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〔Article〕

Camel Production in Kazakhstan

Kaoru IMAMURA

Faculty of Contemporary Social Studies
Nagoya Gakuin Univeristy

Abstract

This study aims to think about the modernization impact on camel breeding culture in the Sahara Desert and Central Asia. The camel has been an important animal for the desert people to get milk, meat, wool and working power. In the Sahara Desert, the Tuareg have lived with dromedary. The use for transportation is reduced; camel are now animals for tourism. While the Bactrian camel has been kept as working animal in Kazakhstan, the camel milk has recently come to highlighted as healthy drink; milk production became more important and the number of dromedary has increased. In the socialist time of the Soviet Union, the collective farm system dominated Camel breeding. Today, the breeding form of the camel is various: big ranching system considers as enterprise, private individual pasturing, breeding in small yards, and somehow traditional way. Various kinds of effect and change to which pastoral culture has been exposed with the modernization process are analyzed.

Keywords: Kazakhstan, pastoral culture, milk production, breeding form

カザフスタンのラクダ生産

今　村　　薫

名古屋学院大学現代会社学部

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1. Introduction

Since 2006, I have been surveying the Tuaregs, nomadic people inhabiting the Sahara Desert who rely on camels as their primary means of livelihood, and have demonstrated how they have developed their stock farming technologies with respect to livestock milking over the course of a year (Imamura, 2012). Since 2011, I have simultaneously been surveying livestock conditions in Kazakhstan while comparing stock farming technologies and inhabitants' views on animals in arid areas of Africa and Eurasia. (Fig. 1)

Fig. 1 Dromedary in Mali (Sahara Dessert)

Modern nomadic stock farming culture is witnessing great change due to motorization, which has led to the diminishing value of horses and camels (previously a guiding force in the formation of civilizations in arid areas), as well as due to the privatization of land, which has created obstacles to the nomadic way of life. However, horses, cattle, and camels continue to be reared in Kazakhstan, and although they are no longer used for work and transportation, the region is prized throughout the world for rearing these three different large livestock.

Since 2011, I have had the opportunity to conduct three anthropological surveys in Kazakhstan. These surveys, which are focused upon the Kazakh people, have been conducted alongside my ongoing research into the culture and societies of the Saharan Tuaregs. While I am still at the preliminary stages of my research, I thought it a good idea to report my findings from Kazakhstan.

2. A brief summary of Kazakhstan

Kazakhstan is situated in the center of the Eurasian continent, encompassing a large area of land that extends from the Tian Shan Mountains in the east to the Caspian Sea in the west. The country borders Russia in the north; the Xinjiang Uyghur Autonomous Region of China in the east; Turkmenistan, Uzbekistan, and Kyrgyzstan in the south; while across the Caspian Sea to the west it

shares a border with the Russian Federation (the Republic of Dagestan, Republic of Kalmykia, Republic of Chechnya, and the Astrakhan Oblast) as well as the Republic of Azerbaijan and Iran. Furthermore, while it does not border the Mongolian People's Republic, the Kazakh Steppe continues onward to the northeastern Mongolian Steppe.

Kazakhstan is the ninth largest country in the world with territory spanning approximately 2,700,000 square kilometers, the majority of which is comprised of deserts and arid steppes such as the Saryesik-Atyrau and Kyzyl Kum deserts; the easterly regions are comprised of the Kazakh highlands, the central regions of the Kazakh Steppe, and the westerly regions contain the coastal lowlands of the Caspian Sea.

Kazakhstan first became an independent state on December 16, 1991 after the downfall of the Soviet Union, when it was proclaimed as the Republic of Kazakhstan. Current President Nursultan Nazarbayev first rose to power as the First Secretary of the Communist Party of the Kazakh SSR (in 1989) and continued on to become the president of the Republic of Kazakhstan, a position he has remained in until today, encompassing 21 years of presidential rule.

3. Research overview

The aim of my research is to provide a clear perspective on the interaction between humans and animals using camels as the subject of my research.

