 277.

mentioned earlier.<sup>98</sup> Like sucking one's master's boil, or draining an abscess, tasting human excrement is invoked as a sign of overstated loyalty or filial piety. King Goujian 勾踐 of Yue (r. 469-465) famously feigned allegiance to the king of Wu 吳 by sampling his excrement and urine to diagnose the king's illness and forecast his recovery.<sup>99</sup>

More evidence for the medicinal use of excreta exists for medieval times. The Longmen recipes (*Longmen fang* 龍門方) carved (between 650 and 653 CE) on the northern wall of a cave in the Longmen grottoes near Luoyang contain seventeen recipes that use the faeces and urine of different animals: swallow droppings, horse and chicken manure, donkey, sheep and cow dung, pig excrements, dog droppings and black ox urine.<sup>100</sup> Mogao 莫高 grotto no. 17 at Dunhuang contains over one hundred medicine-related manuscripts, with drugs containing animal excrements documented in thirty of them. Among Dunhuang manuscripts, Catherine Despeux has counted thirty-five recipes with faeces from seventeen, mostly domestic, animals. They appear more prominently in texts with a Buddhist influence, which suggests Buddhism played a role in their circulation.<sup>101</sup>

## Laozi 46

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<sup>98</sup> *Bowu zhi*, 7.1a; tr. Greatrex, 1987, p.117; Pliny the Elder (24-79 CE) writes extensively on the medicinal powers of urine. See *Naturalis Historia*, XXVIII.18-19.

<sup>99</sup> *Wu Yue chungiu*, 7.6a-b.

<sup>100</sup> Stanley-Baker and Yang, 2017.

<sup>101</sup> Despeux, 2017. On the use of faeces in TCM see Huan Du et al., 2019.

The most debated occurrence of *fen* 糞 “dung, manure” occurs in the *Laozi*:

天下有道	When the Dao prevails in the world,
卻走馬以糞。	<i>Swift horses are withdrawn to fertilize the fields.</i>
天下無道	When the Dao is absent in the world,
戎馬生於郊	War horses are bred in the borderlands.

*Laozi* 46’s dung has bred commentarial fervour both among *Laozi* commentators and historians of agriculture who speculate at length about the technical implications of the second line. The earliest allusion to the verse appears in the late Western Han *Yantie lun* 鹽鐵論, which notes that in the time of Yu the Great “farmers used horses for plowing and transport; among the people there were none who did not ride them; in those times war horses were retired and used for manuring.”<sup>102</sup> This passage however offers little in the form of historical evidence, its purpose being, to invoke a Golden Age inspired by the *Laozi* line. Although horse plowing is attested at Juyan 居延 and in the Yuelu shuyuan statutes, archaeological or pictorial evidence dating to the pre-Qin period is scant.<sup>103</sup> The gloss *bo* 播 (OC \**paH*) has been proposed for 糞 (OC \**pjunH*) implying that horses were used to help set out the seeds in the fields. Etymologically however this reading is open to doubt

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<sup>102</sup> See *Yantie lun jiaozhu*, 15.190 (“Wei tong” 未通). Another passage states that in antiquity horses were under the yoke during travel and used to plow when stationary. See *Yantie lun jiaozhu*, 29.350 (“San bu zu” 散不足).

<sup>103</sup> See Xiong Xianpin, 2019; and Bai Pinjian, 2012.

as the characters hardly ever occur as graphic loans or variants.<sup>104</sup> While attested early on, as a term exclusively denoting fertiliser, *fen* is also not very common in pre-Qin texts. It is explained as *qi chu* 棄除 “to discard and remove” in *Shuowen jiezi*, and it occurs with this meaning in a Qin legal entry.<sup>105</sup> Only by Eastern Han times, the period of the terracotta latrines, is *fen* regularly used for human excrement and urine.<sup>106</sup> In short, the graph’s meaning must have evolved over time. Other hypotheses include that the *Laozi* verse refers to plowing over the seeds or seeding a field or that we ought to imagine horses manuring the fields, either naturally or, by pulling cartloads of manure to distribute across the fields.<sup>107</sup> This last interpretation goes back to Zhu Xi 朱熹 (1130-1200) who recounts having observed a horse pulling a manure-cart (*fen che* 糞車) in Jiangxi.<sup>108</sup> The problem

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<sup>104</sup> The gloss was proposed by Wang Xianshen 王先慎 (19<sup>th</sup> century). See You Xiuling, 2002.

<sup>105</sup> *Shuowen jiezi zhu*, 4B.1b; *Shuihudi Qin mu zhujian*, p.41 (strip 89)(discarding cart wheels that are beyond repair).

