

# The Tibetans in the Making Barley Cultivation & Cultural Representations

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## Introduction<sup>1</sup>

he Tibet-Qinghai plateau is one of the highest environments on the planet. It comprises an area of approximately 2.5 million square kilometres with an average elevation exceeding 4000 metres above sea level (masl). The Tibetan plateau permits only a narrow range of productive activities. It is estimated that about 1% of the plateau is able to sustain farming practices.<sup>2</sup> Today, fields of barley are grown everywhere from the alpine steppes of western Tibet to the hilly grasslands and forested provinces of Amdo and Kham in the east, from the large and temperate alluvial plains of the Tibetan heartland to the terrace fields of highland Nepal. In these harsh climatic and topographical conditions, where resources are distributed asymmetrically, human adaptation was rendered possible by a skilful exploitation of pastoralism and agriculture. As a result, farmers and nomads have always constituted the backbone of Tibetan civilization.

Highland barley is a six-rowed naked (i.e., hullless) barley with a spring phenotype. It is particularly suited for harsh environments with extremely high altitudes. It is sown in the spring around the month of April. After a short period of dormancy and germination the crop is generally harvested in August-September. A six-rowed naked barley with a winter habit is also cultivated in lower regions subject to mild winter conditions. It is frost resistant and benefits from a longer period of dormancy. It is usually sown in autumn and ripens in late spring. Due to a longer season, barleys with a winter habit produce higher yields than the spring varieties. Ethnobotanical research conducted within the Tibetan communities of Yunnan in southwest China today shows that the altitude of 2800 masl generally

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<sup>1</sup> This research benefited from the generous assistance of the Tise Foundation.

<sup>2</sup> Kapstein (2006 : 3).

constitutes the limit from which winter and spring varieties are chosen.<sup>3</sup> The cultivation of barleys with a winter or spring phenotype, as I intend to discuss, had cultural implications for the Tibetans as early as the 1<sup>st</sup> millennium CE.

Barley cultivation represents over 65% of the total food production in the Tibet Autonomous Region (TAR) today.<sup>4</sup> It also constitutes the staple food crop of peoples inhabiting regions bordering the Tibetan plateau such as highland Nepal, Bhutan, and other Himalayan areas in northern India. Barley (Tib. *nas*) is essentially grown for human consumption, while the husk (Tib. *nas phub*) of threshed barley ears (Tib. *nas snye*) and fodder (Tib. *nas sog*) constitute a vital food supply for animals during the winter months. As the main staple food crop, barley grains (Tib. *nas 'bru*) are mostly roasted (Tib. *nas yos*) and processed into flour (Tib. *rtsam pa*). Alcoholic beverages are made of white barley (Tib. *nas dkar po*) or purple barley (Tib. *nas dmar po*). Raw kernels are brewed to produce barley ale (Tib. *chang*) while a slightly less alcoholic beer (Tib. *zan chang*) is made from barley flour and yeast. Tibetan cuisine often includes either roasted barley flour (i.e., *tsampa*) or barley ale (i.e., *chang*) in its preparations, if not both.

Barley also possesses a socio-cultural value that has attracted the attention of anthropologists. Barley, or any of its processed forms, is used during ceremonies and festivals and as part of worship rituals. Several forms of religious offerings involve the use of barley grains, flour, or ale. They regulate the Tibetans' daily life irrespective of their religious affiliation (i.e., Buddhist or Bön followers). *Tsampa* is burnt in portable thuribles (Tib. *spos phor*) or in larger furnaces (Tib. *bsangs bum*) as smoke offerings (Tib. *bsangs*). Barley flour is used to prepare a whole variety of offerings and ritual cakes (Tib. *gtor ma*) in order to appease spirits, accumulate merits, or remove obstacles. It is not unusual to find the floor of protector chapels (Tib. *srung ma lha khang*) carpeted with barley grains, while local deities (Tib. *yul lha*) and dharma protectors (Tib. *chos skyong*) are often propitiated with generous libations of *chang* (Tib. *gser skyems*).

Ethnobotanical fieldwork conducted in ethnic Tibetan communities has repeatedly underlined how the crop performs the function of a 'cultural keystone species'. Barley features prominently in their economy, language, beliefs, and narratives. The relation between agriculture practices, cultural identities, and ethnic boundaries is further exemplified in areas where Tibetan communities have been living in the vicinity of other ethnic groups. The case of the Shuhi, a group in the Tibeto-Burman language family officially included

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<sup>3</sup> Yali Li et al. (2010).

<sup>4</sup> Nyima Tashi et al. (2013).

among ethnic Tibetans, indicates how barley acts as a 'cultural-bearing' unit towards the definition of an ethnic identity.<sup>5</sup> The Shuhi inhabit a subtropical area of South-West Sichuan at an elevation of approximately 2000–2400 masl and rely on the cultivation of rice, barley, wheat, and corn in variable proportions. Although the name Shuhi means 'rice people', the Shuhi display cultural characteristics similar to highland Tibetans (e.g., domestic architecture, material culture, religious beliefs, etc.). They follow Tibetan Buddhism and other local ritualists who perform religious ceremonies and healing practices using effigies and ritual cakes made of barley flour, libations of barley ale, and smoke offerings. Celebrations and festivals are organised based on a seasonal cycle. The Shuhi celebrate two harvests festivals. A barley festival called 'hashing' (i.e., new crop), during which old roasted barley flour is replaced with new tampa and multiple offerings are made to the gods, takes place at the beginning of May each year. It is suggested that "For the Shuhi, the importance of rice as a main staple food and barley as both staple food and a component of daily rituals reflects their position between the two dominant ethnic groups in the region: the Naxi in the south and the Tibetans in the north".<sup>6</sup>

The dual role of barley, as a staple food crop and as a cultural-bearing unit, is also noticeable in the ethnic Tibetan communities of Shangrila, Dequin and Weixi counties in Yunnan Province. As previously observed in west Sichuan, the cultural usage of barley is widely attested during traditional ceremonies, festivals, and religious practices. An ethnobotanical survey conducted by biologists, botanists, and environmental scientists in twenty-seven villages of these areas highlights the socio-cultural value of the crop while documenting the genetic diversity of naked barleys in order to define appropriate conservation strategies.<sup>7</sup> Due to their cultural usage and symbolic value, some varieties of barley are said to be carefully conserved and pass down from one generation to the next. "In all the communities surveyed", observe the authors of this study,<sup>8</sup> "some rituals should be performed before sowing, harvesting and eating the new harvested hulless barley to celebrate their cultural links with the crops. Many Tibetans associate the practice of conserving different hulless barley landraces as respect for their ancestors as these resources were preserved by their ancestors from generation to generation and thus should not be discarded. The Tibetan people of these communities

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<sup>5</sup> Weckerle et al. (2005).

<sup>6</sup> *Ibid.*

<sup>7</sup> Yali Li et al. (2010).

<sup>8</sup> *Ibid.*

believe that hullless barley was *a gift of that ancestral divinity to their ancestors*".<sup>9</sup>

Fieldwork-based researches conducted on barley cultivation, consumption, and usage in Tibetan communities today call attention to the long lasting relation between ecological opportunism, cultural choices, and ethnic boundaries. This article hence attempts to trace the origin and spread of barley onto the Tibetan-Qinghai plateau and the Himalayas. It succinctly reviews genetic evidence and archaeobotanical data with regard to early agriculturalists and barley domestication from the 4<sup>th</sup> millennium BCE to the seventh century CE. Secondly, it discusses collective representations of agricultural practices and barley cultivation in Chinese and Tibetan written sources. By moving barley beyond a descriptive and functionalist presentation, I would like to suggest that the Tibetans' staple food crop featured as a cultural marker of Tibetan ethnic identity as early as the first millennium CE.

### Origin(s) and dispersal of barley onto the Tibetan Plateau

Plant remains retrieved from archaeological excavations have contributed to enriched understanding of historical food production and agriculture. Additional cytogenetic analyses and taxonomic approaches have also allowed the identification of most wild progenitors from which these cultivated plants evolved.<sup>10</sup> Barley has been cultivated on the Tibet-Qinghai plateau and the Indo-Tibetan marches for more than 3000 years. Recent evidence suggests that Tibet was an independent centre of domestication. It shows that Tibetan wild barley was the likely progenitor of Chinese domesticated barley.

Wild barley (*Hordeum vulgare* ssp. *spontaneum*) is the ancestor of cultivated barley (*Hordeum vulgare* ssp. *vulgare*), a grass grown for its grains on a yearly basis. Barley, together with wheat (*Triticum*), was one of the founder crops of many civilizations.<sup>11</sup> It is generally ac-

<sup>9</sup> Emphasis mine ; see below *Seeds of civilization: the bodhisattva farmer*.

<sup>10</sup> Zohary & Hopf (1993 : chap.1).

<sup>11</sup> Pliny offers a compelling account of barley cultivation, consumption, and usage in lands as far apart as India, Egypt, Greece and Spain already in the first century CE. Much to the surprise of modern Tibetans, perhaps, the Roman naturalist shows how the Greeks prepared a roasted barley flour quite similar to the Tibetan *tsampa*.

XIII. The one sown first of all cereals is barley. After explaining the nature of each variety we will also give the date for sowing. India has both cultivated and wild barley, and from it the natives make their best bread

cepted that barley was first domesticated in the Near East, in the Fertile Crescent, circa 8500 BCE. As most self-pollinated cereal crops, barley experienced a rapid success in domestication and contributed to the spread of the Neolithic agriculture to Europe, Africa, and Asia.<sup>12</sup> Barley was cultivated in Greece circa 7000 years BCE. The crop appeared in Central Asia by 6000 BCE.<sup>13</sup> It is reported in the Indian subcontinent in the third millennium BCE,<sup>14</sup> and reached China between 2600 and 2300 BCE.<sup>15</sup> On the Tibetan plateau, the earliest evidence of cultivated barley was retrieved from an archaeological site located in central Tibet and dated to approximately 1500 BCE.<sup>16</sup>

During the past decade, however, genetic research has put forward the hypothesis of the existence of at least two additional and

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and also porridge. Their favourite grain is however rice, of which they make a drink like the barley-water made by the rest of mankind. [...] XIV. Barley is the oldest among human foods, as is proved by the Athenian ceremony recorded by Menander, and by the name given to gladiators who used to be called 'barley-men'. Also the Greeks prefer it to any other grain for porridge. There are several ways of making barley porridge: the Greeks soak some barley in water and then leave it for a night to dry, and next day dry it by the fire and then grind it in a mill. Some after roasting it more thoroughly sprinkle it again with a small amount of water and dry it before milling; others however shake the young barley out of the ears while green, clean it and while it is wet pound it in a mortar, and wash it of husk in baskets and then dry it in the sun and again pound it, clean it and grind it. [...] XV. Barley bread was much used in earlier days, but has been condemned by experience, and barley is now mostly fed to animals, although the consumption of barley-water is proved so conclusively to be very conducive to strength and health: Hippocrates, one of the most famous authorities on medical science, has devoted one whole book to its praise. [...] There is a kind in Egypt made of the double-pointed grain. [...] XVIII. Barley meal is used as a medicine, and is remarkable how in treating cattle pills made of it after it has been hardened by roasting at the fire and afterwards ground, sent down into the animal's stomach by the human hand, serve to increase the strength and enlarge the muscles of the body. Some ears of barley have two rows of grain and some more, up to as many as six. In the grain itself, there are some varieties: it is longer and smoother or shorter and rounder, lighter or darker in colour, the kind with purple shade being of a rich consistency for porridge [...] the most prolific kind is the barley harvested at Carthage in Spain in the month of April. In Celtiberia this barley is sown in the same month, and there are two crops in the same year. All barley is cut sooner than any other grain, as soon as it first ripens, because the grain is carried on a brittle straw and contained in a very thin chaff. Moreover we are told that it makes better pearl-barley if it is lifted before its ripening has been completed. (Pliny, *Natural History*, Volume V, Book XVIII.XIII-XV.)

