Winding Routes and Precarious Switchbacks: The Effect of Silk Road Development on Food Diversity

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Abstract

Silk Road developments increased interconnectivity through trade, but little is written about the resulting effect on food diversity. I used three methodologically, geographically and temporally diverse studies examining aspects of food during the Silk Road period to identify key factors affecting botanical and dietary food diversification in Central Asia during the first millennium. Archaeological and historical data from a study of Tashbulak (800-1100) revealed narrowing of genetic diversity accompanying cultivation, but also broadening of food options through trade and human interventions that created new plant varieties. A comparative study of the medieval period (500-1300) using human remains and published isotopic ($\delta^{13}C$ and $\delta^{15}N$) records of urban and non-urban consumers in the Turkmenistan-Uzbekistan-Kazakhstan region showed the Silk Road fostered greater overall food diversity than occurred in the Iron Age and early first millennium (1300 BCE- 600 CE). It also showed that, although during the medieval period enhanced trade opportunities facilitated a food-diversity trend, the positive movement was eroded by urban, insular agricultural communities with reified social structures. Foodways analysis of recipe books revealed that during the Mongol period (1200-1400), multi-cultural interaction enhanced dietary diversity, whereas changing power dynamics, tradition, and sense of place countered the trend. The Silk Road was not a unilinear path toward dietary diversity, but rather, a series of winding routes beset with potentially precarious switchbacks. Travelling back along the first millennium Silk Road uncovers critical turning points that can inform global food diversity approaches in the 21st century.

Keywords: food diversity, botanical diversity, dietary diversity, Silk Road, Central Asia, first millennium

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University of Saskatchewan Undergraduate Research Journal
Volume 8, Issue 2, 2022

Introduction

Between the Iron Age and the Modern Age, in Central Asia and beyond, webs of connection were spun and conjoined to create the Silk Road–a complex of geographical, social, religious, cultural, and political connectivity linking diverse people and regions. The interconnectivity expanded over time and space during the first millennium, yet episodically and sometimes geographically waned, changed, or revived.[1] This paper examines one commodity–food–in relation to the medieval Silk Road period to identify factors that affected botanical and dietary diversity in Central Asia. Intuition suggests that enhanced trade networks would increase accessibility to a range of food products previously unknown or unavailable to a wide range of people, thereby *expanding* dietary diversity. In contrast, reason suggests that the increased interconnectivity of expanded trade routes could lead to homogenization of diets,[2] thereby *decreasing* food diversity. Multiple impulses behind these opposing trends can be extracted from key first millennium Central Asian studies [3] documenting food availability and preferences.

Evidence reinforces but also problematizes the simple narrative that increased trade along the Silk Road led to increased food diversity. The limited published research on dietary diversity related to the Silk Road[4] can be grouped into three case studies. The first case study focuses on archaeobotanical, climate, and text-based historical evidence from a First Millennium high-elevation Central-Asian market in Tashbulak, Uzbekistan (800-1100). It not only reveals food diversity expansion resulting from trade and cultivation–but also reveals diversity loss through hybridization (creating plant hybrids through trait selection). The second case uses archaeological data from a lengthy Central Asian transect corresponding to present-day Kazakhstan, Uzbekistan, and Turkmenistan and isotopic analysis of human remains to compare diets from 1300 BCE-600 CE with those from 500-1300. It reveals that pastoralism and trade increased dietary diversity while sedentarism and agrarianism in urban centres led to homogeneity in diets. The third case applies foodways analysis (i.e., analysis of cultural and socioeconomic practices related to food production and consumption) to Mongol dietary records and cookbooks from between 1200 and 1400. It reveals that nomadic hunting and gathering increased food diversity, whereas herding and food-sharing reduced it and that multicultural interaction enhanced dietary diversity, whereas changing power dynamics, tradition, and sense of place countered the trend. Together, the three case studies suggest that expanding trade and cultural interaction along the Silk Road in Central Asia during the medieval period increased botanical and dietary diversity generally, yet also exposed–and even introduced–factors that limited inter- or intra-community food diversity.

Trade and Cultivation Versus Hybridization

A detailed archaeobotanical study of Tashbulak provides evidence of dietary diversity. Tashbulak is important for understanding food diversity because it is the first data point with systematic documentation of fruit, nut, and cereal crops in Central Asia,[5] and the first study of botanicals distributed along the higher-elevation Asian mountain routes of the first millennium Silk Road period.[6] Tashbulak (Figure 1) is located at 2,200 metres above sea level in the Malguzar mountain range in eastern Uzbekistan,[7] and is "one of the only known high mountain town centres constructed and occupied during the time of the Qarakhanid Empire, outside the lowland agricultural zones."[8] A team of archeologists used float sample techniques to systematically identify the food remains from an ancient market bazaar

[1]. David Christian, "Silk Roads or Steppe Roads? The Silk Roads in World History," *Journal of World History* 11, no. 1 (2000): 44, https://www.jstor.org/stable/20078816.