(1) Humans incorporate natural resources with domestic animals; we utilize parts of our environment such as vegetation, soil, and climate for livestock, and the resulting natural resources (i.e., "biomass") form the "input" of domestic animals. Is it possible to measure the entirety of the "output" gained from humans' use of livestock?

In conjunction with the above-described research, I would like to investigate the actual conditions of the stock-raising techniques employed by people in order to make the output more efficient.

Furthermore, what are the problems (combined with modern environmental problems and issues caused by commercialization) and limits to accessing natural resources through livestock?

(2) Fully comprehending the history and current state of active intervention by humans regarding "genetic resources"—the crossbreeding and selective breeding of animals. What is the impact of genetic intervention on the interaction between human society and camels? In addition to determining the actual state of hybridization (shape and the relationship between biological characteristics and genetics), I will clarify the resulting impact on humans (benefits) and response of camels (reaction).

(3) My interest in camels stems from two factors. First, camels are animals that maintain some degree of wildness, as they have not been completely domesticated; this is something I felt keenly when observing dromedaries in the Sahara Desert. Second, while I was observing the hybridization of

Bactrian (two-humped) camels with dromedaries in Kazakhstan, several questions arose: Why are they crossbred (why is it necessary for humans)? How is crossbreeding possible (what are the biological characteristics of camels)? Why do both varieties exist? These questions are linked to the problem of "domestication" (i.e., how animals are tamed to become used by humans).

Furthermore, if we assume that camels are representative of a part of human cultural spheres (dromedaries＝Islamic cultural sphere, Bactrian camels＝Mongolian cultural sphere), then the history of the distribution and hybridization of camels can be considered as a precise reflection of the history of human migration and cultural exchange.

4. The types and distribution of livestock

The traditional lifestyle of the Kazakh people finds its archetype in the nomadic economy and culture of the steppe, where livestock chiefly consists of sheep, camels, and horses. I conducted a broad investigation into the types and distribution of Kazakh livestock while travelling between Almaty, Taraz, Shymkent, Otrar, and Turkistan by car. I also spent several hours interviewing owners of livestock businesses and individual dairy farmers (herders) around Almaty, Shymkent, Otrar, and Turkistan about the types of livestock they owned and their rearing methods.

According to 2011 FAO statistics, the livestock reared in Kazakhstan consists of sheep (15,110,000), cattle (6,175,300), goats (2,878,100), horses (1,528,300), camels (169,600), donkeys (30,000), buffalo (10,000), and pigs (1,344,000). It should be noted that because Kazakhs are Muslims they do not consume pork; the pigs are reared principally by ethnic Russians.

The consumption of meat and milk from sheep and goats is a custom shared across Mongolia, the Arab world, and the Sahara Desert; sheep and goat meat is also consumed in Kazakhstan, where in traditional cuisine it is usually boiled. Dairy products from sheep and goats include ailan (sour yogurt made from cow and sheep milk), katyk (similar to ailan but strained), sapyrlmy sut (boiled milk), and kurt, dried cheese that is predominantly made from sheep milk.

The rearing of three types of domestic animals—cows, sheep, and camels—and the consumption of milk and meat from them is characteristic of Kazakhstan. Horsemeat sausages (kazy) are exported to Europe as high-quality goods, and in Kazakhstan horsemeat is sold in portions in butcher shops—the customer chooses their joint and then the butcher creates the horsemeat sausages accordingly. Although you can apparently eat camel meat, I did not see it at the market in Almaty or in any supermarket. However, fermented camel milk (shubat) is extremely popular and widely consumed, and horse milk is also fermented in order to make kumis. Both kumis and shubat are sold in town supermarkets in cartons or plastic containers, and are so popular that every household will always have at least one of the two in the fridge.

The general framework for the distribution of large livestock in Kazakhstan is for horses and cattle

to be reared in the southeastern highlands and central and northern grass-rich steppes, while camels are reared in the arid western regions. Furthermore, in the outskirts of cities such as Almaty (even those in the highlands), those involved in the stockbreeding industry rear large numbers of camels in combination with dairy factories. In general, the rearing and distribution of livestock is reliant on a number of factors, including environmental conditions such as the climate and vegetation as well as economic conditions such as market demand.