<sup>12</sup> Zohary & Hopf (1993 : 62-63).

<sup>13</sup> Charles & Boggard (2010).

<sup>14</sup> Fuller (2006).

<sup>15</sup> Xinyi Liu et al. (2009).

<sup>16</sup> Fu Daxiong et al. (2000).

separate domestication events of barley.<sup>17</sup> The first event was situated in Central Asia, to the east of the Fertile Crescent,<sup>18</sup> the second in Tibet.<sup>19</sup> The discovery of a close and wild relative of barely on the Tibet-Qinghai plateau has challenged the monophyletic origin of barley domestication. Phylogenetic analyses performed on wild barleys from the Near East and Tibet, and between wild and cultivated barleys from the Tibetan plateau and China, suggest a split between both progenitors around 2.75 million years ago.<sup>20</sup> Based on the analysis of two nuclear genes, the genetic data showed that Tibetan wild barley differs from wild barley from the Near East. It also indicates that Tibetan six-rowed wild barley could be the direct progenitor of both six-rowed and two-rowed domesticated barleys of China.<sup>21</sup> This close relationship between Tibetan wild barley and other cultivated forms found on the Tibetan plateau and in mainland China addresses the possibility of separate centres of domestication.<sup>22</sup> Should it be confirmed, Central Asian wild barley would be uniquely related to Southwest Asian wild barley. It would also question the assumption that the development of a spring habit was necessary to move barley to higher elevations with cooler climatic conditions.

The slow and gradual adoption of cultivation practices resulted in genetic changes under human influence. The cultivation of cereal crops follows clearly defined stages. The first stage begins with the sowing of seeds in a ploughed field. The second stage commences when the crops are ripe. The mature spikes are then reaped and the grains are threshed. Over time, through seed selection, domesticated crops became morphologically, genetically, and behaviourally different from their wild progenitors. The archaeobotanical record for the Neolithic period suggests that farming activities brought about several changes to barely due to selective harvesting. One of the most conspicuous instances of barley domestication was the selection by early agriculturalists of a phenotype with a six-rowed ear (*Hordeum hexastichum* L.) where all the spikelets bear fully fertile and bigger seeds.<sup>23</sup> Compared to the wild-type progenitor, where two lateral spikelets are reduced and sterile, the appearance of six-rowed barley would have multiplied yields by three. Yet, a domesticated two-rowed type (*Hordeum distichum* L.) with a lower protein content was also cultivated and often used for brewing.

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<sup>17</sup> Badr et al. (2000).

<sup>18</sup> Morrell & Clegg (2006).

<sup>19</sup> Fei Dai et al. (2012) and Xifeng Ren et al. (2013).

<sup>20</sup> Fei Dai et al. (2012).

<sup>21</sup> Xifeng Ren et al. (2013).

<sup>22</sup> Fei Dai et al. (2012) and Xifeng Ren et al. (2013).

<sup>23</sup> Komatsuda et al. (2006).

Barley taxonomy also differentiates two forms of cultivated barley with regard to its caryopsis. One form is a hulled barley where the grains are enclosed within the surrounding chaff. It has a high yield and is generally favoured for the production of beer and animal feed and fodder. The second form is a naked or hulless barley that possesses a greater environmental tolerance, a lower loss of grain, and easier post-harvest processing. This form of barley is usually preferred for food preparation. Based on archaeobotanical evidence and genetic data, the mapping of hulled and naked barley distribution in early times display an east-west trend across Eurasia.<sup>24</sup> They also indicate the progressive decline of naked barley from the Neolithic to the post-Roman period. It appears that the rise of naked wheat largely contributed to the replacement of naked barley in dietary consumption, while hulled barley was still grown mainly for animal feed and brewing. However, naked barley cultivation has remained in use in Central and Southeast Asia much longer and is still found at altitudes too high for the cultivation of rice or wheat. Today it is estimated that 95% of domesticated barley cultivated in Tibet and in the Himalayas are of the naked type;<sup>25</sup> a trend that can possibly be explained due to the difficulty in cooking hulled barley in a hypoxic environment with low solid fuel procurement.<sup>26</sup>

### Early agriculture practices on the Tibet-Qinghai plateau

Archaeological and paleoenvironmental data suggest that agricultural and pastoral activities began some 7000 years ago. Plant remains and palynological evidence retrieved from prehistoric sites found across the plateau indicate a shift in farming practices. Early agriculturists who settled on the Tibetan plateau did not rely on barley cultivation but adopted a millet-base agriculture. Around the second millennium BCE, however, the inhabitants of the plateau developed an agro-pastoral system based on western crops and mobile herding reminiscent of Central Asian economies.

It has been suggested that resource availability and adaptive strategies facilitated the progressive acclimatisation of low-elevation agriculturists to the extreme environment of the Tibet-Qinghai plateau.<sup>27</sup> A progressive sedentarization of some of these groups occurred by 5000 BCE. The excavation of permanent residences and the collection

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<sup>24</sup> Lister & Jones (2013).

<sup>25</sup> *Ibid.* Researchers from TAR report that hulled barley is not being cultivated in Tibet at the moment; see Nyima Tashi et al. (2013).

<sup>26</sup> Nyima Tashi et al. (2013).

<sup>27</sup> Aldenderfer (2006), Brantingham & Gao Xing (2006).

of ground stone tools, domesticated plants, and faunal remains are clear indicators of the so-called Neolithic package.<sup>28</sup> Chinese archaeologists, who have been excavating Neolithic sites distributed throughout Tibet since the 1970s, believed that these sites represent indigenous Tibetan cultures as they display different archaeological contents when compared to other Neolithic settlements located in neighbouring low-elevation areas.

The archaeological complex of Karo (Tib. *mKhar ro*) has been repeatedly presented as the earliest Neolithic site excavated on the Tibetan plateau.<sup>29</sup> It is located on a terrace above the Mekong River near Chamdo at an elevation of 3100 masl. Although it is currently the lowest human settlement found on the plateau, it is situated largely above the elevation of other known Chinese Neolithic sites. Three distinct phases of occupation were tentatively put forward based on ceramic typology and calibrated radiocarbon dates run on charcoal and plant remains, ranging from 3966 cal. BCE to 2196 cal. BCE.<sup>30</sup> Excavators have retrieved impressive findings that provide a better understanding of the settlers' livelihood.<sup>31</sup> Most significantly, faunal and archaeobotanical data help to clarify the subsistence strategies of this community. Animal remains comprise several domesticated and wild species such as goat, bovid, pig, red deer, antelope, woolly hare, and macaque. Finally, plant remains include foxtail millet (*Setaria italic*), broomcorn millet (*Panicum miliaceum*), chenopods, and wild fruits.<sup>32</sup>

The archaeological complex of Karo marks a milestone in the spread of agriculture onto the Tibetan plateau. The data collected suggest an economy based on the cultivation of millet, pig husbandry, and complemented by foraging activities. It is believed that foxtail millet and broomcorn millet, together with rice, served as pioneer crops in southwest China before being introduced into more challenging environments.<sup>33</sup> Other Neolithic sites found on the plateau, while exhibiting slightly different archaeological cultures, point towards similar subsistence procurement strategies. As of yet, there is no evidence of barley cultivation.

The archaeological site of Changguogou (Tib. *'Phrang sgo lung pa*) in central southern Tibet brings evidence of the introduction of new

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<sup>28</sup> Aldenderfer & Zhang Yinong (2004).

<sup>29</sup> Also known as Karou, Karuo, and Kharup; Chayet (1994 : 37-46), Aldenderfer & Zhang Yinong (2004).

<sup>30</sup> Aldenderfer & Zhang Yinong (2004).

<sup>31</sup> For a detailed list of these artefacts; see Chayet (1994 : 43-46).

<sup>32</sup> A summary table of the archaeobotanical material retrieved from Karo is given in d'Alpoim Guedes et al. (2013).

<sup>33</sup> d'Alpoim Guedes (2011).

cultivated crops onto the plateau. Located in Gongkar County (Tib. *Gong dkar rdzong*), about fifty kilometres west of Lhasa, the site of Changguogou yielded significant archaeobotanical evidence suggesting a shift in agriculture practices. In addition to foxtail millet, Chinese excavators identified naked barley, wheat (*Triticum*), rye (*Secale cereal*), common oat (*Avena sativa*), and a single pea (*Pisum sativum*). These new crops are believed to be “western domesticates”, even though the phylogenetic origin and diffusion pattern of some of these plants from southwest Asia to China is not clearly established.<sup>34</sup> Of equal interest is the presence of *Argentina anserine* (Tib. *gro ma*), a wild plant whose small bulbous roots are still well known in Tibetan cuisine today. The occupation of Changguogou ranges from circa 1400 BCE to 800 BCE. It represents the development of an agro-pastoral economy based on mixed agriculture, sheep and goat pastoralism, and the gathering of wild plants.<sup>35</sup>

Archaeobotanical evidence recovered from Upper Mustang in Nepal makes it possible to outline the spread of a barley-based agriculture in both time and space. Between 1990 and 1995, the Institute for Prehistory of the University of Cologne and the Department of Archaeology in Kathmandu excavated funerary caves of Mebrak (3500 masl) and Phudzeling (3000 masl) in the Jhong Valley.<sup>36</sup> Several hundred samples of plant remains were collected and subject to carbon dating analyses as a result of which six settlement phases were determined ranging from 1000 cal. BCE up to the present. The first two periods (1000 – 400 cal. BCE and 400 – 100 cal. BCE) attest to a mixed agriculture composed essentially of buckwheat (*Fagopyrum esculentum*) and brown, naked, and hulled barleys, complemented with broomcorn millet, wheat, and peas. In addition to cultivated plants, other macrofossils indicate the presence of gathered wild fruits such as apricots (*Prunus armeniaca*) and rose hips (*Rosa sericea*), as well as imported plants including rice, bamboo, lentil, and hemp. Archaeobotanist Karl-Heinz Knörzer remarks that the Jhong valley was likely forested prior to the first millennium BCE. It would have been partially cleared in order to make way for crops cultivation and cattle grazing.<sup>37</sup> A similar phenomenon is posited for central Tibet where early agro-pastoralists might have contributed to the making of the Tibetan landscape characterised by a forest decline and desert pastures.<sup>38</sup> Likewise, it appears that the agriculturists of the Jhong

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<sup>34</sup> d’Alpoim Guedes et al. (2013).

<sup>35</sup> *Ibid.*

<sup>36</sup> Knörzer (2000).

<sup>37</sup> *Ibid.*

<sup>38</sup> Miehe et al. (2009).

Valley practiced crop rotation alternating the cultivation of buckwheat and various kinds of barley.

