From Hunger to Malnutrition
The Political Economy of Scientific Knowledge in Europe, 1918-1960

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CHAPTER 1

Hunger in Europe

Hunger and Health: a Discussion

Hunger and nutrition are essential components of individual and public health, as well as main factors for the economy, social peace and people’s wellbeing. Nowadays the availability of foodstuffs represents one of the main challenges for the United Nations, as serious shortages affect wide regions in the world, with famine and malnutrition still a terrible plight. In Europe and other parts of the world, after decades of economic growth and globalisation of the food market, a portion of humankind has achieved good nutritional standards, according to clinical and scientific patterns, as well as satisfactory levels of individual and social wellbeing. Although this statement is permanently threatened by the evolution of the chronic crisis that started in 2008, and the future of the welfare state is debatable, one can accept that the European model is still at work and that access to food constitutes a legally accepted human right. Conversely, poverty and malnutrition still pose tremendous problems for millions of human beings on most continents. At present, Europe is the most tangible exception.

A quick overview of the global situation shows that at the beginning of the 21st century about 30% of children under the age of five still suffer from severe malnutrition. Ever since the inter-war period, international agencies have warned about the extension of hunger and the risk associated with chronic deficient nutrition for public health and international stability. The latest reports by the Standing Committee on Nutrition of the United Nations raise an alert about the consequences of persisting malnutrition and call for globalised nutritional health to be the starting point of the implementation of human rights and the extension of democracy. Access to food is therefore a responsibility for the international community and national governments. Hunger has now

2 http://www.unscn.org/
become an intolerable load for poor and developing countries; it is one of the main obstacles to progress and wellbeing and the largest hindrance to social, cultural and economic growth in many countries in Africa, Asia and Latin America.

It is generally admitted that the fight against hunger by European governments and other Western institutions started in the 19th century. Although the traditional demographic crisis caused by famine decreased from the central decades of the 19th century, health problems associated with hunger, famine and malnutrition persisted up until the second half of the 20th century due to international conflicts, political and economic crises, as well as the effects of war and post-war depression. Factors that caused hunger and the food supply to remain big issues during the first half of the 20th century included political tensions, financial and economic crises, unemployment, trade protectionist barriers, as well as national, regional and international wars.

In an earlier context, famine and starvation hit most European territories between 1846 and 1848. The great famine that shook the Irish between 1845 and 1849 must also be noted. The destruction of the Global Food Market, which had been built during the second half of the 19th century, was one of the outcomes of international conflicts in the first decades of the 20th century. Its negative consequences affected the most vulnerable sectors of the population, such as children, women and the elderly. These groups, together with the unemployed, those living in the country and other citizens, fell prey to marginality. They became the victims of alimentary deficiencies, starvation, chronic malnutrition and several health problems caused by the international blockade, difficulties in the food supply and extended conflicts. War was a fundamental and usual cause of famine and malnutrition in the first half of the 20th century, and the examples of Russia (1919), Ukraine (1932-33), Greece (1941-42) and The Netherlands (1944-45) illustrate the reach of the problem. Although the political, social and economic

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consequences of war were possibly the most important causes behind famine and malnutrition in Europe during the middle decades of the 20th century, the wrong agricultural policies, isolation and totalitarianism also contributed to reinforcing the problem.6

From Demographic to Nutritional Transition

Historical research on hunger and nutrition has taken on different historiographical orientations. Economic history and historical demography have been traditional approaches when carrying out research on hunger and nutrition, and are considered to be factors that influence the productivity, disease and mortality that condition the demographic evolution, growth and decrease of a population.7 The concept of nutritional transition has been recently introduced by economy historians to express the importance of nutrition and diet as a meaningful factor in the changes in living standards during the social development of Western societies in the 20th century. The idea of a nutritional transition has added a new perspective to the process of modernisation experienced by Western societies in the 19th and 20th centuries. Prior to that, the concept of demographic transition had been proposed and generally introduced into historiography as a useful historiographical tool since the middle decades of the last century. The process of demographic transition helped to explain the changes identified in the internal structure of the populations during the modernisation period, as a consequence of changes in mortality, fertility and life expectancy.

Later, the idea of an epidemiologic transition underlying demographic changes pointed to specific transformations in the patterns of dominant diseases, morbidity and mortality rates. The notion of epidemiologic transition paved the way for a more general health transition accompanied by a transition of risks resulting from the spread of medical technologies, the urban/rural divide, agricultural/industrial societies, labour structure, health care organisation, sanitary campaigns, life expectancy and other social transformations affecting the levels of health and the way in which disease, as a social reality, appears at a specific time and place.

With the aim of explaining the transition followed by industrialised societies, economy and demography historians suggested in the 1990s

the idea of a nutritional transition, which would have taken place simultaneously to the demographic and epidemiologic transitions, directly related to the availability of foodstuffs and the changes experienced in the composition of diets among the different social groups. Obviously, the idea of a transition to modernisation from any other form of traditional society, as defined by historiography, implies the acceptance of a common pattern in the process of evolution of any society regarding the changes experienced by the structure of the population, the standards of health and the dietary habits. All countries, since the end of the 18th century, would have followed the same evolution at different speeds, something that could be accepted for the greater picture but which had to be discussed for each particular factor and context. To a great extent, those models of transition were proposed not only to explain past and present issues, but also to foresee and successfully face future challenges. The picture they showed aimed to draft economic, social and health policies in order to reduce deficiencies and inequalities in the standards of living of the Western population after World War II, especially in poor regions.8

Since transitional patterns include a prospective target as a practical tool to analyse future tendencies and shape new political strategies to improve nutritional and living standards, the definition of factors influencing social development – apart from the level of income and economic growth – has become increasingly essential. Demographic and health problems after World War II in countries with slow economic growth pointed out the necessity of taking into consideration any variable factor influencing the health status of the population, with the evolution of the income level proving insufficient to explain the transitional processes. Housing, environmental conditions, access to foodstuffs, the amount and composition of the diet, medical technologies, hygiene, levels of education and cultural habits appeared as complementary factors. This was confirmed by the inability of more simple indicators such as the levels of income and economic growth to explain the evolution of health improvements.9 A wider approach that


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included not only simple economic factors was required and at least three groups of factors were considered as influencing the evolution of health: environmental and cultural conditions; the health care service/system and social assistance organisation; and techno-scientific improvements, not only in medical therapy and prevention technologies but also in food production, agricultural modernisation, industrialisation of food production, distribution channels, global access and dietary habits.