Furthermore, as will be discussed further in the following section, there are two species of camels: dromedaries and Bactrian camels. While the areas that these two camels were originally bred and raised in did not initially overlap, they are both now reared in Kazakhstan and are actively crossbred to create hybrid camels. Below, you will find summaries of my interviews with dairy farmers. The names of the interviewees have been partially changed.

5. Results of interview

Field survey were conducted by observations, Interviews in 2013 and 2014 in Almaty, Taraz, Shymkent, Otrar, Turkistan, and Aralisk. Some statistical data about domestic animals were collected by FAOSTAT.

The result of interviews are as follows;

A. Interviews conducted on March 13, 2013 and July 11, 2013 in Uznagak (a village located 100 km northwest from the center of Almaty)

Mr. U (aged 63), a stock farmer, was originally from Jambul (toward the south of Kazakhstan). At the time of the interviews, he was rearing 200 camels, 250 horses, and 10 cattle on 3,000 ha of land. He was also rearing 300 goats and sheep, although they were not milked and kept just for meat. Fifty camel calves had been born in the previous year, and 70 of the females were pregnant (of the 200 camels that were being reared, 50 were milked and 70 were pregnant, while the remaining 80 were either immature female camels or male camels). A camel's pregnancy lasts for 13 months, and they are able to give birth once every two years. They lactate for a year after birth, which is long in comparison to Mongolian camels, which only lactate for three months.

The animals were reared outside rather than in sheds, and he mainly utilized camel, horse, and cow milk. Kumis can only be made during six months of the year, while fermented camel milk can be made year round. Kumis also needs to be stirred to ferment, while fermented camel milk does not. Horses are milked every two hours, seven times a day, while camels are milked every three hours, five times a day. In a single day, camels produce 10–12 l of milk, horses produce 8–10 l, and cows produce 7–10 l. Kumis and fermented camel milk have both become popular only within the last 5–6 years, the consumption of them booming after fermented milk was labeled a health food.

Fig. 2 Dromedary in Kazakhstan (central) and Bacterian camel (right and back)

Fig. 3 Bactrian camel in Kazakhstan

Although 90% of the camels that Mr. U was rearing were dromedaries, there were also Bactrian camels in his flock. (Fig. 2, Fig. 3)

Up until a decade ago, Bactrian camels were the norm, but as a result of the increased demand for fermented camel milk dromedaries began to be imported from Turkmenistan due to their increased milk output; however, the milk of Bactrian camels has a higher fat content. As a result, female dromedaries have been crossed with male Bactrian camels in order to create hybrids, but these attempts remain at the experimental stage. Hybrid varieties include Narmaia types, although these hybrids can only be produced in Kazakhstan because other regions are either too cold for dromedaries, or too hot for Bactrian camels. Mr. U draws a genealogical tree of the camels and gives each of them a name.

Mr. U employs about 20 farmhands to look after and milk the livestock and make the fermented milk, as both camels and horses are milked by hand rather than machine. Mr. U has two sons: the eldest runs a Kazakh restaurant that includes kumis and fermented camel milk on its menu, while

Fig. 4 A fermented camel milk production plant

Fig. 5 A big stock farm of camel (mainly dromedaries)

the younger is involved in the wholesale of fermented camel milk and kumis to retail outlets such as supermarkets.

B. Interview conducted on March 17, 2013 in Akshi (a village located approximately 120 km northwest from the center of Almaty)

Mr. D (aged 49) manages the stock farm, which has a fermented camel milk production plant. His farmland covers 8,000 ha, dispersed across four areas, although the fermented camel milk production plant also purchases milk from 20 contracted stock farms. (Fig. 4, Fig. 5)

Mr. D has invested a considerable amount of effort into the stock farm, where he was rearing 3,000 camels; approximately 1,000 of them were milkable females, and were milked three times a day using a milking machine. In addition, 150 of these females were shed-reared, and a group of 70 females had taken one male sire. Mr. D also had 300 horses, 200 cattle, and 3,000 sheep.