[2]. Kristina Killgrove, "Silk Road Skeletons Shatter Assumptions About Ancient Diet," *Forbes*, March 26, 2018, accessed March 16, 2019, https://www.forbes.com/sites/kristinakillgrove/2018/03/26/silk-road-skeletons-shatter-assumptions-about-ancient-diet/#6627af337aa4.

[3]. All three studies examine historical data outside the main research timeframe and geographical area; this wider scope is essential for understanding the primary contexts.

[4]. Robert N. Spengler et al., "Arboreal Crops on the Medieval Silk Road: Archaeobotanical Studies at Tashbulak," *PLOS ONE* 13, no. 8 (August 2018): Conclusions, par. 2, https://doi.org/10.1371/journal.pone.0201409.

[5]. Spengler et al., "Arboreal crops," Conclusions, par. 2.

[6]. Spengler et al., "Arboreal crops," Discussion, par. 1.

[7]. Robert Spengler et al., "Arboreal crops," Materials and methods.

[8]. Michael Frachetti, "High Altitude Towns of the Qarakhanid Empire: New Archaeology at the Medieval Center of Tashbulak," *Fondation Max van Berchem*, accessed March 16, 2019, https://maxvanberchem.org/en/scientific-activities/projects/archeology/11-archeologie/152-high-altitude-towns-of-the-qarakhanid-empire-new-archaeology-at-the-medieval-center-of-tashbulak.