Later palaeobotanical evidence from the western margins of the Tibetan plateau contributes to specifying the development of agricultural practices at the start of the Common Era and during the late imperial period. Archaeological excavations and surface surveys were carried out in 2001 and 2004 at Dindun (Tib. *rTing rhum*) and Khyunglung (Tib. *Khyung lung*) in West Tibet in collaboration between the Chinese Institute of Tibetology of the Sichuan University and the University of Arizona. The site of Dindun (4100 masl) comprises a domestic area and three cemeteries situated nearby. Plant remains, animal bones, and potsherds were consistently recovered from four excavated domestic structures with hearth and kitchen area.<sup>39</sup> Based on chronometric data, it is suggested that this pre-Buddhist site was occupied between 500-100 BCE by inhabitants whose subsistence strategies relied primarily on barley cultivation and herding of sheep, goats, and yaks.<sup>40</sup>

The site of Khyunglung in the high desert of West Tibet rounds out this series of features. Khyunglung is believed to be the historical location of the ancient capital of Zhangzhung,<sup>41</sup> a kingdom that would have ruled most of the plateau before the advent of the Tibetan empire.<sup>42</sup> In 2004, an archaeological surface survey was conducted on top of a large mesa situated at the impressive elevation of 4250 masl. The site showed remains of domestic structures and refuse pits. Grinding implements such as stone mortars, querns, and grinding stones were collected *in situ* attesting to intensive milling and farming activities. Analyses of plant material and animal remains retrieved from two different structures suggest a period of occupation ranging from cal. 220 to 880 CE. They include wood, fish, animal bones, barley, wheat, millet, buckwheat, pine nut, and herbaceous seeds. Remains of domesticated barley, which include rachises, carbonized grains and caryopses, would appear to derive from a six-rowed hulled phenotype, although a naked form cannot be excluded.<sup>43</sup> The archaeological sites documented in West Tibet bring to term this review of barley cultivation on the Tibetan plateau. They suggest a transition towards a mixed agro-pastoral economy characterised by different types of farming, herding, and fishing, with human foraging component. In this scenario, “western domesticates” (i.e., barley and wheat) and buckwheat become noticeable in the archaeobotanical

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<sup>39</sup> Aldenderfer (2007).

<sup>40</sup> Aldenderfer & Moyes (2005).

<sup>41</sup> Aldenderfer & Moyes (2005) and Huo Wei (2008).

<sup>42</sup> Bellezza (2008).

<sup>43</sup> d'Alpoim Guedes et al. (2013).

landscape suggesting a departure from the millet-based Neolithic agriculture.<sup>44</sup>

A growing body of evidence obtained from genetics and molecular biology calls into questions the monophyletic origin of *H. vulgare spontaneum*. Tibet is now considered to be a likely centre of domestication of highland barley, a six-rowed naked cultivated specimen. Likewise, archaeobotanical data has helped to specify the spread of cultivated barley onto the Tibetan plateau and the Himalayan highlands. Two factors appear to be complementary for the intensification, cultivation, and ultimate domestication of wild barley. The first factor involves the genetic adaptations of barley to high elevation, dry environment, frost, and short growing season. In this respect, barley and wheat demonstrate a higher tolerance for frost than broomcorn and foxtail millets.<sup>45</sup> The second factor suggests that cultural preferences also acted as a natural catalyst for the genetics of crops and the moving of agriculture onto the Tibetan plateau. Based on the limited archaeological sites documented in Tibet, evidence from early Neolithic settlements supports the representation of agriculturists relying on millet cultivation, pig breeding, and foraging activities; an economic system that was predominant in West China about 6000 years ago. In the second millennium BCE, barley and other starch grains make their appearance in the archaeobotanical record. These “western domesticates” are associated with more complex subsistence strategies that include cattle breeding, sheep and goats herding, farming and foraging activities. This mixed agro-pastoral economy, which likely originated in Central Asia,<sup>46</sup> might have constituted a distinct cultural package adopted by the inhabitants of the Tibetan plateau. In view of the foregoing, it is therefore suggestive that adaptation, evolution, and changes of subsistence strategies might also reflect economic relations and cultural choices.

### When the time is ripe: the Tang’s view on the Tibetans

Societies are influenced by what they cultivate and eat. Food choices are not simply determined by ecological availability but may also reflect subjective factors. Early literary sources support the view that

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<sup>44</sup> *Ibid.*

<sup>45</sup> It has been shown that the altitude of 2500 masl constitutes the limit from which two types of farming activities were practiced in the second millennium BCE. Human settlements located below this limit relied on broomcorn and foxtail millets, and barley, while sites situated above the altitude of 2500 masl displayed only remains of frost resistant barley with a spring habit; see Chen et al. (2014).

<sup>46</sup> Wagner et al. (2011).

barley consumption was culturally rooted in Tibetan society in the first millennium CE. Chinese and Tibetan written accounts suggest several instances where the highland crop contributed to delineating the contours of a society in rapid transformation.

The *Old Book of Tang* (Ch. *Jiu Tangshu*), an oft-cited Chinese work of official history written in the tenth century, provides a vivid account of the relations between China and Tibet in the seventh and eighth centuries. The author discusses the land of T'ufan (i.e., Tibet) at length with a mixture of wonder and aversion for its inhabitants who defeated the Chinese forces at the gates of Chang'an, the capital of the Tang, in 763 CE.<sup>47</sup> The author's description of agricultural practices, food preparation, and commensality comes in handy and offers some challenging insights into socio-economic dimensions of Tibetan society in historical times:<sup>48</sup>

The climate of the country is extremely cold. No ordinary rice is grown, but they [Tibetans] have black oats, red pulse, barley,<sup>49</sup> and buckwheat. Their domestic animals are mostly yak, pig, sheep, and horses. [...] There is a lot of gold, silver, copper, and tin. Some people follow their flocks to pasture, so there is no fixed place in living; nevertheless, there are some walled cities. The capital of their country is called Lha-sa, and the houses in the city are all flat-roofed and those houses that are high reach up several 10s feet. The nobles live in big felt tents called Fulu. Their living and sleeping places are filthy, and they do not comb their hair and do not wash themselves. They use two hands to receive and drink wine. And with felt (coarse fabrics) they make plates, while by nipping dough they make cups, which they fill with broth and cream together and drink from them.

Many people serve the God of the goat and ram, and believe in Shamanism. The people do not know how to discern the seasons, but reckon the barely-harvest season as the beginning of the year. [...] Bow and sword are never far from the body. The people honour the young and neglect the old.<sup>50</sup>

Overall, the depiction of the people of Tibet outlines an agro-pastoral system with a nomadic component, where farming and animal hus-

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<sup>47</sup> The *Old Book of Tang* is generally attributed Liu Xu (888 – 947) who completed the work in 945.

<sup>48</sup> Sinologist Paul Pelliot gives a slightly different translation of this passage; see Pelliot (1961 : 2-3).

<sup>49</sup> The Chinese character used for barley (Ch. *mai*) in this text can also mean wheat. Translators tend to favour the former over the latter when it comes to this passage.

<sup>50</sup> The translation is Don Y. Lee's. Chinese characters have been omitted in the quotation. A recension of the Chinese text is given in his edition; see Don Y. Lee (1981 : 4-5).

bandry remain the main livelihoods, in terms that largely match the archaeological record of the previous millennium. As for the Tibetans' eating habits and table manners, they are described in less reliable terms. The inhabitants of that marginal land use their hands for drinking alcohol, felt plates for food, and cups made of dough to drink a creamy broth that is oddly reminiscent of a mixture of tsampa and butter tea.

Reading between the lines, it appears that the ethnographic content of the *Old Book of Tang* is subordinated to the Tang's prevailing ideology. Choice of cultivated cereal crops becomes indicative of strong cultural preferences and food habits. Tibetans do not grow rice, the staple food crop of their Chinese neighbours, and thus depart from societies that favour boiling, steaming, and sticky food.<sup>51</sup> In contradiction with material evidence, the apparent lack of vessels and pottery attests to the primitive nature of these uncivilized and malodorous individuals of hirsute appearance. To the fine palates of the Tang China, which produced delicacies such as turtle flesh boiled in mutton soup with ginger, spring onion, and the bark of a lily magnolia tree,<sup>52</sup> Tibetans' dietary habits made of porridge-like dough and broth must have reeked of barbarism. Though partially subjective, this depiction of Tibetan society has the merit of underlining cultural traits that may have gone unnoticed otherwise.

According to the Tang Dynasty Chinese perspective, Tibetans were ignorant of seasonality and relied on their favourite food crop to determine the beginning of the year. The ripening of golden fields hence signalled the arrival of a new year and the barley harvest conversely fulfilled a calendrical function. A similar observation is also reported in the *Tongdian*, an encyclopaedic work on economics and political governance composed a century earlier.<sup>53</sup> In this work, the author indicates in comparable terms that "they [Tibetans] regard the time when barley ripens as the start of the year".<sup>54</sup> The repeated reference in Chinese sources to a season-based calendar year is noteworthy.

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<sup>51</sup> Fuller & Rowlands (2009).

<sup>52</sup> Benn (2002 : 128).

<sup>53</sup> The *Tongdian* was composed by Du Yu (735 – 812) who completed it in 801. His discussion on the fundamental relationship between agriculture and economics is indicative of a highly centralised state: "grain is what governs people's fate, land is what produces the grain, and people are what the ruler governs. If one has the grain, then the needs of the state are complete. If one delineates the land, then people have enough to eat. If one examines the people, then the labour service will be equitable. Understanding these ideas is called governing"; citation given in Hartman & DeBlasi (2012).

<sup>54</sup> Yamaguchi (1984).

Different calendrical systems were introduced and replaced in Tibet during the last two thousand years of its history. Tibetan historiographical sources suggest that the Tibetan year was first established based on a seasonal system before the adoption of a twelve-year cycle. It was followed by a sexagenary cycle from China,<sup>55</sup> and eventually replaced by the Buddhist Kālacakra calendar in the eleventh century.<sup>56</sup> During the imperial period the Tibetan year was divided into four seasons and three intermediate periods, to which an intercalary month (Tib. *ldab ma*) was sometime added. The Tibetan year ended in the middle spring month (Tib. *dpyid zla 'bring po*) and began anew in the last spring month (Tib. *dpyid zla mtha' chung*), a period of time which corresponds roughly to the months of March and April.<sup>57</sup> Incidentally, the Pelliot Chinois 2762 recovered from Dunhuang specifies that the first month of the Chinese calendar corresponded to the Tibetan first spring month (Tib. *dpyid zla ra ba*).<sup>58</sup>

Despite the swift condemnation in the *Old Book of Tang* of the Tibetans' inability to distinguish seasons, the Chinese testimonies have the merit of drawing attention to a seasonal and agricultural calendar year that begins in late spring when barley ripens. This observation crucially points to the fact that the type of barley upon which Tibetans elaborated their calendrical system had a winter habit. This variety of barley, as we have seen, was sown in autumn and harvested in April (i.e., the last Tibetan spring month and beginning of the year). It would benefit from a longer maturing period than the spring type and would produce higher yields. The established connection between the Tibetans' early seasonal calendar, spring harvest, and winter-type barley has consequences poles apart with regard to barley cultivation. It suggests that the development of a spring phenotype was not an absolute condition in order to move barley onto the Tibetan plateau. Yet it does not exclude the possibility that barleys with spring and winter habits were both cultivated while only the latter determined an agricultural calendar. Alternatively, it could also entail that the spring harvest-based Tibetan calendar had first been used by populations cultivating barley in low elevation areas before being adopted throughout the plateau. In this regard it is significant that the Shuhi of southwest Sichuan mentioned in the introduction still celebrate a barley festival called 'New Crop' at the beginning of the month of May.<sup>59</sup>

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<sup>55</sup> Cornu (2002 : 49-84).

