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### Chinese Military Technology and Dai Viet: c. 1390-1497

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## Chinese Military Technology and Dai Viet: c. 1390-1497<sup>1</sup>

Sun Laichen<sup>2</sup>

“Military technology tends to be the first to be borrowed, since the penalties for not doing so are immediate and fatal.” – Anthony Reid<sup>3</sup>

“Any big change in weapons and military organization affects politics and society by helping some people attain ends more easily than before, while putting new, perhaps insuperable, obstacles in the way of others. The advent of guns was such a change.” – William H. McNeill<sup>4</sup>

One of the big lacunae in Asian military history is the transfers of Chinese gunpowder technology to Southeast Asia before the sack of Melaka by the Portuguese in 1511. Elsewhere I have shown how the gunpowder technology of early Ming China (c. 1368-1450) disseminated to the whole “Northern Mainland Southeast Asia” (defined as to embrace southern Yunnan, Northeast India, and northern parts of modern mainland Southeast Asia) and its implications.<sup>5</sup> This research focuses on two issues in Sino-Vietnamese relations and Vietnamese history with respect to the spread of Chinese firearms.

The first issue between China and Vietnam is who borrowed from whom in terms of gunpowder technology. This has much to do with the well-known but highly puzzling passage in the *Ming shi* (History of the Ming dynasty): “When it came to [the time] of Ming Chengzu [Yongle, 1403-1424] Jiaozhi (Dai Viet) was pacified, the techniques of magic gun and cannon (*shenji qiangpao fa*) were obtained, a Firearms Battalion (*shenji ying*) was especially established to drill [firearms].”<sup>6</sup> This has led to the popular belief that it was the Chinese who through their invasion of Dai Viet in

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<sup>1</sup> This article is derived from my dissertation “Ming-Southeast Asian Overland Interactions, c. 1368-1644” (The University of Michigan, 2000) with substantial revision and enlargement. My thanks go to Dai Kelai, under him I studied Sino-Vietnamese relations, and whose translation of Vietnamese works is extremely useful for this research; to John K. Whitmore whose research is crucial for my understanding Vietnamese history and for lending sources; to Li Tana for her valuable suggestions; to Geoff Wade for suggesting and lending numerous sources; to Bruce Lockhart for sharing his unpublished papers and for his comments; to Aroonrut Wichienkeo for checking the original text of the *Chiang Mai Chronicle*. I am especially indebted to Victor Lieberman for his critical and constructive comments on the content and style of this paper, and to Anthony Reid for his valuable suggestions and for editing the paper. I also thank two anonymous referees for their comments and suggestions. This paper will appear in Nhung Tuyét Trần & Anthony Reid, eds., *Viet Nam: Borderless Histories* (Madison, Wisconsin: University of Wisconsin Press), forthcoming.

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<sup>3</sup> *Europe and Southeast Asia: The Military Balance* (Townsville, Queensland: Centre for Southeast Asian Studies, James Cook University of North Queensland, 1982), p. 1.

<sup>4</sup> *The Age of Gunpowder Empires, 1450-1800* (Washington D. C.: American Historical Association, 1989), p. 1.

<sup>5</sup> Sun Laichen, “Transfers of Military Technology from Ming China to Northern Mainland Southeast Asia, c. 1390s-1527,” *Journal of Southeast Asian Studies*, forthcoming.

<sup>6</sup> Beijing: Zhonghua Shuju, 1974, vol. 92, p. 2264. See also vol. 89, pp. 2176-2177. The translation is mine.

1406-1407 learned firearms technology from the Vietnamese.<sup>7</sup> Though this view has been challenged one way or another,<sup>8</sup> it is far from dead.<sup>9</sup> In particular, no efforts have been made to demonstrate convincingly that it was Vietnam that acquired gunpowder technology from China, rather than the other way around. On the other hand, however, the fact that more than one Chinese source express a view similar to that in the passage in the *Ming shi* quoted above must have meant something and therefore merits closer attention. This research examines the issues in detail by making full use of Chinese and Vietnamese sources. On the one hand, it stresses the Chinese origins of gunpowder technology; on the other hand, it also acknowledges the Vietnamese innovations in some aspects of the technology.

The second issue involves the driving forces behind the external expansion of Dai Viet during the fifteenth century, including both the well-known episode of the fall of the Cham capital Vijaya in 1471 and the little-known “long march” of Dai Viet troops to the Irrawaddy River between 1479 and 1484. The main question here is why, after having confronted Champa for more than one thousand (or five hundred) years, Dai Viet was able to defeat Champa decisively at this time.<sup>10</sup> To date available views can be summarized as follows.

First, the agricultural and demographic thesis. This view holds that population increase of Dai Viet both drove and provided an edge for the southward march (*Nam tien*) of the Vietnamese.<sup>11</sup> Earlier views tend to stress population growth as a result of agricultural development in the Red River delta but without giving much thought to the latter,<sup>12</sup> while recently in a more sophisticated, intriguing, and stimulating article explaining the ethnic succession of the Pyu, Mon, Khmer, and Cham by the Burmese,

<sup>7</sup> Joseph Needham, *Science and Civilisation in China*, vol. 5, “Chemistry and Chemical Technology;” pt. 7, “Military Technology; the Gunpowder Epic” (Cambridge, England: Cambridge University Press, 1986), p. 311 (pointing out that both Chinese and Western scholars have followed this belief); Phan Huy Le, et al., trans. by Dai Kelai, *Yuenan minzu lishi shang de jici zhanlue juezhuan* [Several strategic decisive battles in Vietnamese history] (Beijing: Shijie Zhishi Chubanshe, 1980), p. 142 n.3.

<sup>8</sup> Arima Seiho, *Kaho no kigen to sono denryu* (The origin of firearms and their transmission) (Tokyo: Yoshikawa Kobunkan, 1962), pp. 166-171; Needham, *Science*, pp. 311-312; Wang Zhaochun, *Zhongguo huoqi shi* (A history of Chinese firearms) (Beijing: Junshi Kexue Chubanshe, 1991), pp. 106-107; Li Tana, *Nguyen Cochinchina: Southern Vietnam in the Seventeenth and Eighteenth Centuries* (Ithaca, New York: Southeast Asia Program Publications, 1998), pp. 43-44.

<sup>9</sup> Zheng Yongchang, *Zhengzhan yu qishou—Mingdai Zhong Yue guanxi yanjiu* [Military expedition and withdrawal—A study of Sino-Vietnamese relations during the Ming dynasty] (Tainan: Guoli Chenggong Daxue, 1998), p. 39n.65; Dai Kelai, personal communication. One participant of the conference on Vietnam at UCLA where this paper was presented informed me that she had been teaching the old view.

<sup>10</sup> 192-1471 or 939-1471, with 192 as the beginning date of Champa while 939 the start of independent Vietnam from the Chinese control.

<sup>11</sup> For discussion of the divergent views on the *Nam tien* in modern Vietnamese historiography (1954-1975) see Bruce M. Lockhart, “Competing Narratives of the *Nam tien*” (MS).

<sup>12</sup> For example, “For the Vietnamese march southward at the expense of Champa was, to a large extent, a demographic pressure. The Vietnamese victory was above all a victory of number;” and “...the fourteenth century [sic] which witnessed the demographic explosion in Vietnam that brought about the imbalance of forces that existed between the two kingdoms...Champa ... was defeated by sheer number.” See Tam Guach-Langlet, “The Geographical Setting of Ancient Champa” and Pierre-Bernard Lafont, “New Patterns on the Ethnic Composition of Champa,” both in *Proceedings of the Seminar on Champa Held at the University of Copenhagen May 23, 1987* (Rancho Cordova, California: Southeast Asian Resource Center, 1994), pp. 41-42, & 69. Also see Georges Maspero, *The Champa Kingdom: The History of an Extinct Vietnamese Culture* (Bangkok: White Lotus Press, 2002), p. 112; Tran Trong Kim, trans. by Dai Kelai, *Yuenan tongshi* [A general history of Vietnam] (Beijing: Zhonghua Shuju, 1992), p. 10.

Tai, and Vietnamese in mainland Southeast Asia, Richard A. O'Connor has attributed it to the replacement of the "Lowland Agriculture" ("Garden Farmers") by the "Wet Rice Specialists" who could produce more rice to "[foster] the trade, population growth, and resource concentration that promote state power and societal expansion."<sup>13</sup> Li Tana's research on the demographic trend in north and central Vietnam tends to lend more credence to this theory.<sup>14</sup>

Secondly, the Confucian transformation interpretation. It argues that the Ming invasion of Dai Viet in 1406-1407 finally led to the adoption of Ming Chinese model by the Vietnamese, especially under the rule of Le Thanh-tong (r. 1460-1497); as a result the Vietnamese state was transformed. Particularly, Dai Viet embraced the Chinese "civilized versus barbarian" ideology and applied it to its relations with Champa. In the words of John K. Whitmore, "Now the moral question became central and marked the difference between the 'civilized' and the 'barbarian.' No longer did cultural relativity reign, nor were the attacks mere looting raids after which another local prince would be put on the throne. The goal instead became to bring 'civilization' to the uncivilized." In other words, the Vietnamese had to occupy Champa permanently in order to civilize its people.<sup>15</sup>

Third, the institutional interpretation. While the previous view accounts for the institutional strength of Dai Viet, this view explains the institutional weakness of Champa. According to Kenneth R. Hall, Champa, rather than being a centralized state, was "a weakly institutionalized state system that depended upon personal alliance networks to integrate a fragmented population." With a very limited agricultural base and maritime trade, Champa was operated primarily on a "plunder-based political economy," which fluctuated according to the availability of resources and especially the success or failure of external plundering expeditions. Thus, "[t]he inherent institutional weakness in the Cham state ultimately sealed its fate."<sup>16</sup>

Each of the above views has merit and validity to different degrees, though the institutional weakness as expressed in the third point seems more to be the outcome than cause. Nonetheless, the questions have certainly not yet been comprehensively

<sup>13</sup> Richard A. O'Connor, "Agricultural Change and Ethnic Succession in Southeast Asian States: A Case for Regional Anthropology," *Journal of Asian Studies* 54, 4 (1995): 968-996, quote on p. 986.

<sup>14</sup> Li, *Nguyen Cochinchina*, pp. 159-172.

<sup>15</sup> John K. Whitmore, *Transforming Dai Viet, Politics and Confucianism in the Fifteenth Century*, chapter 5 (MS); idem, "The Two Great Campaigns of the Hong-Duc Era (1470-1497) in Dai Viet" (paper presented at the "International Workshop on Indigenous Warfare in Precolonial Monsoon Asia," School of Oriental and African Studies, University of London, 10-11 January, 2003), p. 3; Momoki Shiro, "Dai Viet and the South China Sea Trade: From the 10th to the 15th Century," *Crossroads: An Interdisciplinary Journal of Southeast Asian Studies* 12, 1 (1998): 18-23.

<sup>16</sup> *Maritime Trade and State Development in Early Southeast Asia* (Honolulu: University of Hawaii Press, 1985), pp. 178-193; idem, "Economic History of Early Southeast Asia," in Nicholas Tarling, ed., *Cambridge History of Southeast Asia* (Cambridge: Cambridge University Press, 1992), vol. 1, pp. 252-260. The French colonial image of Champa as a mono-ethnic Cham and centralized state has been challenged in recent years. In addition to Hall's works, see Gerald Cannon Hickey, *Sons of the Mountains: Ethnohistory of the Vietnamese Central Highlands to 1954* (New Haven: Yale University Press, 1982), pp. 78-120; articles in the *Proceedings of the Seminar on Champa*; Keith W. Taylor, "The Early Kingdoms," in Tarling, ed., *Cambridge History of Southeast Asia*, pp. 153-157; Li, *Nguyen Cochinchina*, pp. 31-33; Anthony Reid, "Chams in the Southeast Asian Maritime System," in idem, *Charting the Shape of Early Modern Southeast Asia* (Chiang Mai: Silkworm Books, 1999), pp. 49-53. For a detailed overview of the debate on the nature of "Champa" in Vietnamese historiography, see Bruce Lockhart, "Colonial and Post-colonial Constructions of 'Champa'" (Paper presented at the NUS-UNSW workshop on "Ways of Seeing," Sydney, January 2000).

answered. This research approaches the issue from a technological perspective by taking military technology into account. It argues that China-derived firearms played an important role in Dai Viet's southward and westward expansion in the late fifteenth century.

## Transfers of Military Technology from Ming China to Dai Viet, c. 1390-1427

### 1. The earliest firearms in Dai Viet and the defeat of Champa

The transfers of military technology from China to modern Vietnam can be traced to the time before the Common Era, but a significant transfer took place during the early Ming. In 1390, the very powerful Cham king Che Bong Nga was killed by a volley of *huochong* in a naval battle.<sup>17</sup> This weapon has long been widely understood as cannon,<sup>18</sup> but it was more plausibly a hand-gun (Figure 1).<sup>19</sup> This was, as correctly pointed out by Momoki Shiro, a new weapon.<sup>20</sup> The firing of these hand-guns and especially the death of Che Bong Nga caused psychological chaos among the Cham soldiers who were consequently routed. Dai Viet was thus saved from a "total collapse" or "one of the major crises in the history of Dai Viet."<sup>21</sup>

A brief review of Dai Viet's situation in the second half of the fourteenth century can help us better understand the significance of Dai Viet's victory in 1390. For about three decades (1361-1390) the great Cham king Che Bong Nga launched about ten invasions, large and small, of Dai Viet (in 1361, 1362, 1364, 1365, 1368, 1371, 1377, 1380, 1382, 1383) while the capital of Dai Viet fell three times (in 1371, 1377, and 1383). In 1389, a series of domestic revolts preceded another full-scale Cham invasion. Ho Quy Ly led Dai Viet troops to confront the enemy, but suffered an utter defeat on the Luong River. Ho Quy Ly fled to the capital, followed by his generals, one of whom commented: "The enemy is stronger than we are, and resistance is impossible." Then the most dramatic episode took place (in the words of Maspero):

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<sup>17</sup> *Dai Viet su ky toan thu* [Complete book of the historical record of Dai Viet] (Tokyo: Tokyo Daigaku Toyo Bunka Kenkyujo, 1984-86) (henceforth as *toan thu*), vol. 1, p. 464. *Kham dinh Viet su thong giam cuong muc* [The text and commentary of the complete mirror of Vietnamese history as ordered by the emperor] (Taipei: Guoli Zhongyang Tushuguan, 1969), vol. 11, p. 12a, says *huopao* (cannon), which was a nineteenth century alteration. For consistency and simplicity, I use Chinese terminology for all the weapons that appear throughout this research. The Vietnamese borrowed terms from the Chinese for all the gunpowder and other weapons. For example, *hoa tien* for *huojian*, *phao* for *pao*, and *sung* for *chong*.

