

**Renato Sala<sup>1</sup>, Kartaeva T.<sup>2</sup>**

<sup>1</sup>Leading Researcher. International Laboratory of Geoarcheology, Italy, e-mail: ispkz@yahoo.com

<sup>2</sup>prof. Dr. Al-Farabi Kazakh National University (KazNU). Almaty, Kazakhstan, e-mail: kartaeva07@mail.ru

**ETHNIC NAMES FOR CAMEL TYPES IN THE  
ARAL-SYRDARYA DELTA REGIONS**

This article deals with the problems which related to the traditional camel breeding of the Kazakhs. The camel breeding has a huge role in the life support of the Kazakhs. Camel is considered as wealth for the Kazakhs. The Kazakhs who have a lot of camels and horses in the herd roamed over long distances. The strength of the camel was used in the processing of land, water extraction and for carting goods. Camel`s meat and milk provide food and leather, wool and bone are widely used in everyday life. The Kazakh people highly appreciated camel and called «ұлық/ulyk» (precious), and a camel shepherd «ұлық баққан /ulyk bakkan» (tending precious). Different traditions existed among the Kazakhs, folk knowledge, beliefs which related to the camel. Kazaks considered having camels in possession as sign of prosperity. Basically, camels were property of the tribes living in the middle course of the Syrdaria river, around the Aral sea, in sandy deserts of Mangistau, Kyzylkums, Karakums and Borsyk. Camel was the best of four sacred domestic animals. Many versions of the oral folk lore preserved epithets, quips, and proverbs, concerning camels.

**Key words.** Camel, Traditional farming, pasture, belief.

Ренато Сала<sup>1</sup>, Қартаева Т.<sup>2</sup>

Георхеология Халықаралық лабораториясы. Жетекші ғылыми қызметкер, Италия, e-mail: ispkz@yahoo.com

<sup>2</sup>Әл-Фараби атындағы Қазақ ұлттық университеті профессоры, Қазақстан, Алматы, e-mail: kartaeva07@mail.ru

**Арал-Сырдария өңіріндегі түйе типтері атауларының этимологиясы**

Мақалада қазақ халқының дәстүрлі түйе шаруашылығына қатысты этнографиялық мәселелер қарастырылған. Түйе шаруашылығы қазақ халқының тіршілік қамы жүйесінде маңызды рөл атқарады. Түйе малы қазақтар арасында байлық саналған. Малы көп, әсіресе түйе мен жылқыға бай малшылар алысқа көше алды. Алысқа көшетін қазақтар түйені жүк көлігі ретінде пайдаланған. Түйенің күші жер жырту, су шығару, жүк тасу қызметтеріне пайдаланылған. Түйенің еті мен сүті азық болса, терісі, сүйегі, жүні тұрмыста кеңінен қолданылған. Қазақ халқы түйе малын қастерлеп «ұлық» деп, ал түйешіні «ұлық баққан» деп атаған. Түйеге қатысты дәстүрлер, халық білімі, наным сенімдер жүйесі қалыптасқан. Түйе малы қазақтар арасында байлық саналған. Түйені Сырдың төменгі ағысын, Арал бойын, Маңғыстау өңірін, Қызылқұм, Қарақұмды, Борсық құмдарын мекен еткен тайпалар көбірек өсірген. Түйені – төрт түліктің төресі, киелі түліктің бірі деп есептеген. Ауыз әдебиетінің көптеген үлгілерінде түйеге қатысты теңеу сөздер, даналық нақылдар, мақал-мәтелдер көптеп кездеседі.

**Түйін сөздер:** түйе, дәстүрлі шаруашылық, жайылым, наным сенім.

Ренато Сала<sup>1</sup>, Қартаева Т.<sup>2</sup>,

<sup>1</sup>Международная лаборатория Геоархеологии, ведущий научный сотрудник, Италия, e-mail: ispkz@yahoo.com

<sup>2</sup>Казахский национальный университет им. аль-Фараби, профессор,

Казахстан, г. Алматы, e-mail: kartaeva07@mail.ru

**Этимология названий типов верблюдов Арало-Сырдарьинского региона**

В данной статье рассматриваются проблемы, касающиеся традиционного верблюдоводства казахов. Верблюдоводство играет огромную роль в жизнеобеспечении казахов. Верблюд считался богатством для казахов. Казахи, имеющие большие стада верблюдов и лошадей, кочевали

на дальние расстояния. Кочующие на дальнее расстояние казахи использовали верблюда в качестве вьющего скота. Сила верблюда использовалась при обработке земли, добыче воды, на извозе товаров. Верблюжье мясо и молоко служили им пропитанием, а кожа, шерсть и кость широко использовались в быту. Казахский народ высоко ценил верблюда и называл его «ұлық» (драгоценный), а пастуха верблюда – «ұлық баққан» (пасущего драгоценного). Среди казахов бытовали разные традиции, народные знания, верования, связанные с верблюдом. Также существовали различные традиции, народные знания, убеждения, связанные с верблюдом. Казахи считали наличие верблюдов во владении как знак процветания. В основном верблюды были собственностью племен, обитающих в среднем течении реки Сырдарья, вокруг Аральского моря, в песчаных пустынях Мангистау, Кызылкум, Каракумы и Борсык. Верблюд был лучшим из четырех священных домашних животных. В устном народном творчестве сохранились эпитеты, шуточки и пословицы, касающиеся верблюдов.

**Ключевые слова:** верблюд, традиционное хозяйство, пастбище, верование.

## Introduction

During his travel to the Zhanakorgan volost in the Perovsky district of the Syrdaria region, the famous researcher Abubakir Divayev recorded some oral accounts from Abdulla Niyazov, and in 1904 published in the bulletin 'Turkestanskije Vedomosti' an article titled 'On livestock breeding' (Divayev 1904). Here he lists multiple names of camel breeds, many of which became today obsolete, and also provides interesting ethnographic information (Inter alia, Divayev says that «a Kazakh is content only when he possesses a livestock to run the steppe economy»).