<sup>56</sup> Uray (1984).

<sup>57</sup> Yamaguchi (1984).

<sup>58</sup> Pelliot (1961 : 143-44).

<sup>59</sup> Weckerle et al (2005).

Whilst it is difficult to discuss the annual events that were celebrated during the early imperial period, it is yet certain that the old Tibetan year was punctuated with religious festivals and agrarian rituals. The Tibetan words for year (Tib. *lo*), harvest (Tib. *lo tog/thog*), calendar/almanac (Tib. *lo tho*), and New Year (Tib. *lo gsar*) are all etymologically related. Like the Shuhi's Hashing festival, the Tibetan word for New Year can equally mean 'new crop' and is therefore indicative of agricultural practices and agrarian celebrations that likely survived in the Agricultural New Year (Tib. *so nam lo gsar*). Of lesser importance nowadays, this festival has persisted in regions such as Tsang (Tib. *gTsang*), Ladakh (Tib. *La dwags*),<sup>60</sup> and Bhutan (Tib. *'Brug yul*).<sup>61</sup> The reason why the Agricultural New Year is nowadays celebrated in the tenth or eleventh lunar month still remains unclear. Incidentally, the adoption of the Mongolian (Tib. *hor*) calendar in the thirteenth century was also accompanied by the introduction of a King's New Year (Tib. *rgyal po lo gsar*), which is often simply referred to as Tibetan New Year.<sup>62</sup> Some have suggested that the Mongolian lunar-based calendrical system (Tib. *hor zla*), which is still in use as the official Tibetan calendar, is yet unsuitable for timing agricultural seasonal work.<sup>63</sup> Despite the adoption of several calendrical systems over time and the possible displacement of the Agricultural New Year within the current calendar year, both Tibetan New Year festivities are still entrenched in celebrating harvest and prosperity. Among the New Year paraphernalia none are as important as *gro so phyé mar*, a wooden vessel (Tib. *'bo*) containing wheat grains (Tib. *gro*) on one side, barley flour (Tib. *phyé*) mixed with butter (Tib. *mar*) on the other, and on top of which are stuck spikes of wheat and barley (Tib. *gro nas snye ma*).<sup>64</sup>

The Tang views on their culturally differing neighbours draw attention to some fundamental characteristics of early Tibetan society in historical times. Among the various crops cultivated in Tibet, barley became sufficiently widespread and culturally relevant to determine a seasonal calendrical system based on its harvest. By fixing the beginning of the year to sometime in the months of March-April, it indicates that the qualifying phenotype was that of cultivated barley with a winter habit. Yet it does not rule out the possibility that early agriculturists may have adopted a barley-based calendrical system along with domesticates that had initially originated outside the plateau as a result of cultural exchanges and influences. It is finally sig-

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<sup>60</sup> Khoo (1997).

<sup>61</sup> Aris (1976).

<sup>62</sup> Stein (1972 : 117, 213).

<sup>63</sup> Khoo (1997).

<sup>64</sup> bsTon-pa'i sgron-me (1999 : 12-13).

nificant that concepts such as harvest, calendar, and New Year are etymologically closely related. Observing that the Tibetan words for crop (Tib. *lo*) and year (Tib. *lo*) are the same, Rolf Stein concludes that “such a concept would not have been expressed in its language by a society of nomads”,<sup>65</sup> suggesting perhaps that the agricultural component of Tibetan society predated its nomadic development.

### Seeds of civilization: the bodhisattva farmer

Ancient Tibet relied heavily on farming and the same can be said for Tang Dynasty China. Whilst environmental circumstances might have contributed to the selection of specific crops, most cultivated cereals in Tibet were equally grown in China yet did not perform the same alimentary functions nor did they occupy the same position in their respective economy. Barley and wheat became the highlanders' staple food crops whereas Tang China distinctively preferred rice and millet.<sup>66</sup> The Tang's view on the Tibetans has already shown that cultural markers of ethnic identity were based on perceptions of agricultural practices, food habits, and calendrical systems. To what extent collective representations on agriculture contributed to define Tibetan society is further exemplified in early Buddhist historiographical writings.

It would be no exaggeration to say that it took about five hundred years for Buddhism to adapt to the old and odd ways of the Tibetans and finally pervade all levels of their society.<sup>67</sup> Buddhism was little more than an elitist enterprise at the court of Srong-btsan sgam-po (r. 618 – 649) when it first reached Tibet in the seventh century CE. Whilst it was eventually established as the state religion by King Khri-srong lde-btsan (r.756–797/804) a century later, the assimilation of Buddhism continued for approximately four hundred years during which the Tibetan literati reformulated part of their history, casting an outlandish but relevant gaze on the origin of farming.

The introduction of agriculture is recorded in several literary works that all present the same mythological narrative with some variations. The simplest version is found in the *Mañi bka' 'bum*, a treasure text (Tib. *gter ma*) ascribed to the King Srong-btsan sgam-po himself, which was later revealed in the twelfth or thirteenth century.<sup>68</sup> As a heterogeneous collection of Buddhist teachings, mythologi-

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<sup>65</sup> Stein (1972 : 117).

<sup>66</sup> Benn (2002 : 32, 120-21).

<sup>67</sup> On the various aspects related to the assimilation and propagation of Buddhism in Tibet; e.g., Kapstein (2000).

<sup>68</sup> Kapstein (1992).

cal narratives, and rituals, the *Maṇi bka' 'bum* was instrumental in engineering a unifying representation of Tibet under the influence of Buddhism. In this process, the pacification and conversion of the Land of Snows is realised through the agency of bodhisattva Avalokiteśvara (Tib. *sPyan ras gzigs dbang phyug*) as part of a kingly cosmogony.<sup>69</sup>

The relevant passage recalls how Buddha Amitābha appoints Avalokiteśvara as the tutelary deity of Tibet and instructs him to father the first Tibetans. The bodhisattva Avalokiteśvara kindly complies and produces an emanation of a bodhisattva-ape (Tib. *spre'u byang chub sems dpa'*). The latter settles in the forest of Tibet where he engages in deep meditation. He is soon met by a lascivious rock demoness (Tib. *ma brag srin mo*), who is also the Buddhist goddess Tārā in other versions of the same story. The bodhisattva-ape attempts to resist her repeated calls for intimacy but eventually succumbs, we are told, out of compassion for the ogress. Together they spawn six monkey-like children who would become the chiefs of the first six tribes of Tibet (Tib. *bod mi'u gdung drug*).

In the following episode, the bodhisattva-ape takes his progenies to a fertile valley in central Tibet and unites them through the gift of material goods (Tib. *zang zing*) and religion (Tib. *chos*):<sup>70</sup>

The father ape escorted the children to a forest in the south called the Assembly of Peacocks where there were monkeys. After a long time he returned to take a look [at them], he noticed that there were many more, neither monkeys nor humans. Some of them had turned into their father's kind: very honest, assiduous, intelligent and compassionate and so on; never contented with small roots of virtue. [They] had become of the bodhisattva's line. Some had turned into their mother's kind: murderous, blood thirsty, very strong and brave. [They] had become of the restless Piśāca [and] Yakṣa's line. Thereupon the Noble Avalokiteśvara gave the ape precious stones and five kinds of grain. "Make this the portion of food for your offspring!", he commanded, "When your progenies have reached manhood, they will eventually also live off gems, gold, silver and so forth. and from time to time this source of precious substances will even open up". [He then] blessed the earth as a source of the precious stones. Thereafter, the bodhisattva-ape sowed the grains in the region of central Tibet in the Land of Snows. [When] they were ripe, he summoned the monkey-children and said, "Feed!", whence that region came to be known as the Feeding Plain. These are the earthly goods by which he brought them together.

<sup>69</sup> Davidson (2003).

<sup>70</sup> The translation is mine. For the Tibetan see Appendix A.

As the tutelary deity of Tibet, it was Avalokiteśvara's responsibility to establish the means of livelihood of the first Tibetans. This happened in central Tibet (Tib. *Bod kha ba can gyi yul dbus*) where the monkey-children were reared by the bodhisattva-ape. As instructed by Avalokiteśvara, the father brought them five kinds of grain (Tib. *'bru sna lnga*) that will ensure food supply for many generations to come. As a result, the place of their upbringing was called the Feeding Plain (Tib. *Zo thang*). As a toponymic designation and a literary pun, it recalls that the plain was the place where they had been directed to eat (Tib. *zo dang*).<sup>71</sup> In this first version, the fertile valleys of central Tibet, where Tibetan history reportedly originated, are intentionally portrayed as the country's breadbasket and a source of wealth that never gets dry.

A second version of this mythological narrative is found in another treasure-text. The *bKa' chems ka khol ma*, which is said to have been retrieved this time by Atiśa (982 – 1054) in the eleventh century, is putatively King Srong-btsan sgam-po's hidden testament. The same passage reads:<sup>72</sup>

The hermit bodhisattva-ape said, "O Mahākāruṇika Avalokiteśvara, as I [am unable to] nourish [and] nurse them, I suffer great distress." Mahākāruṇika Avalokiteśvara responded, "Hermit ape, this is the portion of food for your children, grandchildren, and great grandchildren. Make use of it!". The five kinds of grain bequeathed were barley, wheat, hulled barley, peas, and pulses. Having taken the five kinds of grain, and as he was ready to set off for Tibet, the Land of Snows, the Lord put two handfuls of gold dust in his hands [...]. Thereafter the hermit bodhisattva-ape took the five kinds of grain. [As] the earth of central [Tibet], the Land of Snows, is firm, pleasant, propitious, imbued with all natural qualities, various grains grow, [the climate] is temperate, and it possesses the nine aspects of desirable things. Because of the similarities with the region of Magadha in the Land of India, he went to the heart of the Land of Snows, planted the five kinds of grains, and left [them] there. Then, [in] the third summer month, he nourished and nurtured [his] children and grandchildren in the forest teeming with birds.<sup>73</sup> Leading [his] children and grandchildren, he went to the place where he had sown the five kinds of grain on top of gold. There were the five kinds of grain with heavy ripening ears.<sup>74</sup> Then he told [his] brood, "This is the portion of food bestowed by the Āryapāla, Lord Mahākāruṇika, to you [my] children.

<sup>71</sup> The first farming plains of Tibet are all located in today's rTse thang side valley in Yarlung.

<sup>72</sup> The translation is mine. For the Tibetan see Appendix B.

<sup>73</sup> Alternatively *nags rma bya tshogs can*; see Sørensen (1994 : 130, n.342).

<sup>74</sup> I am grateful to Dr Sha-bo mkha'-byams for explaining the phrase *kham shar re smin* as "bent over ripening ears"; personal communication 14<sup>th</sup> May 2014.

Feed [upon it]!". Thus, the hermit ape's four hundred offspring were very pleased. This primeval land [where they settled] is the Feeding Plain [of] Yarlung. Then, as they ate [those grains], [they] turned out to be as delicious as the untilled harvested crops. They reckoned the number of spikes [and found out that] there were hundred millions of grains whence it should also be known as the Ten Million Plain of Yarlung. Furthermore, as [the grains] were supremely delectable, [they] ate [them] and became satiated. As [he told them], "Go frolic!" [they] had fun whence the name the Amusement Plain of Yarlung originated. Again [they] ate the yields and became satiated. [The hermit ape] told [them], "Run!" and thus the name Running Plain of Yarlung 'Ol kha occurred.