<sup>18</sup> Tran, *Yuenan*, p. 128; Li, *Ngyuen Cochinchina*, p. 43. The word *chong* by the early Ming could mean either "hand-gun" or "cannon." When it is not clear whether it refers to a hand-gun or cannon, the original term is kept instead.

<sup>19</sup> All the illustrations of firearms and other weapons or instruments are based on Chinese and Korean artifacts and illustrations, as information on the Vietnamese side is not available yet. One should, however, bear in mind the possible discrepancies between Vietnamese and Chinese and especially Korean weapons.

<sup>20</sup> Momoki Shiro, "10-15 seiki Betonamu kokka no minami to nishi" [Vietnamese polity toward its southern and western neighbors from the 10<sup>th</sup> to the 15<sup>th</sup> centuries," *Toyoshi kenkyu* 51, 3 (1992): 166.

<sup>21</sup> Momoki Shiro, "Was Champa a Pure Maritime Polity? Agriculture and Industry Recorded in Chinese Documents" (Paper presented at 1998 Core University Seminar, Kyoto University and Thammasat University "Eco-history and Rise/Demise of the Dry Areas in Southeast Asia," Kyoto University, Japan, October 13-16, 1998), p. 7; Whitmore, "Two Great Campaigns," p. 2.

Continuing his advance, he (Che Bong Nga) reached the Hoang River. Terror once again reigned in the capital. The order was given to Tran Khac-chon to march and meet him. The fear inspired by the Cham king and his armies was so great that, when this general presented himself before the old emperor, he could not contain his tears despite his courage, and his sovereign also wept. Nevertheless, he advanced to the Hoang River. Finding the Cham there is too great force to enter into combat, he pulled back to the Hai-trieu River. The situation appeared hopeless; everything seemed to indicate a prompt occupation of the country by Cham troops. The emperor's younger brother, Nguyen Dieu, then crossed over with all his men to the camp of Che Bong Nga, hoping no doubt that the latter, master of Annam, would entrust him with its government. At the same time, a monk, Pham Su-on, occupied the capital at the head of a group of partisans. The two emperors had to flee and call back General Huinh The Phuong...<sup>22</sup>

At this crucial moment when "Vietnamese civilization was badly shaken" as Whitmore put it, a low-ranking Cham officer defected and helped the Vietnamese identify Che Bong Nga's warship among several hundred ones. A concentration of firepower from the Vietnamese firearms took the life of the Cham king, the Cham invading troops retreated. When the Vietnamese king Tran Thuan-tong (r. 1388-1398) was waked up from his sound sleep to see the head of Chen Bong Nga, he was startled to rise up as he thought the enemy was already at his camp. Upon learning the death of Che Bong Nga, The Vietnamese king commented jubilantly and with great relief: "Bong Nga and I have been confronting for long but we did not get to see each other until today. Is not this like that Han Gaozu saw the head of Xiang Yu!<sup>23</sup> [Now] the country is pacified."<sup>24</sup>

Maspero maintained that it was the Cham officer's betrayal that "stopped the victorious march of the Cham and saved Annam from an invasion in which its independence would perhaps have been lost." However, without newly acquired gunpowder technology Dai Viet's victory in this naval battle, and, by implication, the fate of the Vietnamese state would have been extremely uncertain. Thus, the year 1390, as many scholars have observed, signaled the shift of balance of the prolonged conflicts between Dai Viet and Champa.<sup>25</sup> From this time on, Dai Viet seems to have started to gain the upper hand. Apparently, the effectiveness of Dai Viet's new military technology played a part in this shift of balance in general and a determining role in the victory of the Dai Viet navy in 1390 in particular.

Though the origin of this Vietnamese hand-gun is not specified, it is reasonable to speculate that it had been obtained from either Ming traders or military deserters prior to 1390. Wang Ji, the Minister of War and commander-in-chief of the campaigns against the Maw Shans (Luchuan) in modern southwestern Yunnan,

<sup>22</sup> I corrected two obvious printing errors such as "in" which should be "is" while "Mon" "monk."

<sup>23</sup> Defeating his rival Xiang Yu, Han Gaozu or Liu Bang founded the Former Han dynasty (206 BCE-25 CE).

<sup>24</sup> *Toan thu*, pp. 462-464; Maspero, *Champa*, pp. 92-94, 107-109; John K. Whitmore, *Vietnam, Ho Quy Ly, and the Ming (1371-1421)* (New Haven: Council on Southeast Asia Studies, 1985), pp. 29-30; idem, "Two Great Campaigns," p. 2.

<sup>25</sup> Jung-pang Lo, "Intervention in Vietnam: A Case Study of the Foreign Policy of the Early Ming Government," *Tsing Hua Journal of Chinese Studies*, new series 7, 2 (1969): 159; Whitmore, *Vietnam*, pp. 30-32; Momoki, "10-15," p. 166.

memorialized in 1444: “In the past Luchuan rebelled primarily because profit-seekers on the frontier, illegally carrying weapons and other goods, sneaked into Mubang (Hsenwi), Miandian (Ava), Cheli (Sipson Panna), Babai (Lan Na), etc., and communicated with the aboriginal chieftains and exchanged goods. There were also those who taught them to make weapons, liked [their] women and remained there...”<sup>26</sup> Though not specifically mentioned here, Dai Viet should have been on the list.

It seems that the adoption of firearms in Dai Viet increased the need for gunmetal, as in 1396 the late Tran under the control of Ho Quy Ly issued paper money and required people to exchange their copper cash, possibly with the purpose of collecting more copper for manufacturing firearms.<sup>27</sup>

## 2. The Employment of Firearms by Ming Troops in Dai Viet (1406-1421)

The Ming invasion and occupation of Dai Viet between 1406 and 1427 greatly furthered the transfer of military technology from China to Dai Viet. As a military superpower and determined to subdue Dai Viet, Ming China mobilized its best generals and troops for that purpose. The Yongle emperor was highly concerned with this campaign and paid much attention to every detail in the preparation. To withstand Dai Viet’s firearms (*huoqi*), he ordered the Ministry of Works to manufacture large, thick, and durable shields.<sup>28</sup> He ordered that the technology of making firearms including the “magic hand-gun/cannon” (*shenji chong*) should not be leaked to the enemy. Particularly, the Firearm Generals (*shenji jiangjun*) were enjoined to make sure that when their troops withdrew, firearms “must be counted each to its original number and not a single piece be allowed to go.”<sup>29</sup> Among 215,000 invading soldiers of the Ming, some troops armed with firearms were headed by at least four Firearm Generals by the names of Cheng Kuan, Zhu Gui, Luo Wen, and Zhang Sheng.<sup>30</sup> If we accept the estimate that ten percent of the early Ming army was equipped with firearms,<sup>31</sup> then around 21,500 soldiers should have served under these generals. They must have formed the backbone of the Firearms Battalion, a special and separate type of troops specializing in firearms, which was established soon after the invasion of 1406-1407 (see below). One Chinese source sheds light on the composition of firearms in one battalion (*ying*) by the mid-sixteenth century. It consisted of forty batteries or units (*dui*) and was equipped with 3,600 “thunderbolt shells” (*pili pao*), 160 “wine-cup muzzle general cannon” (*zhankou jiangjun pao*), 200 large and 328 small “continuous bullet cannon” (*lianzhu pao*), 624 hand-guns (*shouba chong*), 300 small grenades (*xiao feipao*), about 6.97 tons of gunpowder, and 1,051,600 or more bullets of approximately 0.8 ounce weight each; the total weight of weaponry was 29.4 tons.<sup>32</sup>

<sup>26</sup> *Ming shilu youguan Yunnan lishi ziliao zhaichao* [Historical records on Yunnan in the *Ming shilu*] (Kunming, Yunnan: Yunnan Renmin Chubanshe, 1959-1963), vol. 2, p. 642.

<sup>27</sup> *Toan thu*, p. 471; Zheng, *Zhengzhan*, p. 48; Whitmore, *Vietnam*, pp. 43-44.

<sup>28</sup> Li Wenfeng, *Yue qiao shu* [Records on Vietnam] (prefaced in 1540; reprint, 19??), vol. 2, p. 17b.

<sup>29</sup> *Ibid*, vol. 2, pp. 18b, 23a.

<sup>30</sup> *Ming shilu*, vol. 1, pp. 215, 228; Qiu Jun, *Pingding Jiaonan lu* [A account of the pacification of Vietnam], in the *Jilu huibian* [Collection of records], vol. 47, pp. 1-12; *Toan thu*, vol. 1, p. 495; Li, *Yue qiao shu*, vol. 2, pp. 23a-b, 30a; vol. 6, p. 4b; vol. 10, pp. 8a, 12a, 16a.

<sup>31</sup> Wang, *Zhongguo*, p. 103.

<sup>32</sup> Cited in Needham, *Science*, p. 339.

On November 19, 1406,<sup>33</sup> Ming troops led by Zhang Fu entered Dai Viet from Guangxi, while those under Mu Sheng marched from Yunnan.<sup>34</sup> Soon afterwards, 20,000 and 30,000 Dai Viet troops at the Ai-luu and Ke-lang Pass respectively tried to block the Zhang Fu's armies with *huochong* and other weapons, but were routed easily.<sup>35</sup> Earlier the Ming court was worried about the lack of navy for the campaign.<sup>36</sup> But in either December 1406 or January 1407 when the Ming troops arrived in the Tam-doï prefecture on the north bank of the modern Red River they started to "build ships and set cannon (*chong*) on them."<sup>37</sup> This was the beginning of the Ming navy in Dai Viet. On January 19, 1407, Vietnamese soldiers crossing the river fired *chong* on the Chinese but were routed by the latter.<sup>38</sup>

The capture of Do-bang by the Ming armies demonstrates the crucial role played by Ming firearms. Do-bang was the most important strategic point in Dai Viet's whole defense against the Ming. The Ming commanders told the Ming soldiers that "this city is what the enemy relies on."<sup>39</sup> Dai Viet must have counted on Do-bang's defense to prevent the Ming troops from penetrating farther south. Therefore, Dai Viet deployed heavy troops and best weapons to defend it. The city-wall was high, and plenty of *chong*, arrows, wooden and stone obstacles were deployed. To defend the city, there were two deep moats, with pointed bamboo sticks inside. Outside the moats, pits for trapping horses were dug, with pointed bamboo and wooden sticks on and beneath them. In a word, Dai Viet's defense was well prepared. Before the attack, troops under Zhang Fu prepared weapons and other equipment.<sup>40</sup> The Ming armies' general offensive took place on January 19-20, 1407. The Ming troops attacked the city from all directions, employing scaling ladders (*yunti*; Figure 2), *xianren dong*,<sup>41</sup> and gunpowder signal lights (*yemingguang huoyao*). When the Ming troops climbed on the city wall, the alarmed and bewildered Vietnamese defenders could only shoot a few arrows and *chong*. After having successfully entered the city, the Ming soldiers were confronted by Dai Viet elephants and numerous infantry. The Ming troops covered their horses with lion masks to scare the elephants,<sup>42</sup> and in particular, soldiers led by the Firearm Generals Luo Wen

<sup>33</sup> All the dates are converted by following Keith Hazelton, *A Synchronic Chinese-Western Daily Calendar, 1341-1661 A.D.* (Minneapolis: Ming studies, History Department, University of Minnesota, 1984).

<sup>34</sup> *Ming shilu*, vol. 1, pp. 223, 225.

<sup>35</sup> *Ibid.*, vol. 1, p. 225; Li, *Yue qiao shu*, vol. 10, pp. 4b-5a. Some figures of troops and battle casualty in both Chinese and Vietnamese sources seem to have been exaggerated but cannot be verified. Wei Yuan challenged the figures of armies in Ming records. See his *Shenwu ji* [Account of the military affairs of the Qing dynasty] (Beijing: Zhonghua Shuju, 1984), vol. 2, p. 492. For a battle between the Ming and Shan in 1388, the actual number of troops is doubled in the *Ming shilu*. See Zhang Hong, *Nanyi shu* [Book of the southern barbarian], in the *Siku Quanshu cunmu congshu* (Tainan, Taiwan: Zhuangyan Wenhua Shiye Youxian Gongsì, 1997), book 255, p. 199; *Ming shilu*, vol. 1, pp. 98, 110-111, 130. On the Vietnamese side, at least on one occasion we know for sure the figure is inflated due to scribal error (see note 154).

<sup>36</sup> *Ming shilu*, vol. 1, p. 222; Li, *Yue qiao shu*, vol. 2, p. 22a.

<sup>37</sup> Li, *Yue qiao shu*, vol. 6, p. 6b; vol. 10, p. 6b.

<sup>38</sup> *Ibid.*, vol. 6, p. 7a; vol. 10, p. 7a.

<sup>39</sup> *Ibid.*, vol. 10, pp. 7b, 16a; *Ming shilu*, vol. 1, p. 228.

<sup>40</sup> Li, *Yue qiao shu*, vol. 10, p. 15b.

<sup>41</sup> Unidentified.

