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メタデータ	言語: English 出版者: 公開日: 2009-08-25 キーワード (Ja): キーワード (En): 作成者: UMEMOTO, Shinya, NGUEN, Dung Tien, YAMAGUCHI, Hirofumi メールアドレス: 所属:
URL	https://doi.org/10.24729/00009696

Traditional Devices for Threshing Rice Grains in Northeastern Vietnam

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Abstract

Three kinds of traditional devices for threshing rice grains in Vietnam are described on the basis of field surveys conducted in 1998. The *loong*, a device constructed of wood boards and bamboo nets, shaped like a boat, is often used by the Tai people in Cao Bang, Lang Son and Bac Giang provinces. In Cao Bang and Lang Son provinces, the square *loong* constructed of wood board only, resembling the *dadou* in China, is predominantly used by the Nung people. The *nong* which is made of bamboo and rattan, like a flat basket, is used by the Muong people in Hoa Binh province. These devices are convenient for threshing in the rice cultivar with in an easy-seed-shattering habit. The cultural significance of the recent introduction of a foot thresher, *may tout lua*, from China into northeastern Vietnam is discussed in relation to its conflicting nature with traditional methods.

Key Words: rice cultivation, Tai, Nung, Muong people, threshing device, traditional culture.

Introduction

The northeastern part of the Socialist Republic of Vietnam neighboring the Peoples Republic of China was originally covered with warm temperate broad-leave forests (照葉樹林), although there are human-affected secondary forests. Vietnam consists of 55 different ethnic groups (Anonymous, 1998), however, in the northeastern provinces of Vietnam, the Tai, Nung, Muong people are major minorities. These people have cultivated rice (*Oryza sativa*), sugar cane (*Saccharum officinale*), corn (*Zea mays*), bananas (*Musa accuminata*), cotton (*Gossypium hirtum*), and other cash crops for their subsistence with the utilization of natural resources. They have maintained their own traditional life style as much as possible even after the recent introduction of technologies, such as mechanized farming, increasing investment in agricultural production and modern animal husbandry. One such traditional practice is a particular rice harvesting technique.

Masanaga *et al.* (1995, 1998) described traditional threshing methods in rice cultivation, the *dadou*, among the Miao and Buyi peoples

in the Yun-Gui highland, China. They discussed the cultural significance of the *dadou* and other devices with special reference to the shattering habit of rice and the introduction of a foot thresher. In addition, Masanaga *et al.* (1998) briefly mentioned the presence of the *dadou* in the Hmong people's area in Vietnam. The actual diversity of rice-grain harvesting practices in Vietnam is still obscure, although Tanaka (1991) pointed out the variety of threshing practices with relation to three kinds of rice-culture practices in Southeast Asia. The purpose of this paper is to describe three traditional devices for threshing rice grains based on our 1998 expedition and to discuss the value of a modern threshing device, the foot thresher, for three ethnic groups in northeastern Vietnam.

Study Sites and Methods

Field surveys were conducted in mid November 1998, in conformity with the method of Masanaga *et al.* (1995, 1998), in villages and paddy rice fields situated along national and local roads in Cao Bang, Lang Son, Bac Giang and Hoa Binh provinces in northeastern Vietnam.

The former two provinces are characterized as mountainous with karstic topography at altitudes ranging from 500m to 1,500m. In these four provinces, the Tai, the Nung and the Muong peoples have long resided with the Kinh (Viet) people.

Results and Discussion

1. *Loong* of the Tai people.

Type locality: Hong Viet village, Hoa An district, Cao Bang province

Type slide: S.U. 98-11-12-01 (Fig. 1).

Distribution: Villages in Hoa An, Quang Hoa and Thach An districts of Cao Bang province; Trang Dinh, Van Lang, Dong Dang, and Chi Lang districts of Lang Son province; and Son Dong district of Bac Giang province by the Tai people.

Description: The *loong* is a kind of rice threshing device traditionally used by the Tai people, made of wood and bamboo (Fig. 1). The basic meaning of the word comes from the word boat in Tai language, probably because of its shape. This may provide insight into the origin and transmigration of the Tai people who live there. The device has two parts: the bottom is referred to as the *loong* and the top is referred to as the *manh*.

