From a Homemade to an Industrial Product: Manufacturing Bulgarian Yogurt

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Changes in yogurt production in the first half of the twentieth century were related to the transformation of dairy manufacturing through the incorporation of science and technology into the production process. The modernization of the dairy industry affected yogurt, which Bulgarians considered a traditional national product. Scientific discourse reduced regional variations to one universal "ideal type" of yogurt: a model for all producers. That standardized product embodied a nationalistic policy that authenticated products on the basis of their Bulgarianization. This transition of production also changed the labor profile, as housewives relinquished yogurt making to male workers in small dairies.

CHANGES IN YOGURT PRODUCTION IN THE first half of the twentieth century were related to the transformation of dairy manufacturing by the incorporation of science and technology into the production process. The modernization of yogurt production, developed in conjunction with the reorganization of the milk industry, was a part of the general transformation of the dairy industry in Europe. The modernization of the

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Bulgarian dairy industry affected yogurt, which Bulgarians considered a traditional national product.

A 1940 article by the dairy and veterinarian specialist Kosta Katrandzhiev, who participated in the introduction of large-scale production of yogurt, provides an analytic insider's view. He discussed the contradictions and difficulties that surfaced when traditional production practices were replaced by new techniques, ones considered to be more modern. Katrandzhiev graduated as a veterinarian in France. In 1936 he became a manager at the Capital Station for Milk Control in Sofia, Bulgaria. Katrandzhiev's European education nurtured a pro-modern predilection and a resolve to transform the Bulgarian dairy industry in accordance with leading European models. He actively advocated the modernization of dairy production, promoting his ideas by publishing articles on milk control and dairy manufacturing. Katrandzhiev's vision of a modern dairy industry combined new practices and institutional structures that were facilitated by science and technology. Recognizing that the transformation of the dairy sector would be slow and difficult, he consistently championed abandoning older, traditional production methods.[1]

In 1937 Katrandzhiev and his colleagues inspected Sofia's dairies and concluded that the yogurt they produced was often substandard. The microorganisms introduced into the milk were problematic: an analysis of the collected samples showed that *Lactobacillus bulgaricus* was not developed in proper quantities. Some samples showed mutations; in others, competing microorganisms suppressed the actions of the fermentation agent. According to scientists, these problems were caused by the use of impure, contaminated, or old leaven. Most interestingly, Katrandzhiev was alarmed by the realization that various dairies produced yogurt with different tastes and consistencies. The scientists anticipated that sanitary control and the introduction of clear cultures into yogurt manufacturing, rather than the use of *maya* (the traditional leavening agent) would eliminate such problems. In his professional capacity, Katrandzhiev instituted the delivery of starter cultures to dairies from a specialized laboratory with the aim of improving the quality of yogurt. The laboratory at the station selected and filtered the microorganisms to turn them into clear cultures for yogurt manufacturing. To overcome the dairymen's resistance, the selected microorganisms were distributed for free. Katrandzhiev argued that, "this improvement in the quality of

yogurt in Sofia hardly costs the city anything at all. What one needs is initiative and perseverance."[2]

Using clear cultures in yogurt production was the product of scientific rationalization of the natural process. Instead of accepting the wide variety of microorganisms that were used to produce Bulgarian yogurt, the experts established clear, rigid rules and definitions. In 1938 K. Popdimitrov explained this science in *Българско кисело мляко. Произход, производство, хранителност и надзор* (*Bulgarian Yogurt: Origin, Manufacturing, Nutrition, and Control*). Popdimitrov considered that only *Lactobacillus bulgaricus* and *Streptococcus thermophilus* were proper for Bulgarian sour milk. He labeled all other microorganisms "undesirable microflora." He defined the "typical" characteristics of the microorganisms that were considered essential for quality yogurt production: their structure, their reactions to certain environments and experiments, and so on. He also controlled the interaction between the two microorganisms, considering it an important characteristic of real Bulgarian yogurt. Popdimitrov believed the proportion of *Lactobacillus bulgaricus* to *Streptococcus thermophilus* should be three to one. Any Bulgarian yogurt made with unspecified microorganisms was defined as atypical. The Capital Veterinary Station, which controlled milk and dairy products, had the authority to set strict guidelines to control large-scale production of yogurt.[3]

Scientists introduced clear cultures to produce a standardized product. By standardizing yogurt production, they sought to avoid any deterioration in either taste or quality. They tried to eliminate the use of any microorganisms that they considered uncharacteristic of Bulgarian yogurt. Standardization also helped promote yogurt as a national product. It defined what Bulgarian yogurt was, and how it should be produced. By establishing common characteristics, the experts transformed yogurt into Bulgarian yogurt: a product with its own specifications and production technology.[4]

Despite claims that modernization would improve quality, Katrandzhiev noticed that yogurt produced in the private commercial dairies was lower quality and had poorer taste and aroma. In his opinion, home producers used fresh starter cultures made from good quality milk, according to the traditional recipe, and thus made yogurt of better quality than that manufactured at the dairies. Katrandzhiev believed that homemade yogurt was prepared in more hygienic conditions because the processes

could be better monitored compared to the mass production of yogurt under unsanitary circumstances without supervision by proper specialists.[5]