<sup>42</sup> As early as 445, the Chinese armies already employed the effigies of lion to rout the elephantry of Champa. See *Gudai Zhong Yue guanxi shi ziliao xuanbian* [Selected materials on the ancient Sino-Vietnamese relations] (Beijing: Zhongguo Shehui Kexue Chubanshe, 1982), vol. 1, p. 94. Similarly, in 1592, during the Japanese invasion of Korea, the Japanese soldiers wore hats with "ghost head and lion face" (*guitou shimian*) on them to scare Chinese horses and the technique was very successful.

and Cheng Kuan played a crucial role in the victory of the Ming. The magic hand-guns or cannon (*shenji chong*) were set up along the sides of the horses,<sup>43</sup> and both *chong* and rocket arrows (*huojian*; Figure 3) were shot to rout the elephants. This was significant, as Southeast Asian elephant corps had been formidable to the Chinese over the centuries; but with the advent and especially heavy employment of firearms “the elephants stood no chance.”<sup>44</sup> While the Vietnamese troops were in a chaotic situation, the Ming marched their horses and foot soldiers and shot a large number of arrows, hand-guns, and cannon (*pao*; Figure 4), and as a result countless Vietnamese soldiers died.<sup>45</sup> According to the *Dai Viet su ky toan thu* (Complete book of the historical record of Dai Viet), the elephants turned back, the Ming soldiers followed into the city, thus the city fell, and the defense line along the river collapsed.<sup>46</sup> The *Ming shi* states that “...[Do-bang] fell, [the Vietnamese] disheartened” (meaning literally “their gallbladder cracked”).<sup>47</sup> With the fall of Do-bang the Dai Viet troops could no longer prevent the Ming armies’ march forward to the east and south. On January 20, the Eastern capital (Dong-do, Thang-long or modern Hanoi) fell, and six days later (January 26) Western capital (Tay-do, in Thanh-hoa province) fell as well.<sup>48</sup>

In all the subsequent battles, Ming firearms proved to be very effective as well. In early February 1407, the Ming troops killed at least 37,390 Dai Viet soldiers.<sup>49</sup> On February 21, on the Luc-giang, the Ming mobilized their navy and foot soldiers, who employed “magic hand-gun/cannon” and “bowl-sized muzzle cannon” (*wankou chong*; Figure 5), to attack over 500 Vietnamese ships led by Ho Nguyen Trung, son of Ho Quy Ly, killing more than 10,000 Vietnamese soldiers.<sup>50</sup> One Chinese source describes the scene as “[the firing of] firearms were like flying stars and lightning.”<sup>51</sup> Retreating to Muong-hai, Ho Nguyen Trung manufactured firearms and warships to withstand the enemy.<sup>52</sup> On March 18, 1407, in Phung-hoa prefecture the Ming troops used “great general cannon” (*da jiangjun chong*; Figure 6) to smash many enemy ships.<sup>53</sup> On May 4, 1407, a big battle took place at the Ham-tu Pass. The Vietnamese side employed a sizable number of soldiers (70,000) and numerous warships and river boats which extended up to more than ten *li*.<sup>54</sup> The Vietnamese soldiers loaded *chong* to fire at the Ming soldiers. Though sources are silent, the Ming side no doubt employed heavy firearms, especially in view of the fact that Firearms Generals Zhang Sheng, Ding Neng, and Zhu Gui were involved in it.<sup>55</sup> The Ming troops won a big victory by killing over

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See Zheng Liangsheng, *Mingdai Zhong Ri guanxi yanjiu—yi Ming shi Riben zhuan suojian jige wenti wei zhongxin* (Studies on Sino-Japanese relations during the Ming dynasty—Centering on several issues in the “Section of Japan” in the *Ming shi*) (Taipei: Wenshizhe Chubanshe, 1985), p. 587.

<sup>43</sup> Here it seems to refer to heavy cannon.

<sup>44</sup> Whitmore, “Two Great Campaigns,” p. 8.

<sup>45</sup> Li, *Yue qiao shu*, vol. 6, p. 7a; idem, vol. 10, pp. 7b-8a, 16a; *Ming shilu*, vol. 1, p. 228.; Wang Shizhen, *Annan zhuan* [An account of Annam], in the *Jilu huibian*, vol. 48, p. 14a.

<sup>46</sup> Vol. 1, p. 490. See also Li, *Yue qiao shu*, vol. 6, p. 7a & vol. 10, p. 8b.

<sup>47</sup> vol. 321, p. 8315.

<sup>48</sup> *Ming shilu*, vol. 1, pp. 228-9; *Toan thu*, vol. 1, p. 490; Li, *Yue qiao shu*, vol. 6, p. 7b; vol. 10, pp. 8a-b, 16a-b.

<sup>49</sup> *Ming shilu*, vol. 1, p. 229. Also see Li, *Yue qiao shu*, vol. 10, p. 9a.

<sup>50</sup> *Ming shilu*, vol. 1, p. 230; Li, *Yue qiao shu*, vol. 10, p. 9b; *Toan thu*, vol. 1, p. 493.

<sup>51</sup> Li, *Yue qiao shu*, vol. 10, p. 17a.

<sup>52</sup> *Toan thu*, vol. 1, p. 493.

<sup>53</sup> Li, *Yue qiao shu*, vol. 10, p. 10a.

<sup>54</sup> One *li* = 0.5 kilometers = 500 meters.

<sup>55</sup> *Annan zhiyuan* [Records of Annam] (Hanoi: Imprimerie D'extreme Orient, 1932), p. 229.

10,000 Vietnamese soldiers, obtaining more than 1,000 warships, and so on.<sup>56</sup> On May 30, the Ming soldiers killed another 10,000 Vietnamese soldiers in Thanh-hoa.<sup>57</sup> Among the Ming troops chasing Ho Quy Ly and his followers to the south were those led by the Firearm Generals Luo Wen, Cheng Kuan, Zhang Sheng, Ding Neng.<sup>58</sup> On June 16-17, 1407, the Ming troops finally ended their invasion of Dai Viet by capturing Ho Quy Ly and his sons.<sup>59</sup> The quick victory of the Ming justifies the comment of Huang Fu, who was taking charge of military supplies during the war and later on served as administration and surveillance commissioner of the annexed Jiaozhi province: “The speedy success was never known in the past.”<sup>60</sup>

From February 1409 to February 1421, in suppressing a series of Vietnamese rebellions, especially those led by Tran Qui Khoach and Tran Gian Dinh, the Ming troops again employed firearms. The Ming troops were mainly commanded by Zhang Fu who was sent to Dai Viet on February 11, 1409 for the second and on February 10, 1411 for the third time.<sup>61</sup> On July 3, Zhang Fu had more warships built as he realized that the Vietnamese took advantage of river and sea to resist the Chinese.<sup>62</sup> On September 29, 1409, at the Ham-tu Pass Zhang Fu’s troops fought with 20,000 Dai Viet soldiers who had more than 600 ships; “the [firepower] of the firearms were intense while the arrows were shot like raindrops.” As a result, over 3,000 Vietnamese soldiers were killed, and “countless” drowned, and the Ming obtained more than 400 ships.<sup>63</sup> On September 6, 1412, a fierce naval battle took place at the Than-dau estuary, the Vietnamese had more than 400 ships and were in high spirits. But due to the formidable firepower of the Ming firearms, the Vietnamese could not withstand and hence fled.<sup>64</sup> On February 7, 1421, the Ming troops chased a Vietnamese rebel to the Ngoc-ma prefecture and were confronted by the Tais. The latter employed elephants to charge their enemies, but the Ming soldiers “shot the elephant riders, and then used firearms to attack them; the elephants turned back, the rebels were routed.”<sup>65</sup>

In some other battles, the use of firearms is not mentioned but there was no reason for the Ming troops not to have employed them. For instance, on February 12, 1410, in the Dong-ho prefecture, the Ming troops under Zhang Fu fought against 20,000

<sup>56</sup> *Ming shilu*, vol. 1, pp. 231-232; Li, *Yue qiao shu*, vol. 10, pp. 10a-11a.

<sup>57</sup> Li, *Yue qiao shu*, vol. 10, p. 11b; *Toan thu*, vol. 1, pp. 493-494.

<sup>58</sup> Li, *Yue qiao shu*, vol. 10, p. 12a; *Annan zhiyuan*, p. 231.

<sup>59</sup> *Ibid.*, vol. 6, p. 8b; *Toan thu*, vol. 1, p. 494.

<sup>60</sup> Huang Fu, *Huang Zhongxuangong wenji* [Collection of writings of Huang Fu], in *Siku Quanshu cunmu congshu* (Tainan, Taiwan: Zhuangyan Wenhua Shiye Youxian Gongsi, 1997), vol. 2, p. 15.

<sup>61</sup> *Ming shilu*, vol. 1, pp. 277, 278, 295. Both Chinese and Vietnamese sources overwhelmingly attest to Zhang Fu’s extraordinary military leadership, but only one Chinese record reveals the cruel side of this Ming general. According to the Gu Yingtai’s *Mingshi jishi benmo* (History of the Ming arranged by events) (Taiwan: Sanmin Shuju, 1956), vol. 22, p. 249, during the first month of the eighth year of Yongle (February 4-March 5, 1410) Zheng Fu in the battle at 東潮州 killed five thousand Vietnamese rebels and captured two thousand, who were “all buried alive [first, and then were dug out] and piled up for display in the [Vietnamese] capital (悉坑殺之, 築尸為京觀).” The Yongle emperor, who had been bothered by Zhang Fu’s continuous cruelty in battling (久暴師役), recalled him. This account, however, is not corroborated by any other sources.

<sup>62</sup> *Ibid.*, vol. 1, p. 280; *Ming shi*, vol. 321, p. 8317; Li, *Yue qiao shu*, vol. 6, p. 9b.

<sup>63</sup> *Ming shilu*, vol. 1, pp. 283-284; Yamamoto, *Annan shi kenkyu* [A study of the history of Annam] (1950), p. 435. The *Ming shi* (vol. 321, p. 8317) describes the firearms of the Ming side as “cannon [balls] and arrows burst out.”

<sup>64</sup> *Ming shilu*, vol. 1, p. 308-309;

<sup>65</sup> *Ibid.*, vol. 1, pp. 370-371.

Vietnamese, and killed over 4,500 and captured more than 2,000.<sup>66</sup> On August 6, 1411, in a battle that took place in Cuu-chan prefecture, the Vietnamese had more than three hundred boats; the Ming army and navy killed over 400 soldiers and obtained over 120 boats. We know that among the leading Ming generals in this battle was Zhang Sheng, one of the Firearms Generals.<sup>67</sup>

Up to 1426, Ming firearms were mostly manufactured in China in the years of 1409, 1414, 1415, 1421, and 1426. These certainly were driven by Yongle's five campaigns against the Mongols in the north,<sup>68</sup> but the campaigns in Dai Viet may well have been another factor. The establishment of the Firearms Battalion, to be discussed below, may have been due to the effectiveness of the Ming firearms in Dai Viet, which were employed for the first time on a large scale in Ming foreign military campaigns.

Although the Vietnamese had known gunpowder technology and employed firearms ever since 1390, in comparison to the Chinese ones the Vietnamese ones overall must have been inferior in both quality (with one to two exceptions, see below) and especially quantity. China's several attempts to conquer Vietnam ever since the latter's independence in the tenth century failed both before and after the Ming. This is why the Yongle emperor himself pointed out proudly that the Ming achievements exceeded that of the Song and Yuan,<sup>69</sup> and Vietnamese chroniclers, when referring to the Ming conquest of Dai Viet, commented that "the disaster caused by the Ming people was unprecedented."<sup>70</sup> We know that the Qing suffered also miserably in its invasion of Vietnam in the late eighteenth century. Thus the Ming indeed stands out for its amazing success in conquering Dai Viet and occupying it for twenty years. Dai Viet under Ho Quy Ly prepared early (from 1401 on) and well for the Ming invasion and mobilized an unprecedented large number of armies and civilians.<sup>71</sup> Nonetheless, the Ho regime collapsed rather quickly. The reason, besides other factors such as the resentment against Ho Quy Ly's reforms, low morale, and strategic mistakes, and the bad military leadership of the Ho,<sup>72</sup> lies in Ming China's military superiority, including firearms.<sup>73</sup>

<sup>66</sup> Ibid, vol. 1, p. 287.

<sup>67</sup> Ibid, vol. 1, p. 301.

<sup>68</sup> Wang, *Zhongguo*, p. 102.

<sup>69</sup> *Ming shilu*, vol. 1, p. 236. A late Ming scholar commented that Ming Chengzu "stands out among the hundred kings" (Zhang Jingxin, *Yu Jiao ji* [An account of subjugating Jiaozhi], in the *Congshu jicheng xinbian* [New compilation of the *Congshu jicheng*] (Taipei: Xinwenfeng Chuban Gongsi, 1984), book 104, p. 487).

<sup>70</sup> *Toan thu*, vol. 2, p. 835

<sup>71</sup> *Toan thu*, vol. 1, pp. 479, 484-487; *Ming shilu*, vol. 1, pp. 226, 235; Li, *Yue qiao shu*, vol. 6, p. 6a; vol. 10, p. 6a; Lo, "Intervention," p. 171.

<sup>72</sup> *Toan thu*, vol. 1, pp. 487, 489; Le Thanh Khoi, *Histoire du Viet Nam, des origines à 1858* (Paris: Sudestasie, 1987), pp. 200-201; Emile Gaspardone, "Le Quy-ly," in L. Carrington Goodrich and Chaoying Fang, eds., *Dictionary of Ming Biography 1368-1644* (New York: Columbia University Press, 1976), vol. 1, p. 798; Zheng, *Zhengzhan*, pp. 46, 49-50. For example, when facing the Mongol invasion in 1284, the Vietnamese king invited the elderly wise men from across the country to his court for advice, they unanimously said "fight:" "Ten thousand people said the same word, which was just like coming from one mouth." While facing the Ming invasion in 1405 when King Ho Thuong consulted officials in the capital, some said fight and some said peace. His brother Ho Nguyen Trung replied: "I am not afraid of fighting, but afraid that people will not follow" (*Toan thu*, pp. 357, 487).

<sup>73</sup> Ming military superiority (including the Ming navy) has been partially acknowledged, but the role of firearms has not been dealt with. See Jung-pang Lo, "The Emergence of China as a Sea Power during the late Song and Early Yüing Periods," *Far Eastern Quarterly* 14, 4 (1955): 493; idem, "The Decline of the Early Ming Navy," *Oriens Extremus* 5, 2 (1958): 150-1; Zheng, *Zhengzhan*, p. 38.