Mr. D was born in Kuszgen in 1964, moved to Almaty in 1990, and set up a camel farm in 2001

with a flock of four to be used in the manufacture of fermented camel milk. He was in the midst of developing his business, which has a yearly turnover of US $3,000,000.

C. Interview conducted on July 12, 2013 in Kazachika (in the Tian Shan Mountains, approximately 30 km south of the center of Almaty)

Mr. AL (aged 52) was rearing 25 horses, 3 cows, and 10 sheep on the mountain slopes. Of his 25 horses, there were five females that he was able to milk, which he does once a day. He sells this horse milk in addition to raw cow milk at a high price in Almaty because raw milk is prized for its medicinal properties, and if he cannot sell all of the raw milk, he ferments it to make kumis. A liter of horse milk (both raw milk and kumis) will fetch anywhere from 700 tenge (1 tenge is worth approximately ¥0.65) to 1,000 tenge, while one liter of cow milk will fetch between 100–200 tenge.

Horses give birth between March and April, and can be milked for eight months beginning in May in order to make kumis. A young horse (3–4 years old) can produce 700 ml of milk at a time, and is milked 5–6 times a day. Meanwhile, a cow can produce around 6 l of milk at a time, but can only be milked twice a day. Mr. AL makes butter and yogurt (ailan) exclusively for home consumption.

Mr. AL lives a simple and frugal life, raising three children in a small home in the mountains. Water is gathered from a water pipe in a small river that flows through the mountains to his home. I was impressed by his quiet way of speaking:

"When I was young I travelled all over Kazakhstan to work. I have reared animals in other places, and have also worked in factories. However, I'm happiest here in the place where I was born. It's not too hot in the summer and even in winter it's warm—the snow doesn't pile up like in other mountain regions. The water is clear and it is the best place to raise animals."

D. Interview conducted on July 22, 2013 in Otrar (150 km northwest of Symkent) at a shubat (fermented camel milk) shop

Mr. M (aged 55) rears camels in order to make shubat, which he sells directly from his shop and as wholesale to supermarkets in the town. At the time of the interview, Mr. M had 150 camels, 138 of which he milked; all of his camels were Alowana dromedaries. His camels produce between 6–8 l of milk a day, all of which is hand-milked; although he would maybe use a milking machine if they were cows, camels are highly valued animals, and he therefore hand-milks them in order to avoid injuring them as a machine might do. In fact, a cow is worth 150,000 tenge, while a camel is worth 700,000–800,000 tenge. Although dromedary-Bactrian hybrids are advantageous because they provide both meat and milk, they are harder to control because of their aggressive natures. Mr. M was also rearing 800 sheep and goats.

Mr. M was originally from Turkistan, and worked until 1995 as an engineer at a meat processing plant in Semipalatinsk. He returned to Otrar, near his hometown, in 2003 and started up a stock farm.

Mr. M owns camels and sheep, but employs farmhands to look after their actual rearing, while he is responsible for the production, management, and sale of shubat. He has commercial networks in Astana, Akhtao, Shymkent, and Turkistan, and received commendations in 2011 for the high quality of his shubat.

Mr. M believes that Otrar and Shymkent are the areas best suited for raising camels as the soil has a moderate salt content, which allows for the growth of healthy camels. Although he previously only reared Bactrian camels, in the past decade dromedaries have become the norm. However, he says that if he were to travel 250 km north of Otrar, the climate becomes extremely cold, to the extent that only Bactrian camels can survive there.

E. Interview conducted on July 22, 2013 at the home of a stock farmer in Otrar

Mr. K (aged 70) lives with his wife, younger son, daughter-in-law, and six grandchildren. He was rearing 20 camels, 10 cows, and 10 horses, but no sheep or goats. Since camels find their own food, there is no need to look after them, but cows fall ill easily and have to be fed and treated, making their care bothersome. He uses some uncultivated land owned by the state for free.