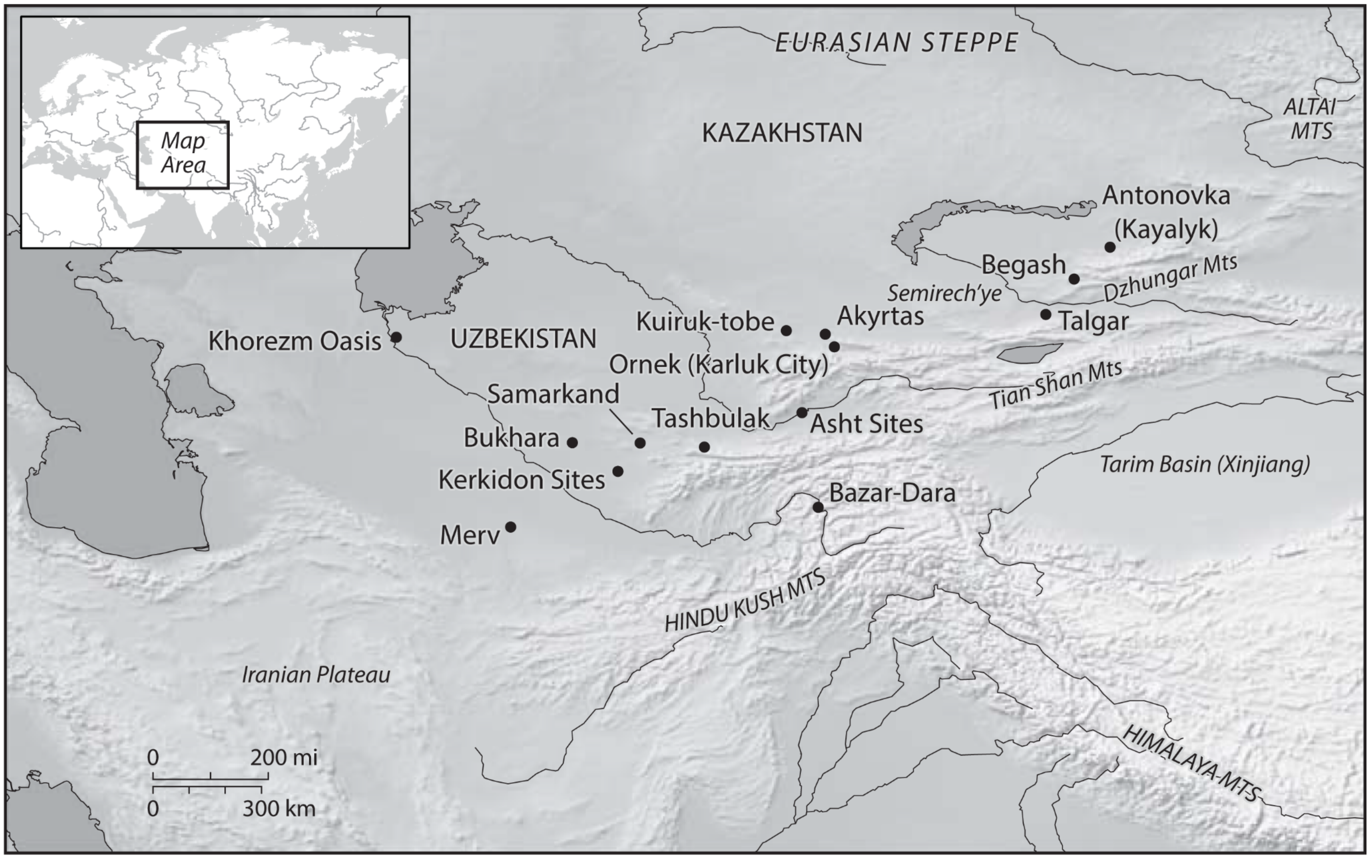

Figure 1: Map of Central Asia showing Tashbulak and other locations from which archaeobotanical evidence was drawn (map by Spengler et al. 2018, "Arboreal Crops on the Medieval Silk Road: Archaeobotanical Studies at Tashbulak," Figure 1; Creative Commons Attribution 4.0 International License, https://creativecommons.org/licenses/by/4.0/).

located in the town centre, which thrived circa 800-1100 CE.[9] The researchers recovered a wide range of staple foods, including nuts, grains, legumes and seeds, and also an extensive selection of fruits. The specific foods identified include: free-threshing wheat, naked barley, peas, chickpeas, capers, cherries, hackberries, rosehips, Russian olives, sea buckthorn, walnuts, apricots, melons, grapes, peaches, pistachios, and wild seeds.[10] These Tashbulak archaeobotanical samples are important for understanding food diversity because they provide incontrovertible evidence of the dietary breadth of botanicals once available in this community.

Tashbulak also provides evidence of crop cultivation and its impact on food and botanical diversity. Researchers discovered larger-sized wheat kernels exhibiting a tetraploid form not previously retrieved in Central Asia, which indicates that certain wheat seeds were cultivated, not wild. Native wild varieties and cultivated fruit tree crops could not be distinguished based on archeological evidence alone. However, population genetics confirmed that some wild fruit trees were managed (for example, apples). In contrast, others were cultivated at Tashbulak.[11] Cultivation had both a positive and a negative effect on dietary and botanical diversity. Creating new cultivars through selective planting initially added to diversification, but over time, a few preferred cultivars were grown or distributed, and this hybridization process led to a narrowing of botanical stock. The Tashbulak study results show lost diversity through displacement. Although new varieties of wheat were found, two East Asian millet varieties that had been significant across Central Asia in preceding millennia (*Panicum miliaceum* and *Setaria italica)* were not found.[12] This evidence buttresses Robert Spengler's claim that "The Silk Road led to genetic bottle-necking, hybridization, and further human selection; later, grafting and cloning allowed

[9]. Spengler et al., "Arboreal crops," Materials and methods.
[10]. Spengler et al., "Arboreal crops," Table 1.
[11]. Spengler et al., "Arboreal crops," Conclusions, par. 1.
[12]. Spengler et al., "Arboreal crops," Grains, par. 1.

for the fixation of traits."[13] The Tashbulak study provides examples both of a narrowing of genetic diversity accompanying cultivation (a trend that accelerated over time) and of a broadening of food options through human interventions that created new plant varieties.[14]