Considering the fact that all these factors have changed over time and that they vary across countries, different patterns of transition have been accepted, which means that the idea of a nutritional transition that includes all such factors appears to be more complex nowadays than the previous approach based on demographic, epidemiologic and sanitary features. However, demographic, epidemiologic, sanitary, risk and nutritional transitions were proposed in different contexts according to the availability of records on the evolution of mortality and birth rates, causes of death and disease, access to foodstuffs and composition of the diet. Usually, such records were reported for a very specific group of developed countries and forecasts were made about the future evolution of the population, health and diet in other countries with more deficient statistics and also in poor countries that lack reliable records. Is this type of projection a solid instrument to analyse and foresee what is going on in those countries?

It is worth highlighting the political dimension of the transitional patterns proposed by recent historiography as a reference for political strategies aimed at reducing tensions, managing demographic pressure and facing foodstuff crises during the inter-war years and the period after World War II. Those models served as a reference for programmes of stabilisation during the Cold War, a period characterised by demographic expansion and a shortage of food in many regions. At the same time, we should keep in mind that a decolonisation process was taking place mostly in Africa and Asia. In this context, Theodor W. Schultz proposed, for the first time, the idea of a nutritional transition in his book *Food for the World.* The book summarised the conclusions of a famous meeting held in Chicago before the end of the war in order to discuss the situation of the global food market and the prospects for the production of foodstuffs during the post-war years. This influential

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meeting was to give impulse to the creation of the Food and Agriculture Organization (FAO).

In this meeting, Frank W. Notestein discussed the importance of the world demographic situation. He focused the challenge on the possibility of a slow reproduction of the Western demographic evolution in other countries and continents by anticipating the capacity to accelerate changes in countries with low economic growth if certain policies were implemented. Based on few demographic records, he identified the demographic situation in different countries, making a projection of the evolution of the population in large regions in the world, as well as the demands for foodstuffs derived from it in future times. The definition of a demographic transition, conceived as a global process, was soon introduced into the academic sphere and served as a tool of analysis for international and national agencies. Initially, mortality was the nuclear factor considered, but fecundity soon occupied the central place, since the need to stop and control the growth of the population in industrialised countries was pressing.

In the early 1970s the idea of an epidemiologic transition stressed the importance of concepts such as social dominant diseases, death causes and fertility rates as influential factors for social change. The idea of an epidemiologic and sanitary transition was defined after World War II in industrialised countries, which were characterised by a decrease in overall mortality, child mortality and infant mortality as a consequence of a reduction in infectious diseases accompanied by a rise in life expectancy. Non-infectious diseases and accidents emerged as major social health problems. In societies where traditional plagues had been controlled (mainly through better feeding, sanitation systems, housing and medical preventive technologies), chronic infectious diseases such as tuberculosis, typhoid fever, malaria and venereal diseases were substituted as socially dominant diseases by cancer, heart attacks, strokes and traffic and industrial accidents as main causes of death and invalidity. Obviously, the higher life expectancy had an influence as well on the growing importance of degenerative diseases and vascular accidents.

Epidemiologic and health transitions are considered to be paths followed by all societies, regardless of their pace of evolution. However, they were probably faster on continents other than Europe, as a consequence of the implementation of medical technologies and immunisation campaigns. But predictions failed as a result of the critical

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ending of the Cold War, and the effects of the globalisation process led to a delay in the evolution of Eastern European countries and to a terrible situation in Africa. A new crisis broke out: new emergent virus diseases, such as AIDS, and life expectancy fell dramatically in wide regions of the planet.\textsuperscript{12}

The \textit{nutritional transition} pattern proposed by economic historians and demographers added the crucial importance of nutrition and diets to explain social change. The radical effects of structural and cyclical famines that affected populations during the \textit{Ancien Régime} have been widely acknowledged by traditional historiography. Those famines were the cause of the high mortality rates and the main factor behind the demographic catastrophe, contributing to the stagnant population model. The demographic and epidemiologic transition did coincide with a reduction in hunger and famine, as well as the agricultural expansion and the shaping of a global food market.\textsuperscript{13} Records on food consumption, the content and variety of diets, food availability, dietary habits, as well as other aspects such as the height of the population and the labour structure, contributed a great deal of information about the effects of nutrition and diet over the population and the several diseases associated with nutritional deficiencies.

Recent research on the nutritional transition in non-Western countries has shown the quick spread of changes in diet in many countries in Asia, Africa and America. From a purely demographic and economic perspective, any nutritional deficiency, malnutrition, overfeeding, industrial production of foodstuffs and regulation of food quality have become a matter of concern under critical situations in which high rates of demographic growth and nutritional deficiencies threaten millions of lives. Nutrition requires not only a healthy diet based on enough food, but also social, cultural and economic policies.

The evolution of the level of income, and the economic growth experienced by many countries and world regions, are not sufficient arguments to explain the social change identified by historians under the concepts of demographic, epidemiologic, health and nutritional transitions during the second half of the 20\textsuperscript{th} century in Europe. In a complementary way, it is essential to consider, as a main factor, the role of the social agents: international institutions, experts, scientists, practitioners, governments, industry, propaganda, housewives and cooking habits. All of them play a part in the reduction of social


inequalities. The evolution of the levels of income – though an important factor – represents just one of the multiple factors that influence health, nutritional status and diet.

The European pattern of social change that we have named nutritional transition adopted different shapes and chronologies in the different countries. In the case of Spain, it achieved a degree of modernisation during the course of the 20th century, consolidating the process of nutrition and diet transition by the 1970s. Other countries went through the process faster. The problems associated with a deficient diet and malnutrition had been overcome, with obesity emerging as a new threat. Like in most European countries, the nutritional transition from scarcity to overfeeding started in the 1920s and 1930s. But in the case of Spain, chronic malnutrition affected large sectors of the population as a consequence of the Civil War (1936-1939) and the post-war years.

In the late 1940s the nutritional landscape of the Spanish population was still a poor one, as we shall discuss in a further chapter. A low calorie and protein intake, marked by low quality proteins of vegetable origin and a shortage of calcium and vitamins, made up the overall picture. In this particular case, the decade of the 1950s was a crucial stage. In the late 1950s and early 1960s the Escuela de Bromatología [School of Bromatology] in Madrid carried out research into the Spanish diet and concluded that a small part of the population still had an insufficient calorie intake, whilst 40 per cent of the population consumed too many calories. The total protein intake was adequate, mainly of vegetable origin, although significant deficiencies were still present regarding the intake of vitamins. Agricultural labourers and industrial workers were identified as the social groups that had the worst diet. In fact, the rural surveys carried out during the 1960s showed that the consumption of proteins was no longer deficient but in rural areas

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17 Ibidem.
the majority of proteins were of vegetable origin, a low intake of calcium affecting most of the population.\textsuperscript{18}

According to current research, by the end of the 1960s the population in Western European countries was able to meet their energy, protein and most of their micronutrient requirements, and their caloric profile reflected almost perfectly the recommendations of international organisations.\textsuperscript{19} Carbohydrates accounted for 53 per cent of the caloric intake, proteins 12 per cent, and lipids 32 per cent. Between 1940 and 1960 the European nutritional picture shifted from the existence of significant nutritional deficiencies caused by the economic crisis, war and post-war periods, with an insufficient protein intake and severe mineral and vitamin deficiencies, to a tendency characterised by an excessive dietary intake of calories, sugar and fats. The situation worsened with the rise of a more sedentary lifestyle and its subsequently reduced energy needs. Meanwhile, the caloric intake increased at the expense of simple carbohydrates, leading to a significant rise in obesity and diabetes. The consumption of meat per person showed the most spectacular increase, particularly pork and poultry.