The *manh* consists of two pieces of bamboo network, each of which is 232 cm high and 121 cm long in size. Both sides of the *manh* are temporarily supported by two bamboo sticks and connected to the bottom part (the *loong*) mentioned below. A farmer can assemble this part in two days. The bamboo cultivated in a semi-natural condition in a farmer's home garden is commonly used because of its lightness and ease of availability as a material. The scientific name of the bamboo has been not identified. This part, if removed from the bottom part, can also conveniently provide farmers with comfortable shading when taking a rest during harvest.

The bottom part, the *loong*, is 240 cm long, 418 cm high, and 437 cm wide in marginal size, with some accessories such as the *gao* (handle when moving), the *goi* (meaning unknown) and the *tai* (ear supporting the bamboo sticks). It is made of wood boards and iron nails, and a farmer can make it in three days. Light and hard-to-bend wood is chosen and obtained from

a tree planted along riverbanks near the village. The bottom part is painted in white or sometimes yellow. The reason for this specific coloring on the wood boards is unknown. This part resembles a boat and is used as a granary after completion of threshing until the next seeding.

The construction of the whole device is completed in three days. If carefully maintained and properly repaired, the *loong* can be functional for over 20 years.

Rice cultivation: In Hon Viet village of Hoa An district, rice is harvested once a year. This is due to rather the higher altitude of 500m to 1000m. A rice variety called 'Bao Fai Lun' is the major variety grown in the village. It is an improved variety with erect flag leaves and a semi-dwarf plant stature, introduced from China 30 years ago, and it is easy to shatter. The plant height at harvest is 90-110 cm. Following the lunar calendar, farmers broadcast rice seeds in nursery beds late in the fifth month, transplant 25-30cm-long seedlings in each 16cm x 18cm square late in the sixth month, welcome flower headings late in the ninth month, and harvest grains mid in the eleventh month. Before transplanting, organic composts made from rice straws of the previous year with cow dung and small quantities of chemical fertilizer are dressed. During the growing season, insecticide is applied as the situation arises. Weeds are removed by hand. The most dominant weed species are *rau max* (*Monochoria* sp.) and *cobo* (*Marsilea* sp.). Not only the less-shattering form but also the none-shattering form of tetraploid *Echinochloa* (Yamaguchi *et al.*, 1996) are frequently observed together with the shattering form of *Echinochloa*. The average yield of rice is estimated to be approximately 300kg/10a.

Threshing: Women and children harvest the rice plants by cutting the stalk at the height of 5cm from the ground surface using a traditional sickle, the *liem*, and tying the stalks up into handful bundles with rice straws. Although two men thresh the harvested rice, one man can do it if necessary. According to the farmers, threshing by two persons is efficient because rhythmic beatings with another person makes the threshing more bearable. Each of workers stands on both sides of the *loong*, and hits a bundle of rice toward the center of the bottom