The ethnographic studies of T. Kartaeva (AFM) are based on oral accounts from the same Aral and Syrdarya delta regions, and, together with the Divayev's reports, constitute the basic reference of the present article. The abundance of camel names and attributes is always witness of a well developed camel-breeding economy and, in these regions, they are counted by thousands.

The recording of names of camel types encounters some difficulties at the lexical and semantic levels: in regions differing by local dialects, different names would apply to the same object; and, even more confusing, in regions differing by climate and ecology where stockbreeding would consist of different camel types and classes, the same name could refer to different objects or to different groupings of objects.

Moreover, in order to provide a data format supporting the elaboration of strategies for genetic studies, it is mandatory to distinguish general names (par.1), names of breed types (purebreds and hybrids), and names consisting of specific attributes like appearance, strength, temperament, etc.

Concerning the etymology, the names for hybrid camels in Kazakhstan have mainly a Turkic origin and are etymologically clear, at the contrary the etymology of the names for purebreds points to Indo-

European or Proto-Turkic roots and its meaning within the present Kazakh culture is forgotten. In that way some glimpses are suggested concerning the historical niches and the geographical diffusion of camel hybridization.

Among the camel names, the ones referring to breed types are by far the most important and from their analysis emerged a main unexpected fact. The nomenclature of camel types in the Kazakh culture is mainly intended for distinguishing different steps of the crossbreeding process, and witnesses a deep knowledge of all the basic breeding procedures of double-cross, backcross and rotational cross. The camel types obtained as third generation offspring, being at the end of the reproductive chain, deserve a lesser number of classificatory names, and these are very variable within regional dialects (i.e. see the various applications of the name *kospak* in par. 3.2). The types further down in the generation series, already of poor economical value, are compacted in generic groups referred by generic attributes.

The Kazakh ethnic methods of hybridization, when compared to the ones modern breeding procedures, shows on one side the use of a wider spectrum of crossing strategies but, on the other, the output of a lesser number of types, half of which are today of low economical value.

## Camel Names: General Categories

The general names for camels are applied to the following dichotomies and to their combinations: age, male/female, one-hump/two-hump, mating/non-mating.

### Age

Camels are generally called *tuye* ('*түйе*'), which normally refers to adult camels older than 5-6 years.

Ages are distinguished for pragmatic reasons. When less than 1 year, it is called *bota* ('*бота*') plus a prefix pointing to its parental origin, for ex-

ample *ulek bota*, *nar bota*, *kospak bota* and so on. When 1-2 years old, it is called *tailak* and has its nose punched. When 2-3, is called *kunan* ('кунан') and is gradually trained to carry packs. When 3-4 is called *donen* and submitted to castration. When 4-5, it is called *besti* and, as non castrated male, starts to be fit for mating.

#### Sex

The female camel is generically called *ingen* ('инген') and, when one-humped, *mayu*; the male camel doesn't have a generic name. Sexual dimorphism is pronounced.

#### Humps

Camels, depending from the number of humps (*orkesh*) can be of 2 types: one-humped, *bir-orkesh* (*бир-өркеш*); and two-humped, *aiyr-orkesh* (*айыр-өркеш*). The most common generic name applied to one-humped camels is *nar*; and to the two-humped camels is *aiyr* when the 2 humps are well distanced, or *kospak* when they are joining at the basis. These terms are sometimes used as suffix or prefix of specific breed names (The names 'dromedary' and 'Bactrian', corresponding to the one-humped and two-humped camel, in ethnic Kazakhstan are not even used in case of purebreds.).

#### Castration and Mating

Castration (*akta*) is required for avoiding unwanted crossbreeding within the herd and for enhancing the docility of the camel.

Non-castrated males, when purebred are called *ulek* or *bura*, when hybrid are called *nar*, and their youngsters are respectively called *ulekshe*, *baurshin* and *nar bura*. Castrated males, when one-humped are called *akta ulek* ('акта үлек') and *akta nar* ('акта нар'), and when two-humped *atan* ('атан'). Castration is done at the age of four (*dopen*, 'дөнен').

Camels are sexually mature at the age of 12-18 months, but are passed to mating only later: females when 4 years old, males when 5. The mating season for all camel types lasts from January to April (*ulek* are crossbred till the 1<sup>st</sup> of May). *Ulek* are mated with 30 females, *bura* with 20.

The female, when mating and pregnant, is called *buaz* ('буаз'), when non-mating and non-pregnant *kyssyr* ('қысыр'). One-humped camels have twelve months-long gestation period, two-humped camels fourteen months.

Today in Kazakhstan are counted around 130000 camels: 110000 two-humped and 20000 one-humped. Of the total two-humped camels, 45000 are females (of which 31000 raised in purity) and 65000 are males (of which 1800 raised for mating). Almost all one-humped camels are female and raised in purity (Baimukanov et al. 2009).<sup>1</sup>

## Genetic Classification and Names of Main Camel Breeds

### Purebreds

Purebreds consist of 2 lineages (one-humped, two-humped) for which doesn't exist a general name but just the name of their female and male members:

- the purebred one-humped female is *aruana* ('аруана') or just *mayu*; and the one-humped male *isulek* ('үлек')<sup>2</sup>.

- the purebred two-humped female is *aiyr-ingen* ('айыр-инген') or *boz-ingen* ('боз-инген'); and the two-humped male is *bura* ('бұра') or *aiyr bura*<sup>3</sup>.

### Hybrids

The general names for hybrid camels exist only in the frame of their distinction between one-humped and two-humped.

The generic name of the one-humped hybrid camel is *nar* ('nar', meaning in Turkish 'pomegranate' or 'offspring', in Arabic and Persian 'stallion'); and of the two-humped is *aiyr* ('айыр', double) or *kospak* ('қоспақ', made, hybrid).