These changes in the diet of Europeans during the middle decades of the 20\textsuperscript{th} century have been analysed in recent historical contributions, some of them taking into consideration the plurality of agents involved in the nutritional transition process.\textsuperscript{20} These include the role played by


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living conditions, research on anthropometric indicators, cultural factors such as body image or the impact of education, advertising and propaganda, local and state policies, institutional strategies and other studies addressing issues related to food policy.

This recent research gives an insight into the effects of industrialisation, increasing urban growth, women’s entry into the labour force and evidence of the changes in dietary habits. The availability of foodstuffs varied widely as a consequence of technological innovations and industrialisation in agriculture. Milk, chocolate, oil, wine, fruit and vegetables and other products all added to the growing impact of the food industry.

The previous arguments show that nutrition has increasingly become an interdisciplinary field of historical research. Traditionally, it was oriented in two main directions. One regarded several aspects of public health, considering the population’s nutritional state to be the most important issue. From this perspective, the content of the diet in rural and urban contexts, its change and evolution, and the detection of malnutrition and deficiency diseases, have contributed to the understanding of the nutritional transition and its demographic and epidemiologic impact. From this viewpoint, the production, circulation and spread of scientific knowledge, and the role of expertise and the nutritional education of the population, clearly became more and more

important, especially in terms of the history of public health. This trend included not only health and demographic features, and social and institutional spheres, but also the role of cultural habits and social values from a more dynamic and anthropological perspective.

The other main historiography trend comes from economic history and focuses on agricultural policies, food production and consumption, distribution and availability of foodstuffs and their influence on the economy, trade and the market. This orientation also included research into socio-economic factors, standards of living, the role played by food and nutrition in the diet, studies of anthropometric indicators such as a synthetic index of well-being that tries to express the quality of the nutritional state, or analyses of the influence of socio-cultural factors, such as body image or the impact of advertising, among others.

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At the same time, the diversity of experience and the importance of the local context have been shown to be among the most significant features of the variability in the nutritional transition process. In addition to anthropometric studies intended to show the relationship between height, weight and the environmental conditions that determine nutrition, the differences that had long been observed between urban and rural settings were noted as indicative of wider access to food in urban centres. Difficulties were also reported in the consumption of animal proteins, particularly milk and dairy products, in some European regions.

**Nutrition and Organic Development**

Going back to the anthropometric approach, a lot of historical literature has outlined the links between nutrition, health and body height. From the mid 19th century onwards physical anthropologists, general practitioners and paediatricians applied anthropometric measures in order to lay out standards of human development. At the end of the 20th century economic historians developed a new methodological orientation: anthropometric history, taking human height as an indicator of wellbeing and social development. The industrial revolution contributed towards changing the social circumstances, the economy, the environment, housing, habits, diet, working conditions; and all of these elements became influential factors.

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33 Nicolau Nos, R., Pujol Andreu, J., “Variaciones regionales de los precios de consumo y de las dietas en España, en los inicios de la transición demográfica”, *Documents de Treball* (UAB. Unitat d’Història Econòmica), No. 29, 2005.


for bodily development. From this bio-somatic perspective, the achievement of a balanced diet, based on the regular consumption of energy and nutrients, influenced body size and height. Alleging that the demographic transition had caused fertility to fall, and that the epidemiologic phase had put an end to avoidable premature deaths, anthropometric historians argued that the nutritional transition had led to an increase in the size of the European population of more than ten centimetres on average in the 20th century. Nevertheless, anthropometric models show that this increase did not follow a linear tendency. On the contrary, some periods of height decrease and impairment have been associated with agricultural crises, demographic pressures and degraded living conditions in unhygienic industrialised areas – among other negative factors influencing the start of the modern economic growth.

Establishing statistical relations between body height, level of income, education and life expectancy, anthropometric history has proposed quantitative parameters to assess biological wellbeing. It argues that a high level of income, a positive environment and a healthy lifestyle correlate positively with height, education and longevity, but negatively with infant and child mortality. In addition to genetic inheritance, anthropometry has shown that changes in height over several generations express a tendency related to nutrition during childhood and adolescence.

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38 One of the first researches on the evolution of height among Europeans based on military records and national statistics was Chamla, M.C., “L’accroissement de la stature en France de 1880 a 1960; comparaison avec les pays d’Europe occidentale”, Bulletins et Mémoires de la Société d’Anthropologie de Paris, No. 6, 1964, pp. 201-278.


Nutrition has become a central issue in explaining social development. Economic historians have emphasised that the positive correlation of nutrition with public health improving the nutritional state of the population also reduces the health care budget, improves the perception of wellbeing and increases productivity.\(^{42}\) From a complementary perspective, the economist Angus Deaton associates the nutritional condition acquired in childhood with mental and physical health, especially for the elderly.\(^{43}\) Moreover, good health in childhood correlates positively with success in school and better employment.\(^{44}\) This is something not only assumed by public health experts and economists, but also by governments and institutional authorities.\(^{45}\)

Since the 1990s economic historians have sampled large amounts of records on soldiers’ height as a way of assessing the influence of industrialisation, migration and periods of crisis upon the standard of living. Although conscription started in the 18th century, paleontologists and physical anthropologists have studied much older bodies.\(^{46}\) Due to limitations related with the sources, most of this research refers to adult men, with records on women’s and children’s height being much scarcer. This failure was more evident until women appeared in schools, universities, hospitals and prisons, the specific places where human measurements were taken. Some of the women’s records are socio-economically biased, since the main purpose of taking measurements was to see if the evolution of height in women followed the same tendency as that of men.\(^{47}\) Several aspects, such as being a housewife or


\(^{47}\) Harris, B., “Anthropometric History, gender and the measurement of well-being”, in Harris, B., Gálvez, L., Machado, H. (eds.), *Gender and Well-Being in Europe*. 28
a working woman, as well as the unequal distribution of foodstuffs in the diet of the family members, can introduce relevant differences. The father’s preferential position as the active worker and breadwinner earned him a number of benefits in the household’s distribution of foodstuffs, such as more meat, eggs and animal produce than other members of the family. Similarly, boys were positively discriminated against in relation with girls. Thus, men’s height integrated more external influences than in the case of women, and was therefore more likely to be negatively affected under extreme circumstances, as has been described in situations of extreme malnutrition in internment camps. 48

Anthropometric research has also confirmed the biological influence of social inequalities. Nutritional deficiencies were frequently caused by poverty and exclusion. General practitioners knew very well that poor nutrition led to infection and therefore medicine created the category of the pre-tubercular child, a clinical prototype common among peasantry and poor working classes in industrial areas. Until the end of the 19th century a low height in urban suburbs populated by low class non-qualified workers was attributed to chronic malnutrition. Bodily measurements were substantially better among qualified workers and the middle and upper classes. 49 At the beginning of the 19th century the poor members of the Marine Society in London were 130 cm tall, while the aristocratic cadets of the Military Academy of Sandhurst were


155 cm, an evident expression of social inequality. Research has shown that other European countries followed a similar pattern.