All of his camels were dromedaries, and he makes shubat from their milk for both home consumption and to sell. He makes kumis from horse milk, and ailan (yogurt), butter, and cheese from cow milk for home consumption, as his first priority is feeding the children in his large family.

F. Interview conducted on July 23, 2013 with a camel breeder in Turkistan City

Mrs. I (aged 28) was rearing six female camels and four calves, and does not rear any other livestock. The camels are put out to pasture during the day on the outskirts of the city, but she is not responsible for them and leaves the job to a specialist herdsman; the herdsman goes from door to door each morning gathering camels, and transports approximately 70 of them to the pastureland by himself. (Fig. 6)

Fig. 6 Camels return from pasture to the village

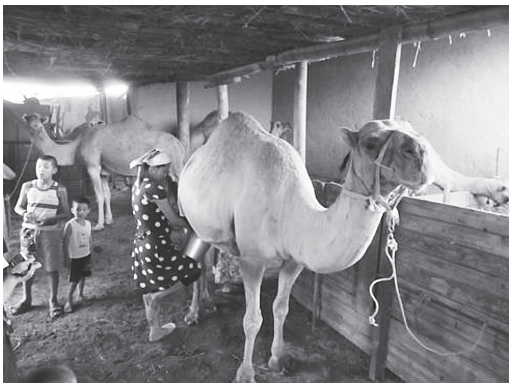

Fig. 7 A woman milking camels in the barn in the front garden

Mrs. I's daily duties go as follows: every morning at 6 a.m. she milks the camels with calves in the barn in the front garden, at 6.30 a.m. she hands the mother camels over to the herdsman, and at noon the camels return from pasture and the calves are fed, after which she milks the camels again. In the evening the calves are with their mothers. The camels without calves are not put out to graze. (Fig. 7)

I was able to observe the herdsman returning the camels to the village. The 70 camels proceed in a line as they are led to their respective owners' homes, where they halt as the herdsman waits for the owners to receive them; they seemed to be very well-disciplined and well-tamed. There are two herdsmen in the village, each of whom is responsible for approximately 70 camels entrusted to them by other villagers.

Because Mrs. I's husband works in a job unrelated to dairy farming, she and her mother-in-law are responsible for looking after the camels; it was also her mother-in-law who taught her how to rear them. All of the camels are dromedaries and are easy to look after because of their submissive natures.

From May to August (when the weather warm) the camels are milked three times a day, and from September to April (when the weather is cold) they are milked twice a day; the camels produce between 2–4 l of milk each day. The milk is turned into shubat and sold easily because shubat buyers come to the house every day. Mrs. I is also able to sell raw milk as medicine at a high price.

I travelled 900 km west through the southern regions of Kazakhstan, starting from the outskirts of Almaty, then through Taraz to Shymkent, Otrar, and Turkistan in order to observe the different distributions and methods of camel-rearing and interview dairy farmers. The towns are all situated in the far south of Kazakhstan in relatively high-altitude areas at the foot of the Tian Shan Mountains and adjoining Kyrgyz Ala-Too Mountains. To fully cover Kazakhstan, I would also need to see the central, northern, and western regions.

During my travels I could see horse, camel, cow, and sheep pastures until I reached Symkent, and as I moved northwest from there I got the impression of far fewer cows and horses and an emerging predominance of camels.

I also found the different types of stock farming very interesting, ranging from entrepreneurs rearing over a thousand camels to individual dairy farmers running family operations, or at-home dairy farmers who leave their camels in the care of a specialist herdsman. These different operations paint a picture of the current situation of stock farming in Kazakhstan; however, the current conditions of stock farming in the arid western regions where camel-breeding is the norm and a traditional nomadic form is said to be practiced to this day are still unclear.

For my future research, I plan to travel by train to the Aral Sea (1700 km away from Almaty, which takes 30 hours by an express train) and conduct anthropological surveys on camel dairy farmers willing to cooperate.