His observations, however, did not make him an advocate of home production. Rather, in his article, Katrandzhiev defined the two fundamental requirements for the mass production of what he called "high-quality genuine Bulgarian yogurt": "impeccable hygiene" and "competence." He was convinced that dairymen were not qualified enough to meet these standards and needed additional training in how to use the clear cultures, how to avoid the mutation of yogurt strains, and how to prevent impurities. Other requirements for success were sterilized fresh, high quality milk and sterilized vessels. Others agreed with Katrandzhiev, and numerous scientific journals published articles on the necessity of clear cultures and how they might benefit yogurt production. Training would result in the use of high-quality microorganisms to ferment the milk and also protect the specific flavor of Bulgarian yogurt to guarantee its quality.[6]

On May 1, 1935, as part of the state policy of vocational education, the Ministry of National Economy financed the construction of the first specialized dairy educational institution—the State Practical Dairy School in Pirdop. Bulgarians considered the small town and its surroundings in the western part of Bulgaria, eighty kilometers from Sofia, as the heart of traditional dairy processing. The school sought to provide students with theoretical and practical training in the technologies of milk processing for the production of cheese, butter, and fermented dairy products; it also taught dairy product control.[7]

Even though dairy production at home was often women's work, the school facilitated the masculinization of the business. It only admitted male students between the ages of seventeen and twenty-five who had completed secondary education, and it offered a two-year course of education, plus one additional year of practical training in dairies approved by the Ministry of Agriculture and State Property. Having passed their final examination, students became dairy masters and received a craftsman's certificate.[8]

With the introduction of formal dairy education in Bulgaria, professional literature discussing how science was applicable to dairy production proliferated. Asen Kantardziev had written the first Bulgarian manual of professional dairying in 1930. Eight years later, Popdimitrov published the first Bulgarian handbook dedicated to yogurt manufacturing. This

manual combined a historical overview of yogurt production in Bulgaria with the introduction of a new scientific approach to its manufacture and sanitary control. Popdimitrov drew the attention of the reader particularly to the chemical and nutritive characteristics of "Bulgarian yogurt" and thus distinguished it from other types of fermented milk products. His aim was to nationalize the product.[9]

In the first chapter, Popdimitrov offered a comprehensive presentation of the historical roots of Bulgarian yogurt. Starting from the tribes that established the First Bulgarian Kingdom in 681 CE and tracing significant historical events through the 1930s, Popdimitrov argued that yogurt was an indispensible component of Bulgarian nutrition. His intention was to assign nationalistic qualities to yogurt, and he used historical, technological, and microbiological evidence to achieve this end. In spite of the patriotic nature of the publication, it offered information on yogurt production, including research on yogurt microflora and nutritive characteristics, instructions on how to collect samples for microbiological and bacteriological tests of yogurt and milk, and regulations stipulating the organization of dairy workshops. In a nutshell, the book provided an excellent description of traditional Bulgarian yogurt production and remains a valuable source on the problems facing mass production of yogurt in the 1930s.[10]

Prior to the commercialization of production in Bulgaria, yogurt was mostly for family use and made preferably from ewe's milk. Up to the Second World War, Bulgarian women produced yogurt on a daily basis, provided that milk was available and the religious calendar allowed the consumption of dairy products. Yogurt production depended on the seasonal availability of milk and on the milking cycles. Several factors besides animal physiology influenced animal lactation. Milk was often scarce when animals lacked enough nutrition or were plagued by disease. Floods or droughts also affected the animals' productivity.[11]

Bulgarians produced yogurt with milk from different animals: ewes, buffalos, goats, cows, or from a mixture of milk. Despite the variety of raw materials available, the most desired milk for yogurt production was ewe's milk. Popdimitrov and Katrandziev both stressed this preference. Popdimitrov stated that, "from pure ewe's milk one may obtain the most delicious and nutritious Bulgarian yogurt." In his opinion, the biochemical composition of ewe's milk gave Bulgarian yogurt its specific taste.

Katrandziev, on the other hand, associated the popularity of ewe's milk among Bulgarians with their preference for a fattier product. Popdimitrov explained that yogurt made of cow's milk was not as thick because it contained more whey. It was also less nutritious than yogurt made from other types of milk, as the albumin and fat quantities in cow's milk are half of those in sheep's milk. The specificity of cow's milk impacted the technology of making yogurt. When cows milk was used, because of its more liquid consistency, it was boiled until just three-quarters of the quantity was left, a process designed to thicken the milk. Popdimitrov's manual for yogurt production thus assumed that only ewe's milk gave the desired nutritive and organoleptic characteristics. The recommendations he offered represented a first step toward yogurt standardization. He neglected regional variations in yogurt production that made use of grassroots knowledge, religious practices, and rituals to guarantee the fermentation of milk.[12]

The availability of ewe's milk had a lot to do with the natural processes of lactation and was also part of the Bulgarian annual agrarian and religious cycle. Milking started on April 23—St. George's Day—and lasted until July 12—St. Peter's Day. During the winter, or when ewe's milk was not available, Bulgarians relied on buffalo's and goat's milk for yogurt manufacturing, which changed its taste. Popdimitrov argued that buffalo yogurt was considerably less palatable than sheep-milk yogurt. Cow's milk was also used during the winter.[13]