<sup>106</sup> Yang Yinchong, 2008, points out that in oracle bone script and small seal script 糞 appears as 糞. One of its earlier meanings may have been to “sweep or keep clean” (e.g. stables). The graph then went into several semantic directions: the human and organic waste that is cleaned out, the only use for which is to fertilize fields; or a sticky mixture of straw and mud that serves as building material (as in *Lunyu*, V.10). From ‘waste’ it also came to mean “to reject or discard”. Given that the graph may not have been known to refer to manure during the time when the *Laozi* came together, historians of agriculture may have overinterpreted it.

<sup>107</sup> See Zeng Xiongsheng, 2003 and 2008, pp.171-181.

<sup>108</sup> See *Zhuzi yulei*, 125.20a. Nightsoil and manure was transported to the fields with buckets (*fen tong* 糞桶) and baskets (*fen kuang* 糞筐), carts, pushcarts, wheelbarrows, or by boat. See Hüseman, 2021.

of course is that there is no reference to a cart in the *Laozi* verse.<sup>109</sup> The line in question therefore could thus simply be read as a metonym for agricultural work in general (in the spirit of the verse which is about retiring war horses for farm labour). Or perhaps the allusion is to letting horses stop and relieve themselves naturally, respecting the physical needs of horses deployed in labour, in which case 糞 can only be read verbally as “to excrete/defecate”.<sup>110</sup>

Dung collection behind horses is attested in the *Zhuangzi*: “He who loves horses catches their dung in baskets and receives their urine in giant clam shells. But if a mosquito or a snipefly should alight upon one of his horses and he slaps it at the wrong moment, the

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<sup>109</sup> The term 糞車 is unattested in pre-Qin and Han texts. It occurs in a rhapsody by Zhang Xie 張協 (third century CE). See *Jin shu*, 55.1523: 卻馬於糞車之轅，銘德於昆吾之鼎 “Withdrawing his horses to the harness of the manure-cart; he engraves his virtue onto the tripod of Mt.Kunwu”). I suspect this draws on (erroneously parsed?) lines in *Huainanzi*, 6.198 (“Lan ming xun” 覽冥訓) (“[the sage] therefore withdraws his horses to use them to manure the fields, and his chariot tracks do not reach beyond distant places 故卻走馬以糞，而車軌不接于遠方之外) or a version of this line without the conjunction 而 in the *Wenzi*. See *Wenzi shu yi*, 2.67 (“Jing cheng” 精誠).

<sup>110</sup> Lü Quanyi, 2013, debunks attempts that seek to emend this line in order to read it in the context of agriculture (note that the text shows no variation in the Mawangdui, Guodian, Dunhuang, and Beida versions of the *Laozi*, as well as in most transmitted editions). Given its parallel with *rong ma* 戎馬, *zou ma* must refer to a type of horse here rather than the name of an official (attested as early as the Shang oracle bones and Zhou bronze inscriptions). A similar corrective not to overinterpret the passage as evidence for agricultural history over and above its philosophical message was aired earlier by You Xiuling, 2003.

horse will chomp through its bit, break his head, and smash his chest. ...”<sup>111</sup> Scenes showing folk scooping up dung behind their horses and catching their urine also appear in Han murals.<sup>112</sup> Yet, it is unlikely, or difficult to establish at best, whether those murals were intended in any way to refer to the *Laozi*. Later agricultural manuals mention the use of horse manure on fields.

The philosophical reading of this stanza is less controversial: once the Dao prevails, warfare no longer has its place. Horses, requisitioned for battle, are set loose to pasture. The “Yu Lao” 喻老 and “Jie Lao” 解老 commentaries interpret it as such:

A ruler [who possesses the Way] does not deploy horses to travel back and forth in warfare and the people do not use horses to transport extravagant luxuries to and from distant places. Instead, the horses’ strength is preserved exclusively for agricultural pursuits. If the horses’ strength is preserved for agricultural pursuits, they will invariably be used for manuring and irrigating the fields. Thus it is said: “*When the Way prevails under Heaven, swift horses are withdrawn to fertilize [the fields].*”  
上不事馬於戰鬪逐北，而民不以馬遠淫通物，所積力唯田疇，積力於田疇必且糞灌，故曰：天下有道，卻走馬以糞也。<sup>113</sup>

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<sup>111</sup> *Zhuangzi jishi*, 4.168 (“Ren jian shi” 人間世); tr. Mair, 1994, p.37. The *Qimin yaoshu* contains a recipe against constipation for horses (大小便不通). See *Qimin yaoshu jiaoshi*, 6.412.

<sup>112</sup> Examples in Shaanxi include the Suide 綏德 and Mizhi 米脂 murals; in Shandong there are some in Tengxian 滕縣. See Xia Henglian et al., 1996, p.37 (A19), p.38 (A20). Another expression for horse manure, *ma tong* 馬通, appears for the first time in *Hou Hanshu*, 81.4459.