Beyond demonstrating that a wide range of food was available there and that cultivation of new crops took place, Tashbulak solidifies evidence that trade links increased access to diverse foods via the Silk Road. Many of the tender fruit crops identified at Tashbulak must have been imported from lower elevations because low spring temperatures at higher elevations would have killed tree buds, prohibiting fruiting.[15] While geo-biological evidence suggests imported food contributed to dietary diversity in Tashbulak, there are also text-based reports of food trade and the presence–both nearby and further afield–of similar foods to those unearthed at Tashbulak. Ibn Hawqal in 988 and Abu Hamid al-Andalusi al-Gharnati in 1130-1155 reported that grains and a wide range of fruit were present in Khorezm. Zahiruddin Muhammad Babur and Nuruddin Muhammad Jahangir, in 1569-1627, wrote of seeing similar fruits in Samarkand (Uzbekistan), Badakhshan, Kabul, Jalalabad (Afghanistan) and Kashmir (Pakistan). Evidence of food similarities among disparate regions before, during and after Tashbulak thrived suggest there were enduring trade connections involving food. Sogdian documents from Mugh (600-800), and other records from the time that discuss economic transactions involving food as payment and purchases, help establish that trade relationships occurred along the Silk Road Routes.[16] Spengler's team documents connections between each of the fruits and seeds found in Tashbulak and its occurrence in archaeobotanical sites ranging south to Pakistan and north to Xinjiang as far back as 2500 BCE and up to 1200 CE, showing that by the medieval period foods were travelling across Central Asia and beyond.[17] This detailed archaeobotanical evidence, along with climate and botanical knowledge, historical context, and text-based evidence, suggests that many of the foods identified at Tashbulak were imported from or linked to other regions, and that inter-regional connectivity heavily supported food diversity within Tashbulak, yet also led to food homogeneity across regions.

Pastoralism and Trade Versus Urban Sedentarism and Agrarianism

The Tashbulak research focuses on a single community but interprets its archaeobotanical data in the context of wider food-related history and archaeology. Thus, it reveals the overall food diversity that existed in Tashbulak and across geographical regions and hints at growing food *homogeneity* among communities. However, the study does not evaluate the *evenness* of food diversity within Tashbulak or between different types of communities. Assessing evenness involves determining if there were differences among regions and/or places within regions where diets were more or less diverse than others. Taylor Hermes *et al*. explicitly assess these nuanced inter-community and intra-community dimensions of food diversity through archeological investigation using human remains and published isotopic (δ13C and δ15N) records of urban and non-urban consumers who once lived along a lengthy Central Asian transect corresponding to present-day Kazakhstan, Uzbekistan, and Turkmenistan[18] (Figure 2). The researchers obtained 45 samples from cemeteries in Tok-kala, Uturlik, Chor Dona, Chartok, Tashbulak, Altyntepe, and Frinkent in Uzbekistan (800-1300); from Geoktchik Depe, and Misrijan (Dehistan Plain) in Turkmenistan (two ca. 1300 BCE and 1000-1200); and from Konyr-Tobe, Temirlanovka, Turgen, Butakty, and Karatal in Kazakhstan (100-500 and 900-1200). In addition, the team used previously published isotopic data to add 13 samples from Otrar Oasis (100-400 and 400-700), 13 from southern Zhetysu (100-600 and 900-1200), and three from Dehistan Plain (two ca. 1300 BCE and one ca. 1100-1200) in order to allow for comparison between early and later periods.[19] After combining stable isotopic analysis, isotopic niche modelling, and statistical analysis to ascertain the range of variation in the types and sources of foods different individuals in each

[13]. Spengler et al., "Arboreal crops," Apples.

[14]. Spengler et al., "Arboreal crops," Melons. With respect to melons, the researchers note that there are thousands of regionally-specific ancient land races, so further research could show whether increased trade and cultivation led to a narrowing of melon biodiversity in the medieval period.

[15]. Spengler et al., "Arboreal crops," Introduction, Materials and methods, and Conclusions, par. 2.

[16]. Primary sources cited in Spengler et al., "Arboreal crops," Historical sources. Economic transaction documents are written in Russian; therefore, I could not provide additional details.

[17]. Spengler et al., "Arboreal crops," Comparative archaeobotanical data and Discussion.

[18]. Taylor R. Hermes et al., "Urban and Nomadic Isotopic Niches Reveal Dietary Connectivities along Central Asia's Silk Roads," *Scientific Reports* 8 (2018): 5177, https://doi.org/10.1038/s41598-018-22995-2.

[19]. Hermes et al., "Urban and Nomadic," Isotopic Analysis, par. 2; Figure 1; and Supplementary Information 3. The very oldest samples (1300 BCE) were included with new urban samples due to low sample size for the location (Dehistan) and congruent measurements.

