Islands in a Sea of Aaruul: Globalization and Mongolian Cheesemakers

Pearse Anderson
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Islands in a Sea of Aaruul: Globalization and Mongolian Cheesemakers

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Despite being a sparsely-populated country with less than 2% of its land arable, Mongolia has developed a rich and complex food culture, notably for its meat and dairy products, which could soon be at an historic high thanks to the tens of millions of animals on Mongolian pastureland. Many Mongolians and non-Mongolians view the countryside as a sea of milk that is currently being underutilized for economic exploitation. Various projects, whether funded and organized by international NGOs, the Mongolian government, or private companies, have tried to use Mongolia’s dairy resources to fill Mongolian demand, with more recent private ventures also pursuing exporting Mongolian dairy products to other countries. European-style cheese is a new but popularizing food item mostly produced by three artisanal Mongolian cheese companies. This paper analyzes the history, present, and planned futures of the artisanal Mongolian cheese company business models to ask how globalization is altering the Mongolian food sector, and the challenges Mongolian cheesemakers face trying to join the global market using their vast dairy resources and network. The main barrier for Mongolian cheesemakers is currently the inability to access the international market due to a lack of export licensing, stemming from health and standardization concerns. The Mongolian cheese industry has been partially globalized at every step of the cheese production and consumption process, with global standards covering everything from starter cultures to demand for luxury wines and cheeses. A globalized cheese industry is shown to be very helpful to cheesemakers from an economic and social standpoint, but has underlying risks of erasing the complex tradition of Mongolian dairy products, both culturally and nutritionally.

Keywords: cheesemaking, globalization, dairy products, marketing, animal culture and nutrition
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KEY TERMS:

European Cheese: Rinded, aged cheese made in the European tradition, usually compressed into large wheels.

Traditional Dairy Products: Milk processed into dried curds, milk vodka, aarts, yogurt, or similar historically Mongolian foods.

Terroir: The characteristic attributes of an environment imparted onto a food, changing its flavor and likely its nutritional profile.

Starter Culture: Groupings of microorganisms used to develop cultured dairy products, most notably yogurt, airag, and cheese. Different cultures provide dairy products with different flavors and characteristics due to the ratio and variety of microorganisms.

MACU: The acronym for the Mongolian Artisanal Cheesemaker’s Union.

MUST: The acronym for the Mongolian University of Science and Technology.

MULS: The acronym for the Mongolian University of Life Sciences.
INTRODUCTION:

Several New Year’s Eves ago, as Mongolia was about to enter 2011, then-president Elbegdorj toasted to the New Year not with traditional champagne, but instead the champagne of Mongolia: a tall glass of milk. Several decades ago, in 1963, as America was about to reel from the consequences of JFK’s assassination, Martin Luther King Jr. gave one of his office boys a book, underlining a chapter about cheesemaking: Gandhi had written it. Several days ago a man, recently retired from his job in the pipes, valves, and fittings manufacturing business, stepped off a plane in Mongolia with his wife: while in Utah, they had heard an expert in the artisanal cheesemaking field is currently in Mongolia and flew into Chinggis Khan International to volunteer. Several years ago, in Bayankhongor aimag, a Swiss cheesemaker started crying when he entered a new cheese plant: he felt the soul of another Swiss cheesemaker, twenty years dead, floating inside the walls of this cheese plant. All of these threads lead back to Ulaanbaatar, in 2019, where Westerner and Mongolian, new cheesemaker and old, navigate the strange world of artisanal cheese. 2019 is as hectic a year as others, with Chinese inspections on the horizon, dairy processing facilities being built this summer, and the industry reeling from the poor-quality grass of the 2018 summer. And as these stories above illustrate, Mongolian cheese is not just a Mongolian industry, but a globalizing one with ties to Switzerland, the United States, India, Germany, Ecuador, New Zealand, France, and of course Mongolia’s two neighbors: Russia and China. The relationship of Mongolian cheesemakers to these countries and their economic, cultural, and intellectual exchanges is difficult to understand but incredibly interesting. This study was born out of the curiosity to dig into one niche Mongolian market and understand how these puzzles pieces fit together, and how the threads align into a tapestry that illustrates how Mongolian ways of life are globalizing.
A series of nationwide trends have been associated with Asian countries, including Mongolia, since the 1990s. The continent is rapidly urbanizing (growing out its urban centers and creating new ones) and globalizing (adopting norms, practices, and culture from the international community), usually with one fueling the other and vice-versa (Pingali, 2005). Many Asian countries have also been developing in the past few decades, defined by the improvement of economic and social conditions for all citizens (Pingali, 2005). Mongolia has been an urbanizing, globalizing, and developing country since the postsocialist revolution in the early 1990s. After the revolution, many types of socialist infrastructure either collapsed, was scraped and sold on the global market, or was privatized (Adiya, 2019). Many of these socialist infrastructures or industries were food-based, such as the collective farming units known as negdels, or the provincial veterinary services (Tuya, 2019). Past literature on the collapse of socialist infrastructure in the 1990s in Eurasia indicates the collapse’s power vacuum left space for the infiltration of retailers, supermarkets, and other forms of Western food production/salesmanship into postsocialist countries (Hanf, 2008). Russians, for example, still purchase their food from open markets, kiosks, and small shops, but the rate that supermarkets, hypermarkets, and cash-and-carry outlets is rapidly finding footing in the urban centers of the country and slowly aimed to reach the less accessible sections of Russia, including Siberia (Hanf, 2008). Mongolia is similarly experiencing infiltration of globalized retail into Ulaanbaatar, its main urban center, as it further urbanizes, globalizes, and develops (Adiya, 2019; Tuya, 2019). This type of food industry is fundamentally different than the 20th century socialist food industry, although the two share many similar infrastructures and supply chains (Hanf, 2008; Swinnen, 2007). Alongside global food ways arriving in Mongolia, global dairy products, mostly European-style, have also arrived.

Mongolian dairying has existed for millennia, although since Soviet occupation and post-socialist collapse the practice has changed dramatically. Dairy culture has always been strong, with milk and “white foods” being
considered pure and Mongolians establishing dairy rituals associated, from offering to sky spirits and blessing people on long journeys (Kaminski-Killiany and McDonough, 2018). “In sedentary societies, giant wheels can be matured slowly and carefully over time—in a culture always on the move, small-format, rock-hard curds are much more practical. The protein-packed morsels last indefinitely; acidic, yeasty, and pungent, they can be sucked on like candy, or mixed with hot water or coffee to make a nutritious drink when fresh milk is scarce,” the cheese magazine *Culture* wrote last year (Kaminski-Killiany and McDonough, 2018). Although some of these cheeses are being mass-produced, a globalizing cheese industry in Mongolia is more focused on sedentary cheeses: European-styles that need to be pressed, continually washed, carefully stored, and sold quickly.

Most cheeses that can be bought in Mongolia today are what one Fine Cheese employee called “analog cheeses.” These are imported (usually Russian) cheeses that are primarily vegetable-based instead of milk-based. Palm oils are substituted into the artificial cheeses, milkfat is removed, Gouda flavorings, added, and more (Int 9; Int 11; Int 17). Mongolian artisanal cheesemakers do not see themselves as competing with this variety of cheese, simply because the quantity of analog cheeses is too high and quality too low, but all interviewed voiced their disapproval of analog cheeses. “The importing of cheese never stops,” Professor Purevsuren said (Int 11). Tsetsgee, a cheesemaker, called them “garbage” (Int 2). Similarly, the large dairy producers in Mongolia, mostly MonFresh presently, mass-produce Mongolian milk cheeses, most notably mozzarella (Int 20). Mongolian artisanal cheesemakers have no intention of mass-producing like Russian or MonFresh operations, but instead make complex, technically-specific European-style specialty cheeses. More numbers and details about the cheese marketplace are given later, but artisanal cheesemaker see themselves as inside a niche industry connected to a larger whole. Everyone interviewed greatly valued cheese and wanted more Mongolians to consume cheese.
However, a globalized dairy supply chains and industries have many well-recorded upsides and challenges. The spread of milk and dairy products has been criticized by many scholars, especially feminist and postcolonial scholars, as a form of neo-colonialism (Gaard, 2013). Articles like “Towards a Feminist Postcolonial Milk Studies” lists ways that milk hurts women, from intestinal issues caused by aid relief milk powder donated to Guatemalan villagers to the replacement of indigenous Indian cattle breeds with high-yield Swiss dairy varieties, exponentially increasing the feed and veterinary bills of some herders (Gaard, 2013). This breed-replacement program in India was known as Operation Flood, it took place in the 1970s and argued for a “white revolution” through adopting European and global standards for dairying. Although the “white revolution” was considered a success, it concentrated dairy power in the hands of the few through centralization and cronyism, crowded out indigenous cattle breeds, and destabilized the dairying chain in India enough to throw “thousands of people into real material poverty” while lowering the status of women and children tasked with milking the animals (Gaard, 2013).