Instead, the camel names for different hybrid types are not only numerous but also well structured, reflecting the steps of the hybridization process. So, in order to understand and appreciate the pragmatic basis of such nomenclature, necessary is the elucidation of the general techniques of hybridization.

'Inbred' (or inter-se-cross) refers to the mating of similar types, where instead 'out-bred' (or crossbreeding) refers to the mating of different species or types and represents the basic technique of hybridization<sup>4</sup>. Hybridization implements the mating two different purebred lines (crossbreeding) in order to improve any biological quality of the parents in a hybrid offspring (outbreeding enhancement, hybrid vigor, heterosis). In that way, several hybrid types can be created, deserving different names.

- Single-cross hybrids. Referring to camels, hybridization starts from the crossbreeding of a one-humped and a two-humped purebreds (P1, P2), producing, by combination of sexes, 2 types of first generation hybrids (called single-cross hybrid or filial-1, and coded as F1). They are both very successful breeds, bigger than their one-humped purebred lineages, milky and fleecy half way between them, and still fertile. These F1 hybrids are then submitted to 3 kinds of crosses: double-cross, backcross, and rotational cross.

- Double-cross consists of the mating of 2 different hybrids of the same generation (F1x F1), in order to fix their qualities. In that way, out of the first two F1, are produced 2 types of second generation hybrids (F2) and, out of repetition by triple crosses,

six types of third generation (F3), after which the purebred gene is too diluted and a loss of quality starts to manifest. The attribute 'crisscrossing' applies to those cases when the sex of the parents is indifferent and interchangeable.

- Backcross (or 3-way-cross) consists in the mating of a hybrid, for example F1, with one of its original purebred parents, in order to enhance the

elite genotype. In that way is produced an offspring called F2b (F2 by backcross).

- Square backcross and Rotational backcross respectively refer to repeated backcrosses of a hybrid with the same or with different purebreds, obtain F2b<sup>2</sup> and F2b<sup>3</sup>.<sup>5</sup>

- Triple-cross consists of the mating of 2 different backcrosses.

**Table 1**

generation	parents		offspring		humps n°	cross type
	female	male	female	male		
P	b	B	b	B	1	dromedary
	a	A	a	A	2	bactrian
F1	b	A	c	C	1	hybrid F1
	a	B	c	C		
F2	c	C	d	D	1	intercross of F1
F2b	c	B	h	H	1	backcross of F1 with dromedary
	b	C	g	G		
	c	A	e	E	2	backcross of F1 with bactrian
	a	C	f	F		

Varieties of F1 and F2 camel hybrids (Tapper 1985).

Marked in gray are types exclusively found in ethnic crossbreeding

Nowadays, in the Aral and Syrdarya regions, are named 10 main types of hybrid camels that can be genetically grouped in 6 classes: *bekpatsha nar*, *kolpatsha nar* (F1 generation breeds from single-cross, F1); *zhampoz nar*, *zhonek nar* (F2 and F3 generation breeds from double-cross); *kerderi*, *kyl-*

*agai nar* (from backcross of F1-2 with one-humped purebred); *mirza kospak*: (from backcross of F1-2 with two-humped purebred); *ara kospak* and *keristi kospak* (from square-backcross and crisscross of mirza kospak); and *sokpak nar* (F4-5 generation breed from triple-cross)<sup>6</sup>

**Table 2**

female		male		offspring		cross type	
	(h)		(h)		(h)	generation	cross type
aruana	1	bura	2	1 – bekipatshanar	1	F1	single cross
aiyr ingen	2	ulek	1	2 – kolpatsha nar	1	F1	
bekpatsha nar (r)	1	kolpatsha nar (r)	1	3 – zhampoz nar	1	F2	double cross
zhampoz nar (r)	1	bekpatsha nar or kolpatsha nar (r)	1	4 – zhonek nar	1	F3	doublecross
aruana	1	bekpatsha nar	1	5 – kerderi (1-2)	1	F2b	backcross
aruana	1	kolpatsha nar	1			F2b	
aruana	1	zhonek nar	1	6 – kylagai nar	1	F4b	backcross
zhonek nar	1	ulek	1				

female		male		offspring		cross type		
	(h)		(h)		(h)	generation	cross type	
aiyr ingen	2	bekpatsha nar	1	7	mirza kospak 1	2	F2b	backcross
bekpatsha nar	1	bura	2				F2b	
aiyr ingen	2	zhampoz nar	1				F3b	
zhampoz nar	1	bura	2				F3b	
mirza kospak	2	bura	2	8 – ara kospak	2	F3b <sup>2</sup> or F4b <sup>2</sup>	backcross	
aruana	1	mirza kospak	2	9 – keristi kospak (1-2)	2	F3b <sup>2</sup> or F4b <sup>2</sup>	backcross	
mirza kospak	2	ulek	1					
kylagai nar (r)	1	keristi kospak (r)	1	10 – sokpak nar	1	F4-5	triple cross	

(h) = number of humps; (r) = reciprocal, i.e. same offspring also from inverted parents' gender.

The table evidences the genetic hierarchic order of the camel breeds.

- The purebreds are the carriers of elite genotypes.

- The one-humped hybrids are primary hybrids, consisting of: 2 types of F1 (type 1, 2), their F2 and F3 double-crosses (3-4), and the backcross of these with one-humped female purebred (5-6).

- The two-humped hybrids. The backcross of F1 or F2 with a two-humped purebred generates the two-humped mirza kospak (7), a transitional breed from which, by further backcrossing, are produced the other two types of two-humped hybrid (8, 9) constituting the much wanted majority of the herd.

The genetic classification of camel types is accompanied and coherent with two other ways of grouping them: morphological (one-humped, two-humped) and pragmatic (good camel, bad camel).

Concerning the morphological appearance of these hybrids, F1 has one elongated hump and is the largest and strongest among all camels. When F1 is

repeatedly backcrossed to Bactrian purebreds, there is at first a single hump with two raised regions, then two humps with fused bases, then two separate humps.