**The Politics of Hunger in the 20\textsuperscript{th} century**

Many conflicts over nutrition, food and diet during the first half of the 20\textsuperscript{th} century – an exceptional time of crisis and conflict – were influenced by social inequalities, local traditions, cultural values, social norms, state policies and failure in the trade market. The First World War was a breaking point within this context. Food and diet became the site of dynamic rearrangements between the state and new demanding groups in society. Workers’ unions, revolutionary movements, consumers and an emergent civil society were linked to social and economic conflicts, changing international views and politics.

As a result, the inter-war years saw a close relationship grow between national social reforms and the global restructuring of the impaired global food system. Improvements in food production – including technical innovations for mass production, new delivery systems and the necessary availability of food recognised as a human right –, together with practical aspects such as food preservation, drew a lot of attention. Cooking traditions, nutritional habits and public health were understood to be a part of a global programme in which the eradication of hunger and malnutrition as a means of improving health, especially among poor and marginalised social groups, constituted an essential element in building up a global civil society.

Therefore, since the start of the 20\textsuperscript{th} century, hunger, nutrition and diet became a major concern for most European governments, civil society, workers’ organisations and other social and charitable entities involved in social work. Several factors were central to this process: economic ones such as food production, food industrialisation, distribution and trade, as well as those associated with quality control.

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Indeed, the cultural factors influencing local dietaries were also operational, e.g. the symbolic meaning and social prestige of certain foodstuffs, mainly in rural districts and among different social classes and professional groups.\textsuperscript{55} In this context, scientific investigations propelled by research on the physiological basis of nutrition and its direct relation to health, nutritional expertise and medical advice played a civilising role.\textsuperscript{56} All such factors shaped a network of agencies and mutual influences acting in a dynamic and complex process simultaneously.

On the other hand, a new international scenario was configured in the first half of the 20\textsuperscript{th} century as a consequence of several deep crises. Nutrition, like health itself, became an essential factor for social stability, as it influenced the changing relationships between state, society and individuals. Access to food and the entitlement to health became a basic right inherent to any human being, regardless of their race, class or nationality. Therefore, hunger became a problem to challenge, one that possessed a political, social and moral dimension. The political dimension of hunger as a factor of instability, the health and economic consequences of nutritional deficiencies and malnutrition, and the necessity to produce enough foodstuffs and make them available for all, constituted an immense political challenge. The implementation of this goal became a driving force behind social and economic change. Industrialisation and mass food production opened up a transitional path closely monitored by new regulations, which had to be negotiated, and gave way to new scientific methods of quality control. Traditional production schemes – mainly in agriculture – and old dietary habits were to be transformed, as they were potentially dangerous and could have a negative influence on both health and the economy. Under the pressure of the war and the economic crisis, food production and

\textsuperscript{55} Barona, 2010; Kamminga, Cunningham, 1997.
\textsuperscript{56} Barona, 2008a, 2008b.
consumption increasingly became a concern for the international agencies and European governments, but also an essential political tool.

In the introductory chapter of the influential essay *Hunger and History* (1990), edited by L.F. Newman, S. Milman and R. Kates start the discussion by proposing to understand hunger in history as the breakdown of the food system, as an entitlement failure connected to the lack of access to food, as well as a hazard or “threat to humans and what they value”, a permanently threatening risk. But traditionally, hunger has also been a consequence of maladjustment between population growth and the growth in food production, a perspective that is highly relevant for the long-term analysis of hunger ever since the first approaches by Thomas Malthus and Karl Marx.

This book is the result of research undertaken since 2005 on the history of the links between nutrition and health and their relationship with scientific research, economy and politics. It feeds on the archival sources of international organisations such as the League of Nations, the International Institute of Agriculture, the Food and Agriculture Organization and the World Health Organization. A previous monograph analysed the construction of the problem of nutrition during the inter-war period. The present work explores the role of nutrition in international health and the transfer of scientific knowledge in 20th century Europe, taking as the main perspective the political economy of scientific knowledge.

Recent anthropological, sociological and cultural studies on food and nutrition have shown that more than a century of increasing nutritional knowledge and dietary recommendations to the European population not only eradicated hunger, but there has also been a considerable rise in the number of overweight people and obesity. Based on this evidence, new research aims to investigate the interaction between science and society and the way in which scientific knowledge is spread and popularised,

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58 Barona, 2010.

59 It is a part of the research project *Sanidad Internacional y transferencia de conocimiento científico. Europa 1900-1975* [MICINN, HAR2011-23233].

60 WHO’s recent report shows that between 20 and 70 % of adults in Europe are overweight:
and how it influences habits. The negative consequences of the nutritional transition have become a source of concern for nutritionists, physicians, sociologists and political authorities. To throw some light on the phenomenon, an interdisciplinary approach is needed, collaboratively involving science historians, and their discussion on the production of nutritional knowledge, economy historians, sociologists and mass media experts, to clarify the selection and diffusion of information as well as the complex topic of consumption patterns.

Food studies has recently emerged as a new and interdisciplinary approach, which considers that “food touches everything important to people”. It has a double dimension, private and social, pointing out the role of agriculture, the food trade and retail sector in economic history, in relation to hunger, social conflict and state intervention in social history, with health and disease in the history of medicine and health, and with marketing, cooking and eating in cultural history. Both in classic social history research and in a growing list of recent emerging approaches, food plays a prominent role. Research on food and hunger has direct connections with numerous aspects of society: suffice it to mention the history of food in relation to prices, purchasing power, work capacities, household expenditure, conspicuous spending, power relations, technological and scientific progress, market regulation, health and disease, fashion, quality control, shopping and prices, import taxes, advertisements, or leisure.