Another downside is that globalizing food supply chains often ruin the “ecological embeddedness” of regional food products (Krzywoszynska, 2014). Because local foods are primarily made through the ecological processes instead of the industrial processes, they are variable and uncertain, varying year-to-year and region-to-region (Krzywoszynska, 2014). Conversations with Mongolians, especially herders, showcase that this variation is observed by Mongolians and often appreciated. It also reinforces that the foods are made with the ecologies and variations of the environment at the forefront of the suppliers mind, instead of being greenwashed or forgotten. Past literature has examined how private standards, usually set by global retailers and reinforced by globalization standards, encourages the normalization of all variable or ecologically embedded foods (Krzywoszynska, 2014; Pingali, 2004). This means that the Mongolian food supply chain, in an effort to control quality and provide Ulaanbaatar citizens with standardized products, is likely stripping itself of the uniqueness important to its
cuisine. Dairy is especially at risk, given how variable fermentation, lactobacteria, and refrigeration can affect the final yogurt, airag, or cheese. Many countries have awakened to the importance of artisan, local, and ecologically embedded products (the United States, France, and Italy come to mind) but usually this occurs decades after standardization sweeps through the country, altering or destroying aspects of the food industry (Henson and Humphrey, 2009; Tuya, 2019).

Mongolia may to able “leapfrog” over this middle period of globalized private standardization to create a high-quality, local, sustainable food industry without destroying smallholder’s livelihoods and traditional cuisines, but the reality of artisanal cheese shows how complicated this process will be. Mongolia has, in the past, leapfrogged into smartphones and arguably “jumped over” capitalism to go straight from feudalism to socialism, so this behavior has a historical precedent (Adiya, 2019).

Supporters of globalization and standardization argue that their behaviors ensure food safety, an aspect on the front of many Mongolian’s minds given the terrible track record of the Mongolian food industry and its neighbors (FAO, 2002; Olmsted, 2017). Because the Mongolian government and its policies are often full red-tape and slow-moving, private organizations that adopt private standards for their products are seen as cutting through bureaucracy and uplifting the food system (Henson and Humphrey, 2009). “Standards allow credible claims to be made about how products are produced, their impacts, and so on” (Henson and Humphrey, 2009). Several cheesemakers were incredibly proud with how their products appeared and tasted in comparison to international standards, and were proud that people educated in global settings understood what they meant when discussing Parmesan or Tilsit cheese.

The purpose of this study is to analyze at which stages of the chain supply chain globalization has entered: if globalization has altered dairy breeds, starter cultures, business models, sources of funding, the types of cheese products being consumed, who is consuming them, and how. These are all opportunities for the infiltration of globalization into Mongolia: altering Mongolian standards and
traditions while opening niche markets and new ideas. This study further investigates how the Mongolian artisanal cheese industry is infiltrating into the global market. Are its cheeses being exported, and what barriers are in the cheese industry’s way?

**METHODS:**

*Setting:*

21 interviews were completed within the Ulaanbaatar city limits, although some were accompanied by tours of cheese production facilities on the west edges of town. Since over half of the population of Mongolia lives in Ulaanbaatar, the city has become the center of the food industry, as well as being the center of food demand, this was the most practical site to study artisanal cheese. Especially because Ulaanbaatar showcases globalization, development, and citizen demand for better food standards within its borders, it is the best site to see these elements interplay around the cheesemaking world, which was mostly concentrated in Ulaanbaatar. The Mongolian universities MUST and MULS were especially helpful, because both deal with the cheese world in different ways: MUST focuses on biotechnology and nutritional sciences, including Mongolian dairy, while MULS focuses on dairy cattle breeding and the economic benefits of cheesemaking. For this reason a number of interviews were conducted with MULS staff or MULS-adjacent cheesemakers, and a MUST professor was selected to advise this project. Interviewees usually chose the location to meet for the interview, which was mostly their offices, restaurants, of cafes around downtown Ulaanbaatar.

In terms of limitations, this project originally intended to visit other areas where Western influence on food systems can be easily seen and studied, such as mine cafeterias, embassies, or food inspection facilities, but the logistics and infrastructure proved too difficult for this project’s scope; a more varied look at places where cheese is imported, bought, and consumed would have been helpful.
There were several mentioned cheese plants, such as a monastery in Selenge, a plant in Erdenetsogt, Bayankhongor aimag, and two pasteurization stations in Övörkhangai that deserved visits and tours, and would have furthered this project.

**Participants**

21 participants were interviewed for this project, with 14 of them Mongolian, and the rest Westerners from Western Europe, Central Europe, and the United States. All of them lived within Ulaanbaatar city limits, although 4 Westerners were planning on leaving soon.

A limitation of this study is the type of participants interviewed: mostly they were scholars and producers, instead of suppliers and herders, whose opinion and worldview would have likely altered the paper. Academics advising this ISP project discussed that the proposed herding community was in a state of “research fatigue” and had little patience for further Western academic involvement in their lives, so herder voices were not directly focused on, neither were individuals working directly with animals in other settings, such as farms and feedlots where Mongolian cheesemakers source their milk. Although there a few conversations with those “on the ground,” this study is restricted to managers, artisans, and scholars in the cheese community. All participants were questioned about their relationship to herders, which provided insight that could later be paired with interviews with herders about their relationship and opinion of those they sell their milk to. Nutrition assessment about the herding community was also sought to understand dairy product consumption among the herding community in lieu of more interaction.

**Measures/Procedures:**

Participants were interviewed as the main source of data collection. Planned interviews were minimally thirty minutes, with around an hour being the general maximum and average interview run-time, although several lasted over
two hours. Because of the nature of the project, these often look place during eating lunch or dinner, which relaxed the participant and gave the interview less of a formal rigidity. Planned interviews were almost always recorded on a voice recorder while handwritten notes were taken, sometimes accompanied by taking a few photographs of the participant at the end of the interview, all with their explicit written or verbal consent. Unplanned interviews did not have the forethought to be as organized, although verbal consent was always sought, and notes were always written or taken in audio form soon after unplanned interviews took place. All interviews used different questions and were semi-structured, although some had written questions beforehand to use as scaffolding while others were solely follow-up questions on what other participants described. After the interviewing process ended, some subjects were briefly shadowed while they went about their tasks: bottling kefir, retrieving molded cheese from supermarkets, and selling starter cultures to farmer’s families, for example. 10 talks were also attended at the first Microbes on the Move conference, a traveling conference in Mongolia and Kyrgyzstan focusing on dairy diversity on the Eurasian steppes, and a number of participants of the conference were interviewed, but none so formally as the 21 listed interviews.

Data Analysis:

Over 13,000 words were transcribed from these 21 interviews, all of which were recorded in two notebooks and mapped onto a series of graphs to better understand the connections between suppliers and producers. Many of these graphs were hand-drawn on graph paper and given to SIT at the end of the project. Recorded interviews were listened to on 1.5 speed as much as possible to ensure information was not glossed-over in the note taking process and typed quotes were accurate. Twenty pages of single-spaced notes were printed out, with each sentence color-coded as it related to the five topics touched on in cheese interviews: Microbiological and Animal Life and Death; Cheese Histories;
Cheese Economics and Market Prices; the Future of Cheese; and Cheese Taste, Nutrition, and Details. Each section was analyzed, as well as each interview, until contrasting and similar opinions about the cheesemaking industry emerged. Although a narrative was fairly clear from the second week of interviews, it further emerged as these notes were analyzed, and sources were re-interviewed to shed light on contrast opinions, such as who the “first cheesemaker in Mongolia” really was.

