

Chapter 5: Historical and Global Context

“How can you know where you are going if you don’t know where you have been”

Alfred D Chandler Jr.

Did you know that most of the food we see on the shelf of the supermarkets today, wasn't available a 100-150 years from now? This was because there were very few techniques to preserve food. The food would spoil very fast and a lot of people suffered from food poisoning and even death. The food we eat today, is completely taken for granted because it is cheap and easily available.

The food you and I are eating today has been possible because of the efforts of a lot of scientists, researchers, engineers, food technologists and nutritionists - the food we eat is safe, nutritious and healthy. But the process of developing food was not invented overnight. In order to understand the historical and global context, it's imperative to think like a historian and appreciate the dynamic nature of the food industry.

Preservation of food has been practised since early humans started farming. Early humans realized the fact that they could not always hunt for animals or pluck fruits from trees every day. And if they stored food commodities like meat, milk etc., they spoiled very fast. So, they had to develop some preservation techniques for consuming safe food even when they could not hunt, or when fruits and vegetables weren't available.

Some of the earliest preservation techniques included sun-drying, smoking, freezing, salting, fermenting and pickling. The downside of the early preservation techniques was that they changed the flavour and texture of the food along with huge loss of vitamins most of the time. These techniques were not very effective for travellers and soldiers who needed a healthy diet.

In 1795, Napoleon offered 12,000 gold francs to anyone who could develop a method for preserving food for the military. The prize was won by a French confectioner named Nicolas Appert. He sealed food in a glass jar and then heated the jar, the time depending upon the type of food.

The invention of canning is considered as the major turning point in the history of food technology and food science. Nicolas Appert is also known as the 'Father of Canning' because of his remarkable contribution, and canning is sometimes referred to as 'Appertization'. Although canning was successful but the science behind its success wasn't known until 50 years later, when a French microbiologist and chemist named Louis Pasteur showed that growth of micro-organisms is responsible for the spoilage of beverages. He also invented a process where milk was heated to a specific temperature for a specified time to kill the spoilage micro-organisms.

The process he invented is still prevalent in the dairy industry and wine industry as well. In honour of Louis Pasteur, the process is known as 'Pasteurization'. In 1895, almost 30 years later in Boston, Massachusetts, William Lyman Underwood from a canning company

worked with Samuel Prescott to develop the research which would further lead to the concept of 'Thermal Death Time'. A lot of people don't consider this event when it comes to the history of food technology, but this was also one of the turning points in history as their research was important to determine the time-temperature combination for a food. That means, for how long a food needs to be cooked and at what temperature.

Since then, a lot of research and discoveries were done but in the 20th century, food safety was still an issue. In 1960, the Pillsbury Company, NASA and the USA army laboratories collaborated to develop safe and healthy food for the astronauts. Eventually, they developed a systematic preventive approach to ensure food safety and that came to be known as 'HACCP' or Hazard Analysis Critical Control Point. HACCP is a preventive tool used in food industry to ensure safety of the food. HACCP is prevalent today in every food industry and food safety is incomplete without the implementation of the HACCP program. Since the development of HACCP, there has been rapid growth in the food technology. Industrialists have adopted newer technologies to process the food in a faster and efficient way.

Figure 1 demonstrates how the demands related to food have transitioned from staple foods to the overall wellbeing of the consumers. In the nineteenth and early part of twentieth century the consumer wanted food to simply satisfy hunger. Wars and famines plagued most parts of the world and there was a lot of food insecurity. As agriculture progressed and economies advanced in the twentieth century, the consumers now food secure, looked for variety in their food. The role of food changed from merely satisfying hunger to providing pleasure. A lot of processed, ready to eat and convenience foods made their way into the market. It was only in the twenty first century that health, wellness and nutrition gained ground as the criteria for food selection. This was also the period when people understood the relation between exponential rise in the incidence of non-communicable diseases and diet. The future demand for food is projected to be centred on wellbeing.



Figure 5. 1: Eating to Promote Wellbeing

Source: Brabeck-Letmathe, 2016

During the 1950s, India also underwent a transition in terms of technological advancements. The years from 1951 to 1964 were those of maturity and achievement. A look at landmark developments of the era would paint a picture.

A major achievement was in the field of scientific research and technological education. In 1950, CFTRI (Central Food Technological Research Institute) was set up in Mysore as a constituent laboratory of the Council of Scientific and Industrial Research, New Delhi. By 1964, the two-year M.Sc Food Technology course commenced with the establishment of International Food Technology Training Center (IFTTC).