Also the morphological distinction between one-humped and two-humped camels is pragmatically motivated by pointing to their different functionality and use: the firsts are mainly intended for breeding; the seconds (besides their higher docility) are intended for final use as meat, milk, fleece producers and as working and riding animals.

The different weight and milk and wool yield of 8 modern breeds are listed in Table-III (reconstructed from: Baimukanov et al. 1989, Table 8.2), with the optimal performances highlighted in grey. Four modern types of them have a precise ethnic equivalent (=) and the other 4, due to different crossbreeding methods, have only approximate similarities ( $\cong$ )<sup>7</sup>. As a whole, Table-III is indicative of the changes of productivity that can be induced by different crossbreeding combinations.

Table 3

breed type				live weight kg	milk yield yearly kg	live fleece kg
modern	ethnic	humps	gener.			
dromedary	aruana	1	P	558	4000	3.1
bactrian	aiyr ingen	2	P	611	1750	6.0
iner-maya	bekpatsha	1	F1	605	3563	3.5
nar-maya	kolpatsha	1	F1	670	2955	4.9
kurt	@	1	F2	535	2544	3.2
kurt nar	@	2	F3	650	3876	5.0
kospak	@	2	F2	644	1925	5.2
kez nar	@	2	F3	640-700 (c)	4565	3.7-4.9 (c)

a – Modern kurt and ethnic kerderi-1 are both offspring of the backcross of F1 hybrids with a one-humped purebred, but they differ by being obtained out of reverse parents' sex. The offspring of its repeated backcross with bura, the kurt-nar, is not documented in the ethnic record.

b – Modern kospak and ethnic mirza-kospak-2 are both offspring of the backcross of F1 hybrids with a two-humped male purebred: of betpaksha or zhampos in the ethnic record; of kolpatsha in the modern classification. They also differ by being obtained out of reverse parents' sexes. The following generation of modern kez nar and ethnic keristi differ by being obtained out of reverse parents' sex.

c – The second cipher refers to values obtained by repeated backcross with a two-humped purebred.

The one-humped excel in milk yield, the two-humped in weight and fleece.

All working camels are castrated. The best pack and draft camels are the strongest and more docile among the one-humped or two-humped hybrids. The best riding camels are the two-humped hybrids because their body morphology, in particular aiyr ingen and ara kospak due to their well distanced humps.

As a whole, the two-humped hybrids are the most profitable.

This functional difference between one-humped and two-humped types explains the discrepancy existing between the number of named types and the number of corresponding individuals. The one-humped camels, because basic for hybridization and because the complexity of the crossbreeding techniques, deserves a more detailed nominal specification of types (7 types of one-humped against 3 of two-humped), but, in the same time, are less represented as individual heads, constituting just the 20% of the total. The two-humped, instead, by being of bigger size, stronger, milkier, woolly and docile, are the final objective of the camel diversity deserving just 3 genetic specifications but represent the 80% of the herds.

Finally, from the pragmatic point of view, camel types are distinguished in good and bad, which refers to both their value as carriers of genes as well as final producers of body materials and services. So, good camels are the purebreds, the one-humped hybrids betpaksha nar, kolpatsha nar, zhampoz nar, zhonek nar, as well as all the two-humped mirza kospak and ara-kospak; while considered bad types are kerderi, kylagai nar, and sokpak nar, because situated at the very end of the breeding chain, weaker and less productive, and often result of unplanned mating. Keristi kospak, a beautiful two-humped camel

that, by being of F4 generation, starts to weaken, is somehow transitional.

The nomenclature of camel breeds quoted above has been compared with another list of ethnic names collected in the same Syrdarya region (Imamura et al. 2016). The Imamura's article presents several lists of names mainly consisting of generic camel attributes, at the exception of Table-1 that refers to the ethnic denomination of developed breeds. Table-1 is listing the ethnic names of 21 breed without a clear distinction between names for a specific breed (10), names for generic classes of breeds (6), and names for just attributes (5). When considering the 10 names for specific breeds, a quite good correlation is found between these and the ones of the present article<sup>8</sup>.

The 6 names referring to the cross between a specific breed and generic classes (like 'all one-humped', 'all two-humped', 'all hybrid'), which is a type of crosses absent from the authors' list, are very interesting by evidencing the existence in very local dialects of an approximate classification of sets of generic breeds: *leilik*, *lekr-nar*, *kizyktas-nar*, *aiyr*.

### Description and Names of the Main Camel Breeds

The following description of the camel types is ordered by generational classes: P, F, backcrossing, square backcrossing, and F5. The ethnic names for hybrid camels, which are always meaningful and rooted in the Kazakh language, are accompanied with their meaning and occasional synonyms.

#### Description of Purebreds (P)

The 2 lineages of purebreds are kept in small number just for breeding purposes, as holders of elite genotypes. They are not even killed, and die of old age. They are so respected that eventually become personages of tales, myths, petroglyphs and rituals, acquiring an archetypical status.

P1 – *Aruana* and *Ulek* are female and male one-humped camels of tall dimension, with long legs, a short fur, but wavy long hairs at the neck and throat [called *kalkan* ('қалқан'), meaning 'shield'] and in the back and tail [called *shal kuiryk* ('шал құйрық'), meaning 'oldie-like tail']. They are not tolerant to cold but very resistant to desert hot climate and to insects. The female aruana is always white, has long udders giving plenty of milk, and is very calm. She is an experienced leader of a string of camels and can remember even very difficult roads for several years: every 6 km it stops and urinates to mark the spot for following camels.

The one-humped descendant born from aruana and ulek, in order to underline its noble origin, de-

serves a special ancient name of unknown meaning, *kurt nar* (see footnote 18); and, if it is a female of less than 1 year, is called *aruana bota* (*аруана бота*).

The body-cloth put as pack saddle on the camel's back is also called aruana.