*Ethics:*

Educating participants about the project and getting their consent at the start of any interview was a consistent element to the data-gathering process. The purpose of the study and the potential risks and benefits were outlined in forms in both Mongolian and English, which were given to possible participants. At the end, participants checked and signed sections with their consent in the interview process, with subsections for allowing photography, voice recording, and direct quotation. Although the default of the English version of this form allowed participants to remain confidential, people did have an option to check that they would like their name to be used. Since a translation error left this section out of the Mongolian version, Mongolian participants were followed up and asked if their names could be used. Curiously, Western participants often signed the forms without carefully reading it or reading it at all, while Mongolians tended to take several minutes to scan the document and ensure they understood the project. In this paper, some participant’s names have been left out to ensure their anonymity, although the majority of participants did allow their full names to be listed. The community selected for this project is a small world, and participants bumped shoulders throughout the month this project, meaning it is likely that this study’s findings will have an impact on the community and the results or quotes shared amongst the cheesemakers. All those involved understood that as a risk going into the project and most still decided to be fully identified.
RESULTS:

*A Series of Brief Cheese Biographies and History of the Mongolian Cheese Industry*

In interviews with cheesemaker Tsetsgee Ser-Od, she often cited the impact and importance of her mentor, a deceased Swiss cheesemaker named Josef Dubach. His story is worth summarizing to better understand his relationship to global cheesemaking world and how his views fit into Mongolia. Josef Dubach was from Käserei Werligen Neuenkirch Luz, a small community of Switzerland, just north of the Alps and just south of Lake Sempach (Kyuya, 1958). There is some evidence he composed Yiddish yodeling songs for the cattle in the area and was respected by the Swiss dairying world early on (Dubach, 1989). During the mid-1950s, Dubach was recorded as living in the Langtang Valley of Nepal, a section of the Himalayas, living in a white tent beside a lama-full gompa (Kyuya, 1958). He had built two crude shacks in the Himalayan countryside, a setting full of alpine flowers, yaks, and cattle, and he was making cheese, butter and milk tea in the shacks (Kyuya, 1958). This is likely the “successful Nepalese project” mentioned later by Swiss documents. Dubach was often selected by the Swiss Development Agency to manage dairy development projects that involved parachuting into developing countries and building out their cheese industry, since cheese is a value-added transportable product more communities could be making (Dubach, 1989). After a failed Peruvian cheese project, the Swiss Development Agency worked with the Ecuadorian Ministry of Agriculture and Animal Husbandry on a mountain cheese project, where Dubach helped establish cheese plants in the mountainous communities of Bolivar and Salinas de Guaranda, Ecuador, in 1978 (Dubach, 1992). The Ecuadorian cheese project would become Dubach’s crown jewel, an amazing success (Belas, 2015). Although development banks were brought in, small debts were paid off within

Dubach would collect his knowledge in a 1989 book, *Traditional Cheesemaking: An Introduction* in 1989. Originally published in Spanish, it outlined how to build decentralized small cheese plants with a capacity of 600 liters of milk (Dubach, 1989). The publishing house’s statement of intent was to enable “poor people in the Third World to develop and use: technologies and methods which give them more control over their lives and which contribute to me long-term development of their communities” (Dubach, 1989) *Traditional Cheesemaking* was translated into English by Bill Hogan, a friend of Dubach who came into the cheese world by a strange path. Working under Martin Luther King Jr. in the 1960s, Hogan was recommended by MLK a chapter of one of Gandhi’s books outlining how disaffected urban youths in India could be uplifted, and add value to society, through good cheesemaking (Adams, 2006). After Hogan’s boss was assassinated, and then Bobby Kennedy the same year, Hogan decided to flee the United States to Costa Rica at the tail end of the 1960s (Adams, 2006).

Remembering Gandhi’s teachings, Hogan got a cattle farm in Costa Rica, started making and selling cheese, and one day met the Swiss ambassador to Costa Rica, who explained to Hogan that another “cheese-making guru” was working for the UN in Ecuador to develop remote Andean communities (Adams, 2006). By this point, Dubach had built hundreds of cheese plants in the mountains (Adams, 2006). Hogan drifted into Dubach’s world, was taught cheesemaking by him in Switzerland for six months, and Hogan eventually took the skills he learned in South America and Europe to Ireland (Adams, 2006). Tsetsgee said that *Traditional Cheesemaking* was a famous book among artisanal, rural cheesemakers. Hogan became a famous Irish cheesemaker and cheese philosopher, fighting for the best cheeses in what has been called The Irish Cheese Wars (Adams, 2006). Dubach returned to Quito, Ecuador, in the 1990s after his work with Hogan (Dubach, 1992). “The future of rural cheese making in
Ecuador looks very promising,” Dubach (1992) wrote in a food chain zine in 1992. Around a year later, he traveled to Mongolia to mentor Tsetsgee and others in rural cheesemaking (Int 2). He had a Nepalese silk stupa with him on the trip, which he gave to a Mongolian lama (Int 2). This was not a good sign, as some said the stupa warded off bad spirits (Int 2). Dubach flew from Mongolia to Ecuador in February 1995 (Int 2). There he was killed in his cheese shop, along with one of his sons, just after giving away the stupa (Int 2). Peruvian terrorists fighting in the Cenepa War against Ecuador, Tsetsgee explained, raided his shop and ended his life (Int 2). Mongolia was the last place his presence was felt.

Translated from Spanish, one description of his death reads: “José Dubach will wander, exploring the heavens to discover some place where celestial cheeses are made” (Belas, 2015).

The 1990s were a chaotic decade for Mongolia, the cheese industry included. “We had 29,000 animals,” Tsetsgee said when thinking back to the high-quality dairy cows of socialist Mongolia (Int 2). The collapse in the early ‘90s changed all that. Cheese equipment was sold, scrapped, or broken (Int 2). Socialist infrastructures like slaughterhouses, veterinary services, and pasteurization plants were similarly stalled or eliminated (Int 1). Soviets introduced high-quality cattle breeds to Mongolia, alongside feedlot-style operations for regulating lots of cows close together for consistent milking, both of those systems were hampered by the collapse (Int 1). The FAO cites a lack of milk as a reason for the surge in undernourished Mongolian children during this period (FAO Office in Mongolia, 2011). Tsetsgee explained that in 1990, Mongolia had two main milk producers churning out 200 tons of milk a day, totaling 60 million liters in a year (Int 2). By 2000, yearly production had dropped to 2 million liters (Int 2). In present-day winter, the big five milk producers can produce 100 tons a day from their factories and plants (Int 2). Although the milk industry is increasing in size every year, these numbers show how dramatic the collapse was. Discussing socialism, cheese company director Michael Morrow
said “I don’t want to make it seem like a paradise, it wasn’t, but the collapse was even worse” (Int 5).

As Mongolia recovered from the transition into a free market democracy, global programs were started inside Mongolia to revive the dairy industry. Two of the most important programs were the Dutch cheese-training program in 1994, and the FAO National Dairy Programme, which started in 2006 (FAO Office in Mongolia, 2011; Int 2; Int 15). According to Michael and corroborated by other sources, the Dutch-led Przewalski horse reintroduction program displaced herders in Tov aimag, a side effect the Dutch felt guilty about (Int 5; Int 15). They wanted to give back, “and being Dutch they thought about cheese” (Int 5). This program trained locals to make the value-added dairy product of European cheese with the express purpose of economically uplifting the area (Int 5). These training sessions is where Tumurkhuyag, the creator of the famous Khustai Gouda, learned about the craft of making Dutch cheeses (Int 15). Tumurkhuyag is the only Mongolian trained by this Dutch program who continued cheesemaking afterwards (Int 15). The program and its cheese eventually burnt out, with specialists citing that the cheese was intended for domestic markets when not enough Mongolians wanted cheese (Int 4; Int 5).

By the end of the Dutch program, Tsetsgee Ser-Od had also established a cheese company that was slowly falling into bankruptcy (Int 2). Tsetsgee is a dairy technician, trained in Moscow for five years starting in 1982, and once she returned to her home in Mongolia she worked managing the data of socialist butter-making plants in Mongolia from 1987 to 1990 (Int 2). During this time she took English night classes, where she was taught Ulziijargal Sanjaasuren, surpassing the English comprehension of others learning English (Int 2). A group of Soviet dairy technicians was leaving to be trained for the first time in a Western country, and Tsetsgee saw herself as becoming the first dairy technician to do so (Int 2). She studied in Denmark, and later in the Netherlands specifically for cheesemaking. Returning to Mongolia in 1993, she met Josef Dubach, in Mongolia as part of a Swiss Development Agency program to, again, uplift rural
peoples through cheesemaking (Int 2). Dubach taught her Alpine-style cheeses that fit the elevation and landscape of Mongolia: Tilsit and Gruyere, specifically (Int 2). Using $50,000 of funding from the German international development organization Konrad Adenauer Foundation, she established an Arkhangai cheesemaking operation and managed it for five years while the Dutch training started and finished (Int 2). The Arkhangai operation did produce good cheeses, but the logistics and demand wasn’t there domestically just after the collapse (Int 2; Int 15). “We were babies, we did not survive,” Tsetsgee said. She “was thinking in 1994 that tomorrow I’d be rich,” but that was not the reality. By her account, she started producing cheese in 1994, making her the first cheesemaker in Mongolia. Tumurkhuyag, who Michael cites as having started in 1995, sometimes said that he is the first cheesemaker in Mongolia, other times he said he started alongside Tsetsgee (Int 15; Talk 7). Tsetsgee does not like when men try to explain away or downplay her successes. “I was the first cheesemaking company, but MACU and Enkhee don’t like to talk about that,” she said (Int 2).