In this book, the subject has been addressed from the perspective of the transfer of knowledge and the international history associated to the historiographical background of the political economy of scientific knowledge. My previous research work concentrated on the construction of the problem of nutrition in the inter-war years and the influence of the international health movement on nutrition and public health in times of crisis. In approaching the complex network around health, nutrition, food production, experimental science, the food trade and patterns of consumption, interactions between the local and the international

65 e.g., De Vries, 2008; Jones, 2010.
66 Barona, J.L. 2010.
context emerged as an inescapable referent. In the very complex historical landscape of the period 1918-1960, interactions between theory and practice, as well as the local, the national and the international, made it preferable to use an approach that integrated all these dimensions. Consequently, this research is oriented towards the analysis of nutrition from a European viewpoint as a paradigmatic case study.

**Circulating Knowledge**

Historical research about international health in the first half of the 20th century became an emerging field over the past decade. The European Union has configured a favourable framework for cooperation projects, scientific meetings and international networks. This process has also taken place in the case of international health and the transfer and circulation of medical knowledge, regarding the scientific production of knowledge, uses and social practices. Indeed, to understand the international character – as well as the role – of knowledge in various fields, it is crucial to understand how, where and why knowledge is produced, communicated and circulated. It is easy to understand that this is not a question of a singular type of process, but of many: from the centre of scientific breakthroughs to more peripheral areas, between countries and within countries, from the experts to the public, from the laboratories to the market, from the market to the kitchen, through institutional decisions or through the actions of individual actors. The transfer of knowledge, artifacts and practices entails a complex network or system that experienced deep transformations throughout the 20th century. The traditional spaces where knowledge is produced in the Modern Age – universities, academies, research institutes, public laboratories – have lost their exclusivity, getting involved in a wide social network linked to other agents such as trade and commerce, industry and public administration. The science-society pattern, shaped in the 20th century, is absolutely different to that initiated with the Scientific Revolution in the 17th century, and which was still alive and kicking at the end of the 19th century. The evolution of the science-society pattern in the second half of the 20th century makes it extremely important to analyse

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68 Networks such as Phoenix, STEP (Science and Technology in the European Periphery), Inter-War Network are some examples among many others operating.

technoscience as a *system in society*, with the interactions between science, politics and the economy representing an essential approach. The interplay between science, technology and the political economy of knowledge will be discussed in more detail in the next chapter.

One of the general aims of this book is to investigate and discuss the production and circulation of knowledge about nutrition, hunger and diseases associated with chronic and acute malnutrition, the institutions and social groups involved, and the networks of power around the science and technology of hunger and health. The main point is not the reception of scientific knowledge in one direction from the experts to the public: how, when and why knowledge reached the general public. The interaction between hunger, food, diet and health essentially touches the relationship between science and society, assuming that science is not *external* to society, a sort of autonomous and *objective* reference, but a substantial element of it, which requires a historical and sociological explanation.

In recent decades, the interactions between society and science have been addressed in many ways by the social history of science. The sociology of knowledge has also contributed an original approach in this direction. Bruno Latour is one of the predecessors in this respect. He found the inner life of the scientific world, and made an intimate connection between science and social values. Of relevance is the shift suggested by Latour from an *external* science to society, to an *internal* science in society.

Some concepts are relevant to the orientation of this book: the role played by the authority of experts and its social and political use, the regulatory role of the state and international organisations, the changes in the food chain, the plural dietary culture and its transformation under the influence of scientific knowledge, market pressure and political action.

Generally speaking, up until the 1850s private institutions seemed to hold more authority than official ones as far as food was concerned, a situation that changed by 1900, when the general public expected official bodies to provide security by controlling the production, manufacturing, trade and preparation of food. By establishing these

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links, reference is made to the concept of the food chain, which assumes a direct and reciprocal relationship between production, distribution and consumption.\textsuperscript{73} In this context, the concept of dietary culture emphasises the importance of everyday life: the way people give meaning to objects and foodstuffs, connecting scientific ideas and traditions to daily practices.\textsuperscript{74} In addition to medical history, economic history, historical demography and anthropometric history, a cultural perspective has to be integrated in order to analyse hunger and health in times of crisis. This is a recent approach with a solid background, following contributions by Zigmunt Bauman,\textsuperscript{75} Ulrich Beck,\textsuperscript{76} Michael Gibbons,\textsuperscript{77} Bruno Latour,\textsuperscript{78} Helga Nowotny,\textsuperscript{79} Dominique Pestre,\textsuperscript{80} and Alain Touraine,\textsuperscript{81} among other influential authors who have opened up new avenues in the history and sociology of science. Hunger, food and health could represent an extremely fruitful topic of research.

Indeed, to analyse the transfer of health and nutritional knowledge, one should consider at least a plurality of aspects, such as the professional dimension of knowledge production, e.g. the role of experts and their importance as agents commissioned to legitimate knowledge and practice. New professional communities grew with a focus on expertise: nutritionists, physiologists of nutrition, clinicians, instructive programmes, vulgarisation campaigns, consumer and professional associations, expert commissions and conferences. Specialised journals were also developed.\textsuperscript{82} Another dimension of nutrition is the institutional perspective involving relations and influences among local, national, international institutions and organisms, governments and private laboratories, hospitals, dispensaries, institutes of food and hygiene,


\textsuperscript{74} Appadurai, 1986.


\textsuperscript{79} Nowotny, Scott, Gibbons, 2001

\textsuperscript{80} Pestre, 2003.

\textsuperscript{81} Touraine, A., Comment sortir du liberalisme, Paris, Fayard, 1999.

sanitary campaigns, health officers, experts’ boards, physicians, nutritionists and others. The plurality of stakeholders intervening in the process involves dynamic interaction between the circulation of knowledge through the networks of experts, local, national and international institutions and conferences, publications, media and the market. From this perspective, the political use of hunger, health and nutritional knowledge is most important. Other specific approaches such as gender, social inequalities and the rural-urban divide could contribute relevant aspects and add to the general picture.

The 20th century was a crucial period for the shaping of an international framework in the field of health, with the creation of public health administrations in Europe backed by local, national and international institutions. The Rockefeller Foundation and the League of Nations gave a boost to public health policies during the inter-war period and the middle decades of the century. New legislation and institutional developments in most states and the creation of committees of experts at influential organisations such as the United Nations (UN), the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) after World War II constitute an unavoidable reference when it comes to analysing the circulation of scientific knowledge on nutrition, hunger and dietary practices and values. Some works have contributed towards research on the United Kingdom, Central Europe and certain peripheral regions such as Latin America. These include: Paul Weindling’s work on the Rockefeller Foundation and the League of Nations;\(^83\) Marcos Cueto on the Rockefeller Foundation and the health activities of the Pan-American Health Office (PHO);\(^84\) Iris Borowy’s book about the League of Nations Health Organization;\(^85\) the series Bergen Workshops on History of Health and Medicine;\(^86\) the orientation followed by the journal Social History of

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85 Borowy, I., *Coming to terms with world health*, Frankfurt, Peter Lang, 2009.
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Medicine; as well as the international conferences promoted by the European Association for the History of Medicine and Health. The STEP network (Science and Technology in the European Periphery) is also working on several aspects of the circulation of scientific knowledge.