### 3. The Employment of Firearms by the Dai Viet Troops (c. 1426-1427)

However, the Ming troops gradually lost this technological superiority, as their Vietnamese counterpart under Le Loi captured more and more Ming weapons and other military supplies in several major battles in 1418, 1420, 1421, 1424, and 1425. Thus Le Loi's troops were able to arm themselves quickly.<sup>74</sup> Though Vietnamese records do not specify the types of weapons, a large number of firearms should have been among them. This is clear from the battle of Ninh-kieu (or Chuc-dong--Tat-dong) that took place on December 4 1426.<sup>75</sup> Earlier the Ming troops in Jiaozhi city (Dong-quan, modern Hanoi) employed firearms (*huochong* and rockets) to repel Dai Viet armies. The latter retreated and the Chinese decided to chase them.<sup>76</sup> The Ming armies of about 100,000 led by Wang Tong and other generals were ambushed and suffered a miserable defeat. It is important for our purpose to mention that among these Ming troops were 510 soldiers led by Regional Military Commander of the Firearms Battalion Xie Rong, who were sent on May 8, 1426 by the Ming emperor order to follow Wang Tong to Dai Viet.<sup>77</sup> 3,000 Dai Viet crack soldiers armed with certainly the best weapons played a decisive role in this victory. According to Vietnamese accounts, over 50,000 Ming soldiers were killed (Chinese records state 20,000 to 30,000), "countless" drowned, and over 10,000 were captured,<sup>78</sup> while "countless" horses, supplies, weapons, etc. fell into Vietnamese hands. As a result, these Ming troops lost almost all of their weapons. Hence after retreating to Dong-quan they had to manufacture firearms and ammunitions using bronze from destroying the famous giant bell Quy-dien and urns at the Pho-minh temple.<sup>79</sup>

This great victory was decisive for the Vietnamese for two reasons. First, they captured the largest number of firearms and other military supplies from the Ming side and as a result the weaponry of the Vietnamese troops must have been enhanced to an unprecedented degree. Secondly, this battle was a turning point in Dai Viet's anti-Ming movement. Encouraged by this victory, the troops led by Le Loi marched north from Thanh-hua (or Nghe-an according to the *Ming shilu*).<sup>80</sup> Soon afterwards, on December 8, 1426, Le Loi and his troops besieged Dong-quan and "obtained ... many enemy ships, weapons and equipment; tens of thousands of army provisions all fell to us."<sup>81</sup>

In addition, Ming captives and defectors also provided the Vietnamese with military technologies. Around February 1427, some Ming captives provided the Vietnamese with city wall-attacking techniques and models of protective shelters (*zhanpeng*, or *xupeng*; Figure 7), primitive tanks (*fenwen*; Figure 8), "flying horse

<sup>74</sup> *Lam-son thuc luc* [Veritable records of the Lam-son rebellion], quoted in Yamamoto, *Annan shi*, pp. 622, 653, 657, 658, 671, and in *Thien nam du ha tap* [Collection of works written during leisure time in the south], "poetry section," p. 102a; *Toan thu*, vol. 2, pp. 516, 519, 523, 525; Le Quy Don, *Dai Viet thong su* [A general history of Dai Viet] (Saigon: Bo van hoa giao duc va thanh nien, 1973), Chinese text, pp. 12b, 15b, 16a, 21a, 26b, 27b, 40b.

<sup>75</sup> *Toan thu*, vol. 2, pp. 528-529; *Ming shilu*, vol. 1, 431; Phan, et al., *Yuenan*, pp. 86-130.

<sup>76</sup> *Ming shilu*, vol. 1, p. 431.

<sup>77</sup> *Ming shilu*, vol. 1, p. 420.

<sup>78</sup> *Lam-son*, in *Thien nam*, "poetry section," p. 109b; *Toan thu*, vol. 2, p. 529; Phan, et al., *Yuenan*, pp. 124-125; *Ming shi*, vol. 154, p. 4240.

<sup>79</sup> *Toan thu*, vol. 2, p. 529; *Cuong muc*, vol. 13, p. 31b; Le, *Histoire du Viet Nam*, p. 211. According to latter, they were two of the four wonders in ancient Vietnam.

<sup>80</sup> *Ming shilu*, vol. 1, p. 431; *Toan thu*, vol. 2, p. 529; Phan, et al., *Yuenan*, pp. 89, 126-127.

<sup>81</sup> *Lam-on*, in *Thien nam*, "poetry section," p. 111a; *Toan thu*, vol. 2, p. 530.

carts” (*feimache*),<sup>82</sup> and Muslim (counterweighted) catapults (*Xiangyang pao*; Figure 9). Le Loi ordered the manufacture of weapons and equipment based on these models.<sup>83</sup> Just before the final attack of Xuong-giang, city-attacking carts (probably *Lugong che*; see below) were also constructed on the order of Le Loi.<sup>84</sup> Among the Ming captives, one by the name Cai Fu was probably the highest by rank (Commander-in-Chief, *dudu*, rank 1a). He played a big role in the fall of Do-bang in 1407, but now around January 1427 he and other Ming officers surrendered to the Vietnamese and taught them to make city-attacking devices to take Xuong-giang and Dong-quan.<sup>85</sup>

All these weapons, both captured and newly made, helped the Dai Viet troops to defeat and drive out the Ming invaders. This is typically reflected in the siege of the city of Xuong-giang, which was the most strategic point for the Ming armies in early 1427, as they counted on it to support Dong-quan while waiting for reinforcements from China.<sup>86</sup> Therefore, the Vietnamese troops were determined to take it before the arrival of the sizable Chinese reinforcing armies from Yunnan. The Dai Viet troops had besieged it for over six (or nine according to the *Ming shilu*) months but could not take it. About 2,000 Ming defenders employed *chong* and presumably catapults hurling huge stones (*jiangjun shi* or *jiangjun shizi*) to defend the city. Eventually, numbering 80,000, the Vietnamese succeeded in taking it by using the technologies they had learned from the Chinese. Around the city they built earth-hills from which they shot into the city; they dug tunnels into the city; and they especially employed turtle-colored “Duke Lü’s overlook and assault carts” (*Lugong che*; Figure 10),<sup>87</sup> fire-lances (*feiqiang*; literally “flying lances”), rocket arrows (*huojian*), cannon (*huopao*), scaling ladders, and so on.<sup>88</sup> The *Dai Viet su ky toan thu* puts it this way: “[The Vietnamese employed] hooks, halberds, rocket arrows, cannon, and attacked from the four directions, thus the city fell.”<sup>89</sup> This was on April 28, 1427. Just as the taking of Do-bang by the Ming troops in early 1407 signaled the collapse of Dai Viet’s defense, the fall of Xuong-giang destroyed the Ming’s. According to the *Lam-son thuc luc*, “The enemy relied on Xuong-giang’s defense; upon learning that Xuong-giang had been taken [they] lost their hope.”<sup>90</sup> As modern Vietnamese historians have pointed out, the taking of Xuong-giang paved the way to the final victory for the Vietnamese; it was also significant from a military point of view in that Vietnamese troops could besiege and take strong fortifications as well as fighting guerrilla wars.<sup>91</sup> Without the employment of heavy firearms, the Vietnamese victories would have been extremely difficult, if not impossible. One of the differences between the siege of Do-bang and Xuong-giang was that after twenty years the Dai Viet troops were well armed with more advanced firearms, especially hand-guns and cannon, and other equipment, and most of them were captured from the Ming armies.

The Vietnamese captured more weapons and military supplies when they took

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<sup>82</sup> Unidentified.

<sup>83</sup> *Toan thu*, vol. 2, pp. 532-533; Le, *Dai Viet thong su*, p. 30a.

<sup>84</sup> *Toan thu*, vol. 2, p. 540.

<sup>85</sup> *Ming shilu*, vol. 1, pp. 228, 456, 465, 472; *Toan thu*, vol. 2, p. 531.

<sup>86</sup> *Thien nam*, “poetry section,” p. 115b; *Ming shilu*, vol. 1, p. 469; Phan, et al., *Yuenan*, p. 141.

<sup>87</sup> Needham, *Science*, vol. 5, pt. 6, p. 439.

<sup>88</sup> *Ming shilu*, vol. 1, pp. 441, 469-470; *Toan thu*, vol. 2, p. 541.

<sup>89</sup> Vol. 2, p. 541.

<sup>90</sup> In *Thien nam*, “poetry section,” p. 115b.

<sup>91</sup> Phan, et al., *Yuenan*, pp. 141, 143.

Xuong-giang, and from September to November 1427 they obtained much more when they defeated the reinforcing units from Guangxi and Yunnan which totaled over 150,000. According to Vietnamese accounts, more than 90,000 Chinese troops perished in the fighting, and “countless” weapons were captured.<sup>92</sup> The *Dai Viet su ky toan thu* specifically points out that the number of weapons and military supplies the Vietnamese troops captured from the Ming reinforcing armies from Yunnan doubled that from the battle of Xuong-giang.<sup>93</sup> It is noteworthy that the more than 100,000 troops from Guangxi led initially by Liu Sheng must have carried a considerable number of firearms, as from 1410 to 1423 he had been in charge of the Firearms Battalion and fought against the Mongols many times on the northern frontier of the Ming. Heavy firearms played a crucial role in those campaigns in the north.<sup>94</sup> We are particularly sure that Liu Sheng’s troops included 10,000 crack troops who had followed Zheng He on his expeditions and were sent to Dai Viet on March 29, 1427.<sup>95</sup> It is beyond doubt that they were armed with the best weapons. When finally about 86,640 Ming military personnel and civilians withdrew from Dai Viet in January 1428 the former no doubt were all disarmed.<sup>96</sup>

Therefore, Ngo Si Lien, the compiler of the *Dai Viet su ky toan thu*, commented: “Most weapons, equipment, and grains were obtained from the enemy.”<sup>97</sup>

The large number of Ming people and weapons that remained in Dai Viet after the withdrawal understandably constituted a big concern of the Ming court. Therefore the Ming court repeatedly requested Dai Viet to return the Ming officials, soldiers, and weapons. Some Chinese sources claim that “countless” Ming subjects still remained in Dai Viet, while the *Dai Viet su ky tien bien* (early part of the historical record of Dai Viet) by Ngo Thi Si several tens of thousands.<sup>98</sup> As for the weapons, despite its claim of having done so, Dai Viet did not return a single piece, and the Ming court eventually had to give up.<sup>99</sup>

### The Vietnamese Contributions to Chinese Gunpowder Technology<sup>100</sup>

However, it should be pointed out that Dai Viet did not just import military technology from, but also exported some better techniques to, Ming China. After the

<sup>92</sup> *Lam-son*, in *Thien nam*, “poetry section,” pp. 114a-115b, 116b-117a; *Toan thu*, vol. 2, pp. 541-543; *Ming shilu*, vol. 1, pp. 434-435, 445, 447-448, 449-450; Phan, et al., *Yuenan*, pp. 144-175. The *Lam-son* puts the number of the Ming reinforcing troops at 200,000.

<sup>93</sup> Vol. 2, p. 543.

<sup>94</sup> Wang, *Zhongguo*, pp. 104-105, 110.

<sup>95</sup> *Ming shilu*, vol. 1, p. 438.

<sup>96</sup> *Ibid.*, vol. 1, p. 453 (also see 456-457); *Lam-son*, in *Thien nam*, “poetry section,” p. 117b; *Toan thu*, vol. 2, pp. 545-546. The *Lam-son* claims that over 200,000 Ming troops, old and new, returned to China.

<sup>97</sup> *Toan thu*, vol. 2, p. 549.

<sup>98</sup> Gu Yingtai, *Mingshi jishi benmo*, vol. 22, p. 257; *Ming shi*, vol. 321, p. 8325; Zheng, *Zhengzhan*, p. 144. Also see Yan Congjian, *Shuyu zhoushi lu* [A comprehensive record of foreign countries] (Beijing: Zhonghua Shuju, 1993), p. 198.

<sup>99</sup> *Ming shilu*, vol. 1, pp. 453, 460, 469, 479, 489, 491; *Toan thu*, vol. 2, pp. 515, 550, 554, 555, 556, 562, 569, 602; *Ming shi*, vol. 321, p. 8325.

<sup>100</sup> This section benefited from the following works. Li Bin, “Yongle chao he Annan de huoqi jishu jiaoliu” [The exchange of firearm technologies between the Ming and Vietnam during the Yongle reign], in Zhong Shaoyi, ed., *Zhongguo gudai huoyao huoqi shi yanjiu* [Studies of the history of gunpowder and firearms in ancient China] (Beijing: Zhongguo Shehui Kexue Chubanshe, 1995), pp. 147-158; Arima, *Kaho*, p. 169; Needham, *Science*, pp. 311-313.

Ming conquest of Dai Viet in 1407, the Ming acquired from the Vietnamese a weapon called *shen qiang*, *shen qiang jian*, or *shenji huoqiang*, meaning literally “magic fire-lance arrow.”<sup>101</sup> It was a fire-lance, but better than its Chinese counterpart due to one unique feature: It had a heavy wooden wad (*mu ma zi* in Chinese) made of ironwood behind the arrow to increase pressure within the barrel. The arrow could therefore be shot as far as three hundred paces (Figure 11). Indeed, Chinese sources inform us that the fire-lances made in Dai Viet were the best.<sup>102</sup> Many Chinese soldiers were probably killed by this Vietnamese weapon during the Chinese invasion. Ironwood was easily available in Dai Viet as well as Guangdong, Guangxi, and Yunnan, and it can be imagined that the Vietnamese employed this indigenous resource to invent the wooden wad in order to increase the shooting range of the fire-lance. This technique was adopted in China for hand-guns by 1415, as a Ming hand-gun made in this year had a wooden wad between gunpowder and “bullets” (iron grits), while the hand-guns prior to this time did not have this salient feature (Figure 12).