Tsetsgee’s first cheese buyer was a young Mongolian man who lived in Germany, named Enkhee (Int 2). He bought 80 liters for his pizzeria, an establishment he was proud of starting in Ulaanbaatar (Int 2; Int 9). In 1996, she pulled mozzarella with Enkhee in the back of his pizzeria (Int 2). It was the first cheese he had ever made, she said (Int 2). Now, Enkhee runs six restaurants and manages five cheese plants, making him the largest known mover of artisanal cheese by volume (Int 9). Discussing this era, Enkhee said “twenty years ago it was a virgin county” (Int 9). In the ‘90s, none of this was obvious to the cheesemakers on the ground. As Tsetsgee’s Arkhangai operation started to fail, she shut down the project and entered the Ministry of Agriculture, Food, and Light Industry (MAFLI) in 1999 (Int 2). Tsetsgee would not produce the cheeses and cheese plants that Dubach taught her until 2014 (Int 2). “Twenty years was spent to taste the cheese, to travel,” she said (Int 2). By the early 2000s, no one was making European artisanal cheese except for Tumurkhuyag, who was still working out the recipe of his Khustai Gouda (Int 15). His cheese is named after a
national park, which was established in 1993 as the Przewalski’s horses’ territory. Michael often calls Tumurkhuyag the Doyen of Mongolian Cheesemaking (Talk 7). Others call him crazy (Int 9; Int 12). Tumurkhuyag sees himself as partially in Tsetsgee’s shadow (Int 15). He is unable to market himself like her because he does not speak English, which also barred him from attending the Netherlands cheesemaking program in 1994 he wanted to attend (Int 15). Although he has fewer connections, he is incredibly proud of his cheese and constantly compare his cheese to Italian, German, and Dutch equivalents (Int 15).

“In 2003, the country was importing nearly all of its processed milk at a huge cost,” the FAO writes (FAO Office in Mongolia, 2011). By Tsetsgee’s account, MAFLI was obsessed with international trade around this time (Int 2). The Ministry was moving at an incredibly fast pace, switching titles and projects and using whatever resources they had (Int 2). Tsetsgee became the officer in charge with trading with post-socialist nations from 2002 to 2004 (Int 2). In 2005, FAO dairy programs started in Mongolia, and she was selected as the National Dairy Programme coordinator in 2005 (Int 2). Alongside Tsetsgee was a UN dairy coordinator named Brian Dudgill (FAO Office in Mongolia, 2011). Dudgill had grown upon a dairy farm in England in the 1950s but his job took him to various dairy farms across the world: he helped establish cooperative dairy programs in Bangladesh after its war, he helped support the rebuilding on Ugandan dairy industries after their civil war (Shamba Kraft). He worked in Iraq, North Korea, Eritrea (Shamba Kraft). His Skype username is milkman1474. Tsetsgee and Dudgill worked to revive the Mongolian dairy industry for two years before his retirement, and then she worked alone for two more years before handing off the project to the Mongolian government (Int 2).

The National Dairy Programme’s main project, which was given the code GCSP/MON/001/JPN, had nearly 2 million dollars of funding and the primary goal of getting milk from herders and transporting it into urban centers “safely and affordably for consumption” (FAO Office in Mongolia, 2011). Funded by the Mongolian and Japanese governments, the project produced, tested, and launched
20 new dairy products in Mongolia’s urban centers, built 16 countryside pasteurization and processing facilities, and collected milk from 1500 households, both herders and farmers (FAO Office in Mongolia, 2011). The explicit goal was to move Mongolia towards self-sufficiency and food security in the dairy world after the collapse (FAO Office in Mongolia, 2011). Tsetsgee said she worked really well with Dudgill on this project and the entire NDP (Int 2). In 2006, Brian was awarded UN/FAO’s B.R. Sen Prize “for outstanding achievement and innovative dairy value chain approach in re-building the Mongolian dairy industry” (Shamba Kraft). What is less clear is what happened to these countryside pasteurization facilities or these tested dairy products.

After the NDP, Tsetsgee went through several other government positions (Int 2). The FAO asked her to be the dzud emergency unit manager, then she worked on Mongolian livestock support programs (Int 2). Dugdill, although retired, was still working in Africa and gave Tsetsgee a job in Rwanda to improve one of their cheese plants (Int 2). By 2014, Tsetsgee retired from the government and MAFLI (Int 2). She decided she was going to start a small cheese company, so she applied for a loan from Chinggis Bank, for 140 million tugriks, likely around $88,000 in 2014 USD (Int 2). Brian Dudgill was the first one to invest in her company, for $10,000 (Int 2). She decided to build the cheese plant in Bayankhongor aimag, Erdenetsogt soum, because her father lived there (Int 2). It is her way to honor his memory (Int 2). Tsetsgee saw herself as following what she was taught in 1994 and in the pages of Traditional Cheesemaking (Int 2).

“After twenty years I am continuing his idea,” she said (Int 2). “Only after twenty years do I understand how he was teaching me” (Int 2). Again, they would make Alpine cheeses like Tislit, Gruyere, and a young Cheddar that Mongolians particularly like the taste of (Int 2). In 2014, Mongolia’s artisanal cheese industry began its second life. This time it would have a more complex series of characters and Mongolian businesses. Around the same time that Tsetsgee opened her cheese company, named Khongor Cheese, an American entrepreneur arrived in Mongolia with the idea of capitalizing on the country’s vast stores of high-quality, natural
milk (Int 5). He was not a dairy technician like Tsetsgee, and she made that clear in interviews. “He’s an English teacher” (Int 2). The entrepreneur was Michael Morrow, and he wanted to build one hundred cheese plants across the country (Int 2; Int 5).

Michael still eats at what could be called his nemesis’s restaurant, a place comes to because the food is good (Int 5). Michael doesn’t really care where he eats (Int 5). His voice is clipped when he selects the right words, and during the restaurant interview he placed on the dinner table a certification stamp of his company—the Mongolian Artisan Cheesemaker’s Union—beside which was a glass of $15 Chilean wine, and a thin plastic bag of three of his company’s cheeses he has brought to his nemesis’s restaurant for tasting (Int 5). Michael has “lived in Asia since 1966 without really coming back” (Int 5). He sees himself as helming a niche business (Mongolian artisanal cheeses) that he wants to grow into $20 million industry before his death (Int 5). And he will die soon (Int 5). He knows it, the question in his head now is if he will spend his last years fishing in Alaska, or planning the construction of one hundred decentralized cheesemaker plants he’s convinced can change the entire Northeast Asian country’s path forward (Int 5).

Michael is a high-risk entrepreneur (Int 5). “I had the good fortune of spending a lot of time in the Vietnam War, and I learned a lot of things,” he said. “And one of those things is that money isn’t very important” (Int 5). He claimed that all of the money he makes it gives away or invests in high-risk projects (Int 5). Previously he started a half dozen companies before spending a decade developing a neuroscience-based language learning company in China. This is his last venture, he made clear several times. “I’m going to leave this project one way or another. I’m an old man,” he said (Int 5). Michael moved to Mongolia in 2014 after considering the unique relationship Mongolia has to Asia and the comparative advantage it offers, namely its natural, organic cheese, if developed correctly (Int 5). He said he studied the entire Mongolian dairy industry but “wasn’t especially impressed or depressed by any of it,” he just saw potential (Int
In 2015 he started doing back-of-napkin calculations for how to build out the cheese industry, and realized that he could not build one centralized dairy plant like large milk producers (MonFresh, Cyy) do, but instead create a decentralized network (Int 5). In public, he said this was Tumurkhuyag’s idea (Talk 7). Because the Mongolian countryside is predictable, as Mongolians work in similar ways from soum to soum, solving one cheese plant’s problem could provide a solution that could be copied and pasted across all one hundred proposed plants (Int 5; Int 12). To develop recipes that other plant cheesemakers can use, and to test and plan for inevitable problems, MACU has built a small facility in Bio Kombinat, against the Songino Mountains, for experimental use (Int 5). It is called the White Mountain Plant and is currently operated by three Americans and the Mongolian engineer that designed the plant: Trevor, Casey, Judy, and Enkhbat, respectively (Int 12; Int 13; Int 14; Int 16).

One of the MACU dairy farmers described Michael as incredibly charismatic. Michael, the farmer said, “creates money very quick. He keeps going” (Int 4). He pays to access certain organizations, he uses all of his networking abilities, he befriends ambassadors, quality control experts, academics, and investors (Int 4). Tsetsgee sees herself as a very different kind of cheesemaker than Michael (Int 2). She has known him since his arrival in 2014 and sees him as raising money, especially from Western sources, in ways she cannot (Int 2). He has met with MAFLI staff, FAO staff, the high echelons (Int 2; Int 5).