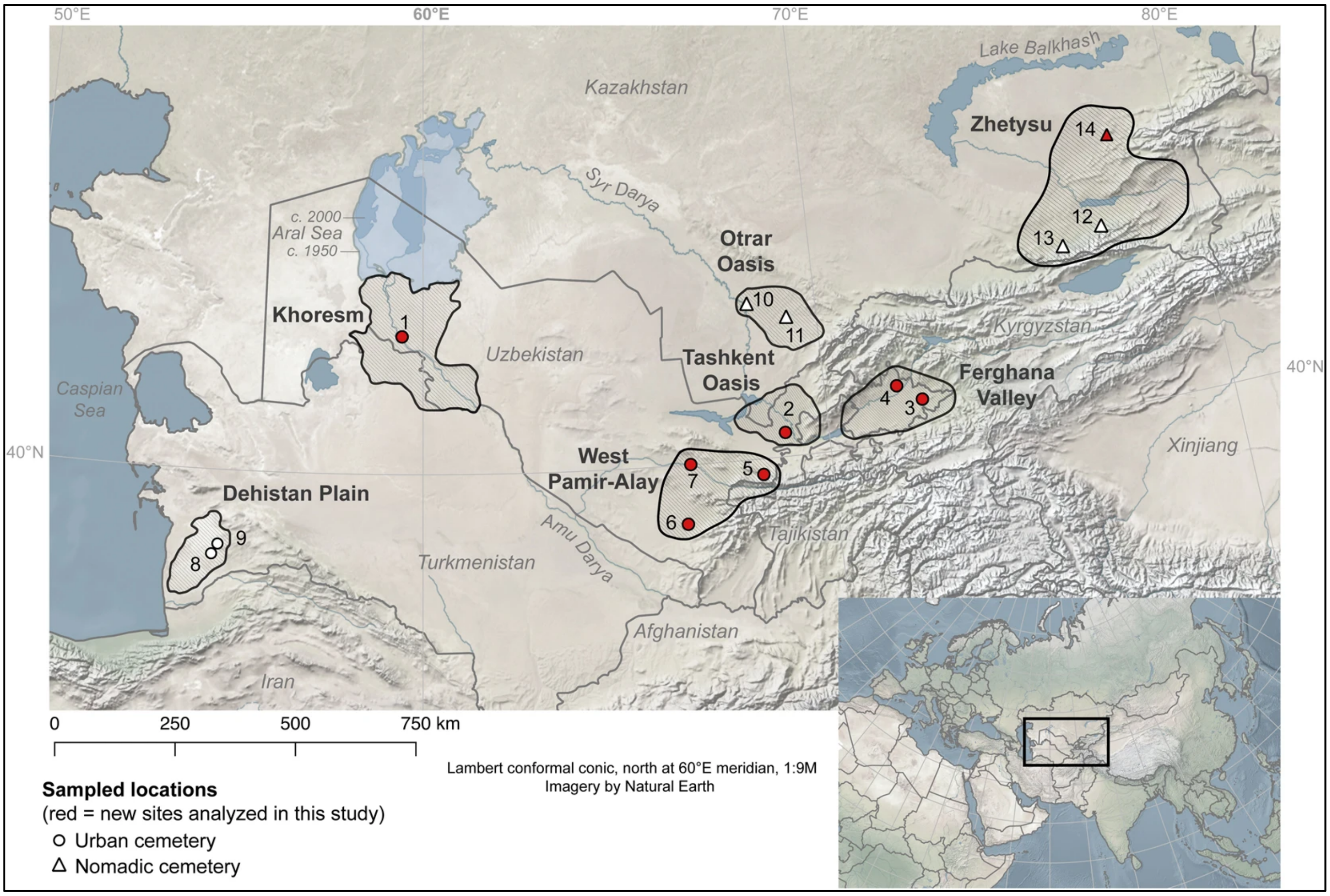

Figure 2: Archeological sites used for comparisons (map by Hermes et al. 2018, "Urban and Nomadic Isotopic Niches Reveal Dietary Connectivities along Central Asia's Silk Roads," Figure 1; Creative Commons Attribution 4.0 International License, https://creativecommons.org/licenses/by/4.0/).

setting were eating, they arrived at significant food diversity findings.

Most importantly, the Hermes study shows that individual nomadic pastoralists within their regional-temporal cohorts exhibited greater variation in their diets than did their sedentary urban counterparts; that is, there was more dietary variation among individual *nomads* of the same period and location than among *urbanites* of the same period and location. For example, largely urban communities south of the Syr-Darya River exhibited less internal diversity than pastoralist ones in the northerly steppes.[20] Using environmental modelling to rule out variations caused by geophysical or climate-related factors, the researchers confirmed that environmental factors did not cause the detected differences; rather, statistically significant differences were attributed to social factors. The narrow dietary niche of the study's urban dwellers reflects insularity and uniformity–exhibited through common dietary practices, restricted distribution pathways and local subsistence production, as well as tightly-coordinated social and economic structures within cities. The broader dietary niches of the more modern pastoralists indicate that these nomads facilitated food connectivity by consuming more diverse foods from further afield, embracing other groups' dietary practices and building socioeconomic structures.[21] These conclusions are critical in assessing the Silk Road's overall impact on food diversity because they indicate that urban communities, which generally would be expected to exhibit greater cosmopolitan-generated diversity among urbanites, actually reflected more dietary homogeneity. The pastoralist-versus-urban dietary differences demonstrate that intra-community diversity was low in settled urban centres, indicating that the trend toward increasing agriculturalist or urban settlements reduced dietary diversity in Central Asia during the medieval period.