Moreover, the igniting device of the hand-guns made at least from 1410 on was improved in that, instead of a small hole where a fuse was inserted, now a rectangular slot with lid was added on the rear part of a hand-gun barrel (Figure 13). Thus it became more convenient to ignite the ignition gunpowder in the slot and the lid could prevent the gunpowder and fuse from getting wet in rainy days. It has been speculated that this device may have been invented by the Vietnamese for the following reasons. First, so far the earliest hand-gun with this improved igniting device was made in 1410 after the Ming invasion of Dai Viet; second, the tropical climate in Dai Viet with great humidity and long rainy season may have encouraged this invention.<sup>103</sup>

Upon the order of the Yongle emperor, Vietnamese captives who were good at making firearms such as hand-guns or cannon (*huochong*), short lance (*duanqian*) and, fire-lance (*shenjian*), and gunpowder were sent to the Chinese capital Nanjing with many other kinds of craftsmen. Altogether about 17,000 Vietnamese were taken captive to China. This included Ho Nguyen Trung (“Li Cheng” in Chinese). The Vietnamese chronicle specifically mentions that in 1407 Nguyen Trung made firearms and warships to combat the invading Chinese.<sup>104</sup> The fact that Nguyen Trung as the “Left Grand Councilor” (*zuo xiangguo* in Chinese) was skilled in making firearms<sup>105</sup> shows the importance Dai Viet attached to gunpowder technology and the intense competition between Dai Viet and its neighbors, primarily China and Champa. Also interestingly, it was this expertise that changed Nguyen Trung’s life in China, as after having captured to Nanjing Nguyen Trung’s father Ho Quy Ly and brother Ho Han

<sup>101</sup> Qiu Jun, *Daxue yanyi bu* [Supplements to the *Daxue yanyi*] (Reprint, 1971), vol. 122, pp. 11b-12a; Yan, *Shuyu*, 183, 243; Hui Lu, *Pingpi baijin fang* [The washerman’s precious salve] (Reprint, c. 1844), vol. 4, p. 32b; Zhang Xiumin, “Mingdai Jiaozhi ren zai Zhongguo zhi gongxian” [Contributions by the Vietnamese people in China during the Ming dynasty], in Zhang Xiumin, *Zhong Yue guanxi shi lunwenji* [Collection of articles on Sino-Vietnamese relations] (Taipei: Wenshizhe Chubanshe, 1992), pp. 55-57.

<sup>102</sup> Hui, *Pingpi*, vol. 4, p. 32b; Needham, *Science*, pp. 240, 311-313, 488n.b; Qiu, *Daxue*, vol. 122, pp. 11b-12a.

<sup>103</sup> Li, “Yongle,” pp. 151-154.

<sup>104</sup> *Toan thu*, vol. 1, p. 493.

<sup>105</sup> *Ibid.*, vol. 1, p. 493.

Thuong, the two kings of the Ho regime, were thrown into jail<sup>106</sup> but Nguyen Trung was pardoned and allowed to serve in the Ministry of Works due to his skills. He took charge of manufacturing firearms (*chong* and *jian*) and gunpowder at the weapon-manufacturing bureau (*Bingzhang ju*) and was eventually promoted to the Minister of Works. He probably played some important role in establishing the Firearms Battalion in Ming China. According to one unofficial Chinese account, receiving the order to accompany the Yongle emperor to attack the Mongols on the north frontier, three Vietnamese including Nguyen Trung set up the Firearms Battalion prior to 1412. At least one of them (other than Nguyen Trung) participated in the campaign and died soon afterwards on June 9, 1412.<sup>107</sup>

According to some other Chinese records, when the Ming court held a memorial ceremony for the “God of Firearms” they also offered a sacrifice to Ho Nguyen Trung.<sup>108</sup> Upon the death of Ho Nguyen Trung at the age seventy three, his son replaced him and continued to manufacture firearms for the Ming until he retired aged seventy in 1470.<sup>109</sup> Up to 1489, the descendents of these Vietnamese craftsmen were still in the service of the Ming.<sup>110</sup> In addition to the fire-lance and ignition device, a bow called “Vietnamese bow” (*Jiaozhi gong*) also spread to Ming China around this time or earlier.<sup>111</sup>

The abovementioned Vietnamese techniques were used widely and had some implications for the Ming military. During the early Hongzhi reign (1488-1505) 30,000 linden and 90,000 sandalwood wooden wads were manufactured. Another kind of hard wood was sent from Guangxi as tribute to the capital for the manufacture of fire-lances (*shen qiang*). The wooden wad technique was still used even after the arrival of Portuguese firearms in China in the late sixteenth century, as was the new ignition device.<sup>112</sup> The establishment of the Firearms Battalion, to which the Vietnamese at least contributed some personnel and techniques, proved effective and sometimes crucial in Ming China’s fighting with the Mongols. In 1414, Yongle and his armies were surrounded by the Mongols, it was firearms with presumably Vietnamese technical features that helped the Ming troops break the siege. The

<sup>106</sup> *Ming shilu*, vol. 1, p. 247. Yan, *Shuyu*, p. 183, says that they were executed but Gu Yingtai in the *Mingshi jishi benmo* (vol. 22, p. 248) states that Ho Quy Ly was released from prison later and sent to Guangxi as a soldier.

<sup>107</sup> Li Xu, *Jiean Laoren manbi* [Notes of the Jiean Laoren] (Beijing: Zhonghua Shuju, 1982), p. 220. Other Vietnamese also participated in Yongle’s expeditions against the Mongols. It is interesting to note that in 1449 after the capture of the Yingzong emperor the Mongols were besieging Beijing. A Vietnamese officer trained and led elephants to rout the horses of the Mongols (*Ming shilu leizuan--shewai shiliao juan* [Categorical compilation of the *Ming shilu*--the volume of historical sources on foreign relations] [Wuhan: Wuhan Chubanshe, 1991], p. 745; Zhang, “Mingdai Jiaozhi ren zai,” p. 62; idem, “Mingdai Jiaozhi ren yiru neidi kao” [A study of Cham immigrants in China], in Zhang Xiumin, *Zhongyue*, p. 80).

<sup>108</sup> Wang Hongxu, *Ming shigao* [Draft history of the Ming dynasty] (Tianjin: Tianjin Guji Chubanshe, 1998), cited in Li, “Yongle,” p. 155; Li, *Jiean*, p. 219.

<sup>109</sup> *Ming shi*, vol. 89, pp. 2176-2177; vol. 92, p. 2264; Li, *Yue qiao shu*, vol. 2, p. 32a; Zhang, “Mingdai Jiaozhi ren zai,” pp. 54-62; idem, “Mingdai Jiaozhi ren yiru,” p. 78; Wang, *Zhongguo*, pp. 104-107; Li, “Yongle,” pp. 154-156; *Ming shilu*, vol. 1, p. 455; *Ming shilu leizuan--shewai shiliao juan*, pp. 757, 758.

<sup>110</sup> Li, “Yongle,” p. 156.

<sup>111</sup> Qiu, *Daxue*, vol. 122, p. 17a.

<sup>112</sup> Li, “Yongle,” p. 152; Wang Ji, *Junjitang rixun shoujing* [Daily notes at the Junzitang], in Wang Yunwu, ed., *Congshu jicheng chubian* (Shanghai: Shangwu Yinshuguan, 1936), p. 28; Cheng & Zhong, comp., *Zhongguo*, pp. 232-233.

effectiveness of the firearms in this event even impressed the Koreans, as they recorded it in their veritable record of the Yi (Choson) dynasty.<sup>113</sup>

The Vietnamese fire-lance was also put into good use. One Chinese source states, when the Yongle emperor fought the Mongols, “[they] just got the fire-lance (*shen qiang*) from Annam; one barbarian (*lu*) marched straight forward, and two followed; [they were] all hit by the fire-lance and died.”<sup>114</sup> Teng Zhao, the Vice Minister of the Ministry of War during the reign of Chenghua (1465-1487) commented: “[We] basically rely on the fire-lance (*shen qiang*) to defeat enemies and win victories. From Yongle (1403-1424) to Xuangde (1426-1435), [the fire-lance] was properly drilled, and was most feared by the barbarians (*luzei*, or the Mongols).”<sup>115</sup> In 1449, after the Ming suffered the Tumu debacle, more than 28,000 hand-guns (*shen chong*) and 440,000 fire-lances (*shen jian*) were collected from the battle scene.<sup>116</sup> The point that concerns us here is that these hand-guns and fire-lances must have carried Vietnamese techniques.

Returning to the puzzling and often misunderstood passage in the *Ming shi* quoted at the beginning of this paper, we can now understand it better. Despite the mistaken inference by later scholars, it meant that China acquired only some new techniques, not gunpowder technology, from Dai Viet. This was first suggested by Arima, and recently further supported by Li Bin’s research. More sources in this regard shed more light on this issue. The *Ming shi*, which was completed in 1739, seems to have derived its information from Shen Defu’s book.<sup>117</sup> According to Shen, “Our dynasty employed firearms to combat the northern barbarians, [which] are number one weapons from ancient times to the present. However, the ingenious (*qing miao*, meaning literally “light” and “wonderful”) techniques of these firearms were not obtained until Emperor Wen (Yongle) pacified Jiaozhi. Hence, [our dynasty] hired its false Grand Councilor...to work in the Ministry of Works, solely in charge of manufacturing [Vietnamese-style firearms], and all the techniques were truly grasped.” This shows clearly that what the Chinese obtained from the Vietnamese was “the ingenious techniques of these firearms.”

### The Increased Use of Firearms during the Early Le (1428-1497)

On September 18, 1428, soon after the withdrawal of the Ming, Dai Viet started to strengthen its navy. It was stipulated that each main general command, *inter alia*, ten big warships, two small sentry boats, one cannon (*da jiangjun huotong*; Figure 14), ten big-sized bombs (*dayang huotong*), ten medium-sized bombs (*zhongyang*

<sup>113</sup> *Ming shilu leizuan--junshi shiliao juan* [Categorical compilation of the *Ming shilu*--the volume of historical sources on military affairs] (Wuhan: Wuhan Chubanshe, 1993), pp. 88-186; Wada Sei, trans. by Pan Shixian, *Ming dai Menggu shi lun ji* [Collection of essays on the history of the Mongols during the Ming dynasty] (Beijing: Shangwu Yinshuguan, 1984), vol. 1, pp. 66, 68.

<sup>114</sup> Wang Ao, *Zhenze jiwen* [Notes of Wang Ao], in Shen Yunlong, ed., *Ming Qing shiliao huibian*, series one, book 3 (Taipei: Wenhai Chubanshe, 1967), vol. 1, 15a.

<sup>115</sup> *Ming shilu*, “Xianzong,” vol. 168, quoted in Zhang, “Mingdai Jiaozhi ren zai,” p. 57.

<sup>116</sup> *Ming shilu leizuan--junshi shiliao juan*, p. 1078. For a discussion of the Tumu incident, see Frederick W. Mote, “The T’u-mu Incident of 1449,” in Frank A. Kierman, Jr. and John K. Fairbank, eds., *Chinese Ways in Warfare* (Cambridge, Mass.: Harvard University Press, 1974), pp. 243-272.

<sup>117</sup> *Wangli yehuo bian* [Unofficial sources written during the Wanli reign] (first finished in 1606 but rearranged in 1700 and enlarged in 1713; Reprint, Beijing: Zhonghua Shuju, 1997), vol. 2, p. 433.

*huotong*), and eighty small-sized bombs (*xiaoyang huotong*) (Figure 15).<sup>118</sup> This demonstrates that from this time on Dai Viet navy was equipped with more and heavier firearms. In addition, it seems that soldiers using “bombs” were organized into a unit headed by the “Associate Administrator of Strong Crossbows and Bombs”), and in 1449 the names of the two units of the “bombs” were changed to “magic thunder” and “magic lightning.”<sup>119</sup> On January 26 and October 4, 1429, unspecified weapons and warships were built.<sup>120</sup> According to the *Thien nam tu ha tap* (Collection of works written during leisure time in the south) which was written in December 1483,<sup>121</sup> at the Ministry of Works of Dai Viet powerful hand-guns (*chong*) and cannon (*pao*) were manufactured.<sup>122</sup> Though the numbers of the production are not specified, firearms seem to have been used extensively. For example, in some *ve* (*wei* in Chinese, military unit) there were soldiers specializing firearms, while in many *ve* across the country out of five or six *so* (*suo* in Chinese, military unit) there was one *so* employing hand-guns and crossbows. It suggests that the percentage of these firearms units was around 20%.<sup>123</sup> In 1467, Le Thanh-tong (r. 1460-97) ordered new types of weapon to be made.<sup>124</sup> In 1469, an edict was issued regarding the drill of the different military units, including those employing *chong* and crossbows.”<sup>125</sup> In 1479, a firearm arsenal, where sharp weapons, guns, gunpowder, sulfur, and so on were stored, was burned down when Le Thanh-ton was on his way to invade Ailao.<sup>126</sup> On January 11, 1493, a firearm arsenal was added to each arsenal.<sup>127</sup>

Soon after the withdrawal of the Ming, the acquisition of gunpowder- and firearm-making materials accelerated in Dai Viet. On September 18, 1428, the acquisition of copper, iron, saltpeter, and so on were urged by the government.<sup>128</sup> In 1467, saltpeter was prohibited to be used for fireworks.<sup>129</sup> All these imply that a greater amount of saltpeter was needed for military use than in the past. At the Ministry of Works, there were special units in charge of saltpeter manufacturing.<sup>130</sup>

Not coincidentally, 1429 witnessed the beginning of exportation of a large quantity of copper from Yunnan into Dai Viet for making firearms. Around the fifteenth century, there were altogether nineteen copper-producing sites in prefectures such as Chuxiong, Lin’an, Chengjiang, Yunnan, Luliang, Yongning, and Yongchang,<sup>131</sup> and several of them located in eastern and southeastern Yunnan were

<sup>118</sup> *Toan thu*, vol. 2, p. 555.

<sup>119</sup> *Ibid.*, vol. 2, pp. 599, 625.

<sup>120</sup> *Ibid.*, vol. 2, p. 557.

<sup>121</sup> *Ibid.*, vol. 2, p. 718.

<sup>122</sup> The “governmental organization,” pp. 26b, 86a, 87a-b, 88a.

<sup>123</sup> *Ibid.*, pp. 32a-49b; *Cuong muc*, vol. 20, 31b-35b; vol. 34, pp. 31a-b; Yan, *Shuyu*, p. 239.

<sup>124</sup> *Toan thu*, vol. 2, p. 664.

<sup>125</sup> *Ibid.*, p. 676.

<sup>126</sup> *Tay nam bien tai luc* [Record of the frontier passes to the west and south], p. 31a; *Toan thu*, vol. 2, p. 710; *Thien nam*, “governmental organization,” pp. 17a, 73a; Nguyen Ngoc Huy and Ta Van Tai, *The Le Code, Law in Traditional Vietnam: A Comparative Sino-Vietnamese Legal Study with Historical-juridical Analysis and Annotations* (Athens, Ohio: Ohio University Press, 1987), vol. 2, p. 161.