Despite this, Michael at times feels isolated inside Mongolia (Int 5). He does not speak Mongolia, neither does his wife (Int 5). Instead, they argue in Mandarin like “we’re not here,” one MACU employee said. It appears that the rest of the MACU office speaks Mongolian, but not Mandarin (Int 5). In one day, their office’s internet was cut for several hours, an act Michael saw as deliberate, and he discussed with other MACU staff how photographs of their facilities and their cheesemakers, like Tumurkhuyag, were being used in promotional material for other artisanal cheese companies, specifically Cheese Republic (Int 5).
Michael said that it is not easy to raise money in Mongolia (Int 5). When asked for his funding source, he said “funding source? My own bank account mostly, until recently” (Int 5). Early on, he was introduced to “people at a very high level who had money” (Int 5). He thought he was naive about them (Int 5). “I don’t know why, but there’s a lot of small mindedness about people, maybe just cheesemakers” (Int 5). Last year, Michael found funders for MACU, but he said they tried to take over the company so he gave them their money back (Int 5). “Despite the bad stuff people say about us, we don’t steal, we don’t cheat” (Int 5). Instead, people have cheated MACU, and lied about MACU, he said (Int 5). He never finds involving lawyers to be pleasant, but had a handful of incidents where he had to use them (Int 5). However, Michael thought he had more friends this year than last, and last year more friends than two or three years ago (Int 5). Michael was the only cheesemaker who presented at Max Planck’s Microbes on the Move conference (Talk 7). Outside a bookstore, a man questioned me about if I was associated with Michael (Int 18). This was an individual close to Tumurkhuyag, who knew him when Tumurkhuyag was in debt, around 2014 (Int 18). Michael somehow forgave the debt, took on Tumurkhuyag as a co-founder of MACU, but because of the financial situation Tumurkhuyag was later downgraded to a cheesemaker (Int 15; Int 18). Still, Michael won his support, and Tumurkhuyag is proud of his loyalty to Michael, specifying he will always advise the man when they have a problem (Int 15). The man who introduced Tumurkhuyag to Michael thinks differently (Int 18). He said MACU is “the same thing as Oyu Tolgoi” (Int 18). He regrets ever introducing Tumurkhuyag to Michael, and now is trying to convince Tumurkhuyag to cut off the relationship (Int 18).

Michael is opening a fromagerie this month, so perhaps he will eat there instead of at his nemesis’s restaurant (Int 5). The owner, Enkhee, tried to do MACU under, Michael says (Int 5). Michael feels sorry for him (Int 5). Still, Michael wanders around the restaurant patio space from table to table, talking up potential investors, expats, and MACU employees (Int 5). In Michael’s eyes,
Enkhee went the wrong way in the cheese industry, not only trying to steal from MACU but creating an unnecessary squabble (Int 5). Instead, Michael thinks they need to develop cohesion as an industry, especially if they hope to export artisanal cheese (Int 5). Both Michael and Enkhee label MACU as the same thing. They call it a cartel (Int 5; Int 9).

Enkhee’s Cheese Republic is the last of the three significant artisanal cheese companies in Mongolia. Out of all artisanal cheese, in 2018 Cheese Republic produced 70% consumed (Int 9). In a year, Cheese Republic can produce around ten times the yield of Khongor Cheese (Int 2; Int 9). Enkhee is a restaurateur by nature, bringing the service and quality of the German restaurants he remembered from his time in Europe in the 1990s (Int 9). He said he started to get into cheese ten years ago when discussing how to fund a monastery charity project in Selenge aimag (Int 9). By using the local herders, they could extract milk from the region and use the monks to process up to 800 liters of milk in a summer season, eventually ripening and selling the herder’s milk as mountain cheese (Int 9). He now rents several cheese plants and produces a variety of high-quality cheeses in such high demand that they have sold out of all 2018 cheeses (Int 9). Cheese Republic cheeses are sold at Nomin and Emart, as well as the lobby of the Silk Road restaurant Enkhee created (Int 9). Both Enkhee and Michael were advised by a Swiss cheesemaker, Carlos Marbach (Int 5; Int 9). He was Josef Dubach’s good friend (Int 2). Out of all cheesemakers, Enkhee expressed the most love over cheese and its many tastes and styles (Int 9).

*Export and Domestic Markets*

By Tsetsgee’s understanding, no wheel of Mongolian artisanal cheese has ever been successfully exported to another country (Int 2). In 2014, Tsetsgee tried to send 30 kilograms of cheese to Denmark, but the DHL package was held in the Copenhagen airport because of fears over pasteurization standards and disease vectors, especially foot and-mouth disease (Int 2). Denmark refused to accept Mongolian government certification for the cheese. Russian requirements for
export just as difficult, they are 30 pages long and involve six different Mongolian agencies, including MUST/MULS, which doesn’t have the dairy technicians the export requirements deserve (Int 2). Russia has a booming market, and is the largest neighbor to Mongolia, but no cheesemaker has made it through (Int 2; Int 5; Int 9). Cheese Republic had an Azeri buyer, but Enkhee could not find a way to transport the cheese to him, saying that Russia was impossible (Int 9). A Harbin-based company wanting to market Cheese Republic products as proudly Mongolian and organic asked for every cheese they had (Int 9). Enkhee moved the cheeses to a Mongolian-China border town but was denied at the border for health concerns (Int 9). MACU has “every interest in selling our cheeses to China,” Michael said (Int 5). When he explains the potential worth of Mongolian cheese, he gives the numbers in comparison to the demand of China, South Korea, and Japan (Talk 7). He predicted cheese consumption trends in China by looking at Chinese red wine consumption, and frequently discusses Chinese models and Chinese markets (Int 5). Last year, Chinese authorities promised to inspect MACU and determine if they could export to China, but it was rescheduled for 2019 (Int 5). Getting an export license for his cheeses is Michael number one problem, and high up on Enkhee’s list as well (Int 5; Int 9). One of MACU’s potential investors said that if someone invites the Dalai Lama to Mongolia, Chinese export negotiations would be screwed, to which Michael laughed and agreed with (Int 5).

All artisanal cheese company directors interviewed saw their cheeses as high-end luxury products, and marketed them as such (Int 2; Int 5; Int 9). Tsetsgee’s customers are Shangri-La and City Tower, but the State Department Store is her best customer (Int 2). Enkhee is marketing his cheeses to high-end and international hotels abroad, where tourists care about the quality of cheese (Int 9). Both Michael and Enkhee discuss the relationship between cheese and wine, and how more complex wine pairings and purchasing (in Mongolia for Enkhee, in China for Michael) would drive demand for their cheeses (Int 5; Int 9). Although Tumurkhuyag said he was the man behind the idea of producing large
amounts of cheese for export, he does not like the idea of luxury cheeses (Int 15). When approached by a businessman who wanted sole access to his Khustai Gouda and a promise to price it high, Tumurkhuyag denied him because regular Mongolians would be unable to afford the cheese (Int 15). Instead, Tumurkhuyag set a fixed price on his Gouda, around 25,000 tugriks, and hasn’t changed it since 2014, despite rising costs of production (Int 15).

Tumurkhuyag’s boss, Michael, has different opinions about the role of the domestic Mongolian market (Int 5). He said that Mongolian consumers are “important in the short term, but not very important.” The FAO said there is a $3 billion difference between what Mongolian milk can be sold for on the domestic market and what it can be sold for internationally (Ministry of Industry and Agriculture, 2014). Mongolian consumers are only going to want so much cheese, the country being small and so new to global trends (Int 5). Michael calculated that there is 1000 tons of a domestic demand for cheese, mostly pizza cheese, but only 1% of that demand is for artisanal cheese (Int 5). He believes he can grow artisanal cheese to 5% of total demand, but that level of consumption would only support three cheese plants (Int 5). MACU has four cheese plants already. MACU has had to suspend plans for many more plants, because they would not have an outlet to sell excess cheese from these plants if and when they are built (Int 5). Simply put, if the Mongolian government doesn’t open the export market soon, Michael said “this won’t be around very long” (Int 5). Instead, he will hand off MACU to Mongolians he knows and he will fly to Alaska with his wife to fish for the rest of his life (Int 5). Mongolia will be left with less than 5% of the cheese plants Michael promised when he decided to build 100 several years ago (Int 5). “I don’t want anyone to lose money,” he clarified (Int 5).