Traditional yogurt production started when the farmer's wife or the shepherd took a small portion of previously produced yogurt and used it as a leaven for the new product. S/he boiled the milk and left it to cool, then tested if the temperature was appropriate for the inoculation of the maya manually, by dipping a finger into the boiled milk. If the yogurt maker was able to stand the temperature, the maya was mixed in. Producers regarded the introduction of the maya—the agent of miraculous milk transformation—as the most risky stage. Thus women had developed a wide variety of traditions to guarantee the transformation of milk into yogurt: using magic words, making the sign of a cross over the milk, producing special sounds (e.g. whistling), etc. In the village of Getcovo in North East Bulgaria, according to local legend, before adding leaven, the youngest unmarried virgin poured the cooled milk through a golden ring into a new container. The women would then

cover the containers filled with the leavened milk with woolen cloth. In order to prevent any drastic drop in temperature, they would leave the vessels close to the fireplace. Several hours later, milk would be transformed into yogurt.[14]

When no milk was available to make yogurt, women preserved the leaven by drying it. Sometimes the maya was not well preserved. In such a case, the farmer's wife would borrow some from the neighbors. If the whole village lacked maya, its inhabitants borrowed it from the neighboring village. Popdimitrov gave an account of several other ways for the preservation and procurement of maya. One of the techniques involved dipping a cloth into a bowl of yogurt and letting it dry. As a result, the piece of cloth would contain the right microorganisms. When the yogurt producers needed it, they could easily reactivate the culture. According to Popdimitrov, a widespread method to activate leaven was dipping a piece of lamb stomach into a small amount of raw milk. The acid bacteria of the lamb maw would ferment the milk. Reproducing leaven several times by souring milk and extracting a new portion of leaven resulted in good quality maya. Popdimitrov argued that Bulgarians obtained the required microorganisms from their environment. Most of the technologies and natural leavening sources he described seem improbable. Some people supposedly used sour bread soaked in water—when dipped into boiled milk it supposedly soured the milk. Other techniques relied on formic acid. A thorn (or sticks) that had been stuck into an anthill would also ferment milk. Different plants were also possible sources of the bacillus that caused milk fermentation. Popdimitrov even reported the use of gold coins called *kostadinki* in the leavening of yogurt. All of those techniques curdled milk, but would not produce good quality yogurt.[15]

Popdimitrov explained why the taste of yogurt differed in Bulgaria and "in Europe." Bacteriological and biological research had proved that the microorganisms causing fermentation of milk, even if they had the same bacteriological characteristics, could produce products that differed in taste and aroma. Popdimitrov stated that "bacteriological and biological research has proven that there is no difference between the bacilli causing the fermentation of milk in Bulgaria and those in Europe; still, the end products differ in flavor and in taste. The yogurt produced with the microorganisms isolated from Bulgarian yogurt is better in taste and in flavor than the yogurt produced with foreign microorganisms."[16]

Popdimitrov advanced the hypothesis that each country had specific beneficial microorganisms that generated specific national products, supporting his argument by saying that "as of today, the flavor of Pilsen beer has been mastered nowhere except in Pilsen itself." He realized that "it was impossible to prove scientifically whether the characteristics of yogurt in this country were related to climate-specific microorganisms—it could only be registered practically, on the basis of the significant differences in the flavor and taste." Therefore, he argued the unique characteristics of a national product depended on local geography and traditional technology, which gave Bulgarian yogurt its specific taste.[17]

Bulgarian scientists introduced another explanation for the specific taste of Bulgarian yogurt: the superiority of Bulgarian microflora due to "the mass selection, which came as a result of daily leavening of yogurt." This argument first appeared in 1930 in *Млекарски наръчник* (*Dairy Guidebook*) by Kantardziev, who commented on the unconscious selection of regional microflora based on the tastes of the local people. Kantardziev concluded that, due to a preference for a specific taste, "a selection of the most suitable fermentation-causing bacteria is carried out." Popdimitrov used the same argument defending the uniqueness of Bulgarian yogurt. According to Popdimitrov, Bulgarian women actually accomplished a natural selection of microorganisms by picking the most delicious yogurt as a maya for subsequent leavening. Charles W. Bamforth calls this "back slopping" and evaluates it as the means "to seed the fermentation with the preferred micro-organism." The cultivation of wild bacteria was crucial in establishing a specific taste that differed from region to region, and from one nation to another. Microbiologists Jashbhai B. Prajapati and Baboo M. Nair point out another important factor in the selection of yogurt microorganisms: "the environmental conditions and taste preferences of the local people."[18]