As the narrative unfolds from one version to the next, the details of the story take shape albeit allegorically. Avalokiteśvara's civilizing mission now draws increasing attention to place names where the gift of agriculture was bequeathed. The rich and fertile plains of the myth are to be found in the valley of Yarlung in central Tibet. This, of course, is hardly surprising considering the literary commitment of these narratives to the glorification of the imperial period. From the Buddhist historiographical viewpoint, Yarlung was not only the seat of the sPu rgyal dynasty but also the centre from which Buddhism was propagated under the aegis of Srong-btsan sgam-po, to whom the authorship of these texts is ascribed. The symbolic value of this mythological narrative, written in the eleventh century, echoes an archaeological reality dating 1400 BCE, as the plant remains retrieved from Changguogou on the plain of Yarlung testify.

As the cradle of Tibetan civilization, the ancient valley of Yarlung is depicted as the birthplace of agriculture. The large alluvial plain and side valleys described in the narrative are naturally imbued with natural qualities (Tib. *rang bzhin gyi yon tan*). This promised land is said to share similarities with the holy land of India and is therefore suitable for the practice of agriculture. Overlooked in the *Maṇi bka' 'bum* the five kinds of grain are distinctively listed in the *bKa' chems ka khol ma*. The pentad is composed of barley (Tib. *nas*), hulled barley (Tib. *so ba*), wheat (Tib. *gro*), peas (Tib. *sran ma*), and pulses (Tib. *sran chung*). These civilizing seeds are carefully deposited in the soil and become fully-grown in the third summer month, sometime between the end of July and the beginning of August, when they are finally partaken.

A final version of the same passage is expressed in the *rGyal rabs gsal ba'i me long*, a large-scale historiographical work composed by bSod-nams rgyal-mtshan (1312 – 1375).<sup>75</sup>

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<sup>75</sup> The translation is mine. For the Tibetan see Appendix C.

The Noble [Avalokiteśvara] replied, "I shall nurture your progenies". The Noble One then rose and took barley, wheat, peas, buckwheat, and hulled barley from a crevice of Mount Sumeru, and scattered it on the ground. Thus the land became filled with untilled harvest. Thereafter, the bodhisattva-ape led the monkey-children there [to that place] and presented them with the unfarmed crops, ordering, "Feed now!" whence it is called the Feeding Assembly Hill.<sup>76</sup> Then the monkey-children ate the yields and felt satiated. [Their] hair became shorter, and so did [their] tails. [They] learned how to speak and became human.<sup>77</sup>

The unexpected evolutionary development of the Tibetans' ancestors as set forth above is not short of a scientific prowess considering that it was formulated in the fourteenth century. Perhaps more to the point is the metaphorical hominization of the first inhabitants of the Land of Snows through the gift of agriculture. Leaving their forested habitat for the cultivated plains of Tibet, the monkey-children reap the fruits of humanness. Losing their body hair and tails, they acquire language and finally become human, the most favourable state of existence from a Buddhist perspective. In this process, their paternal filiation appears to be the precondition of their humanisation. As a reminder, Avalokiteśvara's civilizing mission had been expressed in no uncertain terms in the first place:<sup>78</sup>

The truly and completely Awakened One, Amitābha, thus spoke: "The Bhagavān Śākyamuni had not set foot in the country called Snowy Tibet, the light of [his] word had not spread, and [his] mind had not blessed it. You are going to tame [them], O Bodhisattva. Thus at first you shall populate [it] with human beings. Thereafter, gather them through the gift of earthly goods and Dharma, and bring their stream of consciousness into maturity".

A comparison of these passages clearly shows the persistence of a set of five grains (Tib. *'bru sna lnga bo*). Within the two given lists barley, hulled barley, wheat, and peas constitute the core set to which buckwheat or pulses are occasionally added. All these plants are consistent with what we know of Tibetan agriculture, both past and present, and barley still occupies the position of preferred staple crop. The earliest and most complete version of this narrative is found in the *bKa' chems ka khol ma*, which is most informative insofar as the

<sup>76</sup> The word *gong po* can be rendered as "meeting/assembly" or "heap/mass". For his part, Sørensen understands the phrase *Gong po ri* as a place name; see Sørensen (1994 : 132, n.349).

<sup>77</sup> For a different translation of this passage; see Sørensen (1994 : 131-132).

<sup>78</sup> The translation is mine. For the Tibetan see Appendix D.

growing season of these plants is concerned, placing their ripening in the third summer month (i.e., barley with a spring phenotype).

In these accounts, the civilizing forces of Buddhism appear to be coupled with a tendency towards the standardisation of indigenous practices and representations. Accordingly the five grains are seen suitable for the plains of Yarlung based on an analogy with the land of India, a literary contrivance supporting the Buddhist dissemination logic rather than ecological considerations. Furthermore, a striking feature of Avalokiteśvara's commitment to the introduction of agriculture is his gift of unsown and uncultivated crops (Tib. *ma rmos pa'i lo thog/tog*). It seems reasonable to argue that the gift of agriculture bequeathed by the Tibetans' *pater genitor* could have generated a certain discomfort, or cultural unease, among ecclesiastical circles as it would constitute a breach of monastic code to till the earth (Tib. *sa rko ba'i ltung byed*) and harvest the crops (Tib. *skye ba gcod pa'i ltung byed*).<sup>79</sup> The normative use of Vinaya literature (Tib. *'dul ba*) consequently superseded the civilizing logic of these narratives,<sup>80</sup> and the Buddhist authors eventually resolved the issue by placing considerable emphasis on the fact that the primeval harvest was composed of unsown or uncultivated crops.

Even more challenging is the similar presence of a set of five grains in traditional Chinese culture. The introduction of agriculture in ancient China is equally attributed to a mythological hero and civilizing figure. This legendary ruler is known as the Devine Farmer (Ch. *Shennong*), who is said to have lived some five thousand years

<sup>79</sup> Among the ninety simple or mere downfalls (Tib. *ltung byed 'ba' zhig pa dgu bcu*), the downfall of cutting what grows is number eleven. The text specifies that the downfall of destroying a seed or a plant is established when "A gelong [bhikṣu], personally or by delegating someone, with the wish to so damage, damages a seed or a plant that has not been made suitable". The downfall of digging in the earth is numbered seventy-three in the same list. It states, "A gelong [bhikṣu], personally or by delegating someone, digs more than four finger-widths down into what is reckoned in the world as solid earth" is at fault; see Dalai Lama (2009: 32,73).

<sup>80</sup> The ambivalent relation between the Buddhist clergy and farming has been expressed in a much later work composed by the Tibetan master rDza dPal-sprul (1808 – 1887): "As for roasted barley flour (tsampa): when the fields are tilled at first, all the underground worms and the seeds are exposed on the surface of the soil. [Then] all the grains above are pushed underneath. Wherever the oxen plough, crows and small birds and so forth go after them frenziedly feeding [upon them]. Likewise, when the fields are irrigated, all the aquatic creatures run aground on dry land and all the beings living in the arid soil endure the flooding. Similarly, at the time of sowing the seeds, harvesting and threshing [the crops], countless [beings] are slaughtered. Having all these in mind, eating dry flour is nothing but eating mouthfuls of insects." The translation is mine. For the Tibetan see Appendix E. For a different translation of this passage; see Kapstein (2006 : 17-8).

ago. He is traditionally credited with the invention of hoe and plough but most noticeably for bestowing five sacred crops (Ch. *wugu*) and is therefore also known as the Emperor of the Five Grains (Ch. *Wuguxi-andi*). His deeds are reported in *materia medica* and philosophical treatises that significantly predate the Tibetan sources discussed above. For instance, the Devine farmer's agrarian society is praised in the *Huainanzi*, a work composed in the second century BCE:

Ancient people ate grasses and drank water. They gathered the fruits from trees and ate the meat of clams. They frequently suffered from disease and poisoning. Then Shen Nong taught people for the first time how to sow the five grains, to observe whether the land was dry or wet, fertile or rocky, located in the hills or lowlands.<sup>81</sup>

The complete list of the five grains bestowed by Shennong varies over time. Compiled before the third century BCE, the Confucian *Five Classics* (Ch. *Wu Jing*) traditionally list broomcorn and foxtail millets, wheat, hemp, and soybeans. Among these works, the *Zhou Li* specifies that millet is the principal crop as it was the first to be cultivated.<sup>82</sup> In a seventeenth-century work, the set of five crops is alternatively composed of sesame, legumes, wheat, and the established pair made of broomcorn and foxtail millets.<sup>83</sup> While the composition of the list is subject to variations, the occurrence of a pentad remains constant.

Conversely, some Chinese Buddhist authors did not follow this traditional classification. In early Tang Dynasty China a work composed by the Chinese Buddhist master Dao Xuan (702–760) offers further reflection on plant taxonomy. In his *Liangchu qingzhong yi*, Dao Xuan classifies all monastic properties in order to determinate their value, ownership, and utilisation.<sup>84</sup> In addition to cash contributions, donations made to monasteries occasionally include plants and animals, even though Buddhist monks do not traditionally engage in farming and breeding activities. For that matter, Dao Xuan's administration of monastic properties relies heavily on his reading of Vinya literature as an ethical guideline, while equally consulting Chinese botanical sources. His classification of plants includes five kinds of vegetables, five fruit trees, and five grains. The latter pentad is equally attested in Chinese translations of Buddhist scriptures and is composed of the house grain (Ch. *fanggu*), the loose grain (Ch. *sangu*), the horn grain (Ch. *jiaogu*), the beard grain (Ch. *manggu*), and the cart

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<sup>81</sup> Yang Shou-zhong (2008 : i-ii, n.1).

<sup>82</sup> Biot (1851 : tome 1, 349).

<sup>83</sup> Sung Ying-Hsing (1966 : 3).

<sup>84</sup> Huaiyu Chen (2009).

grain (Ch. *yugu*).<sup>85</sup> To compound matters, Dao Xuan's ritual text offers an alternative list of grains.<sup>86</sup> In all cases, the eighth century Buddhist classification of the *wugu* discussed in the *Liangchu qingzhong yi* moves away from traditional Chinese taxonomy and agricultural representations.

In the light of the above, it seems reasonable to suggest that Tibetans must have been aware of, if not influenced by, a system of classification and a mythological theme widely conspicuous in China prior to the writing of the Tibetan texts discussed. To the best of my knowledge, no similar narrative featuring a divine invention of agriculture coupled with a taxonomic pentad is found in early Indian literature that could suggest an alternative origin of cultural influence. In fact, it is surprising that historiographical works committed to promoting the spiritual legacy of the holy Buddhist land did not attempt to develop an agricultural theme in connection with the Indian Buddhist literature.<sup>87</sup> As a result, I would suggest that the idea of a specific set of grains, which constituted the foundation of Tibetan agrarian society, was already a key element of cultural identity when the authors of these texts compiled their grand narrative of Tibet.