Life and Death in the Cheese World

The hardest barrier to obtaining an export license to ship Mongolian artisanal cheeses to neighboring countries, “or god forbid the E.U.” Michael said, is foot-and-mouth disease (Int 2; Int 5; Int 9; Talk 10). At the recent dairy
Conference, Michael Eschbaumer, a pathogens expert said that foot-and-mouth disease has arrived in Mongolia in “repeated incursions over the past decade,” and has moved extremely fast and extremely widely across the nation (Talk 10). Mongolia desperately wants to be free of foot-and-mouth disease to open up opportunities for trade, as potential buying countries would be scared off by the virus (Int 1; Int 2; Int 4). Michael downplays foot-and-mouth, explaining people should instead of worrying about meat, not properly processed cheese, and Eschbaumer said that “any sort of seriously fermented product should be safe” from the virus, possibly including cheese (Int 5; Talk 10). Enkhee believes that if they record evidence of foot-and-mouth, they’ll be barred from European and Chinese markets, the exact people they believe they need to export to (Int 9).

The eradication of foot-and-mouth disease has been handled poorly from Michael’s perspective, but the system is improving (Int 5). And FAO and MAFLI project in the mid-2000s started subregional discussions with Mongolian neighbors about the virus (FAO Office in Mongolia, 2011). And now, the Mongolian veterinary system is being reformed and developed after a landmark piece of veterinary policy was passed in 2018, signaling the rebirth of veterinary services after socialist collapse (Int 2; Int 5). New, better infrastructure like roads allows for vets to navigate the countryside with ease, although it also allows globalized foods, like standardized European starter cultures, to reach countryside homes, a PhD candidate said (Talk 1). And diseases (Int 4; Talk 1).

Veterinary evidence makes it clear that foot-and-mouth disease is spreading from China, likely from the illegal transport of animals through Inner Mongolia (Int 1; Int 4; Int 5; Int 9; Int 11). The spread has lead to a series of conspiracy theories. One dairy farmer believes that the virus was purposefully spread here by the Chinese government to restrict Mongolia’s export options, giving China more leverage in trade negotiations, such as the upcoming cheese discussions (Int 4). Enkhee could believe that the virus was instead introduced by vaccine companies to sell more medicine to Mongolia, given how the yak region of Mongolia was virus-free for half a century (Int 9). When Tsetsgee was
originally interviewed, she claimed that the export market would refuse to take cheeses from a foot-and-mouth country, meaning every cheese company focused on exporting, specifically naming Cheese Republic and MACU, was doomed to fail (Int 2). Later she reoriented her argument that MACU’s model was good, but very difficult. “In ten years it will probably work” (Int 2). When discussing foot-and-mouth disease, Michael casually stated that China worked out contaminated dairy a different way. “Four people got shot and now they’re strictly enforcing the dairy industry,” he said, referencing public executions (Int 5). One of his farmers in a separate conversation about the virus started to attack Chinese history, saying “China should be inside the wall. Simple border. They built it” (Int 4).

A virus isn’t the only “alive” aspect to cheese: cheese is thriving with microorganisms introduced as a starter culture of organisms during the cheesemaking process (Talk 2; Talk 5). No cheese company interviewed used starter cultures indigenous to Mongolia. Tsetsgee used Danish CHR Hansen cultures, which she bought in bulk and sold to farmers or smaller producers (Int 2). Fine Cheese imported German starter cultures, but refused to name their supplier (Int 17). Tumurkhuyag used Dutch cultures (Int 15). MACU used Danisco cultures, another Danish company now controlled by the controversy-ridden chemical company DuPont (Int 12).

To people like Christina Warinner of the Max Planck Institute, who “care a lot about the past and prehistory,” ignoring indigenous starter cultures is arrogant, and annoying (Int 21). There’s “no real reason to crowd out indigenous cultures other than that it’s convenient,” she said (Int 21). The indigenous cultures of Mongolia are known dairy bacteria that do not require that much R&D to implement into dairy products, and can be done using traditional backslopping technique that has been used in Central Asia for thousands of years (Int 21). This also means when it comes to quality control testing, “indigenous cultures can pass all these tests” (Int 21) Global, standardized starter cultures, in her eyes, are too minimalistic for their own good, and are used because the paperwork is easier (Int
21). Purevsuren publicly questioned an Apu dairy representative for similarly taking the convenient way out with cultures (Talk 5).

Trevor, the expert cheesemaker for MACU, does not want to use Danisco cultures either, instead “go back to the roots of cheesemaking,” but presently indigenous cultures are seen by MACU as unstable, experimental, and something that should be tested later on in the process, not while MACU is trying to recipe-test and start up the company (Int 5). Michael has discussed with Trevor using indigenous starter cultures, specifically taking some from airag, later on in MACU’s development (Int 12). Airag has thirty microorganisms in its culture, compared to the handful (around 5) in imported Danish cultures. They have not discussed compensating the herders they would be taking the cultures from (Int 12). Because MACU does not have a permit to import starter cultures from Mongolia, when Trevor flew into Mongolia he carried a cardboard box filled with $1000 worth of cultures wrapped inside a food security conference complimentary tote bag, and they have been using these Swiss-style Alpine mixes since his arrival (Int 12).

Dairy breeds, similar to cultures and diseases, are coming from abroad into Mongolia. “We have to protect breeds,” the zoo technician professor of MULS said in an interview, describing how local breeds can survive poor pastureland, but he also emphasized the need for commercial dairy breeds (Int 1). The demand for dairy products in Mongolia is simply too high to rely on local, decentralized cows (Int 1; Int 9). European breeds do have a high feed demand, meaning the more Mongolia supports farmed cows, the larger the fodder industry would have to grow to support feeding cows (Int 1; Int 9; Int 17). Some cheesemakers see this as a drawback, given the high-quality and readily available pastureland (Int 9; Int 12).

Demand and Idealization

Different cheesemakers saw Mongolian cheese demand changing in different ways. Enkhee believed that because the Mongolian diet could be
described as so simple, Mongolians would be interested in trying anything (Int 9). Tsetsgee saw the opposite, as Mongolian’s historic diets meaning they were afraid to experiment with stranger or spicier cheeses—this is why she produces young Cheddar (Int 2). Other Mongolians described their discontent for Mongolian cheeses. Interviewee 4 said that his proposed farm and plant with Michael will only make European varieties, not Mongolian, because Mongolian cheeses don’t melt. He added, “personally, I don’t buy Mongolian cheese. I only buy European cheeses” (Int 4). Others described Mongolian traditional cheeses as low-quality, sour, and most of all not economically feasible, because people are not interested in buying them (Int 2; Int 5; Int 7; Int 17).

Enkhee described trying to make the same cheese from two different groups of cattle who each grazed on opposite sides of one mountain (Int 9). In the end, the same process yielded two different cheeses, because the terroir of the milk was so varied. Enkhee and Cheese Republic understands that every year produces a different cheese, making the industry very difficult (Int 9). The idea of vintage-specific cheeses with an ecological embeddedness feature could be a strength, he accepts, much how wines are sold by their vintages (Int 9). He called ecological embeddedness a crazy idea, because it would make life harder for cheese buyers (Int 9). Buyers have standards, and even if buyers understand how cheeses vary, their customers might not (Int 9). Enkhee is aiming to has cheeses only vary 10-15%, the maximum he thinks he can get away with, and funnel variant cheeses into local restaurants, but this is not a global solution (Int 9). For export, he understands he will need to standardize the product (Int 9). He also said that helping people understand variation is the “only solution we have” (Int 9).

Michael said that “if we have a hundred cheese plants we’re going to have two hundred cheeses” (Int 5). Each plant would make two cheeses well, but “every cheese should be unique, unique to the environment, and commercially viable” (Int 5). Michael compares his vision of the future to Parisian cheese shops, while a Mongolian cheese buyer compared his vision of the future to
Boston’s Russo’s Market, where he saw 103 varieties of cheese being sold, and now wants that level in Mongolia (Int 5; Int 10).

When Mongolian cheesemakers were invited to Hokkaido Island in Japan, last year, to train in cheese entrepreneurship, Tsetsgee said that the Hokkaido cheese plant had been perfecting a white cheese recipe and technique for the last fifteen years (Int 2). It took her many years to perfect the Alpine cheeses Dubach taught her, and Tumurkhuyag took a similar pace in his Khustai Gouda (Int 2; Int 12).

However many cheeses they pursue, logistics looks to be baffling. Traditionally, Mongolian dairy products dramatically reduce waste, sorting dairy products into nine different categories and using as much of it as possible (Talk 2; Int 2). The European waste standard system for cheesemaking is incredibly different, with 85% of the milk turning into whey that, normally, is flushed down the drain (Int 5). Learning and dealing with these new systems presents even more challenges. MACU wants to turn the whey into sillage, fertilizer, or what Michael called “human food,” referring to one plan to reduce whey to dulche de leche (Int 5; Int 12; Int 14; Int 16). Storing so many wheels of finished cheese is something Tsetsgee takes particular worry in as the industry scales up (Int 2). Proper cheese storage facilities are millions of dollars, and who then will flip the cheeses, wash the rinds, and ensure the correct aging process (In 2)? Essentially no elements of European cheese infrastructure have been tested in Mongolia, or tested to this scale.