This book considers hunger in relation to science and health, as a starting point for the analysis of a complex network of elements participating in the economy and politics of hunger. The crossroads between food and health makes concrete the claim that food studies reflect societal evolution. Indeed, bringing together food and health allows us to take into consideration a wide range of aspects such as state intervention, the definition of body standards of health, the design of statistics and social enquiries, political criticism, trends in scientific research, economic calculations, scientists’ prestige, people’s reactions, the role and use of education, the gender divide and, more particularly, dietary requirements, nutritional recommendations, household schools, and illnesses caused by nutritional deficiency. Considering food in relation to health has yet another great advantage: the constitution of an international context. Scientific production has traditionally had a national basis, but since long contacts between scientists from various countries were manifold and international organisations took the initiative, hunger and health entered the international agenda. International meetings, especially those associated with the notion of “public hygiene” – which included healthy food and food safety – have played a crucial role in the exchange of knowledge since the 1850s. International contexts and international networks have to be incorporated in order to understand the local.

This book also aims to fill significant gaps with regard to the representation, interpretation and application of scientific knowledge on hunger and nutrition in Europe in the 20th century. The research carried out involves the combination of three levels: the production, circulation and social use of knowledge, mainly connected through international political action. It tries to identify the connections between science and society throughout the 20th century, connecting politics (revolutions, Fascism, wars, education programmes) and economics (the crisis in the 1930s, protectionism, rationing) to nutritional science and public health policies.


A series of contributions have been devoted to the emergence of an experimental science of nutrition. The oldest one, which mostly concentrated on food fraud, was predominant until the end of the 19th century; a great deal of scientific research was focused on calories and vitamins during the early decades of the 20th century. Research on the ideal diet followed, up until the 1980s, and preoccupations with obesity and overweight people emerged at the turn of the century. Along with life scientists’ comprehensive research, social, political, economic and cultural historians have contributed to particular fields of dietary knowledge. In this respect, the publication of the collection of essays by H. Kamminga and A. Cunningham (1995) may be seen as a turning point. Research has been conducted in a number of fields focused on the search for the ideal diet, the life and work of scientists, food adulteration, the discovery and physiological research on vitamins and nutrients, the political dimension, as well as the constitution of international nutritional networks. All of this work is of crucial importance, as it provides either a clear outline or precise information, while displaying the richness of historical source material. Therefore, our research goes back to texts that were generated by nutritional

researchers in the 20th century and to the large amount of information about nutrition and health produced by the international agencies. Most of this information was the point of departure of reports, surveys and political action. This work analyses the discourse of nutritional knowledge and experimental research, paying attention to the way in which science was produced, written and discussed and how research was reported, taking the trouble of defining new terms and new standards.

In the process of knowledge production it is not only laboratories and national food institutes that play a significant role. A fundamental issue also appears to be the knowledge exchange between specialists and the creation of networks of experts’ commissions that have scientific and political legitimacy. In addition, when talking about food and diet, it is essential to uncover the circulation of knowledge between experts, as well as between the experts and social actors: how nutritional science served as point of departure for political action, medical intervention and marketing strategies. During most of the 20th century, we witness a permanent tension between food production and the organising of trade, something absolutely determinant to understanding the limits of the experts’ recommendations when their proposals were to be transformed into political actions. The relations between nutritional knowledge and food policies, and their importance for the evolution of war and post-war situations, and the spread among the wider public, seem to be essential to understanding scientific trends from an internal social perspective.

Finally, the social application of nutritional knowledge encompasses several spheres: health and disease; nutritional policies in times of crisis (rationing policies); and public canteens for the groups at risk, such as the unemployed, children, industrial workers, pregnant women, refugees and deprived rural populations. It would also be interesting to find out how nutritional information was incorporated into daily practices.95 This is the most difficult part, since dietary information and guidelines fall within the context of social norms, habits and beliefs, i.e. within existing culinary traditions. Moreover, while nutritional science and the media changed drastically between 1900 and 2000 in Europe, society did too in terms of family structure, power relations, prosperity, state intervention, education, time management, expectations, etc.

The internal dynamics of the European society needs to be taken into consideration, as this would indirectly uncover the concern of households with food recommendations. Yet, the historical literature shows many research possibilities with regard to public kitchens. Of course, these differ from private kitchens (in terms of quality control, cost, tradition, cultural links), but the advantages of using source documents from public cooking institutions are too significant to neglect, while similarities between the two sorts of kitchens undoubtedly exist. European countries established different models of public kitchens, so a comparative approach could be instructive in understanding the circulation of nutritional information, as well as some aspects of the relations between nutrition and health. Public kitchens allow us to make a comparative approach to the social application of nutritional knowledge.

On the other hand, local and national regulations caused hospitals throughout Europe to pay attention to healthy food for their patients, especially from the last quarter of the 19th century. In some European countries, nutritionists and dieticians were trained in hospitals according to the principles of the new science of nutrition and appointed to public canteens, hospitals, schools, prisons and military institutions. Prisons and charitable institutions constitute complementary sources of information as well. Diets in public canteens for workers of large factories are similarly interesting. Investigations into school canteens and other initiatives such as school breakfast and milk distribution have become increasingly important in recent years from a historiographical viewpoint, most likely as a result of the recent intense attention paid to children’s history and particularly to children’s health. This includes the study of various aspects, such as food in relation to illness.

practical organisation and the moral implications of school meals,\textsuperscript{100} the national social policies for the protection of children and mothers,\textsuperscript{101} as well as the way that pupils perceived food and school milk schemes.\textsuperscript{102}

**Dimensions**

The articulation of the previously mentioned aspects into a comprehensive explanation of the political economy of knowledge on nutrition, hunger and health in Europe in the middle decades of the 20\textsuperscript{th} century requires the integration of at least the following elements and perspectives, considered in the present book:

1. A general picture, inclusive of a pattern of interactions between the production of scientific knowledge on health, hunger and nutrition, and its social and political use in the period 1918-1960, taking into consideration the influence of critical factors such as the economic crisis, World War I, World War II, the Spanish Civil War, social revolutions and international tensions in the inter-war period, as well as the Cold War.

   Relevant aspects of the problem researched have to be considered and discussed in depth. These include: the discussions about international standards; the agreements on statistical methods and technical surveys; the preparation and discussion of the reports presented to the international agencies and groups of experts on the effects of hunger and malnutrition about certain groups of the European population; and the particularities of the problems affecting the rural population and community nutrition services.