P2 – *Aiyr ingen* and *Bura* are the female and male two-humped purebreds. They are bigger in size, less milky and fleecier than the one-humped purebreds.

Concerning names, purebreds' names are quite similar on very large territories and carry unknown etymological meaning, at the contrary of the hybrids' names that are local and meaningful in Kazakh language.

The purebred names used in the Aral and Syrdarya regions share similarities with the ones used in the rest of W-Central Asia and, more significant, even beyond its southern borders, in Anatolia, Azerbaijan, Turkmenia and Afghanistan. These southern regions represent the merging area of the respective habitats of the dromedary and the Bactrian, where hybridization would happen naturally, and are suspected as the original niche of their artificial crossbreeding (I millennium BC) (Potts 2004).

In Azerbaijan, during the XVII AD, aruana was called '*maya*', ulek was '*lok*', bura was '*bugur*', and bekpatscha-nar was '*nar*' (Olearius 1669). Today, among Anatolian nomads, ulek is '*lok*' and bura is '*bohur*'. In W-Iran, aruana is '*hasa-maya*', ulek is '*lok*', ingen is '*hasa dava*' bura is '*bugur*'; and their hybrids, called '*nar*', are the best pack camels. Among the Turkmen of Khorasan, hybrids are called '*nar*' or '*iner*' if male, and '*maya*' if female. Among the Afghan Pashtun, camel names are similar, borrowed from Persian or Turkic. In W-Iran, Khorasan and Turkmenistan, F1 hybrids are directly used and prevented from mating together. (Tapper 1985)

Concerning the etymological meanings of purebred names, these are unknown in the Kazakh culture. A preliminary investigation of the possible etymologies of these terms shows that they have ancient roots in Indo-European languages for the one-humped and in Proto-Turkic for the two-humped, and that all of them convey attributes of a superior quality. These facts make suspecting that the hybridization techniques used by ethnic Kazakhs could have been introduced in Turkic Central Asia from the south during the first millennium AD together with elite genotypes of dromedary camels.

- aruana: '*arvana*' in Ugaritic-Hittite (1200 BC) means 'ruler, and in Old Persian (500 BC) «high protector».

- ulek: '*aleket*' in Old Persian means 'fine big camel' and '*ulek*' means 'herd'; 1500 years later, '*ulugh*' in Tartarian Turkic language means 'great'.

- ingen: '*ingen*' in Mongolian and Turkic means 'cow' or 'she-camel' or 'mother camel'.

- bura: '*bugur*' in Proto Turkic means 'soul of a sacrificial animal', referring to an ox, a horse or a camel. The name is used as far as in the Sahara, among speakers of a Afro-Asiatic Proto-Chadic language, where it refers to a male goat (Hausa people, Niger)<sup>9</sup>.

#### **Description of Hybrids**

Hybrid camels types 1-6 and 10 are one-humped, types 7-8-9 are two-humped. Each of the different types has its own specific qualities for crossbreeding or for economical purposes.

All of them, when acquire hybrid vigor out of accurate crossbreeding, become stronger, milkier (approaching the yield of cows), more docile, and even of better appearance than both the purebred ancestors. This is particularly true for the final offsprings of two-humped hybrids. They are generally called *aiyr orkesh* (which means 'double hump') or *aiyr tuye* ('*айыр түйе*', double camel). They are tall camels, with a big belly, a thick long wool and a large space between humps that can easily accommodate two people, from which comes their name. So, in Kazakhstan, they are the main camels used in the practical life and constitute the absolute majority of the herd, representing by number of individuals the 80% of the total (Baimukanov et al. 1989).

Hybrids from purebred crossbreeding: F1

1 – *Bekpatsha nar* (from Persian *bokt-padsha*, hybrid-king), one-humped, together with *kolpatsha nar*, pertains to the basic F1 category and, being the largest among all camels, is supposed to be the best of the two. Referring to the fact that it is the first in the hybrid line, it is also surnamed *bir-tygan* (first-generation) or, among Turkmen and Tashkent Kazakhs, also *kez nar* or *kez-orkesh* (sharp-hump). When 2 years old and male, it is called *aruana tailak* ('*аруана тайлақ*', aruana son). It has one high hump, curly thick hairs, big hips, long neck, pan-like head and thick legs. It differs from all other camels in that it does not trot.

2 – *Kolpatsha nar* (commander-king hybrid), one-humped, similarly deserves the name of *bir-tygan* (first generation) and, in the Urals, also *kez-nar* (sharp-to-come hybrid). By appearance it looks like the *betpaksha nar*, though it is bigger (it is the biggest) and trots.

*Hybrids from double-cross mating and criss-cross: F2-F3*

3 – *Zhampoz nar* (smart hybrid), one-humped, has curly wool, low hump and armpits, and two hair locks on the flat part of the chest, which are called *zulip* ('зұлып', 'evilish'). It trots a little.

4 – *Zhonek nar* (right hybrid) one-humped, has a big belly and thin legs, goat-like straight wool, thick eye-brows. It trots constantly.

#### *Hybrids from backcrossing*

5 – *Kerderi* (female) or *Kohret* (male) is a one-humped F2b camel. The name is an ancient Turkish term, possibly imported from Arabic, where 'qadr' has the high meaning of 'predestination for sustenance', and still used today (*kaderi*, *kediri*) among the Turkmens of Khorasan for referring to this type of camel breed. In the Syrdarya, the name comes from a tribe of camel breeders, the Kerderi (possibly descendant from the Kidarite Huns of Khorezm), now living in Kazaly region: interesting is the fact that, because here by now almost all camels are two-humped, also the name *kerderi* has changed its original meaning for referring to a two-humped breed. (Zhakypov, 1989; AFM).

6 – *Kylagai nar* (limited-bad hybrid), one-humped, has sparse, non-wavy hairs, thin legs, a small head and, as a whole, is unpredictable and cries a lot.