<sup>127</sup> *Toan thu*, vol. 2, p. 740.

<sup>128</sup> *Ibid.*, vol. 2, p. 555.

<sup>129</sup> *Ibid.*, vol. 2, p. 658.

<sup>130</sup> *Thien nam*, “governmental organization,” pp. 86b-87a, 89a.

<sup>131</sup> He Mengchun, *He Wenjian shuyi* [Memorials by He Mengchun] (Reprint, Taipei: Taiwan Shangwu Yinshuguan, 1973), vol. 8, pp. 26b-35b, especially 27a, 29b, 32a; Xie Zhaozhe, *Dian lue* [A sketchy record of Yunnan] (Block print, 1600), vol. 3, p. 22a; Bai Shouyi, “Mingdai kuangye de fazhan”

close to the Yunnan-Dai Viet border. According to a memorial in 1429, silver, copper, etc. were illegally mined by both military personnel and civilians in Dongchuan and Huili in northeastern Yunnan. But due to these places' proximity to foreign countries (probably Dai Viet), the mining was ordered to stop lest soldiers and civilians create troubles.<sup>132</sup> However, the mining not only did not stop, but the scale increased. As the profit was enormous, a substantial number of people became involved in the mining and smuggling of copper, and a considerable but unknown amount was smuggled into Dai Viet.<sup>133</sup>

In 1477, Dai Viet purchased copper from Mengzi for manufacturing weapons.<sup>134</sup> Another Chinese source clearly says that the Dai Viet people purchased copper and iron from Lianhuatan for making hand-guns.<sup>135</sup> Prior to 1481, merchants transported goods to Lianhuatan to trade with the Vietnamese.<sup>136</sup> In 1481, the Ministry of Revenue of Ming China reported that copper mine in Lu'nan of Yunnan was mined illegally for Dai Viet to manufacture weapons, and it stipulated that those who illegally traded copper out of Yunnan be executed and their families exiled to the malarial regions.<sup>137</sup> In 1484, the illegal trade of copper to Dai Viet occurred in another county.<sup>138</sup> Not only did the border officials in Yunnan not prohibit these activities, they abetted them.<sup>139</sup> The military use of copper is also recorded in Vietnamese sources. In 1497 the Dai Viet government ordered to increase the number of copper-extracting households so as to fulfill military needs.<sup>140</sup> The practice of importing copper from Yunnan for manufacturing cannon in Dai Viet continued into the seventeenth century, though the scale seems to have dwindled.<sup>141</sup>

Gunpowder technology also spread from Dai Viet westward to the Phuan region and Chiang Mai. In most of the years of the fifteenth century, Dai Viet waged several military campaigns against Muong Phuan and eventually annexed their land and made it the Tran-ninh prefecture in 1479.<sup>142</sup> As a result, the Phuan people received heavy Vietnamese influence, including military technology. In the seventeenth century, the capital of Muong Phuan was fortified much better than Do-bang in the fifteenth century. In particular, the Phuan had in their possession, and possibly manufactured themselves, a large number of firearms, including hand-guns

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[The development of the mining industry during the Ming dynasty], *Beijing Shifan Daxue xuebao* 1 (1956): 100, 104.

<sup>132</sup> *Ming shilu*, vol. 1, p. 478.

<sup>133</sup> He, *He Wenjian*, vol. 8, pp. 26b-35b.

<sup>134</sup> *Ming shilu*, vol. 2, p. 802; Zhang Xuan, *Xiyuan wenjian lu* [Account written by Zhang Xuan] (Reprint, Taipei: Mingwen Shuju, 1991), vol. 68, p. 17b.

<sup>135</sup> Zhang, *Xiyuan*, vol. 68, p. 17b.

<sup>136</sup> *Ming shilu*, vol. 2, p. 819; He, *He Wenjian*, vol. 4, pp. 17a-b, 18a, 26b, 30a.

<sup>137</sup> *Ming shilu* vol. 2, p. 822; Ni Tui, *Dian Yun linian zhuan* [A general history of Yunnan] (Reprint, [Kunming, Yunnan: 1914], vol. 7, p. 33a; Liu Kun, *Nanzhong zashuo* [Miscellanies of the Nanzhong region] (reprint, Taipei: Yiwen Yinshuguan, 1970), p. 18a.

<sup>138</sup> Wu Xingnan, *Yunnan duiwai maoyi: cong chuantong dao jindaihua de licheng* [Yunnan's external trade: the process from traditional to modern] (Kunming, Yunnan: Yunnan Minzu Chubanshe, 1997), p. 62.

<sup>139</sup> *Ming shilu*, vol. 2, p. 802.

<sup>140</sup> *Toan thu*, vol. 2, p. 749.

<sup>141</sup> Liu, *Nanzhong*, p. 18a.

<sup>142</sup> *Toan thu*, vol. 2, pp. 685, 706-711; Dao Duy Anh, trans. by Zhong Minyan (Dai Kelai), *Yuenan lidai jiangyu* [Vietnam's territories throughout history] (Beijing: Shangwu Yinshuguan, 1973), pp. 253, 329-330.

and rockets.<sup>143</sup> Vietnamese gunpowder technology traveled further westward. In 1443, when Chiang Mai was invading Nan, it was a Vietnamese by the name of Pan Songkram who helped operate the cannon; as a result, Nan eventually surrendered.<sup>144</sup>

Based on the discussion above, one can speculate that after 1390, especially as a result of the Ming invasion and occupation, the proportion of firearms in the military weaponry of Dai Viet increased. To some extent, we may say that a “military revolution” had taken place, hence that Dai Viet became a “gunpowder state” (if not “empire”).

### Southward and Westward Expansion of Dai Viet (c. 1430s-1480s)

During the reign of Le Thanh-tong (r. 1460-97), Dai Viet reached its golden age which witnessed a phase of rapid, stunning, and unprecedented internal consolidation and external expansion. In the words of Whitmore, it was “...a Vietnam more peaceful, prosperous, and powerful than any before the nineteenth century, and perhaps after.”<sup>145</sup> Internally, following the Ming model the state of Dai Viet was transformed ideologically, bureaucratically, and militarily.<sup>146</sup> The latter point not only refers to the fact that Dai Viet built a huge and well-organized military force,<sup>147</sup> but especially, for our interest, this force employed firearms extensively, as shown above. These must have increased the authority (or intimidating power) of the Vietnamese state domestically<sup>148</sup> and facilitated the external expansion of Dai Viet. This expansion is best reflected in Dai Viet’s sack of Champa to the south and march westward to the Irrawaddy River in the kingdom of Ava.

From the 1430s, Dai Viet intensified its military activities on its west frontier where different Tai peoples dwelled in the Sip Song Chu Tai (Xip xong chau Thai), Ai-lao, and Muong Phuan (modern Xiang Khuang in Laos). As a result, more stability ensued.<sup>149</sup> Following this, Dai Viet’s attention turned to its age-old foe Champa. Dai Viet during the two decades from 1370 to 1390 faced repeated depredations from Champa but offered no effective resistance.<sup>150</sup> After the naval victory in 1390, however, Dai Viet seems to have gotten the upper hand. In 1396, Dai Viet troops under the leadership of a general invaded Champa and captured a Cham general. From 1400 to 1403, Dai Viet invaded Champa every year, sometimes successfully and other times not. The invasion in 1402 was massive and the most fruitful, with the

<sup>143</sup> Phan Huy Chu, *Lich-trieu hien-chuong loai chi* [Categorized collection of official documents of consecutive dynasties] (Saigon: Phu quoc vu khanh d ac trach van hoa, 1972), vol. 1, pp. 113, 149.

<sup>144</sup> David K. Wyatt and Aroonrut Wichienkeo, *The Chiang Mai Chronicle* (Chiang Mai: Silkworm Books, 1995), pp. 80-81.

<sup>145</sup> John K. Whitmore, “The Development of Le Government in Fifteenth Century Vietnam” (Ph. D. dissertation, Cornell University, 1968), p. ix. Also see Tran, *Yuenan*, pp. 173, 180.

<sup>146</sup> *Ibid.*

<sup>147</sup> *Thien nam*, “governmental organization,” pp. 32a-49b; *Cuong muc*, Book 5, pp. 2015-2022.

<sup>148</sup> Whitmore suggested to me that throughout the early Le not a single domestic rebellion had occurred.

<sup>149</sup> *Toan thu*, vol. 2, pp. 590, 604, 605, 607-608, 613, 616, 630, 631, 659, 661-662, 663; E. Gaspardone, “Annamites et Thai au xv<sup>e</sup> siècle,” *Journal Asiatique* 231 (1939): 405-436; John K. Whitmore, “Colliding Peoples: Tai/Viet Interactions in the 14<sup>th</sup> and 15<sup>th</sup> Centuries” (MS, 2000), pp. 8-12; Yamamoto Tatsuro, *Betonamu Chugoku kankeishi* [History of Vietnamese-Chinese relations] (1975), map.

<sup>150</sup> *Toan thu*, pp. 403-404.

result that the Cham king was terrified and agreed to cede territory to Dai Viet in exchange for peace. Thus the northern Cham territory of Amaravati fell into Vietnamese hands and was divided into four subprefectures (*chau*): Thang, Hoa, Tu, and Nghia. In 1403, Dai Viet mobilized 200,000 troops to invade Champa. Vijaya was besieged but did not fall. Dai Viet troops had to withdraw due to bad leadership and shortage of grain supplies. This unsuccessful invasion lasted nine months. Champa requested help from the Ming court, which sent out nine warships. But it seems that they only encountered the withdrawing Vietnamese navy at sea and no fighting occurred.<sup>151</sup> In 1407, Champa, taking advantage of Dai Viet's subjugation by the Ming, won a victory by regaining the four subprefectures previously lost to Dai Viet.<sup>152</sup>

From the mid-1440s, according to Vietnamese sources, due to Champa's repeated encroachments on its territory, Dai Viet intensified its attacks on Champa. In 1446, Dai Viet troops (allegedly over 600,000) sacked the capital of Champa, and took the Cham king and 33,500 captives to the Vietnamese capital.<sup>153</sup> But it seems that the strength of the Cham remained, as in 1470 the Cham king led over 100,000 Cham troops to invade Hoa chau. Le Thanh-tong decided to invade Champa again. The 100,000 strong Vietnamese navy set out on November 28, 1470, followed by another 150,000 on December 8. Le Thanh-tong also marched in person on the same day and composed a poem including this sentence: "The boom of the thunder-cannon shakes the earth." This suggests that the Dai Viet navy was heavily armed with firearms, and our discussion of the navy above supports this point. Fighting started on February 24, 1471, when 500 Dai Viet warships and 30,000 troops were ordered to block the way of 5,000 Cham troops and elephants. Then 1,000 warships and 70,000<sup>154</sup> troops followed under the leadership of Le Thanh-tong. On March 18, Thi-nai was taken with more than 400 Chams being killed. On March 22 the Cham capital Cha-ban (Vijaya) collapsed after four days of siege. According to the Vietnamese chronicle, more than 30,000 Chams were captured including King Tra Toan and his family members while over 40,000 killed. During the siege, signal-guns were fired as signals by the Dai Viet side, and other forms of firearms must have been employed, though the sources are silent about it.<sup>155</sup>

According to the *Ming shilu*, the Annam (Dai Viet) troops arrived in Champa during the second month of the seventh year of Chenghua (February 20-March 21, 1471), sacked its capital and captured its king and over fifty family members, took the seal of the Cham king, set fire to and destroyed houses, and killed and captured "countless" military and civilians.<sup>156</sup> The Malay annals, *Sejarah Melayu*, also records this war: "...The Raja of Kuchi (Dai Viet)<sup>157</sup> accordingly invaded Champa: and the men of Kuchi fought a fierce battle with the men of Champa. One day the Raja of Kuchi sent messengers to the Treasurer of Champa to win him over to his side. The

<sup>151</sup> *Ibid.*, vol. 1, pp. 471, 479-483; Whitmore, *Vietnam*, pp. 72-76.

<sup>152</sup> *Ming shilu*, vol. 1, pp. 244, 332.

<sup>153</sup> *Toan thu*, vol. 2, p. 611; *Ming shilu*, vol. 2, pp. 709-710.

<sup>154</sup> *Toan thu* says 700,000 but *Tay nam* states 70,000. The former must be a scribal error.

<sup>155</sup> Imagine that the fighting lasted nearly a month but the sketchy Vietnamese chronicle devotes only one page to it.

<sup>156</sup> Vol. 2, p. 789. Yan Congjian (*Shuyu*, p. 256) states that the Vietnamese killed only more than three hundred people. This does not seem to be correct.

<sup>157</sup> For etymology of the word "Kuchi" see Li Tana & Anthony Reid, eds., *Southern Vietnam under the Nguyen: documents on the economic history of Cochinchina (Đàng Trong), 1602-1777* (Singapore: Institute of Southeast Asian Studies, 1993), pp. 2-3.