The introduction of agriculture, as exemplified in Buddhist works composed between the eleventh and fourteenth centuries, reveals multiple cultural influences. The Avalokiteśvara's cycle worked towards a unifying and civilizing representation of Tibet which is accomplished through the glorification of a revisited past. In this endeavour, the devout King Srong-btsan sgam-po and the figure of Avalokiteśvara, who are often conflated with one another, acted as the driving forces behind the conversion of Tibet to Buddhism. The syncretic nature of the narrative suggests that Tibetan authors reformulated parts of their history and cultural milieu. In this process, indigenous elements offered the bedrock on which the demoness and the bodhisattva-ape gave rise to the myth of the first Tibetans. Farming activity presented the means to reaffirm the inalienable dimension of traditional Tibetan economy. The consumption of barley, wheat,

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<sup>85</sup> *Ibid.*

<sup>86</sup> *Ibid.*

<sup>87</sup> One may think of the *Aggaññasutta* in which the Buddha discusses the creation of the universe, the beginning of life on earth, and the metamorphosis of beings, similar to luminous gods (Pal. *abbhasara*, Tib. *'od gsal gyi lha*), into humans. This early Buddhist discourse explains that the development of sexual organs was caused by a strong desire for taste, which resulted in the consumption of fungus, creepers, and uncultivated rice. While this text does not seem to have been translated into Tibetan, similar tropes are reported in Vasubandhu's *Abhidharmakośa* (Tib. *Chos mngon pa'i mdzod*). A clear reference to these celestial beings can also be found in the *Blue Annals* (Tib. *Deb ther sngon po*). I am indebted to Prof. Ulrike Roesler for drawing my attention to these passages.

buckwheat, and peas constituted by then a well-established diet, and barley consistently appeared in both its hull (Tib. *nas so ba*) and hullless (Tib. *nas*) forms. Although pentad-based taxonomies were used elsewhere in Inner Asia,<sup>88</sup> the appearance of a set of five grains in the Tibetan narrative seems highly indicative of a cultural adaptation of the traditional Chinese view on the invention of farming. The gift of agriculture bestowed upon the Tibetans by Avalokiteśvara is strongly evocative of the ancient Chinese myth of Shennong, the Devine farmer. Finally, Avalokiteśvara's gift of five crops that do not require any kind of farming activities is suggestive of the Tibetan historiographers' tendency to suffuse their writings with Buddhist ethos and normative monastic views. It prefigures the homogenization of Tibetan society operated by Buddhism and the difficulty for scholars to trace back indigenous elements predating the first millennium in Tibetan written documents.

### Discussion

Barley is one of the founding crops of many civilizations in the Ancient World. The emergence of farming activities and crop domestication instigated fundamental changes in many early societies. As a result, economic systems, social organisations, and collective representations elaborated by agriculturists often reflect some of these changes. The Tibet-Qinghai plateau is one of the latest environments peopled by agro-pastoral groups in prehistoric times. Although barley became the staple food crop of ethnic Tibetan communities over time, pervading all aspects of their economic, social, and religious life, the crop is significantly absent from the earliest sites documented on the plateau.

In view of the current archaeological evidence it is yet possible to assess that Neolithic sites located on the plateau, whilst displaying distinct and indigenous material cultures, relied on farming practices similar to those of groups located in the river valleys and foothills of northern China and western Sichuan between the fifth and the fourth millennia BCE.<sup>89</sup> Cultivation of broomcorn and foxtail millets dominated their economies, which were often complemented with pig husbandry and foraging activities.

Evidence of barley cultivation on the Tibetan plateau exists from the second millennium BCE onwards. The grass progressively appears in the archaeobotanical record of sites located in central Tibet,

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<sup>88</sup> Huaiyu Chen (2009).

<sup>89</sup> Xinyi Liu et al. (2009).

highland Nepal, and in the western Himalayas from approximately 1400 BCE to 880 CE. While phylogenetic analyses performed on barley support the view that Tibet was a possible centre of barley domestication, the presence of other western domesticates such as wheat, buckwheat, and peas is suggestive of contacts and exchanges with the Central Asian steppe. Likewise, wheat and barley became established in South-East Asian agricultural practices by the middle of the second millennium BCE when these western crops presumably moved to China through the Hexi Corridor,<sup>90</sup> a route that had already facilitated the introduction of bronze metallurgy.<sup>91</sup>

Aside from the introduction of new crops other archaeological evidence affirms a shift in subsistence strategies and food procurement. Faunal remains comprising bones of caprids (i.e., sheep and goats) and yak are indicative of a growth of mobile herding. These observations suggest a transition to a mixed agro-pastoral system reminiscent of Central Eurasian economies. Striking similarities also include the recovery of skeletal remains of disarticulated horses at mortuary sites. Equine utilisation, which is largely prevalent in social groups composed of mobile pastoralists and warlike mounted élite, will soon become an essential characteristic of early Tibetan society. Tibetan historiographers report that the reign of a Tibetan monarch (Tib. *btsan po*) was limited to the moment his son reached maturity, when the prince was able to ride a horse.<sup>92</sup> Likewise, horse sacrifices are documented on the plateau where several dozen of horse skeletons were recovered from pits and tranches located in the vicinity of burial mounds.<sup>93</sup> The presence of horse remains in mortuary context does not only complement the representation of Tibetans' agro-pastoral economy in the first millennium BCE but is also evocative of changing belief systems and political complexity across the plateau.<sup>94</sup>

Barley remains were equally retrieved from mortuary sites. Whilst early Neolithic sites display a large number of tombs with little funerary deposit, later burial places such as cave tombs and burial mounds show a greater social and political complexity.<sup>95</sup> The presence of cultivated plant remains attests to a variation in the content of later tombs. The analysis of barley in funerary contexts pertaining to the early Tibetan period has been intentionally excluded from this research. Admittedly the study of mortuary sites and funerary practices will certainly prove to be the most valuable source of infor-

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<sup>90</sup> Flad et al. (2010).

<sup>91</sup> Xian Wan (2011).

<sup>92</sup> Richardson (1989).

<sup>93</sup> Chayet (1997) and Heller (2006).

<sup>94</sup> Aldenderfer (2013).

<sup>95</sup> *Ibid.*

mation with regard to the emergence of a Tibetan society. To date the archaeological record and the scant literary evidence available provides no solid foundation for further elaborations. Suffice to note the appearance of barley in domestic and funerary archaeological cultures that are characterised by new forms of economies and social structures. Overall, the adoption of western domesticates by the inhabitants of the Tibetan plateau must be considered in terms of ecological opportunism, economic relations, and cultural choices.<sup>96</sup>

Determining the amount of innovation, contact, and exchange to produce significant social changes within ethnic groups and generate new traits of cultural identity was the underlying question of this work on barley cultivation and collective representations. One can safely speculate that the period ranging from 1500 BCE to circa 500 CE was instrumental in engineering dominant traits of Tibetan cultural identity. The emergence of a late Tibetan script in the seventh century and the paucity of written documents pertaining to the first half of the first millennium CE is a major obstacle to the understanding of this formative period. As a result, we are left with protohistoric archaeological evidence on the one hand and sources written after the tenth century on the other to infer cultural markers of ethnic identity and collective representations prior to the advent of Buddhism.

It is yet clear that the expanding Tibetan empire relied heavily on its agrarian society between the seventh and ninth century CE. The *Old Tibetan Annals* and other written documents discovered in Dunhuang provide first-hand information with regards to territorial demarcation, land taxation, and barley cultivation. Several entries detail how officials kept register of agricultural fields (Tib. *phying rild*) and register of fodder fields (Tib. *sog ril*) on behalf of the emperor who was the nominal owner of all cultivated lands of Tibet.<sup>97</sup> Taxes of grain were levied from various economic units (e.g., estates and households) by governors in charge of water (Tib. *chu mngan*) and crops (Tib. *stsang mngan*).<sup>98</sup> Contracts for the borrowing of grains (Tib. *stsang*) or seeds (Tib. *sa bon*) – principally barley, wheat, and millet – constitute the bulk of loan contracts (Tib. *chags rgya*) regulating the agro-economic life of Dunhuang under Tibetan imperial jurisprudence.<sup>99</sup> These documents, which are concerned with borrowers and creditors from various ethnic groups (e.g., Chinese, Khotanese, Sogdians, Uighurs, Sumpa), involve loans of grains obtained from personal properties, monastic storehouse, and government granaries. Barley grains were usually borrowed in the spring and the

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<sup>96</sup> Jones et al. (2014).

<sup>97</sup> Dotson (2010 : 33, 36).

<sup>98</sup> Dotson (2010 : 41).

<sup>99</sup> Takeuchi (1993).

repayment was due after the harvest time in the middle autumn month (i.e., September).

Grain economy was undoubtedly at the centre of the Tibetan empire preoccupation and so was its territorial expansion. In addition to the levying of grain taxes, each district of Tibet – if not household – might have been responsible for supplying soldiers to the Tibetan army.<sup>100</sup> A mutilated passage on the south side of the Zhol Pillar erected circa 764 recalls how following the sack of Chinese dByar mo thang, the mighty Tibetan troops led by general Klu-khong possibly seized “granaries, barley and so forth in the direction of Tsong ka”.<sup>101</sup> Food resources, animal feed and fodder were needed to ensure the expansion of the Tibetan empire and barley cultivation in a sense supported the war effort.

It is easy to see why Chinese historians of the Tang Dynasty readily associated the Tibetans with their Spartan lifestyle and barley-based diet. The descriptions of the Tibetans depicted in the *Old Book of Tang* and other Chinese sources are essential to approach the cultural identity of these two powerful neighbours in the first millennium CE. The ancient Chinese perspective on Tibetan agriculture and seasonality offered the means to re-evaluate the harvest-based calendrical system in use on the plateau. The Tibetan calendar year hence started in late spring when barley fields were reaped as a result of which it was possible to assert the development of a calendrical system based on the cultivation of barley with a winter habit. A first harvest around the months of March-April likely contributed to the elaboration of agrarian festivals as reflected in today’s Tibetan New Year. There is yet evidence for the agricultural practice of alternating crops as early as the first millennium BCE.<sup>102</sup> In addition, Tibetans were able to produce two crops a year, with a second yield in August-September, with the direct effect of creating enough food surplus and fodder to sustain their expansionist views and military campaigns.

Combing through written documents about Tibetans, agriculture and barley, it was eventually possible to formulate preliminary observations on indigenous (agri-) cultural representations in mythological narratives composed after the tenth century. Buddhist literary works such as the *bKa’ chems ka khol ma* and *Maṇi bka’ ’bum* recount how a set of five grains was first brought to the Land of Snows by the bodhisattva Avalokiteśvara in the context of a civilizing undertaking. As part of a Buddhist glorification of the imperial period, the intro-

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<sup>100</sup> Dotson (2010 : 25).

<sup>101</sup> Richardson (1985 : 10-13).

<sup>102</sup> Knörzer (2000).

duction of agriculture contributed to reaffirm the role performed by the central valley of Yarlung as the radiating centre of the sPu rgyal Dynasty. It is my contention that the divine gift of agriculture bestowed by the bodhisattva farmer finds its origin in the legend of Shennong, the Emperor of the Five Grains, who introduced farming practices to ancient China. Matrimonial alliances and intensive cultural exchanges with Tang Dynasty China would certainly explain the diffusion of ideas and the borrowing of cultural elements by the Tibetans. Matthew Kapstein has drawn attention to the fact that “sons of noble families were sent to China to study the classics, and Chinese scholars were invited to Tibet to handle official correspondence with the Tang court”.<sup>103</sup> Within the highland cultivated crops, barley hence became a 'cultural keystone species' that contributed to ascertain an ethnic identity; a claim that Tang historians would not have contested. As barley cultivators – and more recently tsampa eaters (Tib. *rtsam pa za mkhan*) – the Tibetans eventually manufactured cultural representations of themselves drawn from contacts and exchanges with their neighbours. In this process, the cosmopolitan and powerful Tang China might well have acted as the basis of assertion of a distinct cultural identity while the Tibetans' agrarian society provided the means to do so.