Additionally, processed food products entered into the Indian market as the food production began shifting from home to the factory. Some of the companies set up in the late nineteenth and early twentieth century, can be considered as the torch bearers for the evolution of the food industry in India. One such example is that of Britannia which was established in 1892 in Kolkata. The first product they made was biscuits mainly for the British families. The company today is a market leader in several product categories. Bikanervala is another such company which was set up in 1905 in a town called Bikaner. It is now a household name for sweets and snacks in India and indeed an international brand. In 1924, another popular household name, MTR Foods was set up as a restaurant. They later diversified their business into convenience foods and instant mixes. In 1925 Keventers, the milkshake brand, was established in India. After a shutdown in 1970, the brand has received an overhaul by young entrepreneurs.

Parle Products, established in 1929, started as a single confectionery brand named 'Orange candy'. It is now a large food company dealing in a number of products like biscuits, cakes, rusks, chocolates, snacks and staples. Kissan was the first brand in vegetable and fruit processing in India which came up in 1934. It is now a market leader in Jams and ketchups. In 1946, the first Dairy Cooperative – Amul was established in India. Amul spurred India's white revolution making the country the world's largest producer of milk and milk products. Several other companies have since come up and contributed to the growth of the food processing and manufacturing sector in the country. The Ministry of Food Processing Industries has mentored entrepreneurs and food businesses to increase production as well as innovate. The scheme of Mega Food Parks provides a mechanism to link agricultural production to the market. They typically consist of supply chain infrastructure including collection centres, primary and central processing centres, cold chain and have provisions for entrepreneurs to set up food processing units.

The Indian Standards Institution (Certification Marks) Act was legitimized in 1952. The scheme was formally launched in 1955-56 and enabled to grant licenses to manufacturers who produced goods in conformity to Indian standards. Around the same time, Fruit Products Order (1955) was promulgated under Section-3 of the Essential Commodities Act. The Prevention of Food Adulteration Act was passed in 1954 as a central legislation to address 'food adulteration'.

Mandatory fortification of hydrogenated vegetable oil (Vanaspati) began in 1953. In the next few years, a community based controlled trial was initiated in Kangra Valley. The study period was approximately 16 years (1956-1972) and observed goitre prevalence amongst 100,000 school aged children. As a result, the National Salt Iodization programme was started in 1962. This was a classic case of research based policy planning culminating into a nationalized programme to address iodine deficiency.

Despite the existing challenges with agricultural productivity and food insecurity, India witnessed remarkable developments in allied fields of food science innovation, strengthening of academic capabilities and regulatory framework. In the 1960's, many illustrious institutions came into existence for example, Defence Food Research Laboratory (1961); Paddy Processing Research Centre (1967) to name a few. The impetus on food exports was strengthened with the passing of Export (Quality control & Inspection) Act (1963) by Ministry of Commerce and Industry. Furthermore, India gained global recognition by becoming a member of Codex Alimentarius Commission in the year 1964. The first wave of Green Revolution began in the 1960s and was largely confined to 'wheat' and the northern most parts of the country. This laid the foundation of self-sufficiency in crop production many years later.

'Necessity is the mother of all invention' implying that the primary driving force for all inventions is a need. The next couple of decades saw an evolution of consumer needs, opening and deregulation of markets, enhanced scientific and technical understanding within the food and nutrition domains, growing regulatory complexities and challenges. During this journey, many crucible moments altered the face of regulatory ecosystem in India and paved way for the Food Safety and Standards Act of 2006. This includes (but is not limited to) the Behala oil tragedy (1988-90), Delhi epidemic drowsy disaster (1998), Pesticides in carbonated beverages and bottled water (2003).

As we reflect on the past, it dawns on us that there are many factors that go into making national food law and a food regulatory ecosystem. A sampling of these factors includes history, culture, traditions, international obligations, institutions, political commitment, resources and social norms. The triggers for any transformational change often come in the form of public health issues and related constructive activism, domestic and/or international incidents, scientific developments, innovations and collaborative problem solving.

The future presents a myriad of complex challenges to address. On one hand we are bound to experience climate change, reduced agricultural productivity, scarcity of resources, rising population and a demographic shift to an ageing cohort, improved life expectancy and associated quality of life. While on the other, we would have to stay ahead of the curve when it comes to technological advancements, their applications as well as the related misuse including economically motivated malpractices.

The bottom line however is one cannot fix the symptoms in isolation without looking at the entire food ecosystem holistically. With this philosophy at its core, the 'Eat Right' textbook puts a magnifying lens at the multi-faceted and inter-linked dimensions of the food ecosystem. It allows the reader to reflect on the past, deliberate on the present and build a collective future.

References

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