<sup>113</sup> *Han Feizi jishi*, 6.359 (“Jie Lao”); cf. 7.387 (“Yu Lao”).

The *Huainanzi* 淮南子 quotes the *Laozi* line in a passage describing the non-interfering and non-action sage who “retires [his] fast horses to fertilize the fields, and [whose] chariot tracks do not extend beyond far-off lands” (故卻走馬以糞，而車軌不接于遠方之外).<sup>114</sup>

The *Heshang Gong* 河上公 commentary (dating no earlier than the time of Ge Xuan 葛玄, 164-244, and more likely later) draws an analogy between redeploying war horses in agriculture and cultivating the self:

Manuring means fertilizing the fields. Once weapons and armour are no longer used, one retreats war horses to cultivate the farming fields. One who cultivates the self withdraws essential *yang* energies in order to fertilize one’s self.

糞者，糞田也。兵甲不用，却走馬治農田，治身者却陽精以糞其身。<sup>115</sup>

Wang Bi 王弼 (226-249) concurs and presents tending to one’s inner self or internal affairs as an act on a par with returning horses to fertilize the fields:

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<sup>114</sup> *Huainanzi honglie jijie*, 6.198 (“Lan ming xun” 覽冥訓). Commentators have spilled ink on how to interpret *que* 卻 (却) (glosses include 退 or 止), but there can be little misunderstanding here of its verbal use “to return, to retreat, to withdraw”. Gao You 高誘 (2<sup>nd</sup> cent. CE) notes that halting horses to let them fertilize the fields proves how the sages put into practice “ultimate virtue” (行至德之效).

<sup>115</sup> Reid, 2015 (p.127), translates, freely: “‘Fertilizing’, here, means fertilizing fields. Soldiers are not employed, and people go back to leading their horses on foot while managing and farming their fields. Those who govern the body lead *yang* essence to fertilize the body.”

When All Under Heaven has the Way, he [a Sage Ruler] “knows how to be satisfied [with what goods he has]” and “knows how to halt [the craving for ever greater fame],” and there is no striving for [things] outside but each and everyone just takes care of his internal matters. That is why [the *Laozi* says] “riding horses would be kept back for managing the dung on the fields!”

天下有道，知足知止，無求於外，各修其內而已。故卻走馬以治田糞也。<sup>116</sup>

### **In conclusion**

From abandoned sanitary sticks in a latrine near Dunhuang to a line in the *Laozi*, we have come full circle: from excreta that are shed as waste and left untreated, to manuring the fields and fertilizing the self in a Daoist act of self-cultivation. Socially produced dirt and defecatory capacity turn into a regenerative faculty. Early Chinese evidence comes to us in sporadic and often decontextualized ways. Yet, as I hope to have shown, this fragmentary picture is sufficiently informative to allow us to sketch out the contours of the cycle: what gets excreted gets re-absorbed and regenerates. Excreta seed new life, in the fields, within the body, in the mind, perhaps even in the tomb and the afterlife. Just as warhorses -- emblems of dead and the demise of peaceful civilization -- can turn into a lifegiving force on the fields, so dead matter contains the germs of revitalization. There is

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<sup>116</sup> Wang *Bi ji jiaoshi*, p.125; tr.Wagner, 2003, p.275.

Dao amidst excreta, an image that survives perhaps moist poignantly in Zhuangzi's exchange with Dongguo Zi 東郭子:

“Where is the so-called Way present?” “There is no place that it is not present,” said Master Zhuang. “Give me an example so that I can get an idea,” said Master Easturb. “It’s in the ants,” said Master Zhuang. “How can it be so low?” “It’s in panic grass.” “How can it be still lower?” “It’s in the tiles and shards.” “How can it be still lower?” “It’s in shit and piss.”

所謂道，惡乎在？」莊子曰：「無所不在。」東郭子曰：「期而後可。」莊子曰：「在螻蟻。」曰：「何其下邪？」曰：「在稊稗。」曰：「何其愈下邪？」曰：「在瓦礫。」曰：「何其愈甚邪？」曰：「在屎溺。」<sup>117</sup>

The subject of excretion has not been expelled from early China's record, albeit that it is scattered across multiple types of sources. It tends to be matter out of place on the regular menu of sinologists. Yet being a basic daily need of all human and non-human animals in the societies we study, it is matter that mattered.<sup>118</sup>

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<sup>117</sup> *Zhuangzi jishi*, 22.749-50 (“Zhi bei you” 知北游); tr. Mair, 1994, p.217.

<sup>118</sup> For the fate of the latrine in modern times see Zhou Xing, 2019. Studies of the latrine in other parts of the ancient world include Koloski-Ostrow, 2015; Koloski-Ostrow et al., 2011; Mitchell, 2016; and Min and Dong, 2016.

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