**DISCUSSION:**

Some discussion of these results have already appeared in the above text, as cheesemakers and industry stakeholder’s opinions were contrasted and discussed, both in present and historic attitudes towards Mongolian cheese.

As this relates directly to globalization, it could be difficult to overstate the global influence on the cheese industry. Globalization has affected every stage
of the Mongolian cheesemaking world. The breeds of cattle used to be European-Kazakh crossbreeds that are now being reintroduced post-collapse into Mongolia (Int 1; Int 5). The development projects in Mongolia were funded by Dutch, German, and Japanese foundations, where Mongolians were taught European-style cheeses by Dutch, Swiss, and Japanese cheesemakers. The equipment that fills cheese plants across Mongolia is a rag-tag assortment of Czech, French, Russian, Italian, Chinese, and Indian makes and models. The cultures are introduced from abroad, as are the diseases, sometimes leading to new forms of lacto-nationalism and pride in old dairying traditions.

Not only Mongolia but its two neighbors have customers that value European-style cheeses more and more each year, especially meltable, stretchable cheese for foods like pizza (Pingali, 2005; Int 2; Int 5; Int 9). Even the very concept of artisanal cheese could be considered foreign. As mentioned in the literature review, European cheeses can only be produced by sedentary cultures that stay in one place and can afford habits that managing a live product like cheese requires. Trevor sleeps directly outside the White Mountain plant because he needs to flip massive (hard to transport) cheeses in the middle of the night (Int 12). He washes them with water. He sets up home humidifiers underneath racks of cheese wheels to improve the aging process. Mongolians just a century ago would likely be unable to afford such habits, and the sign that more Mongolians are involving themselves in the industry is a sign of sedentarization. Companies that source from farmed cattle instead of semi-nomadic herders, such as Fine Cheese, further speed up the sedentarization process and now need to deal with waste management, growing fodder, and supporting dairy cattle during the harsh winters (Int 17). Although many Mongolian cheesemakers see this farmed/feedlot systems as necessary evils to support the Ulaanbaatar demand for cheese, the industry should remain careful to not use the steppe as a backdrop or curtain to hide intensive agriculture behind. Western agricultural systems have brought health and environmental degradation across continents, and many Westerners and Mongolians can see these systems as being imported into Mongolia with
dangerous speed (Swinnen, 2007). Is there not a better way for this country, which has relied so heavily on semi-nomadic pastoralism?

The Mongolian artisanal cheesemaking world mostly seemed to view globalization as a positive for their industry, although there was disagreement among the community and about specific issues globalization exacerbated. The economic and societal gains from a globalizing dairy industry were the viewed as the most positive, while the bureaucracy, power dynamics, and lack of a cheese’s “value” (whether nutritionally, socially, or metaphorically) were seen as drawbacks. Most of those in the cheese industry saw globalization as the only way forward. In past literature, scholars have been suspicious by this shift, especially the power dynamics. “[F]ood aid has always been a colonialist extension of foreign policy, farm interests, and corporate interests; it is offered to open future markets for commercial sales, extending the reach of agribusiness corporations and enabling First-World governing and economic institutions to control their Third World counterparts,” Gaard (2013) writes. Her argument supports that such dairy globalization and restructuring (from a family hobby into a large business) is colonial in nature.

One Mongolian cheese buyer questioned the crowding out of Mongolian cuisine due to global infiltration. “What is American food?” he said. “Sandwiches from Germany, pizza from Italy. Where do these things come from? As long as you have vitamins and nutrients you are good” (Int 10). Trevor from MACU also complicated the significance of a globalized cuisine, positing that perhaps Mongolian cuisine needs to be altered for Mongolians to grow nostalgic of their past and start a renaissance of old culinary ways (Int 17). Similarly to the repetition of agricultural mistakes, just because historically this has been a pattern of behavior, Mongolia does not need to repeat this dynamic.

According to the Dairy Cultures project at the Max Planck Institute, 80% of Mongolians are lactose intolerant (Int 8). Christina Warinner has called this a “milk paradox,” and the Dairy Cultures project is investigating how Mongolians still consume so much dairy despite this apparent intolerance (Int 8). Current
research is showing that many Mongolians have rare bacteria that allow them to process dairy, and that fostering these gut bacteria is incredibly important to uphold the Mongolian historical relationship to milk (Int 8). Several interviewees such as Enkhee and Tumurkhuyag theorized that the ultra-processing of dairy products and the use of oversanitized, Tetra-Paked milk is sickening more and more Mongolians, likely because this standardization does not foster healthy microbial life and instead kills everything (Int 5; Int 9). Ecological embeddedness in the case of Mongolian milk seems to not only matter on a taste, terroir, or economic level, but at a public health level. The further use of standardized starter cultures could further damage the healthy Mongolian microbiomes. Paired with the conspiracy theories surrounding milk contamination and geopolitics, one can see how many Mongolian topics and anxieties dairy products can impact, and how more clear, rigorous research is needed into the subject. Unchecked, fast-paced dairy globalization looks to have significant drawbacks for the future of Mongolia, and cheese provides a lens to analyze this.

As this project went more in depth, more connections between cheesemakers were discovered. Bill Hogan, the cheese translator and later philosopher, was on the forefront of the war to not oversanitize cheese and to instead support indigenous, natural starter cultures (Adams, 2008). These talking points would be picked up at the Microbes on the Move conference decades after. Carlos Marbach, while touring Tsetsgee’s cheese plant several years ago, started to cry when he felt the soul of Dubach inside the facility (Int 2). They were close, and they reunited in this strange way in the mountains of Mongolia. Tsetsgee taught Enkhee how to make mozzarella, then later Enkhee tried to join MACU, pulled out, and started teaching cheesemaking at MULS, working alongside the dairy science professors who might be instructing the first wave of students who can produce a wheel of cheese that can actually leave Mongolian borders, as export regulations could be finalized around 2020 (Int 9). When Trevor was traveling to Ecuador, by chance he came across a company producing Dutch-style cheeses in copper pots after being trained “by some European” (Int 12). That had
to have been Josef Dubach. Many of these connections were not understood by those in the industry, or lacked sufficient context to explain the significance behind the history and relationships. A clearer sense of the history of the Mongolian cheese industry and similar cheese development projects would help everyone moving forward. MACU does not seem to understand the trials and errors that the National Dairy Programme went through in 2005, but since both projects seem to have the same goals and methods a comparative analysis would be incredibly helpful. MULS professors discussed wanting to pursue projects similar to India’s Operation Flood, but interviewing dairy historians about how to avoid repeating the centralization mistakes Operation Flood encouraged could reorient expectations and start conversations about dairying in Asia. When Michael was asked what other experts and stakeholders should be interviewed about the Mongolian artisanal cheese industry, he said “I don’t know many.” That should be the wrong answer. Not only does he know many people in the industry, but the industry is so wide, friendly, and accessible that after five years one could have easily joined the local and global community of cheesemakers, from rural Vermont, to southern Ireland, to mountainous Nepal if effort was put in. If there is one consistent benefit to globalization, it would be the consistent worldwide communication and record-keeping. More conversations between cheesemakers should be widely encouraged, especially humbling conversations. During many interviews, participants expressed histories of “bad blood” with other cheesemakers, some of which were based on bad information or misinterpretations. Michael’s goal is to form a cartel of cheesemakers under one umbrella brand of MACU, where the entire industry comes together and avoids “petty fights.” This would be a more realistic goal if people like him listened more.

The most revelatory piece of information was the lack of export procedure for Mongolian cheeses, essentially blocking the entire world from consuming Mongolian cheeses. Despite this, many companies had sold themselves around their plans for expansion. MACU is the clearest example, where Michael has been
promising for several years twenty times the amount of cheese plants he believed the country could afford to support while claiming how MACU can help revitalize the Mongolian countryside, reduce or reverse brain drain, and support herders’ finances. Such a large-scale transformation simply won’t happen despite his promises if the export market fails to open, specifically the Chinese market he has been trying to catch. Although he understands how high-risk/high-reward this scheme is, do others, especially those banking their futures on his plan for the future? This pace towards entering the export market is noteworthy, but risky. Government workbooks described cattle milk alone as having 2 billion USD of international market value, and everything from camel to goat milk adding hundreds of millions of dollars more to value of Mongolian “white gold” (Ministry of Industry and Agriculture, 2014). This is still, however, a speculation of the dairy industry instead of its present-day capabilities. Michael revealed in an interview that the top phytosanitary expert in China, one of the officials associated with the upcoming cheese export inspections, did not even know Mongolia made cheese. A revolution for the Mongolian cheese industry is overdue, but that does not mean it is on the horizon. This project illustrates the many clear barriers of entry Mongolia has to face before it can enter the global market for its cheese.