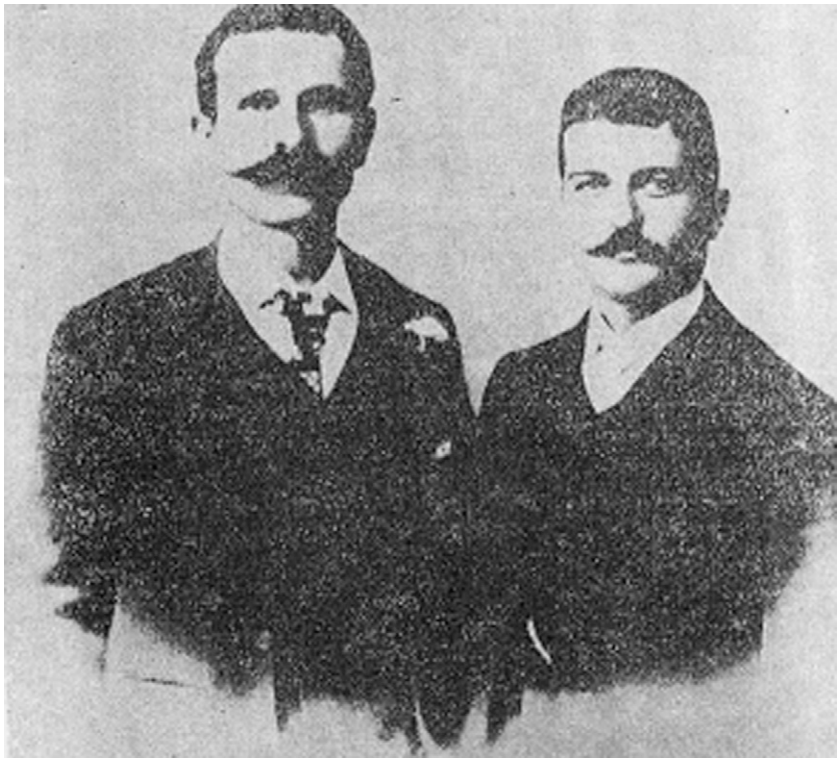
The production of homemade Bulgarian yogurt from sheep's milk was an everyday activity of Bulgarian women. What scientists described as natural selection was the repetitive production of yogurt that corresponded to what the woman-producer and her family considered good quality yogurt. Because each woman adapted the product to the preferences of her household, one could claim that the specificity of Bulgarian yogurt reflected taste preferences of Bulgarians.

The transformation of yogurt from a homemade product to a mass-produced foodstuff was a long process. The first Bulgarian dairies appeared a few decades before Bulgaria gained its independence in 1878 from the Ottoman Empire. At first common only in the big cities in the Ottoman Empire, the trend spread to smaller towns throughout the Bulgarian state after 1878. The Balkan and First World Wars slowed commodification, but the transformation of the Bulgarian dairy market took off in the late 1920s in response to urbanization and agricultural modernization. Even then, however, the rural population dominated the country's demographics. In 1920 only Sofia and two other cities had a population over twenty thousand (Russe and Burgas), but by 1934 Bulgaria boasted twelve relatively big cities: Burgas, Varna, Pazrdzhik, Plovdiv, Pleven, Russe, Sliven, Sofia, Stara Zagora, Harmanly, Shoumen, and Yambol. Cities offered work opportunities that tempted the peasant population to migrate.[19]

The uprooting of peasants resulted in profound changes in their practices and traditions. By moving to the town, they lost connection with the land and with their animals, which were their basic sources of food and profit. Simultaneously, city administrations had to solve the problem of providing healthy raw milk for their growing populations. In Bulgaria, milk became a commodity earlier than yogurt. From the mid-nineteenth century on, however, Bulgarian entrepreneurs produced yogurt in many Ottoman cities long before the process spread throughout the national Bulgarian state in the late 1920s and 1930s. Bulgarian dairymen working in the largest cities of the Ottoman Empire developed trade strategies and gained experience of yogurt production beyond the domestic sphere. According to Ivan Zafirov Masharov, who worked for the Bulgarian Exarchate in Constantinople from 1908 to 1910, quite a few of the yogurt producers in the city were Bulgarian. Atanas Lutov, Nikola Lutov, and Georgy Georgiev from the town of Koprivshtitza worked in Alexandria up to the First World War, selling their dairy goods to some of the consulates in the city.[20]

Mass-produced yogurt did not gain popularity in the Bulgarian state until the late 1920s, spreading slowly from the largest Bulgarian cities to smaller towns. The dairies did not compete with home production at first; indeed, until the 1960s homemade and mass-produced yogurt existed side by side. Katrandzhiev stated that in the 1920s and 1930s,

Figure 1. Nikola Lutov and Georgy Georgiev, Bulgarian Dairymen in Alexandria.



SOURCE: Atanasov and Masharov, *Млечната промишленост в България,* 17.

consumers gradually adapted to the product sold in the dairies. He observed that

> over the last few years the production of yogurt in this country has been acquiring the status of an industry, even if still limited in scale, and this explains the growing demand for it. . . . Nowadays, yogurt is not only homemade the way it was in the past; quite a few food places produce it and offer it, among them dairies, confectioneries, restaurants, etc.