7 – *Mirza kospak* (which in Kazakh means 'gaspadin hybrid'<sup>10</sup>), with two humps joined at the basis, is an important transitional type that, out of square-backcrossing, produces all the two-humped hybrid types of Kazakhstan. It has a solid body, curly hairs, and small humps with little distance between them, though allowing a man to fit in between. It has an extremely ugly appearance but, when backcrossed, produces one of the most productive camels (*ara kospak*) and also the most beautiful of them, the *keristi kospak*. It does not trot.

#### *Hybrids from square-backcrossing*

8 – *Ara kospak* ('ара қоспақ', 'spaced hybrid', being that 'ara' in Turkic means 'interval') or *Aiyr kospak* ('айыр қоспақ', 'double hybrid') are synonyms for a two-humped camel resulting from the backcross of a *mirza kospak* female with a purebred *bura*, which explains its characteristic big distance between humps and its name. It is the milkiest.

9 – *Keristi kospak* ('suitable hybrid') is a beautiful camel with long, thick and straight wool like the one of a goat. It is the result of the backcross of *mirza kospak* with purebred dromedaries, which makes that at first glance it looks very much like a one-humped camel with a humps' wide base and an invisible gap between two humps that can only be distinguished by touch. It trots.

#### *Hybrid F5*

10 – *Sokpak nar* (uneven-road hybrid) is the F5 last product of the crossbreeding chain. It is tall, with one high protruding hump, non-curly hairs, of unsightly appearance. It cries a lot.

As said above, the names of hybrid camels, at the contrary of the ones of the purebreds, show many regional differences and, by having roots in the Kazakh language, are always etymologically clear. They are very changeable by region because different dialects would favor lexical variants, and different breeding conditions would induce semantic variants.

For example, the name '*kospak*' (which means 'made, hybrid') in the Kyzylorda district acquires different local meanings every just 50 km and even within the same region. In the west, around Karmakshi, it refers to the cross of *ulek* and *aiyr ingen* (i.e. *kolpatsha*). In Zhalagash, it means both the cross of *mirza kospak* with *ulek* (i.e. *keristi kospak*) or with *bura* (i.e. *ara kospak*). In Terenozek, the term '*kospak*' refers to the cross of a *bura* with any hybrid one-humped (*nar maya*); the term '*mirza kospak*' to its crossbreed with a two-humped female (*kospak ingen*); and the term '*ara kospak*' is pointing to its crossbreed with any hybrid female, with one or two humps. Further east, around Shieli, *kospak* is the name of the cross of a two-humped male purebred (*aiyr bura*) with a one-humped female hybrid (*nar maya*) (i.e. *mirza kospak*).

### Camel Attributes Referring to Specific Morphological and Temperamental Features

Main themes of the camel attributes are health, strength and character, pointing to its economical value; and beauty and color, pointing to its ceremonial value. Moreover, by distinguishing strong and weak individuals, they are also conveying information for in-breeding and out-breeding purposes.

*Aiyr bota* ('айыр бота', 'double baby') refers to a two-humped calf with pronounced fork-like humps.

*Aiyr tailak* ('айыр тайлақ', 'double calf') refers to a two-year old two-humped calf born from the cross of a two-humped *bura* purebred with any two-humped female. It is very prized by being well-built, with fluffy wool, and of rare beauty. In some regions it is strangely called *zhampoz tailak* («жампоз тайлақ», 'smart calf'), which could be the attribute for an *ara-kospak* calf, underlining the presence of *zhampos* in its lineage.

*Akbas orkesh* ('ақбас өркеш', 'white-head hump') refers to a camel with humps deprived of

hairs due to arduous labor or to camel scabies. White hairs will grow at such spots.

Ak bura (*'ақ бұра'*, 'white bura') refers to a two-humped male purebred camel of whitish colour. The white color is rare in nature but becomes more frequent out of purposeful selection. It is often added to a camels' herd (*'kele'*) for mating.

Ak kaptal tuye (*'ақ қаптал түйе'*, 'white sides camel') refers to a camel that was harnessed to a cart, or with traumatized or wounded sides, but later getting better. The skin in this spots grows white hairs or becomes bold and white.

Ak maya (*'ақ мая'*, 'white she-camel') refers to a white female camel, like the aruana that is always white. When aruana is crossed with a white bura, it may happen that even the delivered bekpashka calf is white, and in that case, if female, is also called ak maya. Whitish-yellow females are called just *maya*, and *maya nar* when hybrids.

Aramza bota (*'арамза бота'*, 'ignoble calf') refers to a calf born unexpectedly for the camel's shepherd or owner.

Arttyrgan tuye (*'арттырған түйе'*, 'packed camel') refers to one of the best camels, the one usually laden with the dowry for a girl or with presents for gifts or rewards.

Augan tuye (*'ауған түйе'*, 'brainsick camel') is the attribute for a camel brought in from elsewhere, or a camel that moves bowing left or right due to a long trip or to a cargo packed incorrectly.

Ayu bura (*'аю бұра'*, 'bear bura') is the title given to a two-humped male purebred in full vigour, with red eyes, aggressive. During the January-February mating season it may chase, reach and pull apart anyone, even a rider on a horse, and therefore it is tied up. The most dangerous ones, like a bura in full vigour, are muzzled and fettered.

Baya Tuye (*'бая түйе'*, 'harmful camel') or *'baya-nar'*, is the name given of the ugliest kinds of hybrids, so fearful and conflictual that do not let anyone come close.

Jelmaya (*'желмая'*, 'wind she-camel') is the name of a mythological folkloric one-humped female camel, swift like the wind. According to the legend, the great sage and musician Korkut Ata (X-XI AD), riding on his Jelmaya, searched the land where you can hide from death. Also the great poet and thinker Hasan Kaigy (XIV AD), on his Jelmaya, searched for the end of the world.

Jon (*'жон'*) synonym of 'baya', and similarly referring to an animal with bad character.