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### Appendix

#### Tibetan text of the passages translated in the present article

A. *Mañi bka' 'bum* (2011 : 269-70)

པ་སྤྱིའུ་དེས་བྱ་རྒྱལ་སྤྱོད་ལྷོ་ལྷོ་གསལ་གྱི་ནགས་མ་བྱ་ཚོགས་ཅན་ཞེས་བྱ་བར་སྤྱིའུ་ཡོད་པའི་རྒྱལ་བསྐྱེལ་ཏེ། རིང་ཞིག་ལོན་  
ནས་བཟུང་བྱིན་ཅན། སྤྱིའུ་ཡང་མ་ཡིན། མི་ཡང་མ་ཡིན་པ་མང་དུ་འཕེལ་ནས་འདུག་གོ། དེ་རྒྱལ་སྤྱོད་ལ་ཅིག་

<sup>103</sup> Kapstein (2006 : 56).



ལ་སྐྱེས་པ། རྒྱུ་ཚུ་ཚོ་རྣམས་ལ་འཕགས་པ་ཐུགས་རྗེ་ཚེན་པོ་ལྷུ་རྩུ་པ་ལོས་གནང་བའི་ཟས་སྐྱལ་འདི་ཡིན་ནོ་ཟེ  
 དང་བྱས་པས། སྤྱི་ལོ་ལྔ་མེད་ཀྱི་ལྷ་ལྷ་བྱ་བ་ཚོ་བོ་བཞི་བརྒྱ་བོ་ལོན་ཏུ་དགའ་ལོ། ཡུལ་འཛིན་པ་ལ་སྲུ་བ་ཡར་ ལུངས་ཟོ་ཐང་  
 འདི་ཡིན་ནོ། དེ་ནས་ཁོང་རྣམས་ཚོས་ཐོས་པས་མ་རྗེས་པའི་ལོ་ཉོག་ལྟར་ཞེས་པར་གྲུར་ནས། ཁོང་རྣམས་ཀྱིས་སྤྱི་  
 མའི་གངས་བགངས་པས་འབྱུང་གི་གངས་ཁྲི་ཁྲི་འདུག་ནས་ཡར་ལུངས་ཁྲི་ཐང་ཞེས་གྲང་བུའོ། དེ་ཡང་རོ་མ་ཚོག་ཞེས་  
 པར་གྲུར་ནས་ཐོས་པས་བརྒྱགས་པར་གྲུར་ཉེ་བརྗེས་དང་བྱས་པས་རྗེད་མོ་རྗེས་པས་ཡར་ལུངས་རྗེས་ཐང་བྱ་བ་བྱུང་ལོ།  
 ཡང་འབྱུང་ལོ་ཉོག་ལ་ཐོས་ཉེ་བརྒྱགས་པར་གྲུར་ནས་རྒྱུག་དང་བྱས་པས་ཡར་ལུངས་ལོལ་ཁ་རྒྱུག་ཐང་བྱ་བ་བྱུང་ལོ།

C. *rGyal rabs gsal ba'i me long* (1981 : 53)

འཕགས་པའི་ཞལ་ནས་ཁྱོད་ཀྱི་རིགས་རྒྱུད་རྣམས་ངས་བསྐྱུང་ལོ་གསུང་ནས། འཕགས་པ་ཡར་བཞེངས་དེ། ནས། ལྷོ།  
 ལྷན་མ། ལྷ་ལོ། སོ་བ་རྣམས་རི་རབ་ཀྱི་ཁོང་སེང་ནས་གྲངས་ཉེ། ས་ལ་གཏོར་བས་ཡུལ་དེར་མ་རྗེས་པའི་ལོ་ཐོག་གིས་  
 གང་བར་གྲུར་ཉོ། །དེ་ནས་སྤྱི་ལོ་བྱུང་རྒྱུ་སེམས་དཔའ་དེས་སྤྱི་ལོ་སྤྱི་ལོ་རྣམས་དེར་ཁྲིད་དེ།མ་རྗེས་པའི་ལོ་ཐོག་ལ་གཏད་  
 ནས། དེ་ཚོ་དང་བྱས་པས། ཟོ་དང་ ལོང་པོ་རི་ཡིན་ཟེར་ལོ། དེ་ནས་སྤྱི་ལོ་སྤྱི་ལོ་རྣམས་ཀྱིས་ལོ་ཐོག་ཐོས་པས་ཚོས་པར་  
 གྲུར་ནས། སྤྱི་ཡང་ཐུང་དུ་སོང་། མཚུག་མ་ཡང་ཐུང་དུ་སོང་སྤྱི་སྤྱི་ལོས་ནས་མིར་གྲུར་ཉོ།

D. *Mañi bka' 'bum* (2011 : 267-8)

ཡང་དག་པར་རྫོགས་པའི་སངས་རྒྱས་འོད་དཔག་ཏུ་མེད་པས་བཀའ་སྤྱུལ་པ། བོད་ཁབ་ཅན་ཞེས་བྱ་བའི་རྒྱལ་ཁམས།  
 བཅོམ་ལྷན་འདས་ལྷུ་ཐུབ་པའི་སྤྱི་ལོ་ཞབས་ཀྱིས་མ་བཅགས། གསུང་གི་འོད་ཟེར་གྱིས་མ་ཁུབ། ཐུགས་ཀྱིས་བྱིན་གྱིས་  
 མ་བརྒྱབས་པ་དེ། བྱང་རྒྱུ་སེམས་དཔའ་ཁྱོད་ཀྱིས་འདུལ་བར་འགྲུར་བས། ཐོག་མར་འགྲོ་བ་མི་སྤེལ་ཉོ།  
 དེ་ནས་ཟང་ཟེང་དང་ཚོས་ཀྱི་སྤྱི་ལོ་བསྐྱེས་ལ་དེ་དག་གི་རྒྱུད་སྤྱི་ལོ་ལྷན་པར་གྱིས་ལོག

E. *sNying thig sngon 'gro'i khrid yig* (1988 : 123)

རྩམ་པ་ཡང་། དང་པོ་ཞིང་ལ་སྤོམ་བརྒྱབ་པའི་གནས་སྐབས། ས་འོག་གི་འབྲུ་འབྲུ་ཐམས་ཅད་ས་སྤྱིང་དུ་བྱུང་།  
 ས་སྤྱིང་གི་འབྲུ་ཐམས་ཅད་ས་འོག་ཏུ་མ་ཚན། རྗེས་སྐྱུང་གར་སོང་གིས་རྗེས་སུ་བྱ་རོག་དང་བྱེད་སོགས་ཁ་དལ་འོམས

མིད་པར་འབྲུ་སྐྱམ་གྱིན་འགྲོ་བ་དེ་ཡིན། དེ་བཞིན་དུ་ཞིང་ལ་རྒྱ་འདྲིན་སྐབས། རྒྱ་ལ་གནས་པའི་སློབ་ཆགས་ཐམས་ཅད་སྐྱམ་ལ་བཀམ། སྐྱམ་ལ་གནས་པའི་སློབ་ཆགས་ཐམས་ཅད་གཤེར་གྱིས་བཟད། དེ་བཞིན་དུ་ས་བོན་འདེབས་པ་འབྲིག་པ་བརྒྱུད་བ་སོགས་ཀྱི་དུས་བསད་པའང་གུངས་གྱིས་མི་ཚོད། དེ་དག་ལ་བསམ་ན་འབྲུ་སྐྱུང་ཁོན་ཕྱིས་བྱས་པ་འགས་པ་དང་འདྲ།

### References<sup>104</sup>

- Aldenderfer, M.S. (2006) "Modelling Plateaux Peoples: The Early Human Use of the World's High Plateaux", in *World Archaeology*, vol.38, no.3, pp.357-370.
- \_\_\_\_\_ (2007) "Defining Zhang zhung Ethnicity: An Archaeological Perspective from Far Western Tibet" in *Discoveries in Western Tibet and the Western Himalayas: Essays on history, Literature, Archaeology and Art*, edited by Amy Heller and Giacomella Orofino, PIATS 2003: Tibetan Studies: Proceedings of the Tenth Seminar of the International Association for Tibetan Studies in Oxford, Brill, Leiden-Boston, pp.1-21.
- \_\_\_\_\_ (2013) "Variation in mortuary practice on the early Tibetan plateau and the high Himalayas" in *Journal of the International Association for Bon Research*, vol.1, inaugural issue, pp.293-318.
- Aldenderfer, M.S. & Moyes, M. (2005) "In the Valley of the Eagle: Zhang-zhung, Kyunglung, and the Pre-Buddhist sites of far Western Tibet" in *Expedition*, vol.47, no.2, pp.28-34.
- Aldenderfer, M.S. & Zhang Yinong (2004) "The Prehistory of the Tibetan Plateau to the Seventh Century A.D.: Perspectives and Research From China and the West Since 1950" in *Journal of World Prehistory*, vol.18, no.1, pp.1-55.
- Aris, M. (1976) "The Admonition of the Thunderbolt Cannon-ball and its Place in the Bhutanese New Year Festival" in *Bulletin of the School of Oriental and African Studies, University of London*, vol.39, no.3, pp.601-635.
- Badr, A. et al. (2000) "On the Origin and Domestication History of Barley (*Hordeum vulgare*)" in *Molecular Biology Evolution*, vol.17, no.4, pp.499-510.
- Bellezza, J.V. (2008) *Zhangzhung: foundations of civilization in Tibet: a historical and ethnoarchaeological study of the monuments, rock*

<sup>104</sup> Chinese and Tibetan names are given in full for the sake of clarity.

- art, texts, and oral tradition of the ancient Tibetan upland*, Verlag der Österreichischen Akademie der Wissenschaften, Vienna.
- Benn, C. (2002) *China's Golden Age: Everyday Life in the Tang Dynasty*, Oxford University Press, Oxford.
- Biot, E. (1851) *Le Tcheou-li : ou Rites des Tcheou*, traduit et annoté par Édouard Biot (1803 – 1850), Imprimerie nationale, Paris.
- Brantingham, P.J. & Gao Xing (2006) "Peopling of the northern Tibetan Plateau" in *World Archaeology*, vol.38, no.3, pp.387-414.
- bsTon-pa'i sgron-med (1999) "Phye mar dang kha btags kyi lo rgyus mdor bsdus" in *Bod kyi dmangs srol gces btus*, «spang rgyan me tog» rtsom sgrig khang nas rtsom sgrig byas, Mi rigs dpe skrun khang.
- Charles, M. & Bogaard, A. (2010) "Charred plant macro-remains from Jeitun: implications for early cultivation and herding practices in western Central Asia" in *Origins of agriculture in western Central Asia: An environmental-archaeological study*, edited by D. R. Harris, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, pp.150-165.
- Chayet, A. (1994) *Art et archéologie du Tibet*, Picard, Paris.
- \_\_\_\_\_ (1997) "Tradition et archéologie: notes sur les sépultures tibétaines" in *PIATS*, edited by H. Krasser et al., Verlag der Österreichischen Akademie der Wissenschaften, Vienna, pp.131-139.
- Chen, F.H. et al (2014) "Agriculture facilitated permanent human occupation of the Tibetan plateau after 3600 BP" in *Sciencexpress*, published online November, 20, 2014, last accessed 23.11.2014  
<http://www.sciencemag.org/content/early/2014/11/19/science.1259172>
- Cornu, P. (2002) *Tibetan Astrology*, Shambhala, Boston.
- Dalai Lama (2009) *Direct Instructions from Shakyamuni Buddha: A Gelong's Training in Brief*, Annotated Translation by Geshe Graham Woodhouse, Institute of Buddhist Dialectics, Dharamsala.
- d'Alpoim Guedes, J. (2011) "Millets, Rice, Social Complexity, and the Spread of Agriculture to the Chengdu Plain and Southwest China" in *Rice*, vol.4, pp.104-113.
- d'Alpoim Guedes, J. et al. (2013) "Moving agriculture onto the Tibetan plateau: the archaeobotanical evidence" in *Archaeological and Anthropological Sciences*, published online July, 24, 2013, last accessed 22.05.214.  
<http://ezproxy.ouls.ox.ac.uk:2733/article/10.1007/s12520-013-0153-4>