2. It is essential to discuss the concepts of circulation of knowledge and transfer of scientific knowledge within the framework of health, nutrition and diet, and to try to understand the historical background from the perspective of the political economy of knowledge.

Households, private kitchens and culinary habits are not considered in this book. Conversely, scientists, nutritionists, industries, politicians,
traders, peasants and farmers, as well as particular social groups are to be analysed as the main performers of an active platform trying to influence citizens’ behaviour in the context of tensions between scientific knowledge, feeding habits and food availability.

3. An analysis of the clinical, anthropometric, psychological and statistical criteria proposed by institutions, physicians, medical inspectors, authorities, etc., to establish standards of nutrition and patterns of health and optimum diet, including experimental, clinical and statistical strategies to clearly differentiate the healthy citizen from the population affected by deficiency diseases and malnutrition. New categories to identify nosological entities that shared experimental and clinical data.

4. A central aspect of the research involves analysing the dimensions of health problems associated with hunger and deficiency diseases in Europe between 1918 and 1960, to assess the political and economic impact of hunger as a health problem and also the task developed by national institutions (National Food Institutes, National Schools of Health, public canteens, rationing programmes) and international organisations (IIA, FAO, WHO, League of Nations, Rockefeller Foundation) in the establishment of patterns of measure, diagnosis, technological developments and political campaigns of intervention.

5. To understand the social dynamics of the political economy of knowledge and practices related to hunger, diet and health, it is also necessary to analyse the agents that intervene in the process of the transfer and circulation of knowledge, agreements on food safety, and their impact in the production and process of industrialisation of food and in public health.

6. The mutual interaction between national interests and programmes, and international proposals based on technical approaches and expertise with a more global perspective, help identify the problems in the fight against hunger and malnutrition, as well as in the education of citizens.

The far-reaching demographic catastrophe and political and economic international crisis caused by the Great War (1914-1918), and the period of conflicts until World War II, together with the financial and economic recession following the economic slump that started in 1927, transformed the global food market. The restoration of the food chain became a considerable political and economic concern, with clear repercussions on the nutrition and health standards of the European population. This book seeks to throw some light on the importance of hunger, malnutrition and health impairment in this historical context. It will also analyse the implication of the states’ governments and interna-
tional organisations in the creation of a new political and economic order.

The historical analysis of the political economy of hunger and health emerged in Europe in the period 1918-1960, and it requires the following aspects to be taken into consideration:

A cartography of hunger, considering as main sources national and international surveys during the economic crisis, and the war and postwar periods.

The importance, if any, of the international action taken by the international conferences and technical reports of experts of the League of Nations, the International Labour Office, the International Institute of Agriculture, the FAO and the WHO.

The evaluation of the impairment of the health condition of the European population directly or indirectly caused by hunger, a deficient diet and malnutrition, especially in rural areas. The influence of war and the economic crisis of the 1930s were especially important.

The politics of scientific research on nutrition and diet, as well as rationing policies derived from the calculation of the physiological values of the minimum diet and the optimum diet, and the parameters to calculate the dietary standards for families and special groups, such as the unemployed, families at risk of exclusion, pregnant women and babies, soldiers, patients, prisoners, refugees, etc.

It is also extremely important to analyse the consequences of famine and malnutrition in internment, concentration and refugee camps. These closed institutions represented an experimental laboratory for the clinical and experimental analysis of the resilience of the human body under extreme exhaustion.

The strategies of governments (Institutes of Nutrition, National Schools of Health, rationing policies) within a framework of international collaboration (the commissions of nutrition experts of the League of Nations, the OIT, the FAO and the WHO), concurrence and tension.

The historical sources listed in the final chapter of this book, archive documents and printed sources include, inter alia:

a) Technical reports, conferences and recommendations of the Commission of Experts of the League of Nations, the mixed committee of the League of Nations, as well as the FAO and the WHO on the state of nutrition of the European population.

b) World Food Surveys and regional reports and conferences promoted by the FAO since the late 1940s.
c) Specific studies on malnutrition and the extent of malnutrition in zones of war and in post-war periods. Particularly important are the reports of experts on the Spanish population during the Civil War, and those that analyse the consequences of hunger and famine in Europe during World War II and the post-war years.

A particular consequence of the transformation in food production and food consumption is the food safety issue associated with the fraud and adulteration of foodstuffs. At the end of the 19th century some international initiatives were proposed with a view to agreeing on a definition of fraud and its scope, and some regulations and methods of analysis were developed and standardised in order to homogenise international strategies of quality control. Apparently, these initiatives reached a new dimension, and more technological tools were developed in the early 20th century, when the first initiatives for the international standardisation of food quality emerged. Some of those initiatives created preferential spaces for the transfer of knowledge between national experts and a diversity of professionals. In that context, France took on a new leadership role in the promotion of the regulation of food safety and powerful private enterprises were set up, such as the Foundation of the White Cross in Geneva.103

**A New Historical Context**

As a result of the analysis of the various factors intervening in the political economy of scientific knowledge on hunger and nutrition mentioned in previous pages, this book offers a general discussion on the plural dimensions of hunger and health during the period 1918-1960. The aim is to show how the idea of a balanced diet and food availability became a central issue for the economy, scientific research and politics in the international agenda, a subject widely discussed in national institutions, parliaments, international organisms and scientific conferences. It also includes an overview of previous research that mainly focused on specific aspects and countries,104 and it represents a step forward from my previous work on the emergence of the problem of nutrition in Europe.105

The scientific, political and economic dimensions of hunger and nutrition allowed politicians and scientific experts – dieticians, nutritionists, physiologists and clinicians – to dream...

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105 Barona, 2010.
of a rational solution to the problem through the design of minimum and optimum standard diets for different income groups, professions and ages.

The problem I want to address is how the political economy of scientific knowledge on nutrition involved private and public institutions, international and national agencies, experts and citizens, education, health, politics, scientific rationality and cultural habits. Some aspects were particularly influential in understanding the evolution of the complex network shaped around hunger and health: the impairment of the global food system; the political tensions; the effects of the war and the devastating landscape of malnutrition in internment camps; the clinical and physiological research on the pathological effects of chronic nutritional deficiencies and long standing malnutrition; the rural-urban divide; and the emergence of new groups of population at risk, such as internees, refugees, soldiers, children, pregnant women and prisoners.

What was the role of national and international organisations such as the National Schools of Hygiene and the National Institutes of Food, the League of Nations, the International Labour Organisation, the International Institute of Agriculture, the Food and Agriculture Organisation, the World Health Organisation and the Red Cross? Thanks to their intervention, expert commissions built an international framework, which served to promote the circulation of legitimated knowledge, influencing government decisions, scientists, economists, food producers and the population’s habits.