Fig. 1

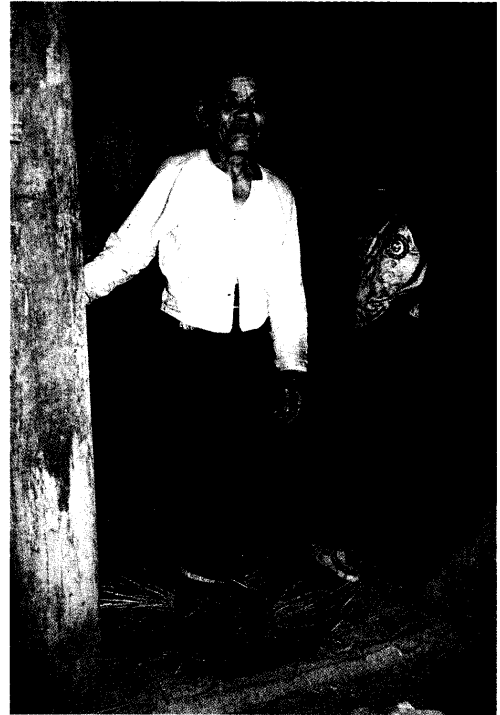


Fig. 4

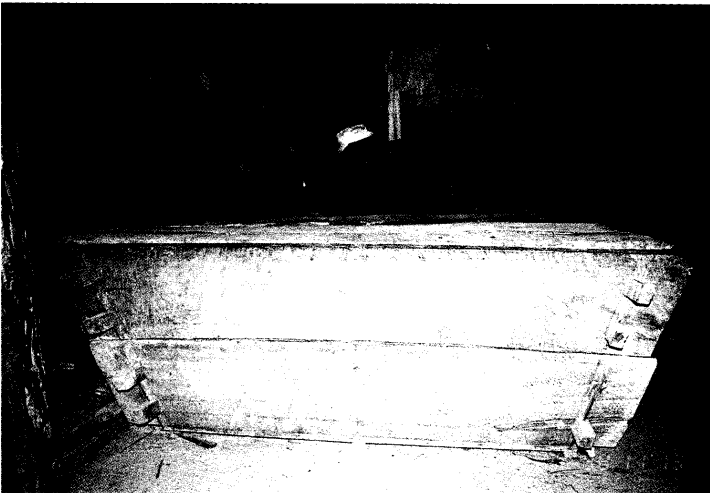


Fig. 2



Fig. 3

Fig. 1. The loong of the Tai people in Hoa An district.

Fig. 2. The square loong of the Nung people in Quang Hoa district.

Fig. 3. The thung in Bac Ha district by the Hmong people (*H. Y. 97-11-23-42*).

Fig. 4. The nong using by the Muong people.

part a few times. The *manh* prevents the rice grains from scattering onto the ground. When the *loong* is filled with rice grains, the workers put them into cloth bags then take a rest every hour under the shade of the *manh*. The *loong* is slid to another place in the paddy field by grasping both sides of the *gao* (handle). The *loong* is usually stored under the side roof of the house after completion of the harvest.

Comparison with the foot thresher: Farmers state that the *loong* is better than the foot thresher, the *may tout lua*, despite its lower speed of threshing, because of three reasons. The first is that the foot thresher severely damages rice panicles, and the removal of broken rachis from rice grains becomes a troublesome task. The second reason is that two people are required for the operation of the foot thresher. In contrast with the case of the *loong* it is impossible for only one man to operate the foot thresher. Therefore, the *loong* is more adaptable than the foot thresher. The third reason is that the foot thresher costs 200,000 Vietnam dong (Vietnamese currency units) or more in the market of Cao Bang and is much more expensive. According to the Statistical Yearbook 1987 published by General Statistical Office of Vietnam, the average annual income per capita of Cao Bang province is only 16,500 Vietnam dong.

On the other hand, a young Tai farmer in Ban Chang village, Dong Dang subdistrict, Dong Dang district, Lang Son province has cultivated an easy-to-shatter rice cultivar, 'Bao Thai Lun,' which was introduced from China 30 years ago. He uses a foot thresher made in China for threshing this cultivar. The traditional *loong* is still common among his elders. The reasons he has adopted the foot thresher are because of its quickness for threshing rice grains and non-dispersion of rice grains around the paddy ground. However, he points out three demerits: the foot thresher costs 500,000 Vietnam dong which is 25 times more than his standard yearly income, the foot thresher requires more than two male persons for operation, and certain foot thresher disorders require repair specialists. After learning about the quickness of harvesting by the foot thresher while sightseeing in Guandong Province, China, he introduced it to his local area.

A 30-year-old Tai farmer in Nhan Ly village, Chi Lang subdistrict, Lang Son district, Lang Son province uses a foot thresher made in Vietnam which costs 400,000 Vietnam dong. His father and grandfather had used the *loong*. He emphasized the fact that the foot thresher is very quick in threshing. However, he said that the foot thresher is very heavy to move in paddy fields and to transport from his house to a paddy. He also pointed out another demerit that the foot thresher absolutely requires more than two or three male persons for driving.

2. Square *loong* of the Nung people

Type locality: Thanh Minh village, Phuc Xen commune, Quang Hoa district, Cao Bang province.

Type slide: S.U. 98-11-13-02 (Fig.2).

Distribution: Villages of Quang Hoa district of Cao Bang province and Trang Dinh district of Lang Son province by the Nung people.

