

The Oxford Companion to Cheese

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Industrialization, the historical development that saw cheesemaking transformed from a largely craft-based or artisanal activity, often located on a dairy farm, to a production process that, for the most part, takes place in large ‘cheese factories’ or creameries [See ARTISANAL]. The principal features of modern industrialized cheesemaking, which set it apart from traditional approaches include: high production volumes; sourcing of milk from multiple dairy herds; pasteurization and re-balancing of milk supplies to minimize variability; use of standardized, bought-in starter cultures and rennet; mechanization and automation of manual processes such as stirring and cutting the curd; detailed ‘recipes’ and procedures; and the precise measurement and control of key variables such as temperature and acidity using specialized instruments [See PASTERURIZATION, RENNET, STARTER CULTURES]. This transformation of long-established cheesemaking practices was accompanied by equally radical innovations in product marketing and distribution. Together, these changes have exerted a profound influence on the quality and variety of cheese available and in overall patterns of cheese consumption.

Today, most of the world’s cheese is produced on an industrial scale, yet the journey from farm to factory was far from straightforward. The British pioneered in commercialized cheese-making and marketing in the pre-industrial era but it was left to others to create a fully-fledged industrial model of cheesemaking. The story begins in the mid seventeenth century, when farmers in England’s more productive dairying regions began to specialize in making cheese for distribution to wider markets. These changes were driven by a combination of factors, including the drive for agricultural ‘improvement’, which helped to generate milk surpluses, and London’s rapidly growing demand for butter and cheese. In an early example of commercialization, cheesemakers in the Cheshire Plain began pool their resources to make “greate” (i.e. large) Cheshire cheeses that were suitable for transportation by coastal routes to the capital [See CHESHIRE]. While the cheesemaking retained much of its artisanal character, this period saw the introduction of several key pre-requisites for industrial production, including the rise of market intermediaries or ‘cheese factors’, government interventions to regulate the trade, and an increasing emphasis on a limited number of regional varieties, such as Cheshire, Cheddar and Stilton. A similar commercialization process could be observed in

parts of the Netherlands at this time as Dutch cheese began to be exported in larger volumes, much of it destined for London.

The next major development was in the application of scientific principles to cheesemaking. By the mid-nineteenth century, England's commercial cheesemakers were experimenting with new techniques in order to produce more reliable and consistent products. Joseph Harding and his contemporaries had started to monitor key variables such as temperature and acidity in a systematic way [See HARDING, JOSEPH]. They also promoted a free flow of information by publishing their findings in specialist journals and promoting dairy education programs. This spirit of self-improvement and scientific inquiry helped to formalize their cheesemaking practices into distinctive 'systems', or sets of detailed instructions, that could be accurately reproduced in other locations. These early evangelists had made a decisive first step towards industrial-scale production, but its consequences were to be realised much farther afield. The earliest cheese 'factories' have been variously identified in Switzerland (1815) and the United States (1851), but in reality these were little more than purpose-built, and somewhat larger, versions of their farm-based precursors. The American Civil War (1861-1865) provided the catalyst for rapid factory-building and was accompanied by an equally dramatic increase in cheese exports from the Northern states. Key figures in this period included Xerxes Addison Willard of the American Dairyman's Association, who popularised Harding's Cheddar system as part of his effort to promote the factory system [SEE WILLARD, XERSES ADDISON].

Competitiveness was fuelled by the country's large, productive dairy herds and by technological innovations such as the 'gang-press' [Figure 1] and by the mid-1870s, it is estimated that more than a quarter of the cheese consumed in England was being imported from factories in the United States. By the 1880s, New Zealand, Australia and Canada began to challenge the United States' dominance of the British market, each of them contributing to a new and thriving international trade in factory-produced cheese. Britain's own transition to the modern industrial-scale creamery was much slower and more faltering. In the end, it was largely a result of direct state intervention over two decades from the early 1930s. Controls were introduced by the government's milk marketing boards and subsequently extended with the onset of the Second World War, when all domestic cheese production was redirected to

creameries [See MILK MARKETING BOARDS]. Other countries followed their own distinctive paths to industrial scale production. For example, Dutch cheesemaking experienced a relatively smooth transition from the late nineteenth century, with varieties such as Edam and Gouda helping to bolster export sales [See EDAM, GOUDA]. The French also introduced their first factory systems in this period. However, while retaining their familiar array of territorial varieties, France's leading dairying regions also exploited improved transport links to Paris to initiate new 'national' varieties, notably Camembert [See CAMEMBERT]. Criticism of industrialization tends to revolve around two closely related issues: the quality of cheese produced by industrial creameries and its impact on more traditional modes of production. From the earliest times, people have been complaining about the quality of factory cheese. For example, in the mid-1930s the gastronome Sir John Squire dismissed imported products as, 'mere generic soapy, tasteless stuff', while his compatriots mocked the 'mousetrap cheese' that formed part of their wartime ration. Despite these periodic outbursts, popular tastes became accustomed to the taste, texture and the convenience of pre-packaged and often branded supermarket products while factory-produced Mozzarella has become one of the world's favourite cheeses [See MOZZARELLA]. The spread of industrial cheese production and marketing is also seen a primary cause of declines in artisanal cheesemaking and the disappearance of regional varieties. Even in France, efforts to protect these traditional practices eventually came under pressure from agricultural modernization policies. Critics have also pointed out that the high-profile Appellation d'Origine Contrôlée (AOC) system was not designed to resist the underlying logic of industrial-scale cheesemaking, particularly when it became coupled to a highly concentrated food retail sector [See APPELLATION D'ORIGINE CONTROLEE]. There is still a substantial philosophical and practical gulf between the world of the large- scale, technologically advanced industrial creamery and that of the small artisanal cheesemaker. However, the dividing lines are permeable and can sometimes blur at the margins. For example, international dairy companies such as Arla and Kraft Foods have responded to market pressures by seeking to introduce distinctive and novel organoleptic qualities into their premium cheeses [See ARLA, KRAFT FOODS]. Their efforts have been rewarded in international cheese competitions, where notionally industrial and artisanal

products often share in the prizes. At the same time, artisanal producers and specialist wholesalers often make selective use of technological and practice innovations such as HACCP and microbiological analysis that were first introduced by industrial creameries [See HACCP]..

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RICHARD K. BLUNDEL

Contributor details

*Richard K. Blundel is an organizational researcher at The Open University (UK). His work explores the relationship between entrepreneurial agency, innovation and environmental sustainability. Richard has examined the nature and implications of growth in organizations of various kinds, such as artisanal food producers, boat builders and social enterprises. His publications on industrialization and the reinvention of artisanal cheesemaking include: 'Network Evolution and the Growth of Artisanal Firms: A Tale of Two Regional Cheesemakers.' *Entrepreneurship and Regional Development*, 14, 1, 1-30, 2002; and (with Angela Tregear) 'From Artisans to "Factories": The Interpenetration of Craft and Industry in English Cheese-making, 1650-1950.' *Enterprise and Society*, 7, 4, 705-739, 2006.*