[20]. Hermes et al., "Urban and Nomadic," Human isotopic variation across medieval Central Asia, par. 1

[21]. Hermes et al., "Urban and Nomadic," Discussion, par. 2.

Hermes' study also suggests that Central Asian food diversity increased in non-sedentary communities over the first millennium. Early first millennium pastoralist communities such as early Otrar (100-400) and Zhetysu (100-600) exhibited less intra-community variation than the same communities did later (Otrar, 400-700; Zhetysu, 900-1200), whereas the early Iron Age (ca. 1300 BCE) and later medieval (1000-1200) urban communities of Dehistan showed comparable diversity.[22] This result suggests that, in the later medieval period, the Silk Road fostered greater overall food diversity than occurred in the early first millennium and Iron Age. Two opposing impulses co-existed: during the medieval period, in the Turkmenistan-Uzbekistan-Kazakhstan region of the Silk Road, enhanced trade opportunities facilitated a food-diversity trend that was countered by urban, insular agricultural communities with reified social structures.

Nomadism and Multiculturalism Versus Communalism and Power Shifts

Several of the factors identified above apply to the Mongol culture, and some new sets of factors affecting food diversity emerged as the Mongols gained dominance across Asia from 1200-1400. For example, the Mongols, being nomads, surely possessed some of the inter-community dietary diversity Hermes describes because they roamed extensively.[23] Yet they often ate communally,[24] which would have reduced individual dietary differences within their communities (limiting intra-community diversity). Expansive overall diversity (such as that exhibited in Tashbulak) seems unlikely, as the Mongol diet relied heavily on meat and dairy.[25] Russian ethnographer A. M. Khazanov observes that "[u]niquely specialized types and variants of pastoral nomadism are almost always imposed by ecological necessity,"[26] which also implies limits to dietary diversity. However, multispecialization–the nomadic approach the Mongols adopted in which they developed several distinctive dimensions of their diet by being attuned to their environment, allowed them to overcome bio-physical restrictions.[27] Asian historian, Paul Buell, reveals the Mongols' adaptability to place, listing 40 species of animals consumed–wild and domesticated, even including exotics (Siberian tigers, snow leopards) and rodents (otters and marmots)–and 17 plants used, including berries, mushrooms, nuts, herbs, and reeds.[28] This list shows much greater dietary diversity than the standard diet of goat or lamb and kumis (fermented milk), frequently attributed to Mongols (possibly supplemented by salt, dates, and grains obtained through trade).[29] While dietary adaptability is indicated, the extent of dietary diversity implied is deceptive, since most of the game listed were only obtained and consumed in exceptional circumstances.[30] For Central Asian traditional Mongols, conflicting impulses are revealed: nomadic hunting and gathering led to dietary diversity, while a traditional diet based on food sharing and on herding within harsh and inhospitable habitats with sparse wild animal populations and geographic and climatic extremes decreased dietary diversity.[31]

Stepping east of Central Asia into China from 1279-1368 allows for a glimpse into the complex diversification of diets through cultural interaction, yet also shows the strength of the Mongols' Central Asian dietary traditions.[32]

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22. Hermes et al., "Urban and Nomadic," Human isotopic variation across medieval Central Asia; Figure 3; and Isotopic analysis, par. 2.

23. Paul D. Buell, "Mongol Empire and Turkicization: The Evidence of Food and Foodways," in *The Mongol Empire and its Legacy*, ed. Reuven Amitai-Preiss and David O. Morgan (Leiden: Brill, 1999), 206-208.

24. Paul D. Buell, "Pleasing the Palate of the Qan: Changing Foodways of the Imperial Mongols," *Mongolian Studies* 13, The Hangin Memorial Issue (1990): 59, https://www.jstor.org/stable/43193123.

25. John Masson Smith, Jr., "Dietary Decadence and the Dynastic Decline in the Mongol Empire," *Journal of Asian History* 34, no. 1 (2000): 36-37, https://www.jstor.org/stable/41933162.

26. A. M. Khazanov, *Nomads and the Outside World*, trans. Julia Crookenden (Cambridge: Cambridge University Press, 1984), 27.