- Davidson, R.M. (2003) "The Kingly Cosmogonic Narrative and Tibetan Histories: Indian Origins, Tibetan Space, and the *bKa' chems ka khol ma* Synthesis" in *Lungta: Cosmogony and the Origins*, edited by R. Vitali, no.16, pp.64-83.
- Done Y. Lee (1981) *The History of Early Relations between China and Tibet: From Chiu t'ang-shu, a documentary survey*, Eastern Press, Bloomington, Indiana.
- Dotson, B. (2010) *The Old Tibetan Annals: An Annotated Translation of Tibet's First History*, with an Annotated Cartographical Documentation by Guntram Hazod, Österreichische Akademie der Wissenschaften, Philosophische-Historische Klasse Denkschriften, Veröffentlichungen zur Sozialanthropologie, Österreichische Akademie der Wissenschaften, Vienna.
- Fei Dai et al. (2012) "Tibet is one of the centers of domestication of cultivated barley" in *Proceedings of the National Academy of Sciences* (PNAS), vol.109, no.42, pp.16969-16973.
- Flad, R. et al (2010) "Early wheat in China: Results from new studies at Donghuishan in the Hexi Corridor" in *The Holocene*, vol.20, no.6, pp.955-965.
- Fu Daxiong et al. (2000) "The ancient carbonized barley (*Hordeum vulgare* L. var. *nudum*) kernel discovered in the middle Yalu Tsangpo river basin in Tibet" in *Southwest China Journal of Agricultural Science*, vol.13, pp.38-41 (in Chinese).
- Fuller, D.Q. (2006) "Agricultural Origins and Frontiers in South Asia: A Working Synthesis" in *Journal of World Prehistory*, vol.20, no.1, pp.1-86.
- Fuller, D.G. & Rowlands, M. (2009) "Towards a Long-Term Macro-Geography of Cultural Substances: Food and Sacrifice Traditions in East, West and South Asia" in *Chinese Review of Anthropology*, vol.12, pp.1-37.
- Garibaldi A. & Turner N (2004) "Cultural keystone species: implications for ecological conservation and restoration" in *Ecology and Society*, vol. 9, no.3, art.1.
- Hartman, C. & DeBlasi, A. (2012) "The Growth of Historical Method in Tang China" in *The Oxford History of Historical Writing (400 – 1400)*, edited by S. Foot and C. F. Robinson, vol.2, Oxford University Press, Oxford, pp.17-36.
- Heller, A. (2006) "Archaeology of funeral rituals as revealed by Tibetan tombs of the 8<sup>th</sup> to 9<sup>th</sup> century" in *Ēran ud Aneran Studies presented to Boris Ill'ič Maršak on the Occasion of His 70th Birthday*, edited by M. Comparetti, M. Raffetta, and G. Scarica, Ca Foscarina, Venice, pp. 61-74.

- Huaiyu Chen (2009) "A Buddhist Classification of Animals and Plants in Early Tang China" in *Journal of Asian History*, edited by D. Sinor, vol.43, no.1, pp.31-51.
- Huo Wei (2008) "Archaeological Survey of the Khyung lung Site in the Glang chen gtsang po Valley in Western Tibet" in *The Cultural History of Western Tibet: Recent Research from the China Tibetology Research Center and the University of Vienna*, edited by D. Klimburg-Salter, Liang Junyan, H. Tauscher, and Zhou Yuan, China Tibetology Research Center, Arbeitskreis für Tibetische und Buddhistische Studien Universität Wien, Vienna, pp.211-229.
- Jones, M. et al (2014) "Food globalization in prehistory" in *World Archaeology*, vol.43, no.4, pp.665-675.
- Kapstein, M.T. (1992) "Remarks on the *Mañi bka' 'bum* and the Cult of Avalokiteśvara in Tibet" in *Reason and Revelation*, edited by S. Goodman and R. Davidson, Suny Press, Albany, pp.79-84.
- \_\_\_\_\_ (2000) *The Tibetan Assimilation of Buddhism. Conversion, Contestation, and Memory*, Oxford University Press, Oxford.
- \_\_\_\_\_ (2006) *The Tibetans*, Blackwell Publishing, Malden-Oxford-Victoria.
- Khoo, M. (1997) "Preliminary Remarks Concerning Solar Observation, Solar Calendars, and Festivals in Ladakh and the Western Himalaya" in *Proceedings of the 7<sup>th</sup> Colloquium of the International Association of Ladakh Studies held in Bonn / Sankt Augustin, 12-15 June 1995*, edited by T. Dodin and H. Räther, pp.235-269.
- Knörzer, K.-H. (2000) "3000 years of agriculture in a valley of the High Himalayas" in *Vegetation History and Archaeobotany*, vol.9, pp.219-222.
- Komatsuda, T. et al. (2006) "Six-rowed barley originated from a mutation in a homeodomain-leucine zipper I-class homeobox gene" in *Proceedings of the National Academy of Sciences (PNAS)*, vol.104, no.4, pp.1424-1429.
- Lister, D.L. & Jones, M.K. (2012) "Is naked barley an eastern or western crop? The combined evidence of archaeobotany and genetics" in *Vegetation History and Archaeobotany*, vol.22, no.5, pp.439-446.
- Miehe, G. et al. (2009) "How old is pastoralism in Tibet? An ecological approach to the making of a Tibetan landscape" in *Palaeogeographical, Palaeoclimatology, Palaeoecology*, no.276, pp.130-147.
- Morrel, P.L. & Clegg, M.T. (2006) "Genetic evidence for a second domestication of barley (*Hordeum vulgare*) east of the Fertile

- Crescent" in *Proceedings of the National Academy of Sciences* (PNAS), vol.104, no.9, pp.3289–3294.
- Nyima Tashi et al. (2013) "Food Preparation from Hulless Barley in Tibet" in *Advance in Barley Sciences: Proceedings of 11<sup>th</sup> International Barley Genetics Symposium*, edited by Guoping Zhang et al., Zhejiang University Press and Springer Science, pp.151-158.
- Pelliot, P. (1961) *Histoire ancienne du Tibet*, Libraire d'Amérique et d'Orient, Edition Maisonneuve, Paris (posthumous release).
- Pliny (1950) *Natural History: with an English translation in ten volumes*, vol.V, L. XVII-XIX, by H. Rackham, Harvard University Press, Cambridge (reprint 1971).
- Richardson, H.E. (1985) *A Corpus of Early Tibetan Inscriptions*, James G. Forlong Series no. XXIX, Royal Asiatic Society, Hertford, London
- \_\_\_\_\_ (1989) "The Origin of the Tibetan Kingdom" in *Bulletin of Tibetology*, ns.3, pp.5-19.
- Sørensen, P.K. (1994) *Tibetan Buddhist Historiography: The Mirror Illuminating the Royal Genealogies: An Annotated Translation of the XIV<sup>th</sup> Century Tibetan Chronicle: rGyal-rabs gsal-ba'i me-long*, Asiatische Forschungen series, band 182, Harrassowitz, Wiesbaden.
- Stein, R.A. (1972) *Tibetan Civilization*, Stanford University Press, Stanford.
- Sung Ying-Hsing (1966) *T'ien-Kung K'ai-Wu: Chinese Technology in the Seventeenth Century*, translated by E-tu Zen Sun and Shiou-Chuan Sun, The Pennsylvania State University Press, University Park and London.
- Takeuchi, T. (1993) "Old Tibetan Loan Contracts" in *Memoirs of the Research Department of the Toyo Bunko* (The Oriental Library), No.51, Tokyo Press, Tokyo, pp.25-84.
- Uray, G. (1984) "The Earliest Evidence of the Use of the Chinese Sexagenary Cycle in Tibetan" in *Tibetan and Buddhist Studies, Commemorating the 200<sup>th</sup> Anniversary of the Birth of Alexander Csoma de Körös*, edited by L. Ligeti, vol.2, Akadémiai Kiadó, Budapest, pp.341-360.
- Wagner, M. et al. (2011) "Radiocarbon-dated archaeological record of early first millennium B.C. mounted pastoralists in the Kunlun Mountains, China" in *Proceedings of the National Academy of Sciences* (PNAS), vol.108, no.38, pp.15733-15738.
- Weckerle, C.S. et al. (2005) "The Role of Barley among the Shuhi in the Tibetan Cultural Area of the Eastern Himalayas" in *Economic Botany*, vol.59, no.4, pp.386-394.

- Xian Wan (2011) "Early Development of Bronze Metallurgy in Eastern Eurasia" in *Sino-Platonic Papers*, no.213, pp.1-17.
- Xifeng Ren et al. (2013) "Tibet as a Potential Domestication Center of Cultivated Barley of China" in *Public Library of Science (PLOS ONE)*, vol.8, no.5, e62700, pp.1-7.
- Xinyi Liu et al (2009) "River valleys and foothills: changing archaeological perceptions of North China's earliest farms" in *Antiquity*, no.83, pp.82-95.
- Yali Li et al. (2010) "Indigenous knowledge and tradition conservation of hulless barley (*Hordeum vulgare*) germplasm resources in the Tibetan communities of Shangri-la, Yunnan, SW China" in *Genetic Resources and Crop Evolution*, vol.58, pp.645-655.
- Yang Shou-zhong (2008) *The Divine Farmer's Materia Medica: A Translation of the Shen Nong Ben Cao Jing by Yang Shou-zhong*, Blue Poppy Press, Boulder (reprint 1998).
- Yamaguchi, Z. (1984) "Methods of Chronological Calculation in Tibetan Historical Sources" in *Tibetan and Buddhist Studies, Commemorating the 200<sup>th</sup> Anniversary of the Birth of Alexander Csoma de Körös*, edited by L. Ligeti, vol.2, Akadémiai Kiadó, Budapest, pp.405-424.
- Zohary, D. & Hopf, M. (1993) *Domestication of plants in the Old World: the origin and spread of cultivated plants in West Asia, Europe and the Nile Valley*, Oxford University Press, Oxford (2<sup>nd</sup> edition).

### Tibetan Sources

*bKa' chems ka khol ma*

Edited by sMon-lam rgya-mtsho, Kan su'u mi rigs dpe skrun khang, Lanzhou, 1989.

*Mañi bka' 'bum*

Edited by rDo-sbis Tshe-ring rdo-rje, Bod ljongs mi dmangs dpe skrun khang, vol.1 (stod cha), Lhasa, 2011.

*rGyal rabs gsal ba'i me long* (by bSod-nams rgyal-mtshan)

Edited by rGyal-sras Ngag-dbang blo-bzang and mGon-po rgyal-mtshan, Mi rigs dpe skrun khang, Lhasa, 1981.

*sNying thig sngon 'gro'i khrid yig* (by rDza dPal-sprul Rin-po-che)

Published by Si khron mi rigs dpe skrun khang, Chengdu, 1988.