Kisyktos nar (*'Қисықтос нар'*, 'distorted chest') is the attribute for camels of poor breed.

### Ethnic and Modern Nomenclature and Methods of Camel Hybridization

During Soviet and post-perestroika times, the advent of the modern stockbreeding industry introduced new methods and names for the development of camel hybrids, confining the ethnic methods and nomenclature to the small domestic farms.

In this last paragraph we compare the ethnic data spoken above with the data included in few publications concerning modern industrial stockbreeding (Baimukanov et al. 1989; Baimukanov et al. 2009). As result, the comparison will provide the evaluation of the ethnic ways of hybrid development at the light of modern crossbreeding strategies. Several structural and terminological differences emerge. Structural differences must be attributed to different methodologies of hybridization; terminological differences are due to the modern introduction of a totally new vocabulary based on the conventional use of old terms combined with numerical codes.

The above paragraphs clearly show that the ethnic camel development produces two F1 hybrids that are then submitted to repeated double-cross and backcross with one-humped or two-humped male or female purebreds.

Modern crossbreeding starts similarly by producing two F1 hybrids, but then these are not double-crossed<sup>11</sup> but repeatedly backcrossed with just male purebreds, one-humped or two-humped<sup>12</sup>. The resulting long list of types is the product of repeated backcrossing with not just 2 but 5 purebred sub-species: 2 kinds of dromedary (Kazakh and Turkmen) and 3 kinds of Bactrian (Kazakh, Kalmyk and, rarely, Mongolian).

So, in the modern crossbreeding industry double-cross is avoided and so is the backcross with female purebreds, which results in the direct inclusion of just 2 ethnic hybrid types, in the approximate inclusion of other 4 types that anyhow present an inversion of parental sexes, and in the exclusion of 4.

According to that, the Baimukanov's articles, referring to camel breeds developed in modern stockbreeding industry, besides the 2 purebred species P, classifies a series of 6 valuable hybrid groups (F1, kurt, kurt-nar, kospak, kez-nar, and new-group) counting all together a total of 24 hybrid types. Of these 24 types, just 2 show direct equivalence with ethnic types (=) and 4 an approximate correspondence ( $\cong$ )<sup>13</sup>.

Table 4

group	type		humps	gener.
	modern	ethnic		
P	dromedary	= aruana	1	P
	Bactrian	= aiyr ingen	2	P
F1	iner-maya	= bekpasha	1	F1
	nar-maya	= kolpasha	1	F1
Kurt	kurt-1 F2	@	1	F2
	kurt-nar-1 F3	@	2	F3
Kospak	kospak-1 F2	@	2	F2
	kez-nar-F3	@	2	F3

The other 18 modern types, often designated by Kazakh terms<sup>14</sup>, refer to 3-4 rounds of backcrosses alternating male purebreds of 3 kinds (Kazakh, Turkmen and Kalmyk male purebreds), which introduces structural differences and levels of complexity that don't allow any correspondence with the ethnographic data at disposition of the authors.

Summarizing we can say that, concerning the denomination of camel types, the ethnic terminology is very meaningful: it underlines the main characteristics of the referred breed. The modern terminology is conventional: it defines camel types by some traditional roots *maya*, *nar*, *iner*, *kurt* and *kez*<sup>15</sup>, of which the source and etymology are unknown or insignificant, together with their combinations among themselves and with some numerical codes.

### Conclusion

Concerning the development of camel types, the ethnic crossbreeding industry, when compared with the 24 types of the modern industry, takes in consideration only the relatively small number of 10 basic crossbreeding types. Of these, 6 are directly or ap-

proximately included in the modern list under other names; 4 are omitted: zhampos and zhonek (i.e. the double-cross of hybrids F1) and, as a consequence, also their backcrosses. In particular, the backcrosses of one-humped male hybrids with one-humped females purebreds (kerderi, kylagai), which are present but not highly estimated in the ethnic industry, in modern industry are not considered at all or, like kerderi, are used as a transitional type for crosses.

So, the ethnic development of camel hybrids shows a wider spectrum of combinatory expedients by considering the double-cross and crisscross of F1 types and by the inclusion, in case of backcrossing, of both female and male purebreds. Instead, the modern industry, on the basis of an improved knowledge of the camel genetic reserves and reproductive potential, eliminates the double-cross of F1 and privileges a rotational backcross of F1 involving just male purebreds (see Table-I).

The modern development, by resulting in an higher performance of camels, seems to be more knowledgeable and advanced thanks to the removal of some traditional unlucky crosses. But the reasons of the disparities between the traditional ethnic and the modern industrial approaches cannot be totally reduced to an higher knowledge and productivity of the modern methods. The reasons must be searched deeper, in differences of the ecological, epidemiological, technical, economical and social contexts of the ethnic breeding, where even camels types today discarded could have played some still unknown important role.

The spectrum of the ethnic ways of hybridization, when compared with the one of modern biotechniques, is much wider because contextual to human communities where camels were used in several tasks today abandoned: not just for meat, milk and fleece, but also as labor and transport animals, as components of open air free herds, and as ceremonial animals. The question suggest the need of further ethnographic investigations.

### Notes

1. In modern industry, as tendency, the relative number of one-humped camels increases due to the import of milkier Turkmen one-humped breeds (Imamura et al. 2016)

2. The one-humped male purebred, among Turkmens and in the nomenclature of modern industrial breeding, is called 'iner' (see below par 3.1).

3. Today, in modern camel development, a further distinction is introduced between Kazakh and Turkmen one-humped purebreds, and between Kazakh and Kalmyk two-humped purebreds (Baimukanov 1989; Imamura et al. 2016), which is not recorded in the ethnographic record (see below par. 5).