Treasurer of Champa acquiesced (and undertook to) open the gate. Accordingly when day dawned he opened the gate and the men of Kuchi entered the city and fought the men of Champa, some of whom resisted, while the others concerned themselves with saving their families. And Yak (Vijaya) fell and the Raja of Champa was killed.”<sup>158</sup>

As a result, Dai Viet annexed two Cham regions, Avaravati and Vijaya, about four-fifths of Champa’s total territory, and Champa never recovered from this defeat.<sup>159</sup> Thus the fate of Champa was sealed and the over-one-millennium-balance (c. 192-1471) between Dai Viet and Champa was finally broken, partially due to the utilization of firearms by Dai Viet.<sup>160</sup>

On the side of Champa, there is no evidence showing that it ever acquired firearms. By 1410, Cham soldiers seem to have possessed no firearms.<sup>161</sup> A Chinese envoy arrived in Champa in 1441 and observed as follows: “...Its people (read: army) is very weak; [their] guards on the city walls in its country all hold [only] *bamboo spears*” (my emphasis).<sup>162</sup> The fact that the terms for weapons in a fifteenth century Cham-Chinese dictionary are all about conventional ones (spear, lance, etc.) renders more support to the Chinese observation.<sup>163</sup> This cannot be a sharper contrast with the contemporary Vietnamese who were actively procuring copper and iron from Yunnan to manufacture firearms. As late as the 1590s, according to a Portuguese observation, the people of Champa “are weak and with no courage, their weapons are of bad quality and they are clumsy in using them and very disorganized during the battle.” The common weapons they used were still lances and crossbows. They did possess some pieces of artillery and nearly one thousand arquebuses, which were, however, “badly adjusted and with a very bad quality [gun]powder.” Especially, they themselves could not handle them, so they had to hire mercenaries. Therefore, “...it is foreign slaves who deploy them, *for they themselves have little taste for that* and they use them more to terrify than to have an effect” (my emphasis).<sup>164</sup> Thus, it seems clear that Champa lagged behind Dai Viet technologically from the 1390s. We have reasons to believe Le Thanh-tong’s claim in his war proclamation to the king of Champa that Dai Viet possessed more troops and better weapons than Champa.<sup>165</sup>

In early 1471, while the Dai Viet troops were marching toward Champa but before the fighting started, possibly sensing the balance of power was going to change in the region, Tai principalities such as Ai-lao already sent tributes to the Vietnamese capital. After Dai Viet crushed Champa, more of its western neighbors came to pay tribute, as they apparently felt the shockwave of Dai Viet’s unprecedented feat.<sup>166</sup>

<sup>158</sup> *Sejarah Melayu, or, Malay Annals*, trans. by C. C. Brown (Kuala Lumpur: Oxford University Press, 1970), p. 102.

<sup>159</sup> *Tay nam*, pp. 9b-22b; *Thien nam*, “Champa section,” p. 28a; *Toan thu*, vol. 2, pp. 679-684; Whitmore, “Development,” pp. 207-215; Maspero, *Champa*, p. 118.

<sup>160</sup> The Cham kingdom did not disappear completely, but stopped being a viable competing force to Dai Viet.

<sup>161</sup> Yan, *Shuyu*, p. 250.

<sup>162</sup> Wang Ao, *Zhenze*, vol. 1, 26b; *Ming shilu*, vol. 2, p. 599. Also see Yan, *Shuyu*, p. 253.

<sup>163</sup> C. O. Blagden & E. D. Edwards, “A Chinese Vocabulary of Cham Words and Phrases.” *Bulletin of the School of Oriental and African Studies* 10 (1940-1942): 53-91.

<sup>164</sup> Blas Ruiz de Hernan Gonzalez, “Relation des affaires du Campā,” trans. by Pierre-Yves Manguin, *Bulletin de l'Ecole française d'Extreme-Orient* 70 (1981): 258-259; Anthony Reid, *Southeast Asia in the Age of Commerce* (New Haven, Connecticut: Yale University Press, 1993), vol. 2, p. 226. The quotes are from Pholsena Vatthana and Reid. I thank the former for checking and translating the French source for me.

<sup>165</sup> *Thien nam*, “Champa section,” p. 2b; Maspero, *Champa Kingdom*, p. 117.

<sup>166</sup> *Tay nam*, pp. 20b-21b; *Toan thu*, vol. 2, pp. 683, 685.

And now, in the fall of 1479, Dai Viet, with a force of 180,000 as claimed by Vietnamese sources, launched more fierce invasions into Ai-lao, Muong Phuan,<sup>167</sup> Lan Sang, and further west. It seems that Lan Sang was subdued easily.<sup>168</sup> Afterwards, in 1480, Dai Viet troops went on to invade Nan, which was then under Lan Na,<sup>169</sup> and then threaten Sipsong Panna which was reportedly going to submit to Dai Viet under great pressure.<sup>170</sup> Finally, Dai Viet troops even reached as far as the Irrawaddy (Kim-sa or Jinsha) River in the Ava kingdom.<sup>171</sup>

The details of Dai Viet's incursion into Ava are not available, but one can speculate that Dai Viet troops probably marched through the region around Keng Tung<sup>172</sup> and reached the territory of Ava, as later on Keng Tung was informed by the Ming court to be on alert; in 1482 Mong Mit planned to borrow troops from Dai Viet to invade Hsenwi and Lan Na. In any case, the intrusion itself is confirmed by more Chinese and Vietnamese sources. According to the *Ming shi*, in 1488, Ava sent a mission to the Ming, complaining about Dai Viet's incursion into its territory. In the next year (1489), the Ming court sent envoys to admonish Dai Viet to stop it.<sup>173</sup> Other sources, both Vietnamese and Chinese, state that Ming envoys were sent in 1488 to Dai Viet to announce the ascension to the throne of the new Ming emperor, and the Chinese one does mention Dai Viet's disturbance in the Burmese territory.<sup>174</sup>

The Ming regime was very concerned with Dai Viet's expansionist activities. In July 1480, the Yunnan authorities, upon learning that Lan Sang was attacked by Dai Viet, sent spies to reconnoiter the latter. The spies, who returned via Sipsong Panna by September 10 of the same year, reported that Dai Viet took more than twenty stockades from Lan Sang and killed over 20,000 people, and attempted to invade Lan Na. Also, they said that Sipsong Panna received a "false edict" from Dai Viet dated in 1479. Therefore, the Ming sent envoys to Dai Viet to reprimand its actions.<sup>175</sup> On December 7, 1480, the Ming court learned that Dai Viet had already subdued Lan Sang and was drilling for the invasion of Lan Na. On July 5, 1481, the Ming, after having learned more about Dai Viet's invasions of Lan Sang, warned Dai Viet not to encroach upon its neighbors on the strength of its armed forces and prosperity, and ordered Sipsong Panna, Yuanjiang, Mubang (Hsenwi), Guangnan, Keng Tung, etc. to protect each other.<sup>176</sup> On June 30, 1482, Lan Na reported to the Ming that it helped Lan Sang to repel the troops of Dai Viet and destroyed the edict of Dai Viet.<sup>177</sup> It was reported on January 8, 1484 that in perhaps 1483 Dai Viet allegedly with 1,060,000 troops (a figure grossly exaggerated) approached the territory of Sipsong Panna along four routes to demand that this state pay a tribute of

<sup>167</sup> "Bon man" in Vietnamese and "Meng Ban" in Chinese records (*Ming shilu*, vol. 2, p. 828).

<sup>168</sup> *Tay nam*, pp. 23a-33a; *Toan thu*, vol. 2, pp. 705-710; Martin Stuart-Fox, *The Lao Kingdom of Lan Xang: Rise and Decline* (Bangkok: White Lotus, 1998), pp. 65-66.

<sup>169</sup> David K. Wyatt, *Nan Chronicle* (Ithaca, New York: Southeast Asia Program, Cornell University, 1994), p. 57; Wyatt and Aroonrut, *Chiang Mai Chronicle*, pp. 98-99; Cansu Kamani Sankram, *Jan May rajavan* [Chiang Mai chronicle] (unpublished palm leaf), pp. ka-gi.

<sup>170</sup> *Ming shilu*, vol. 2, pp. 813, 818, 828.

<sup>171</sup> *Tay nam*, p. 31a; *Toan thu*, vol. 2, p. 710.

<sup>172</sup> Keng Tung here and Mong Mit and Hsenwi below were all independent (though under nominal Ming control) Shan principalities in modern northern Burma.

<sup>173</sup> *Ming shi*, vol. 315, p. 8132;

<sup>174</sup> Yan, *Shuyu*, pp. 201-202; *Toan thu*, vol. 2, p. 733.

<sup>175</sup> *Ming shilu*, vol. 2, pp. 812-3; *Tay nam*, pp. 33a-b; *Toan thu*, vol. 2, pp. 712-713.

<sup>176</sup> *Ming shilu*, vol. 2, pp. 814, 818. Both Yuanjiang and Guangnan were in southeastern Yunnan.

<sup>177</sup> *Ibid.*, vol. 2, p. 825.

gold and assist Dai Viet in invading Chiang Mai and Lan Sang. Dai Viet denied all this in a letter to the Yunnan authorities.<sup>178</sup> On October 31, 1484, Lan Sang and Lan Na each reported to the Ming that Dai Viet withdrew its troops to its country.<sup>179</sup> Thus Dai Viet's "long march" throughout mainland Southeast Asia, which lasted about five years, came to an end.

By and large, the sources are silent about the sorts of firearms used by the parties involved during Dai Viet's "long march." It should be beyond doubt that all certainly employed their best firearms. As mentioned above, in 1479 when Dai Viet troops were on their way to invade Ai-lao, a firearm arsenal was burned down accidentally. The incident was recorded probably because of the urgency of firearms for the campaign. *The Chiang Mai Chronicle* records that "blunderbusses" were made and used by Lan Na to repel the Dai Viet forces. The original Thai Yuan word for "blunderbuss" is *puun yai* or "big gun" whose muzzle was around ten centimeters.<sup>180</sup> Hence, this "blunderbuss" in all probability was a Chinese-style cannon.

Not only mainland but also maritime Southeast Asia felt the repercussions of Dai Viet's expansionist activities. In 1481, envoys from Melaka made the following complaint to the Ming. In 1469, Dai Viet plundered its envoys to the Ming court when they were forced by strong wind to the shore of Dai Viet, and "Annam had occupied the cities of Champa and wants to annex Melaka's territory," but Melaka "has dared not to raise troops to engage war with them." The Ming emperor in his edict admonished Dai Viet for this matter and informed the Melakan envoys: "If Annam is again aggressive or oppresses you, you should train soldiers and horses to defend against them."<sup>181</sup> The details of Dai Viet's attempted invasion of Melaka cannot be substantiated, but it seems that Melaka may have been directly threatened in some way.<sup>182</sup> According to one Chinese source, Le Thanh-tong led 90,000 troops to invade Lan Sang but was chased by the troops of Melaka, and 30,000 soldiers died.<sup>183</sup> This Dai Viet-Melaka connection sounds very intriguing but is not supported by hard evidence. In 1485, Dai Viet included Melaka on the list of tributary countries together with Champa, Lang Sang, Ayudhya, and Java.<sup>184</sup>

The immediate impact of Dai Viet's southward expansion and sack of the Cham capital Vijaya was the diaspora of the Cham to different places, such as Hainan, Cambodia, Thailand, Melaka, Aceh, and Java. For example, over one thousand Chams fled to Hainan with a Cham prince, who later became king of the remnant Champa with Ming support. According to the *Sejarah Melayu*, after Vijaya fell,

<sup>178</sup> Li, *Yue qiao shu*, vol. 11, pp. 18a-b.

<sup>179</sup> *Ming shilu*, vol. 2, p. 837.

<sup>180</sup> P. 99, which says that an archer by the name Mun Thum who knew how to make "3-fathom arrows and blunderbusses," while the Burmese *Jan May rajavan*, which is a translation of the Chiang Mai chronicles, records "big bows and big machines" (*le kri yantara cet kri*) (p. *ga*), no doubt from the Thai Yuan words. Aroonrut in personal communication informed me the original Thai Yuan word and the size of the muzzle.

<sup>181</sup> *Ming shilu*, vol. 2, pp. 820, 822; Geoff Wade, "Melaka in Ming Dynasty Texts," *Journal of the Malaysian Branch, Royal Asiatic Society* 70, 1 (1997): 43. The translation is from Wade.

<sup>182</sup> For example, Dai Viet may have used the harboring of Cham a prince by Melaka as a *casus belli* against Melaka, or Melaka's complaint to the Ming court against Dai Viet was perhaps made on behalf of these Cham refugees (see below).

<sup>183</sup> Mao Qiling, *Mansi hezhi* [A comprehensive record of the aboriginal chieftains] (Taipei: Guangwen Shuju, 1968), vol. 10, p. 1b.

<sup>184</sup> *Toan thu*, vol. 2, p. 726; Momoki, "Dai Viet," pp. 21-22 and n.29.

“...the children of the Raja of Champa together with the ministers scattered and fled in all directions. Two sons of the Raja, one of them named Indra Berma Shah and the other Shah Palembang, escaped by ship, Shah Palembang to Acheh and Shah Indra Berma to Malaka... That was the origin of the Chams of Malaka, all of whom are sprung from Shah Indra Berma and his descendents.”

This exodus of the people of Champa resulted in the modern linguistic distribution of Chamic dialects.<sup>185</sup> It was through the Cham emigration that other countries or regions in maritime Southeast Asia may have felt the shock wave of Dai Viet's aggression and expansion.

According to a Vietnamese source, Dai Viet during the late Hong-duc reign (1470-97) also subdued Ryukyu (Liuqiu).<sup>186</sup> However, this is not so far supported by other sources. The records on the Ryukyu side, such as the *Rekidai hoan* (The precious records of the consecutive dynasties), are completely silent on Ryukyu-Dai Viet relations until 1509 when the king of Ryukyu sent a mission to Dai Viet.<sup>187</sup> The so-called “subjugation” of Ryukyu may have meant the fight which occurred when a Ryukyuan ship was cast onto the Dai Viet shore in 1480.<sup>188</sup>

Different countries and peoples perceived the expansion of Dai Viet differently. The Vietnamese saw Le Thanh-tong's reign with greatest content and jubilation:

“Thanh-tong ... revitalized all the professions, set up *phu* and *ve*, fixed official ranks, promoted rite and music, chose clean and able officials, sent expeditions to the four directions, expanded the territories; Tra Toan was captured, Lao-qua (Lan Sang) collapsed, Ryukyu was defeated, Cam Cong fled and died, the barbarians in the four directions surrendered, wind blew from the eight directions. [During his] thirty-eight-year's rule, the country was peaceful and well governed. How spectacular was this!”<sup>189</sup>

In the Chinese eyes, the Vietnamese were extremely troublesome:

“In the 17<sup>th</sup> year of Chenghua (1481), Laowo (Lan Sang) [sent envoys to the Ming court] for emergency help. The Ministry of War memorialized: ‘Annam annexed Champa on the east, took Laowo on the west, dilapidated Babai (Lan Na), issued false edict to the Cheli (Sipsong Panna) Pacification Commission,

<sup>185</sup> Graham Thurgood, *From Ancient Cham to Modern Dialects: Two Thousand Years of Language Contact and Change* (Honolulu: University of Hawai'i Press, 1999), especially pp. 22-23; *Ming shilu*, vol. 2, p. 842; *Sejarah Melayu*, pp. 102-103; Abdul Rahman al-Ahmadi, “Champa in Malay Literature,” in *Proceedings of the Seminar on Champa*, p. 104; G.E. Morrison, “The Chams of Malaka,” *Journal of the Malaysian Branch Royal Asiatic Society* 24, 1 (1951).