27. Khazanov, *Nomads*, 27.

28. Paul D. Buell and Eugene N. Anderson, eds., *A Soup for the Qan: Introduction, Translation, Commentary, and Chinese Text* (London: Routledge, 2000; Taylor & Francis, 2013), 245-259, https://doi-org.cyber.usask.ca/10.4324/9780203039113.

29. Rhoads Murphey, "An Ecological History of Central Asian Nomadism," in *Ecology and Empire: Nomads in the Cultural Evolution of the Old World*, ed. Gary Seaman (Los Angeles: Ethnographics Monographs, University of Southern California, 1989), 41-42. This work offers a general overview and is not fully referenced. Because it was published in 1989, it reflects earlier stereotypes of Mongols, thus is useful for illustrating the idea of perceived dietary limitations. For a more balanced view, see Smith, "Dietary Decadence," 37-38.

30. Buell, "Pleasing the Palate," 60-61. Also on this point, see Smith, "Dietary Decadence," 36-37, https://www.jstor.org/stable/41933162.

31. Jacques Legrand, "Mongol Nomadic Pastoralism: A Tradition between Nature and History," in *The Silk Roads: Highways of Culture and Commerce*, ed. Vadime Elisseeff (New York: Berghahn Books, 2000), 306, https://en.unesco.org/silkroad/sites/silkroad/files/knowledge-bank-article/mongol%20nomadic%20pastoralism.pdf.

32. Because the Central Asian Mongols remained more nomadic, examining their China rule offers insight into dietary breadth, but, by contrast, reveals that less diversity existed in the Central Asian region of this study. Prajakti Kalra, *The Silk Road and the Political Economy of the Mongol Empir*e, (London: Routledge, 2018): 6.

As the Mongols gained control of Central Asia and conquered China, they constructed a court cuisine to showcase their power over conquered cultures.[33] The resulting Turkicised and Sinicized Mongol-based diet was recorded in a written Chinese recipe book, the *Yin-shan cheng-yao*, translated as "Proper and Essential Things for the Emperor's Food and Drink."[34] The book, presented in 1330, reveals *bi-directional dietary syncretism*; a transition from a monotonous though nutritious diet toward a more sophisticated and acculturated Mongolian diet; increased use of grains, flour, sweet confections, and spices; and new cooking methods.[35] Bi-directional dietary syncretism (the two-way merging of distinct dietary cultures to expand the influence of each cultural source) occurred because both the conquered and the conquerors incorporated aspects of the other's diet, creating greater food diversity in Mongol, Chinese and West Asian cultures.[36] But did the diversification last? Anderson claims that: "With the fall of Yuan . . . the Mongols rode back to the steppes to return to a simpler diet of mutton and noodles. The new international cuisine of the Mongol world empire did not go on to develop into a new style."[37] Furthermore, he adds, homesickness and cultural conservatism guaranteed that the Mongol's Central Asian diet was readopted.[38] In contrast, Buell argues that the Mongol dietary influence persisted after the Mongol's 1368 retreat from China, as evidenced in the continued use of the Yuan Dynasty household encyclopedia, *Chü-chia pi-yung shih-lei*, which reflects lasting Mongol influence on north Chinese popular culture.[39] Both views are accurate, in part, as foodways analysis using these key recipe books reveals that during the Mongol period, multicultural interaction enhanced dietary diversity, whereas changing power dynamics, tradition, and sense of place countered the trend.[40]

Conclusion

All three case studies provide evidence that trade relationships along the Silk Road increased overall food diversity. Archaeobotanical evidence, written records, and economic transaction documents establish that trade associated with the Silk Road expansion supplied Tashbulak with tender fruits that could not have been grown in the cold conditions in that elevated location. Because the archaeobotanical evidence of diverse fruits, nuts and grains found in Tashbulak can be linked to text-based reports of food trade and the presence of similar foods further afield, there is general evidence of increased food diversity connected to the Silk Road development. The Turkmenistan-Uzbekistan-Kazakhstan long-range regional and temporal study that compared isotopes in human remains to characterize individual diets also shows an overall increase in dietary diversity–diversification specifically associated with pastoralism and the Silk Road development in the second half of the first millennium. A different form of dietary diversity was demonstrated through foodways analysis of thirteenth- and fourteenth-century recipe books that document bi-directional syncretism, in which the Mongol diet was diversified by Chinese and West Asian dietary cultures and vice versa. Together, these findings confirm the intuition that increased Silk Road exchange generally increased diversity in diets across the expanding trade region.