Description: The square *loong* is a traditional device used among the Nung people, made of wood boards (Fig. 2). This device has the same pronunciation and spelling as the *loong* used by the Tai people mentioned above, but a much different shape from the *loong* of the Tai people. For avoiding the confusion we refer to this device as the square *loong*. According to an interview with Mr. Eng Ly Danh Phuong, the standing vice director of the Department of Rural Development of Cao Bang Province, a small number of Tai people also use this square *loong*. The square *loong* used by the Nung people is exactly the same as the *dadou* (Masanaga *et al.*, 1995, 1998) which is traditionally and commonly used by the Miao, the Buyi, the Tong and the Yao peoples dwelling in Yun-Gui highland of China. In Nung language, *loong* means a bottom, a box or a square. The Nung people wear traditional clothes dyed in dark blue color by fermented *xom* (dye plant). It is suggested that the Nung people are genealogically related to the Tong people in Guizhou province of China judging from this dye-technique.

A typical square *loong* in Phuc Xen village is 146cm and 164cm along the upper edges, 116 cm and 117cm on the bottom edges, and 55cm high. The square *loong* is made of *cham* (tree plant) and thus it is very light. As reported by

Masanaga et al. (1995, 1998), the ventral side of the *dadou* is constructed of two boards which are at ca. 45 degree to the bottom. However, the two ventral boards of the *loong* of the Nung people can be separated from each other for convenience of transport through steep paths to rice fields. Different from the *dadou*, the square *loong* used by the Nung people has no legs on its bottom, like a sled, for smooth movement on the surface of rice fields, and it is not waterproof. Furthermore, there is no oil applied to the wood boards. The square *loong* has a handle, the *tai*, which means “ear,” for moving in rice fields, which is the same as the *xia-er*, *dou-er*, or *tuo-er* of the *dadou* (Masanaga et al., 1998).

A male farmer can construct the square *loong* with bamboo nails in 4 days using *cham* trees located around the village. The life of a square *loong* is 10-15 years if properly maintained. The square *loong* can also be used for seed-storage when covered with a board.

Rice cultivation and threshing: In Thanh Minh village of Quang Hoa, rice is grown once a year. This is because of its higher altitude of 500m to 1500m. The major rice variety grown is ‘Doan Ket (團結)’ which is an improved easy-shattering rice introduced from China 30-40 years ago. The plant height of the rice is more than 100cm. Following the farmer’s lunar calendar, rice seeds are scattered in the nursery early in the forth month. Transplantation is carried out early in the fifth month with each square having a density of 15 x 18 cm. Heading occurs early in the sixth month, and harvesting is conducted early in the ninth month. Before transplanting the rice seedlings, organic compost made from rice straw and corn and chemical fertilizers are applied to the rice fields. During the cultivation of the rice, insect pests sometimes attack the rice plants but ducks consume them thoroughly. Weeds are removed by hand.

The method of threshing the rice grains is similar to that of the *dadou* described by Masanaga et al. (1995, 1998). A few farmers of the Nung people have introduced foot threshers made in China, but for most of them a foot thresher is too expensive to purchase.

Note: The Hmong and Dao peoples who are probably ethnically akin to the Miao people also use a device similar to the *dadou* in China. They

call it the “*dong*” or “*thung*” (Fig. 3 : Umemoto and Yamaguchi confirmed its existence in Sa Pa and Bac Ha districts in Lao Cai province in 1997).

3. *Nong* of the Muong people

Type locality: Tha village, Kin Boi district, Hoa Binh province.

Type slide: S.U. 98-11-17-03 (Fig. 4).

Distribution: Hoa Binh and Kin Boi districts of Hoa Binh province.

Description and threshing, rice cultivation and evaluations of the foot thresher: The *nong* is a kind of rice threshing tool traditionally used by the Muong people (Fig. 4). It is a round and flat basket made of bamboo and rattan. The diameter is about 60-70cm. Certain procedures are necessary when threshing rice grains. Initially, a woman puts the *nong* onto the ground and sets a bundle of rice heads in the *nong*. Then, she skillfully squelches and roundly scrubs the bundle by foot in the center of the *nong* for 30-60 seconds. She gets rid of the rachis, then winnows the rice grains by raising and lowering the *nong* by hand for about 30 minutes. Then she repeats the procedures. Sometimes the *sang* which is a little larger than the *nong* is used instead of the *nong* for winnowing rice grains.