4. «Breeding of the crosses inter-se fixes the type of the improved camels with increased live weight, hair cover and viability. Crossbreeding is aimed at obtaining crosses of the second and third generation» (Baimukanov et al. 1989). On the basis of laboratory experiments on mice, «first-generation hybrids generally displayed larger heads and jaws and a greater variety of skull shapes than

their purebred parents. More than 80 percent of second-generation hybrids had head sizes and shapes that fell in between those of their hybrid parents and purebred grandparents. Ensuing generations, including offspring of hybrid-purebred matches (backcrosses), sported skulls that generally looked like those of a purebred species with a few traits borrowed from another species or a hybrid line». (Ackermann 2016)

5. Usually, the F4 generation offspring of 3 rounds of backcrosses with the same type of purebred, by rising the genetic percentage of the hybrid above the 94%, is considered as purebred status.

6. In Kazakh script: бекпатша нар, колпатша нар, жампоз нар, жөнек нар, кердері, қылағай нар, мырза коспақ, ара коспақ, керісті коспақ, соқпақ нар.

7. 1 – About the correlation between ethnic and modern crossbreeding types and names, see Table-III, par. 5.

8. An exception is the 'kerderi' type that in Table-I is quoted as 'kambagai' ('қалбағай' 'non-serious'). On the basis of our data, 'kalbagai' or 'okpak nar' are generic names for F5-6 generation breeds from one-humped hybrid parents, which are considered bad camels by being weak and poor producers of milk and fleece.

9. See also: Bulliet 1975:144-5, summary table.

10. 'Mirza' could be a term introduced from Persian, where it means 'prince', so that 'mirza kospak' would have the etymological meaning of 'prince hybrid', which matches the fact that this camel type stands as begetter of all the other types of two-humped hybrids.

11. «Second generation hybrids, raised by crossing first generation hybrids, occur rarely since camel-breeders avoid this breeding method... characterized by low production ability, with elements of evident ugliness and degeneration observed (distorted chest, deformed joints, etc.). The Kazakh people calls these hybrids 'dzharbai' or 'kaisyktas' ». (Baimukanov et al. 2009, p. 27)

12. The modern camel hybridization industry distinguishes two methods of hybridization : the crossing of the female Bactrian and the male dromedary, called Kazakh; and the crossing of the female dromedary and the male Bactrian, called Turkmen. Both are applied for the production of the first two F1 hybrids (nar and iner) that then, backcrosses repeatedly with one or the other male purebred, stay at the basis of 2 different lines of development (one-humped kurt and two-humped kospak).

13. A table from dissertation of Saparovich (Saparovich 2010), included as Table-2 in Imamura's article, provides a list of 24 modern industrial hybrid types, strictly following the classification and nomenclature of the Baimukanov's publications.

14. Other modern names for camel types borrowed from Kazakh language refer to types of the so-called 'new group hybrids': baidara, bereket-nar, bacdas (of the kospak line); arada, binur, baitun, and baidasbek (of the kurt-kerderi line). They have evident Kazakh etymology but pertain to unspecified dialects not found in the Aral-Syrdarya region.

15. These modern terms exist in the ethnic vocabulary of the Syrdarya region, however are not referring to breed types but exclusively used as generic attributes. Their etymological roots have been analyzed elsewhere in this article, at the exception of the term 'kurt'.

Kurt' in Old Turkic means 'wolf' and, in effect, among ethnic Kazakhs, generically refers to an impracticable unfriendly camel. But today among Turkmen and in Kazakh modern breeding the term kurt is referring to a group of good breeds. In modern breeding industry, kurt has few synonyms matching some ethnical terms: kurt-1 is also called 'zhun' or 'kokhert', which among Karakalpaks refer respectively to the male and female kerderi; kurt-2, result of the backcross of kurt-1 with a one-humped purebred and absent in the ethnic record, is also called 'sapaldryk'.

## References

- AFM= Author's Field Materials.
- Baimukanov A. and Meredov B. (1989). Two-humped camels. In: Animal genetic resources of the USSR, eds N. G. Dmitriev, L.K. Ernst. FAO, Rome, p. 345-351
- Baimukanov D. and Baimukanov A. (2009). Genetics, selection and hybridization of camels. Almaty, Bastau Ltd.
- Bulliet R. (1975). The Camel and the Wheel. Harvard University Press, Cambridge, Mass. Morningside Book Series. Columbia University Press.
- Divaev A. (1904). Iz oblasti kirgizskogo skotovodcheskogo hoziaistva [From the provinces of the stockbreeders]. Turkestan-kiye vedomosti. 102. S.468. (in Russian)
- Imamura K., Amanzholova A. and Salmurzauli R. (2016). Ethno-terminology of Camels by Kazakh Language. Journal of humanities and natural sciences Vol. 52, No.2 Nagoya Gakuin University: pp. 65-81.
- Kazaktun etnografialuk kategorialar, ugumdar, ataular dasturli juesi. (2014). [The traditional system of ethnographic categories, concepts and names of the Kazakhs] . Encyclopedia, 5 volumes, Almaty, Asiya Arna. p. 521 – 523 (in Kazakh)
- Kazak tilinin aimaktuk sozdigi [Regional dictionary of Kazakh language]. Almaty: Arus. 2005
- Olearius A. 1669. The Voyages and Travels of the Ambassadors. (tr. John Davies), 2nd ed. corrected. London: J. Starkey.
- Potts D. 2004. Camel hybridization and the role of Camelus bactrianus in the Ancient Near East». Journal of the Economic and Social History of the Orient, 47: 143-165
- Saparovich, T. B. 2010. Scientific and technological aspects of enhancing the capacity of the Kazakh Bactrian camels productivity and their hybrids in Kazakhstan. PhD thesis, Kostanai State University.
- Tapper R. 1985. One hump or two? Hybrid camels and pastoral cultures: an update. Production pastorale et societe, 16:149-162.
- Zhakypov A. (1989). Tyie osirushinin tysindirime sozdigi [Dictionary of the cameleer]. Almaty: Kainar. (in Kazakh)