Katrandzhiev reported that the capital city of Sofia consumed 3.5 tons of mass-produced yogurt per year. Other sources back up his observation

that homemade and commercial yogurt coexisted. For example, Bulgarian microbiologist Maria Kondratenko remembered that during the mid-1930s, "even in our small town [Aitos, South East Bulgaria] there were three dairies that offered yogurt. . . . My mother, even though preparing yogurt at home, would sometimes send me to buy it from them." The Bulgarian writer Dragan Tenev also recalled the dairies in Sofia selling yogurt in the interwar period. He recounted how "around seven o'clock sparks of life would start flickering around the bakeries, grocery stores, butchers, and especially around the dairy workshops where the citizens of Sofia went to buy yogurt rather than raw milk." Tenev remembered that, in his childhood, yogurt was leavened in large enameled basins or earthenware pots. He described how dairymen, "using their roundish scoops of shiny stainless tin," served it out into the customers' containers.[21]

As these reminiscences show, for many households yogurt making was no longer a common daily practice by the 1920s and 1930s. Instead, urban residents bought yogurt in a shop or at the market. Dairymen produced yogurt in earthenware pots that could take five kilograms of yogurt; enameled tin pots later replaced the earthenware ones (see Figure 2). Domestic producers used unglazed earthenware pans and wooden

Figure 2. Old Yogurt Pot from Getzovo Village, Razgad Region.

Temporary exposition on the Sixth Yogurt Fair in Razgrad (2009).
SOURCE: Photograph by the author.

containers. The yogurt's density was so high that the product was cut in portions according to the amount that the consumer was willing to buy. As a proof of quality, consumers looked for the presence of *kaymak,* the fatty portion of cream on top of the yogurt. Recalling her childhood, Kondratenko emphasized how important it was for Bulgarian consumers to have kaymak. As she remembers: "When I was buying yogurt, I always kept my eye on when they would start selling from a new pot with lots of kaymak on top. . . . On the way home, I always ate the entire kaymak, which was considered the most delicious part of the yogurt. When I got home, my mother would ask me what type of yogurt I had bought with no kaymak at all."[22]

In the 1920s and 1930s, dairymen took the technology for producing homemade yogurt and made it a craft. However, real industrial yogurt production started in the late 1950s, following the guidelines of the communist party for a nationwide industrialization of agriculture. Up to then, mass production of yogurt was not full-scale industrial production. However, the transformation of the practices associated with homemade yogurt into a craft was a stage in its own right, and the appearance of a market for mass-produced yogurt affected home production.[23]

The new urban market redefined the position of women in the countryside, who produced yogurt for their families. Along with their work in the household, on land, and with animals, they also became participants in the urban dairy market. Peasant women had a specific place in the commercialization of yogurt. They took part in the exchange of goods as the producers of a recently introduced commodity. The growing demand for yogurt in the urban market encouraged peasant women to increase production at their homes in order to make money. The product was still produced in the traditional way, but there was a drastic change in distribution and consumption.[24]

In his 1938 article, Katrandziev included a drawing of peasant women selling their yogurt in the town (Figure 3). The caption informed the reader that these were women from the village of Borisovo, who were selling yogurt at the Momina Cheshma market in the town of Razgrad. The picture has a modern woman in a non-traditional dress in the background, representative of the potential consumer. One of the rural women reveals how yogurt was transported to market. With the help of a large wooden shoulder yoke, she balances three pots of yogurt on each

Figure 3. Women from Borisovo Village Selling Yogurt at Momina Cheshma Market in the City of Razgrad.

SOURCE: Katrandziev, "Киселото мляко като храна," *Serdica* 1 (1938): 12.

side. The author did not explain why he printed the piture. Given his subject, one might argue that the depiction of the yogurt market in Razgrad was meant to show visually how primitive dairy production in this country was when compared to the modern industry with its scientists and laboratories promoted by the author. The image of the three female yogurt sellers functions as a valuable and vivid visual source for the yogurt trade.[25]

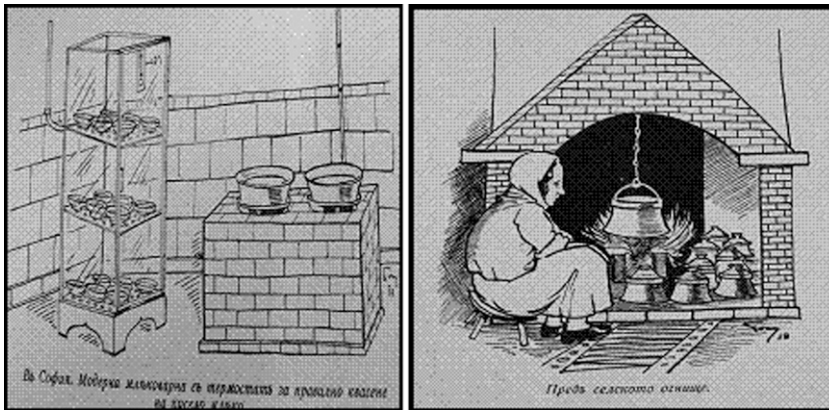
An interview with the daughter of a yogurt seller from another village close to the town of Razgrad fleshes out information gleaned from the picture. In the 1930s O. X. often accompanied her mother to the market in Razgrad—they went there twice a week on foot. According to the daughter's memories, the village women started early in the morning

and walked to the town wearing six pots on a wooden stick on their shoulders. The interviewee's mother had regular customers such as the doctor, the wife of a Jewish tradesman, and others who preferred her mother's yogurt and had it delivered directly to their doorstep.[26]

Despite the existence of two different systems of yogurt production and distribution in the 1930s and 1940s, mass production gained dominance, even though it was limited to urban areas. In rural Bulgaria, villagers produced their own milk and dairy products. Urban yogurt mass production resulted in a disconnect between consumers and the product consumed, and it transformed yogurt producers into yogurt buyers. It also introduced new experts in yogurt production. The experience of female producers clashed with modern dairy production, with its focus on science, technology, hygiene, and strict controls.