However, all three case studies also point to subtleties in food diversification trends that show dietary heterogeneity was not consistent or even. Archeological and plant genetics assessment at Tashbulak identified new cultivars of both grains and fruit, documenting increased food diversity there. However, Tashbulak also provides evidence that the process of hybridization, in which a few select cultivars are favoured, reduced food diversity through displacement. For example, East Asian millet varieties that were once prevalent across Central Asia were notably not found in Tashbulak, whereas new wheat varieties were found. By assessing the evenness of diversity between and within cultures and broad regions, the Hermes isotope study shows that nomadic pastoralists exhibited greater variation in their diets than did their sedentary urban counterparts–even though it might be expected that cosmopolitanism would have the opposite effect. Similarly, although the diet of pastoralist Mongols was restricted by the ecological constraints of their harsh environment and there was low

[33]. Eugene N. Anderson, "Food and Health at the Mongol Court," in *Opuscula Altaica: Essays Presented in Honor of Henry Schwarz*, ed. Edward H. Kaplan and Donald W. Whisenhunt (Bellingham, WA: Studies on East Asia, Volume 19, 1994; Western CEDAR), 21, https://cedar.wwu.edu/easpress/18/. Others would claim that the Mongols were not asserting dominance, but permitting multiculturalism, for example, Kalra, *The Silk Road*, 6.

[34]. Buell, "Pleasing the Palate," 58.

[35]. This characterization of the early Mongol diet as monotonous appears exaggerated and biased. Buell, "Pleasing the Palate." 58, 60-61, and 71.

[36]. Buell, "Pleasing the Palate," 68.

[37]. Anderson, "Food and Health," 37.

[38]. Anderson, "Food and Health," 34.

[39]. Buell, "Pleasing the Palate," 58.

[40]. Buell uses foodways analysis to describe the process of tracing food and diets through history.

intra-community variation because of herding and communalism, multispecialization enabled nomadic Mongols to overcome restrictions–increasing dietary diversity. However, after their ascendancy to power, when bi-directional dietary syncretism rooted in multiculturalism had been at its peak, shifting power and tradition rooted in cultural connection to place countered the dietary diversification trend. Each case shows that as the Silk Road developed, some types of food diversity decreased in some regions despite the general trend toward diversification.

These methodologically heterogenous research studies of the food available to Central Asians in the first millennium reveal complex forces that propelled food diversity forward but also held it back. Urban sedentarism–characterized by reified social structures and agrarianism–restricted intra-community diversity; however, urban centres like Tashbulak provided nodes for the exchange of goods, creating the potential for dietary diversification. Cultivation circumscribed natural genetic diversity, yet generating new plant varieties temporarily increased food diversity. Cultural interaction pushed toward syncretism that decreased dietary heterogeneity among cultures but expanded culinary repertoires within cultures. Environmental constraints, communalism, and traditionalism limited food diversity within nomadic cultures highly attuned to place, although nomadism fostered travel and exchange of goods that increased diversity. In summary, these competing forces meant that the Silk Road was not a linear path toward dietary diversification but rather a series of winding routes beset with potentially precarious switchbacks.

Significance

Many historians extol the societal, cultural and economic advancements that catapulted forward with the interconnectivity of the Silk Road complex. Yet, there are hints that seeds of future discontent were also sown in medieval Central Asia. Both the avenues for dietary diversification and the switchback points or obstacles to it may offer hints for recovering dietary diversity today. Comprehending why agrarianism, urbanization, and changes in power dynamics narrowed dietary diversity in the first millennium could offer clues for addressing rural depopulation and food homogenization in today's transnationally-dominated, global marketplace. Knowing when and where hybridization occurred for individual plant species could redress contemporary plant biodiversity loss. For example, *Malus sieversii*–a key apple variety from medieval Central Asia–is already leading gene scientists to recover alternate genetic stock that can diversify today's overly-restricted food supply.[41] Socioeconomic and cultural factors identified as having expanded food diversity while the Silk Road developed also may be useful for solving contemporary food homogeneity issues related to societal organization. For example, the Mongol practices of multispecialization, of nomadism, and of being attuned to environment may incent recovery of the range of indigenous practices linking environmental awareness and sustainable food acquisition. Although it is worlds away in time, travelling back along the first millennium Silk Road might create new pathways toward enhanced global food diversity in the 21st century.

[41]. James Luby et al., "Silk Road Apples—Collection, Evaluation, and Utilization of Malus sieversii from Central Asia," *HortScience* 36, no. 2 (April 2001): 225-231, https://doi.org/10.21273/HORTSCI.36.2.225.

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