6. Discussion

6–1 Variety among the two species of camels and hybrids

There are two domestic camel species: the dromedary and the Bactrian camel. There is also a wild camel species, although it only inhabits the region spanning from the Republic of Mongolia to China. Furthermore, the distribution of the two domestic camel species differs, although they meet at the latitude corresponding to an average temperature of around 21°C. However, both species of camels have long been reared in Kazakhstan, and have been actively crossbred to produce hybrids; for example, the Bukht hybrid camel, used to transport goods, was apparently first bred on a wide scale here. (Fig. 8)

Fig. 8 A hybrid camel

6–2 Historical dynamics about the camel-breeding forms

The rearing of camels over the last hundred years in Kazakhstan has been deeply affected by the collective farming of the Soviet era, as the number of camels fell steeply from 1,200,000 in 1927 to 100,000 in the 1990s. The purpose of camel-breeding in traditional Kazakhstan was either for transport, ceremonial purposes (camel meat was used at the Nauryz Spring Festival), or having a necessary number in order to preserve one's fortune (although there is a question as to what number is considered necessary), and were thus bred in large numbers. However, the "rationalization" that coincided with the advent of the Soviet Union restricted the number of livestock an individual could raise in an effort to achieve collectivization, and is considered to have led to a severe decrease in the number of camels. Soviet policy not only had an effect on the quantity of camels, but also their purpose: in the 1980s, the government emphasized the use of camels as foodstuffs.

The number of camels in Kazakhstan continued to decline even after the county's independence in 1991, as the agriculture and stockbreeding industries continued to flounder in depression after independence, a major cause for which was the dismantling of the sovkhoz and kolkhoz farm management systems, leading to widespread disruption as farms were restructured into individual entities.

However, the decrease steadied in 1999, after which the numbers of camels started to rise again. This has been claimed to be due to the health benefits that camel milk, and in particular fermented milk (shubat), are said to provide.

Fermented camel milk is said to contain vitamin C and immunoglobulin, and is advertised as not only possessing the capacity to strengthen one's immune system against disease, but also contains anti-aging effects.

In response to the increasing prominence of camel milk, Kazakhstan has begun to turn away from Bactrian camels in favor of dromedaries.

Bactrian camels were formerly the most common camel species in Kazakhstan, and until recently constituted 80% of the total number of camels in the country (Konuspayeva and Faye, 2004). However, dromedaries have started to be imported from countries such as Turkmenistan because they produce more milk. As mentioned above, 90% of the camels reared by one stock farmer working on the outskirts of a city were dromedaries.

Currently, three types of Bactrian camels, one type of dromedary (the Alowana), and the Narmaia hybrid are bred in Kazakhstan (Konuspayeva and Faye, 2004). To what extent are these five varieties genetically dissimilar, and what differences are there in the actual quality of their milk? I have doubts as to whether the dromedaries in Central Asia are really the same species as the dromedaries bred in the Middle East and the Sahara Desert, as the dromedaries reared in Kazakhstan seem to be more similar to the Bactrian camel—a different species—in terms of hair length and build.

In the future I would like to conduct a multilateral analysis of the movements in the change of

camels in Kazakhstan from Bactrian camels to dromedaries. I would first analyze any socio-economic factors, then the techniques of stock farmers and their lifestyles. I want to fully understand the extent to which the traditional methods of the Kazakhs have been passed on and the influence of the Soviet era on current camel-rearing methods. I also want to explore the subject from a biological perspective; which is to say, I want to clarify the genetic variances between dromedaries and Bactrian camels, and the differences in their feeding habits and behavior.

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References

Imamura K. 2012 La systèm d'élevage nomade au Touaregue de Mali, Islamic Africa Studies V, pp81–88

Konuspayeva, G. and B. Faye 2004 A better knowledge of milk quality parameters: A preliminary step for improving the camel milk market opportumity in a transition economy—The case of Kazakhstan, Saving the camel and Peoples' Livelihoods, India

Faostat 2011 http://faostat.fao.org/