Study Limitations

Although setting and herder participant limitations have been previously mentioned, there were other aspects of this paper that have potential for later expansion or re-analyzation. A clear, representative view of the Mongolian food supply chain, even just looking at cheese, because not enough suppliers of milk were interviewed, and not enough consumers of Mongolian dairy products were interviewed either, leaving the “middlemen” of the supply chain the focus of the paper. Not all stakeholders in the Mongolian cheese world were interviewed, and if more time permitted those in the supermarket and grocery world, those in food-
or export-based government positions, and those who acquire and move dairy products, such as nyaravs, would have been sought.

Additionally, the study did not collect new quantitative data to analyze, instead it gathered previously collected surveys, order forms, price listings, and other quantitative information to present together. The data was believable, but the underlying numbers and standards for data collection may remain slightly too obscure for some readers, and further investigation is recommended. J.F.M. Swinnen wrote that a lack of empirical evidence and weak conceptual analyses are a dramatic constraint in the literature of food supply chain analyzes, and although this article is more anthropological than economic, more quantitative information again could have been pressed (Swinnen, 2007).

Mongolian foodways, especially the dairy industry, is dictated by the season, and because this project was centered in May, before the dairy industry has started its peak, it was difficult to accurately represent the scale and inner workings of Mongolian dairies, instead relying on past testimony and the beginning of milking season. Although seasonality is important to herders and artisanal cheesemakers, it is becoming less important to industrial dairy operations as they keep cattle year-round in closed facilities, so the seasonality did not have as much of an impact of these “city milkers.”

CONCLUSION:

At the end of May 2019, the cheese world is starting to bubble. MACU invited the guests and speakers of the Microbes on the Move conference into the new fromagerie for its first official meal (a mixed bag, but a proof-of-concept). Enkhee is meeting with a Canadian cheesemaker in MULS, testing $30,000 worth of cheesemaking technology invested into the university. Tsetsgee is presenting during the World Milk Day Celebration 2019 at the Blue Sky Hotel in downtown
Ulaanbaatar. Milking season is starting, and after the 2018 drought and poor grasses, everyone is hoping this year’s yield to improve.

The Mongolian artisanal cheese industry in 2019 is radically different than the industry looked in 2014, or 1994, or even 1924. As the country globalized and took on Western systems of cheesemaking and dairy consumption, European-styles of soft and hard cheeses developed in the country, the likes of which few Mongolians had seen or enjoyed. Much of the dairy industry was disrupted during the postsocialist collapse, and took decades to recover, with some policies and projects such as aimag veterinary care only being successfully reimplemented in the present-day. After the collapse, several international development projects trained Mongolians to make cheese, although the market was not ready for artisanal cheese and almost everyone involved stepped back from cheesemaking for many years. In recent decades, three notable artisanal cheese companies started in Mongolia: Khongor Cheese, Cheese Republic, and MACU, each with different approaches to the future of Mongolian cheese, where their cheese should be sold, and the benefits and challenges to making cheese in Mongolia. Today, globalization has influenced nearly all aspects of Mongolian cheesemaking, from the types of cheeses being produced, to the cultures inoculating the cheese, to the markets these companies are aiming to sell their cheese to. However, no Mongolian cheese has been successfully exported from the country, leaving the industry with many questions and speculations about the future of Mongolian cheese.

There is strong evidence that a decentralized artisanal cheese industry could and will be supported in Mongolia, and that it could dramatically change the socio-economic of anyone involved in the dairy industry. Currently there is not sufficient evidence that MACU will be the harbinger of this change. Josef Dubach accomplished a similar feat in the Ecuadorian Andes decades ago, but the economic and logistical barriers in Mongolia combined with the current attitudes and arguments inside the industry suggest that a lot of work needs to be done before such a system can prosper.
Although recommendations for future studies and comparative analyses have been mentioned throughout, it is worth again noting how many directions this research can go. Mongolian cheese can be analyzed through a public health lens, looking at how the globalization and standardization of milk reduces the potential health benefits of cheese, and how cheese might be suppressing or encouraging the spread of viruses like foot-and-mouth disease. Mongolian cheese can be analyzed through an infrastructure lens, looking at how cheese is a way to reduce the perishability of a food and move it to market on the bad roads of Mongolia, which might be changing, as some cheesemakers discussed using the One Belt One Road Initiative to transport cheese through Kazakhstan, or renting air fleets to transport soft cheeses to neighboring megacities. Mongolian cheese relates to topics like food safety, sedentarization, terroir, historical memory, tradition, quality control, ecological embeddedness, climate change, and others that could not be discussed for this project, but still deserve attention. If Mongolia alters its policy for exporting cheese, the entire industry might change in a few seasons, and someone should hopefully be tracking and reporting if and when that occurs.

APPENDIX 1:

Photograph Descriptions (in order):

Image 1: The cheese processing section of the MonFresh milk factory in the Southwest section of Ulaanbaatar. Seen in the morning, this section of the factory fills up with workers during the afternoon after the milk workers finish the days’ worth of milk.

Image 2: Executive Chef Cliffe Arrand, Sous Chef April, and Mrs. Arrand taste experimental cheeses at Rosewood Kitchen + Enoteca. Previously Cliffe was not as happy with MACU cheeses, but everyone really enjoyed this
batch. Rosewood plans to open a market in June to sell artisanal groceries to Ulaanbaatar customers, including cheese.

Image 3: Michael Morrow of MACU sits at his desk in the new MACU office space in Orchin Center, downtown Ulaanbaatar. Their office is above the planned fromagerie and surrounded by embassies and expats, which Michael sees as a source of customers.

Image 4: Erdenebat and Oyunchimeg, local herders and farmers near the White Mountain MACU plant, bring the plant the most milk they have ever received: 240 liters of spring milk, which has yellowed thanks to grass consumption. Michael Morrow’s old dog awaits the arrival of the milk for pH testing.

Image 5: Tumurkhuyag Urtnasan in downtown Ulaanbaatar after his drive into the city from Altanbulag, where he makes his famous Khustai Gouda.

Image 6: Trevor Warmedahl watches the milk froth die down as he separate cream from high-fat milk in the White Mountain experimental cheese plant. He is wearing a MACU promotional hat which his new intern, Casey Allred, thinks looks great. The cream will be used in a special dinner for the attendees of the Microbes on the Move conference.

Image 7: A selection of attendees of the Microbes on the Move conference after the first day of lectures and discussions let out in the conference hall of MUST. Event organizers, medical students, nutritionists, microbiology experts, and herders can all be seen in this collage.
APPENDIX 2:

List of Interviews:

Int 1: Bat-Erdene Amarbat, Zoo Technician Professor, Mongolian University of Life Sciences
Int 2: Tsetsgee Ser-Od, Creator/Director of Khongor Cheese
Int 3: Media Representatives, Mongolian Health Initiative
Int 4: Dairy Farmer and Restaurateur, Mongolian Artisan Cheesemakers Union
Int 5: Michael Morrow, Creator/Director, Mongolian Artisan Cheesemakers Union
Int 6: Sugar Nergui, Biotechnology/Nutrition Department Lecturer, Mongolian University of Science and Technology
Int 7: Cliffe Arrand, Executive Chef, Rosewood Kitchen + Enoteca
Int 8: PhD Candidate, Max Planck Institute
Int 9: Enkhee Ya, Director/Restauranter, Cheese Republic
Int 10: Employee, Green Lips
Int 11: Purevsuren, Dairy Science Professor, Mongolian University of Life Sciences
Int 12: Trevor Warmedahl, Cheesemaker, Mongolian Artisan Cheesemakers Union
Int 13: Judy Allred, Intern/Volunteer, Mongolian Artisan Cheesemakers Union
Int 14: Casey Allred, Intern/Volunteer, Mongolian Artisan Cheesemakers Union
Int 15: Tumurkhuyag Urtnasan, Cheesemaker Mongolian Artisan Cheesemakers Union
Int 16: Enkhatbat, Engineer, Mongolian Artisan Cheesemakers Union
Int 17: Employee, Fine Cheese
Int 18: Employee, World Wildlife Foundation
Int 19: Creator/Director, Sant Suun Bulag
Int 20: Employee, MonFresh
Int 21: Christina Warinner, Max Planck Institute

List of Talks Attended:


REFERENCES:


Shamba Kraft. Brian Dugdill, Dairy Specialist