A woman can braid a *nong* with a kind of bamboo, the *Lua Te*, in two days.

In Xom 4 village of Hoa Binh district of Hoa Binh province, rice is dabble-cropped every year. According to the lunar calendar, farmers seed rice-grains in the 11th month, transplant juveniles in the 12th month, witness heading in the fourth month and harvest grains in the sixth month in the first crop. While farmers seed rice-grains in the forth month, transplant juveniles in the sixth month, and harvest grains in the 11th month in the second crop. The rice variety, ‘Bao Thai Lun,’ which is easy to shatter and is 60-70 cm in plant height.

A woman aged 55 years old in Xom 4 village who introduced the foot thresher 10 years ago still uses the *nong* for winnowing. The foot thresher costs 400,000 Vietnam dong which is very expensive and 10 times her annual income. However, her family has begun to cultivate sugar cane and does not have enough time to use the *nong* for threshing since it is too sluggish. According to her, the foot thresher can harvest

2,500 m² of rice fields in one day while the best the *nong* can do is 500 m² of rice fields in 3 days or more.

However, a woman aged 60 years old in Tha village of Kin Boi district pointed out somewhat interesting demerits of the foot thresher. The first one is the disadvantage related to stock preservation for rice varieties. She claims that the foot thresher frequently invites seed contamination with other varieties and can not maintain the purity of rice varieties. She recommends the conventional use of the *nong* for important varieties, which have ritual purposes such as traditional awned sticky rice, *nep rau*, and scented rice (These landraces are often used in Swidden culture). The second disadvantage is concerned with her time management for household and field affairs. She thoughtfully says that threshing rice grains by the foot thresher is no doubt much quicker and more efficient than using the *nong*, however, the *nong* is better for a rice culture of small patches or a small amount of grain harvesting for household needs.

Conclusion

In the previous two years, we were able to analyze the four different kinds of traditional threshing methods in northeastern Vietnam; the *tung* of the Hmon people, the *loong* of the Tai people, the square *loong* of Nung people, and the *nong* of the Muong people. Three of these are related to the threshing system by virtue of a beating method employing certain tools, however, one involves a skill of trampling by man. The relationship between threshing by beating and an easy shattering habit such as is done with *Indica* rice has been frequently pointed out (Ohji, 1983; Tanaka, 1987). Tanaka (1991) summarized three types of rice-culture systems in Asia and India. According to his work, a beating practice for threshing is observed in Indian, Chinese and Malayan types of rice cultivation systems. The author's observations on the traditional devices for rice threshing generally support his macroscopic grouping of rice cultivation systems. However, the diversity of threshing devices in northern Vietnam is very high due to the country's varied ethnic diversities. In particular, the connection between

the form of threshing device as a cultural element and the life-style of different ethnic groups is very complex. It is highly suggested that the square *loong* is akin to the *dadou* by their resemblance in shape and usage. However, it is hard to position the *loong* made of wooden boards into any of the traditional threshing skill-types, because the Hani people use a canoe-threshing-device similar to this in Yunnan Province, China (Abe, 1998). Additionally, it is harder to determine whether the trampling with the *nong*, a networking of bamboo or rattan, is a particular harvesting way for Japonica, Javanica or *Indica* rice varieties including culture elements for cultivation skill.

In contrast, the introduction of the foot thresher may affect the rice culture systems in these minority groups with the introduction of new varieties of rice. Since it leads to a replacement of traditional skill and intelligence, cultural diversity may rapidly decrease. However, our observation indicates that the change is very slow in these minorities when the dwellers' life style is connected with the element of ritual and traditional culture as it is in China (Masanaga *et al.*, 1998), although the new device is much more costly for these minorities. More detailed investigations of the threshing skills of other minorities are necessary in order to determine the origin of diversity in traditional threshing devices and the changing processes of rice-cultivation systems in Vietnam.

Acknowledgment

Many thanks are given to the Tai, Nung and Muong peoples for their friendly and patient reception of our interviews. The authors also thank Dr. Le Quang Minh of Hue University of Agriculture and Forestry for his sympathetic guidance during our field surveys and the reviewers for their invaluable comments.

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(Received Dec. 17, 1998; Accepted May 14, 1999)