When yogurt production became industrial, the profile of the people involved changed from housewives to male workers in small dairies (Figure 4). Peasant women sold their product at town markets, but modernizers considered home production unhygienic. Gradually, women were excluded from production, although for centuries they had been the traditional keepers of the technology. One reason for the masculinization of yogurt production was the market. The amount of milk available to farmers' wives was limited, since they used surplus milk from their

Figure 4. Comparison between Homemade Practices of Yogurt Production and the Proclaimed "Modern" Ones.



SOURCE: Katrandziev, "Киселото мляко като храна," *Serdica* 1 (1938): 12.

animals. Thus, the amount of yogurt they could offer the market was less than the dairies, which collected raw milk from farmers. Market principles and the product cost were crucial in the process of yogurt mass production in dairies.

The first dairy school in the town of Pirdop did not accept female students, thus denying the former producers the opportunity to obtain a professional education. Dairy specialists were to be men only, who would be taught the new requirements and logic of modern dairy production. With mass production of yogurt, manufacturing was transformed from a home activity to a craft. At home, knowledge was transmitted tacitly, whereas the workers involved in commercial yogurt production applied lessons they learned in vocational dairy schools. The education the dairy school offered its male students was based on scientific achievements and newly developed machinery. The authority of science, technology, and education was the most powerful agent in the masculinization of female activities and the regenderization of yogurt production.[27]

The requirement that agricultural schools admit only men became an important factor in the masculinization of dairy production, a process forced and supported by the state and the scientific community. In 1936 the weekly Bulgarian magazine *Млекопроизводител* (*Milk Producer*) published an article entitled "Жената в млекопроизводството" ("The Woman in Milk Production"). It directly addressed the exclusion of the female dairy producer from the modernization of the Bulgarian dairy sector. The authors raised an important question: "Should the woman who was and still is the keeper of dairying and milk production . . . be left in ignorance and unaffected by enlightenment and science?" The article stressed the fact that Bulgarian women had been producing all kinds of dairy products for their households for many centuries, while the "great dairyman" had only recently entered the picture. "The first dairy producers and milk processors . . . were women; they still have this role and would keep it in the future too, regardless of the fact that men have become 'great dairymen' who open dairy-processing stations, dairy shops, etc." Commercialization introduced men into dairy production. "Only recently, when they saw that cow's milk provided for the family, did men become interested in dairy production." The article advanced the argument that Bulgarian dairy production might benefit from the

inclusion of women in the process of modernization. It suggested that dairy and agricultural courses be organized for rural women, which should "broaden their knowledge." Unfortunately, that suggestion was not heeded.[28]

When yogurt was commercialized, it was cast as a male practice in opposition to the home production by women. The introduction of technological equipment, scientific rationality, and specialized education legitimized the masculinization of the dairy industry. The technological revolution and the concept of progress reinforced this process. The understanding of technology as a rational endeavor devalued traditional methods of production. The growing dominance of male experts and entrepreneurs over yogurt production involved machines and new scientific knowledge (microbes, fermentation, inoculation, *Lactobacillus bulgaricus,* and so on) as indispensible for the quality and safety of the product. Dairy experts routinely railed against rural women's production methods as backward and old-fashioned.

Even when craft yogurt production followed the same steps as traditional yogurt making, it was presented as scientific. Scientists and dairymen did this by explaining specific activities in terms of scientific principles. For instance, dairymen no longer checked the temperature of the milk prior to the introduction of maya by dipping a finger or elbow into the milk. Instead, proponents of the scientific method utilized a thermometer to indicate the exact temperature. In 1938 Popdimitrov described the equipment that should be used in a modern town dairy such as machines for pasteurization, thermostats, and fermentation cupboards. In fact, these were simple tools labeled as more developed technology, used to remove milk fat, to regulate the temperature, and to pour the cooling and boiling milk into containers.[29]

Scientists also utilized new procedures and tools in yogurt production, as well as a "new" scientific language. They introduced the ferment with a syringe and long needle. Popdimitrov criticized the practice of using an amount of previously produced yogurt as a starter and suggested different ways to prepare a starter culture directly before its introduction to the milk. Kantardziev described the fermentation process as "the time during which the milk, at forty to forty-five degrees Celsius, cultured with a starter culture for yogurt, acquired a dense, thick texture and a pleasant sour-milk taste and aroma under the

influence of *Str. thermophilus* and *Lactobact. Bulgaricum.*" He pointed out that the proper correlation between *Streptococcus thermophilus* and *Lactobacillus bulgaricus* was essential for the quality of the yogurt. To achieve high quality yogurt, he advocated ½ to 1 percent leaven, introduced into milk cooled down to forty-two degrees Celsius. After three hours, the result should be a product with agreeable texture and density.[30]

The movement to rationalize yogurt production had two major effects. First, mass production transformed yogurt from a typical home product into a commercial product, and the changes were related to the adaptation of scientific knowledge. The scientific principles opposed the received wisdom and the old methods of yogurt production that had acquired the reputation of being backward, primitive, and unscientific. The modern approach generated its own knowledge and practices. Although most of them were based on traditional methods, they were translated into the language of science. The second major effect was to shift production from women using traditional knowledge in their homes to male workers in the dairies utilizing their professional education.