<sup>186</sup> *Toan thu*, vol. 2, pp. 762, 835.

<sup>187</sup> Kobata Atsushi & Matsuda Mitsugu, *Ryukyuan Relations with Korea and South Sea Countries: an Annotated Translation of Documents in the Rekidai Hoan* (Kyoto, Japan: Atsushi Kobata, 1969), pp. 183-186.

<sup>188</sup> *Ibid.*, p. 119.

<sup>189</sup> *Toan thu*, vol. 2, p. 835.

killed the envoys of Melaka. [We] heard that its country will send 3,000 warships to attack the Hainan [island].”<sup>190</sup>

For other Southeast Asians, such as the Chams, the Tai/Shan from the western frontier of Dai Viet to modern Burma, the Burmans of Ava, and even the Melakans (and perhaps the Ryukyans), however, Dai Viet of the second half of the fifteenth century was a formidable enemy or a great potential threat. This research would like to suggest that it was the borrowed gunpowder technology that contributed to the golden age of Dai Viet, a factor may or may not be understood by the contemporaries of China and Southeast Asia.

### The Legacy of Chinese-style Firearms in Post-1497 Dai Viet

Firearms continued to be employed by the Vietnamese after Le Thanh-tong's reign. As Dai Viet's territory extended to the south, its military forces and technology followed. In 1471, immediately after the victory over Champa, one *ve* was set up in the conquered Cham land Quang-nam. In 1498, a “*chong* and crossbow” unit (*so*) was added and two more *ve* were set up, each with a “*chong* and crossbow” unit.<sup>191</sup> From the early sixteenth century on, hand-guns, signal-guns, cannon, rockets were regularly used mostly in domestic fighting of Dai Viet (rather than against external enemies). In 1508, King Le Uy Muc's body was exploded by a big cannon (*pao*) into pieces.<sup>192</sup> In 1511 and 1522, signal-guns (and probably other firearms) were fired by Dai Viet government troops in fighting against rebels.<sup>193</sup> After the usurpation of the Mac in 1527, firearms including signal-gun, cannon, and hand-guns were more frequently employed by both the Mac and Trinh forces in 1530, 1555, 1557, 1578, 1589, 1591, 1592, and 1593.<sup>194</sup>

Vietnamese records indicate, directly and indirectly, the effectiveness of the these firearms, as in 1555 almost all of the several tens of thousands of Mac troops died; in 1578, the Trinh soldiers “fired [their] *chong* together at them, countless Mac soldiers died;” in 1593, the troops under Nguyen Hoang, who was sent to Thuan-hoa as a military commander, came back with heavy firearms including cannon to fight the Mac forces. As a result, the fortification of the Mac was broken and about 10,000 Mac soldiers were killed.<sup>195</sup> It is also noteworthy that in the decisive battle between the Mac and Trinh in 1592 in Thang-long, the Mac troops employed heavy firearms (*dachong baizi huoqi* in Chinese, literally meaning “big *chong* and hundred-son [bullet]-firearms”) and the fighting scene is described as “the [sound] of hand-guns and cannon shook the sky,” showing the intensity of the use of firearms.<sup>196</sup> In 1597,

<sup>190</sup> Wan Sitong, *Ming shi* (The history of the Ming dynasty), in the *Xuxiu Siku quanshu* (Shanghai: Shanghai Guji Chubanshe, 1995), “shibu, baishi lei,” vol. 413, p. 598. See also the *Ming shilu*, vol. 2, pp. 817-818, 820-823.

<sup>191</sup> *Ibid.*, vol. 2, p. 686; *Cuong muc*, vol. 24, pp. 31a-b.

<sup>192</sup> *Toan thu*, vol. 2, p. 789.

<sup>193</sup> *Ibid.*, vol. 2, pp. 801, 829.

<sup>194</sup> *Ibid.*, vol. 2, pp. 839, 853, 854, 877, 886-890, 893, 895.

<sup>195</sup> *Ibid.*, vol. 3, p. 899; *Dai Nam thuc luc* [Veritable records of the Nguyen dynasty] (Tokyo: Keio Institute of Linguistic Studies, 1963), vol. 1, p. 25.

<sup>196</sup> Mao, *Wu bei zhi*, vol. 6, pp. 5187-5188.

1619, and 1623, big *chong* (presumably cannon) and *chong* were fired in suppressing a rebellion or in royal intrigues.<sup>197</sup>

From the first half of the seventeenth to the early nineteenth centuries, in the nearly half-century (1627-1672) confrontation and war between the Trinh and Nguyen, in the Tay Son rebellion and their war against the Qing troops in the late eighteenth century, and even in the Nguyen's fight against the Tay Son, though the Vietnamese still retained the Chinese terminology (*chong and pao*) for most of their firearms, Chinese-style firearms yielded more and more to European ones and decreased in importance.<sup>198</sup> However, they did not completely disappear, though more research needs to be done to discern these elements. The use of Chinese-style rockets for both war and entertainment purposes certainly continued and was even widespread.<sup>199</sup>

European records shed much light on the unique mastery of firearms by the Vietnamese. Among the many countries and regions in Southeast Asia modern Vietnam (first the north and then the south) stood out for its impressive number and skillful use of firearms. Dai Viet, not Champa, Burma, Siam, or any others, impressed Pires at the very beginning of the sixteenth century (prior to the arrival of European firearms in Dai Viet) with its large scale of production of firearms. He observed: “[H]e (the king of Cochin China) has countless musketeers, and small bombards. A very great deal of [gun]powder is used in his country, both in war and in all his feasts and amusements by day and night. All the lords and important people in his kingdom employ it like this. Powder is used every day in rockets and all other pleasurable exercises...” Also, he stated that a great quantity of sulfur and saltpeter was imported both from China and the Solor islands beyond Java via Melaka: “The island of Solor ... has a great deal of sulphur, and it is better known for this product than for any other... There is so much of this sulphur that they take it as merchandise from Malacca to Cochin China, because it is the chief merchandise that goes there from Malacca.”<sup>200</sup> Pires clearly suggests that the amount of sulfur imported into Vietnam was huge.

Rhodes in 1653 said that the weapons of the soldiers in Tonkin included muskets which “they handle with great dexterity, especially firearms.”<sup>201</sup> Baron wrote in 1683 that the Tonqueen (Tonkin) soldiers were “good marksmen, and in that ... inferior to few, and surpassing most nations in dexterity of handling and quickness of firing their muskets.”<sup>202</sup> He also said Tonqueen possessed “guns and cannons of all sorts, as also calibres, some of them of their own fabric, but the greatest part bought of the Portuguese, Dutch, and English, and stored with other ammunition suitable to their occasions.”<sup>203</sup> Dampier in 1688 said that the king of Tonkin purchased cannon

<sup>197</sup> *Toan thu*, vol. 2, pp. 911, 935.

<sup>198</sup> The appearance of European firearms and its impact on Vietnamese warfare up to the early nineteenth century will be treated elsewhere in detail.

<sup>199</sup> Thome Pires, *The Suma Oriental of Tomé Pires, an Account of the East, from the Red Sea to Japan, Written in Malacca and India in 1512-1515, ...* (London: The Hakluyt Society, 1944), vol. 1, p. 115; *Toan thu*, vol. 3, p. 1095.

<sup>200</sup> Pires, *Suma Oriental*, vol. 1, pp. 115, 203. “Solor” not only includes the Solor Islands, but also the island of Flores in modern Indonesia.

<sup>201</sup> Alexander de Rhodes, *Rhodes of Viet Nam: The Travels and Missions of Father Alexander de Rhodes in China and Other Kingdoms of the Orient* (Westminster, Maryland: The Newman Press, 1966), p. 57.

<sup>202</sup> Samuel Baron, “A Description of the Kingdom of Tonqueen,” in A. and W. Churchill, eds., *A Collection of Voyages and Travels* (London: 1704-1732), vol. 6, p. 686.

<sup>203</sup> *Ibid.*, vol. 6, p. 665.

and had 70,000 professional soldiers armed with hand-guns under him. This purchase of foreign firearms by the Trinh Vietnam in the north is also confirmed by a Vietnamese source: In 1670 an edict was issued to ban this practice conducted by probably private parties.<sup>204</sup> In 1633, Cristoforo Borri observed that “[t]he Cochinchinois being now become so expert in the managing of them [artillery], that they surpass our Europeans.”<sup>205</sup> Modern historians have pointed out that other Southeast Asian peoples, including the Malays, Javanese, Achinese, Siamese, and Burmese, though they may have been familiar with firearms before 1511, never “developed their artillery into a very effective arm.”<sup>206</sup> The aloof attitude of the Chams to firearms is perfectly illustrated in a source cited earlier.

These highly-praised skills in firearms can only be explained by Dai Viet’s profound knowledge and long experience with firearms ever since 1390. The point which needs to be stressed here is that superior European military technology did not arrive in Dai Viet in a vacuum in the seventeenth century, rather it was built upon an earlier Sino-Vietnamese layer.<sup>207</sup> It is also noteworthy that the Vietnamese, unlike especially the Burmese, had a tendency not to hire mercenaries but relied on their own native armies.<sup>208</sup> The expertise of the Vietnamese in firearms may have rendered recruiting mercenaries unnecessary.

## Conclusions

Several conclusions may be drawn from our discussion. First, this research has shown that Chinese firearms reached Dai Viet by 1390, over 120 years before 1511 when Melaka fell to the Portuguese. This transfer of military technology was greatly furthered by Ming China’s invasion and occupation of Dai Viet during 1406-1427. The Ming troops, relying in part on their superior firearms, had conquered Dai Viet, a feat that can only be envied by other Chinese dynasties that had also attempted but failed to do the same thing. However, contrary to the Ming wish, its advanced military technology and numerous firearms had been obtained by the Vietnamese during the later period of the Ming occupation and this helped drive the Ming forces out of Dai Viet.

Cultural exchanges are two-way traffic and this was also true of the spread of military technology between China and Dai Viet. Though Dai Viet first acquired gunpowder technology from China, it later on also exported some better techniques such as wooden wad and possibly new ignition device to China. Therefore, on the one hand, it is time to rectify once and for all the misunderstanding of the *Ming shi* or the belief that China learned to make firearms from Vietnam. On the other hand, it is also time to recognize Vietnam’s contributions to Chinese gunpowder technology.

<sup>204</sup> *Toan thu*, vol. 3, p. 991.

<sup>205</sup> Cristoforo Borri, *Cochin-China: Containing Many Admirable Rarities and Singularities of that Country* (London: Robert Raworth, 1633), chapter VII; C. R. Boxer, “Asian Potentates and European Artillery in the 16<sup>th</sup>-18<sup>th</sup> Centuries: A Footnote to Gibson-Hill,” *Journal of the Malayan Branch of the Royal Asiatic Society* 38, 2 (1965): 166.

<sup>206</sup> Boxer, “Asian Potentates,” pp. 162, 165-166; Li, *Nguyen Cochinchina*, pp. 44-45.

<sup>207</sup> “Sino-Vietnamese” here means “Chinese” by origin and “Vietnamese” in application.

<sup>208</sup> Reid, *Southeast Asia in the Age of Commerce*, vol. 2, p. 226; Frédéric Mantienné, “Le recours des États de la Péninsule indochinoise à l’aide européenne dans leurs relations (XVI<sup>ème</sup>-XVIII<sup>ème</sup> siècles),” in Nguyễn Thế Anh and Alain Forest, eds., *Guerre et paix en Asie du Sud-Est* (Paris: L’Harmattan, 1998), p. 59.

Secondly, to quote O'Connor, "States and peoples rise and fall for reasons."<sup>209</sup> The fall of Vijaya in 1471 is a complex issue, therefore it needs complex answers; any monocausal explanations must risk being simplistic. Following Victor Lieberman's multi-variable scheme in explaining political, socioeconomic, and cultural changes during early modern Southeast Asia and other parts of Eurasia,<sup>210</sup> I propose that gunpowder technology should be considered as one of the variables that caused the downfall of Champa and that helped Dai Viet's "long march" as far as the Irrawaddy River in modern Burma.

The second half of the fifteenth century witnessed Dai Viet's golden age, especially its external expansion. To the south, Dai Viet subdued Champa in 1471 after more than one thousand years of confrontation, and subsequently Champa ceased to be a viable competing power. Thus the political geography of the eastern part of mainland Southeast Asia dramatically changed. One may even claim that to some extent it was gunpowder technology that paved the way for the *nam tien* or Vietnam's march to the south. To the west, Dai Viet not only stabilized its border region with the different Tai peoples, but also marched all the way to the Irrawaddy River in Burma in the late 1470s and early 1480s. As a result, the kingdoms in Northern Mainland Southeast Asia including Lan Sang, Chiang Mai, Sipsong Panna, and Burma, were terrified and even Ming China was alarmed. Parts of maritime Southeast Asia such as Melaka felt the threat of Dai Viet as well.

To be sure, many other factors contributed to the abovementioned developments in fifteenth century Northern Mainland Southeast Asia. Gunpowder technology was one, but a crucial one. To paraphrase the two quotes at the beginning of this article, Dai Viet borrowed, digested, and internalized Chinese military technology and employed it to achieve its ends more easily than before, while Champa, for reasons still unclear to us, failed to grasp this technology and was penalized fatally. Lan Sang, Lan Na, and other Tai people, though obtaining gunpowder technology, incorporated it less effectively than Dai Viet in terms of quality and quantity.

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<sup>209</sup> O'Connor, "Agricultural Change," p. 987.

<sup>210</sup> "Local Integration and Eurasian Analogies: Structuring Southeast Asian History, c. 1350-c. 1830," *Modern Asian Studies* 27, 3 (1993): 475-572 and "Transcending East-West Dichotomies: State and Culture Formation in Six Ostensibly Disparate Areas," in Victor B. Lieberman, ed., *Beyond Binary Histories: Re-imaging Eurasia to c. 1830* (Ann Arbor, Michigan: The University of Michigan Press, 1999), pp. 19-102.