Scientific discourse reduced regional variations to one universal "ideal type" of yogurt making as the model for all producers. The restriction of variations was intended to guarantee a tasty and high-quality standard product for the mass consumer. Commercialization required standardization. The final standardized product embodied nationalistic policy; its authentication stemmed from its Bulgarianization. The product that met all the scientific guidelines was labeled "good quality real Bulgarian yogurt."[31]

NOTES

1. Kosta Katrandzhiev, "Киселото мляко като храна и мерките за подобрението му в столицата," *Ветеринарна сбирка* (1940): 43–56.

2. Ibid., 43–56. Maya was prepared by keeping a small amount of yogurt from the previous day.

3. Yogurt is produced using a culture of *Lactobacillus bulgaricus* and *Streptococcus thermophiles.* Each stimulates the growth of the other. See, A. Y. Tamime and Richard Robinson, eds., *Yoghurt: Science and Technology* (Cambridge: Woodhead, 2007), 48. Katrandzhiev, "Киселото мляко като храна," 50–53.

4. Yogurt produced at home was never made with pure cultures. Thus, many additional microorganisms were also part of the yogurt's microflora.

5. Katrandzhiev, "Киселото мляко като храна."

6. See, for example, Penyo Penev, "Българско кисело мляко," *Млекарсак просвета* 4 (Apr. 1941): 1–5; Katrandzhiev, "Киселото мляко като храна," 34, 52–53; K. Popdimitrov, *Българско кисело мляко. Произход, производство, хранителност и надзор* (Sofia: Spas Iv. Bozhinov, 1938), 35. Spas Marinov, "Кооперативно млекопреработване," *Млекарска просвета* 3 (Mar. 1940): 19–20.

7. For an overview of the state policy fostering vocational education, see, Roumen Daskalov, *Българското общество,* 3 vols. (Sofia: Gutemberg, 2005), 1:369–74; "Една петгодишнина," *Млекарска просвета* 5 (1940): 1.

8. "Обявление № 254," *Млекарска просвета* 4 (Apr. 1941): 31. The first vocational dairy school fulfilled the need for specialized dairy education. Until then, agricultural schools had been responsible for training dairymen. The first agricultural schools in Bulgaria were established in 1883. Alexander Kostov, "Техническото и търговското образование в България до първата световна война- дискусии, идеи, реализации," in *И настъпи време за промяна. Образование и възпитание в България XIX–XXв*, *съст*., ed. Alexander Kostov et al., (Sofia: BAN, 2008), 38–64, 52.

9. Asen Kantardziev, "За същността, развитието и задачите на млекарството изобщо и в България," *Годишник на Софийския университет. Аграро и лесовъден факултет*, no. 3 Agriculture (Sofia: Sofiiski universitet, 1937); Asen Kantardziev, *Млекарски наръчник* (Sofia: Pridvorna pechatnica, 1930); Popdimitrov, *Българско кисело мляко*; Katrandzhiev, "Киселото мляко като храна."

10. Popdimitrov, *Българско кисело мляко,* 30–32.

11. Ibid., 55.

12. Ibid., 32–34; Katrandzhiev, "Киселото мляко като храна" 50.

13. The dates are according to the Julian calendar that the Eastern Orthodox Church was using at that time. Bulgarians celebrate the life of saints noted on the church calendar. People named after a saint have a name day, when that particular saint is celebrated. Popdimitrov, *Българско кисело мляко,* 34.

14. Some of these practices are still part of yogurt making. In an informal conversation, G. S. shared that after introducing maya into boiled milk, his grandmother always makes a strange sound reminiscent of whistling. I. C. assured me that, after applying the leaven, his mother always says: "Хайде, тръгвай!" (Come on, go!). The making of a cross is still practiced as well. G. S. interview, Sept. 3, 2010, Plovdiv, Bulgaria; I. C. interview, May 10, 2011, Sofia, Bulgaria; O. X. interview, June 30, 2009, Razgrad, Bulgaria, notes in possession of author; Popdimitorov, *Българско кисело мляко*, 39–40.

15. Popdimitorov, *Българско кисело мляко,* 39–40. Assen Fikov also reported using natural sources to leaven milk. *Българското кисело мляко и използването му при диетиката и лечението на кърмачета* (Sofia: Lekopizdat, 1945), 5.

16. Popdimitorov, *Българско кисело мляко,* 45; Adolphe Combe, "Curdled Milk and Intestinal Decomposition," *British Medical Journal* 2 (Sept. 26, 1909): 47–48; Albert Fournier et al., *Intestinal Auto-intoxication* (New York: Rebman, 1908), 338.

17. Popdimitorov, *Българско кисело мляко,* 45.

18. Ibid; Kantardziev, *Млекарски наръчник*; Maria Kondratenko, "The Bulgarian Starters for Yogurt," trans. Zdravko Nikolov and Maria Stefanova, p. 2, International Symposium on Original Bulgarian Yogurt, Sofia, Bulgaria, May 25–27, 2005, Dr. Stamen Grigorov Foundation, http://www.stamengrigorov.org/?current=science&lang=en&id_sess=rs83gktvno6u56ghoqr59sdua4 (accessed July 27, 2012). The specific characteristics of local

dairy products discussed by Kantardziev and Popdimitrov became the subject of research in the late twentieth and early twenty-first centuries. Microbiologist Christo Tchomakov offers a summary on the process of natural selection of strains for Bulgarian yogurt, arguing that "regular and continuous preparation resulted in the natural selection of the two lactic acid bacterias of yogurt." "Bulgarian Sour Milk—A Unique Probiotic," 2, http://www.google.co.uk/url?sa=t&rct=j&q=Bulgarian+Sour+Milk—A+Unique+Probiotic&source=web&cd=1&ved=0CCMQFjAA&url=http%3A%2F%2Fwww.stamengrigorov.org%2Fdocuments%2Fabstracts%2FBulgarian%2520sour%2520milk_2.doc&ei=JrNZUPPVC6Hl4QSx_YGYAQ &usg=AFQjCNGkQ1mEj5tN5QPagavskFd5JageMg (accessed Oct. 3, 2012). Charles W. Bamforth, *Food, Fermentation, and Micro-Organisms* (Oxford: Blackwell Science, 2005), 31; Tamime and Robinson, *Yoghurt,* Maria Stefanova Kondratenko and Jelyazko Iliev Simov, Българско кисело мляко (Sofia: Asociacia na Mlekoprerabotvatelite, 2003); Baboo M. Nair and Jashbhai B. Prajapati, "The History of Fermented Foods," in *Handbook of Fermented Functional Foods,* ed. Edward R. Farnworth (Boca Raton: CRC, 2003), 2.

19. Georgy Atanasov and Ivan Masharov, *Млечната промишленост в България в миналото и днес* (Sofia: Zemizdat, 1981), 15–18; National Statistic Institute, *Статистически годишник на българското царство* 36 (Sofia: National Statistic Institute, 1924); National Statistic Institute, *Статистически годишник на българското царство* 23 (Sofia: National Statistic Institute, 1938). For basic history of early twentieth-century Bulgaria, see, Rumen Avramov, *Стопанския XXти век на България* (Sofiq: CLS, 2011).

20. Many Bulgarian dairymen worked in large Ottoman cities close to the Bulgarian ethnic territories like Constantinople, Edirne, and Thessaloniki. Atanasov and Masharov, *Млечната промишленост в България,* 15–18. National Statistic Institute, *Статистически известия на статистическото бюро,* 12 vols. (Sofia: National Statistic Institute, 1886).

21. Atanasov and Masharov, *Млечната промишленост в България,* 18; Katrandzhiev, "*Киселото мляко като храна*," 49–50; Maria Stefanova-Kondratenko, interviewed by author, Sofia, Bulgaria, Mar. 6, 2009, notes in possession of author; Dragan Tenev, *Тристахилядна София и аз между двете световни войни (Sofia: Balgarski pisatel, 1997), 17.*

22. Atanasov and Masharov, *Млечната промишленост в България,* 14; Kondratenko interview.

23. Atanasov and Masharov, *Млечната промишленост в България,* 14–16; Popdimitrov, *Българско кисело мляко,* 50.

24. The historian Barbara Orland records a similar practice of selling dairy products in German cities. Into the 1870s, "the sale of milk and dairy products was in the hands of producers, i.e. farmers' wives. They took their products, butter and cheese to weekly markets or maintained other direct contacts with consumers." "Cow's Milk and Human Disease: Bovine Tuberculosis and the Difficulties Involved in Combating Animal Diseases," *Food & History* 1 (Spring 2003): 188.

25. Kosta Katrandziev, "Киселото мляко като храна и мерките за подобрението му в столицата," *Serdica* 1 (Jan. 1938): 12.

26. O. X. interview.

27. The term "regendered" is introduced by Arwen Mohun, "Industrial Genders: Home/Factory," in *Gender and Technology. A Reader,* ed. Nina E. Lerman et al. (Baltimore: Johns Hopkins University Press, 2003), 171.

28. "Жената в млекопроизводството," *Млекопроизводител* 8 (Aug. 1936): 4. Mohun presents a similar process of masculinization of a typically female home industry. Her research shows how laundry—considered a female activity—was transformed into skilled male work during industrialization. Mohun explains that the language surrounding the industrial laundry gave rise to the assumption that the activity was essentially masculine. "Industrial Genders," 155.

29. Popdimitrov, *Българско кисело мляко,* 44–46.

30. Ibid., 38–46; Kosta Katrandzhiev, *Българско кисело мляко* (Sofia: BAN, 1961), 29.

31. Katrandzhiev, *Българско кисело мляко,* 51.