Obviously, the first task was to cope with hunger and its negative effects upon public health. International agencies played an essential role in the establishment of a sort of cartography of hunger, which aimed to assess the dimension of the problem and identify the most affected areas: they promoted technical surveys on the nutritional state of the population in countries and regions; commissioned conferences of experts to implement international standards intended to improve the physiological knowledge of nutrition and the clinical consequences of nutritional deficiencies; checked the nutritional state of citizens (children, workers, soldiers, pregnant women…); and screened rural diets and nutritional habits in all corners of Europe.\[106\] International historians, political economists and economic historians have mainly examined the problem in terms of the power of interest groups and state strategies,\[107\] but the role of the international organisations in the impulse

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106 Barona, 2008a; Barona, 2010.
of experimental science and health policies – the major dimension of the problem – have been scarcely considered.\textsuperscript{108} A global perspective should analyse all the factors that came together and influenced one another to shape a political economy of scientific knowledge on health, hunger and nutrition.

The critical period between 1918 and 1960, which was characterised by international conflicts, war and post-war, was a decisive time for the appearance of a new international vision of coordination in many aspects of state intervention. Rather than traditional protectionist-state centred politics on the one hand, and liberal market-based traditions on the other, an alternative emerged that connected elements of the civil society with mechanisms of global governance, including a view of mutual dependence. Historiography has shown that since the end of the 19\textsuperscript{th} century, European countries showed different traditions regarding the global food system.\textsuperscript{109} Britain had a predominant free-trade tradition, quite different from protectionist Germany, France and Russia, and far from the more simple and self-sufficient agricultural communities in the Mediterranean area. Other countries, such as Sweden, Denmark, Belgium, the Netherlands and Switzerland, were more market and export oriented. Europe was a plural reality.\textsuperscript{110}

Therefore, the role of expert scientists when talking about dietary needs and optimum diet would not only influence nutritional knowledge but also inspire agricultural and health policies. It was the starting point of education and propaganda programmes on cooking and diet composition, aiming to civilise and change the population’s traditional habits considered to be pernicious for health. It was also the basis for diet in hospitals, charity meals, prisons, schools and other institutions. Proteins, fats, carbohydrates, nutrients, minerals and vitamins became common language.

A wide programme of intervention around nutrition and health was shaped with a view to disciplining, civilising and changing production and consumption patterns and modifying popular habits. The emergence of hunger as a social problem and nutrition as a scientific field of research contributed to the recognition of the social dimension of the self through the emergence of international and state social policies. Hunger, deficiency diseases, rational diet, healthy cooking, calorie intake, undernourishment and famine appeared as a core political and

\textsuperscript{108} Weindling, 1995; Barona, 2010.
\textsuperscript{110} Trentmann, Just, 2006, p. 15; Boyce, 2009.
economic issue and therefore became a central locus of action for social and political stability, programmes of intervention, public health and social modernisation. A well-nourished population was healthier, taller and stronger. Local and international institutions and experts appeared in connection with the social and scientific transformation of nutrition, becoming principal agents for the development of public health and social welfare policies.

The emergence of nutrition as an experimental field of research, as a medical speciality, as an economic and political locus, was immediately connected to market and consumption, but also to cultural and socio-historical factors and to the rise and increasing influence of the state as a social regulator.\(^\text{111}\) The international crisis that permanently affected the period studied, and the changing meaning of hunger and poverty as unacceptable social realities on the one hand, and the emergence of new governmental responsibilities in the public administration on the other, were some of the most meaningful factors.\(^\text{112}\)

As early as in the second half of the 19\(^{\text{th}}\) century, social initiatives were put in place in order to fight hunger as an intolerable reality punishing most European countries. These initiatives included: school meals; charity meals for the poor, mothers, women and industrial workers; propaganda campaigns on dietary habits; experimental research on the physiology of nutrition and the clinical definition of deficiency diseases associated with a poor diet; as well as economic and agricultural policies. No specific political ideology monopolised this economic, social and scientific process, which indeed was more broadly related to a generally accepted value of progress and modernity widely spread in most Western societies, excluding hunger and deep poverty.\(^\text{113}\)

The new social ethics about hunger and deprivation from the perspective of human rights resulted in practical actions in order to determine minimum and optimum standard diets, reshaped dietary habits, planned agricultural production and implemented rationing policies aimed at designing school and family meals, and discipline citizens via education and campaigns. Hunger and feeding were no longer considered purely private matters, as the diet became a locus for economic, political and medical intervention, as well as a scientific field

\(^\text{111}\) Barona, 2010.


During the 1930s the new culture of nutrition and its health dimension (optimum diet, dietary standards, nutritional deficiencies, malnutrition) entered the international scene.\footnote{Burnet, E., Aykroyd, W.R., ‘Nutrition and Public Health”, \textit{League of Nations Quarterly Bulletin of the Health Organisation}, Vol. 4, No. 2, 1935, pp. 323-474.} An increasing process of industrialisation of food production took place in order to guarantee the calorie intake and satisfy growing demands. This process became even more evident during the 1940s and the beginning of the Cold War. The regulation of food quality, as well as the scientific patterns for a balanced diet and their adaptation to cultural habits, were strengthened. The physiology of nutrition was considered to contribute more than merely nutritional benefits as, according to the new style of thinking, experts and authorities believed that the diet was to be adapted to scientific patterns on individual needs as a way of improving human development. They showed a eugenic perspective to improve \textit{the race} and overcome long-standing shortcomings and superstitions.\footnote{Carrasco Cadenas, E., \textit{Ni gordos, ni flacos. Lo que se debe comer}, Madrid, Diana, 1935; Burnet, Aykroyd, 1935.}

Planning the food market was the starting point. In the opinion of scientists, practitioners, public health experts and some politicians, the science of nutrition was to have a civilising effect upon the population, mainly workers and peasants, mothers and children, prisoners and patients. Knowledge on nutrition was to become legitimated by science and expertise, to be spread from the laboratory to the school, hospital, factory and the kitchen, to influence food production, to improve and rationalise the economy, shape scientific knowledge, change dietary habits and become a technical tool for future generations. As a material instrument of statecraft, as well as a new development for trade and market, the political economy shaped around nutrition was an important tool of power, and most European governments were determined to use it. Indeed, nutritional knowledge had to become quantifiable so that political and scientific initiatives could challenge the international crisis.
J. George Harrar, President of the Rockefeller Foundation during the inter-war years, synthesised the complex dimension of nutrition and diet, as the discovery of the calorie as a unit of measurement had led directly to an “informal alliance” of “scientists, farmers, government agencies, educators, and processors” working to fight malnutrition worldwide.\textsuperscript{117} The political economy of nutritional knowledge pooled, in its public health dimension, national and international efforts during the middle decades of the 20\textsuperscript{th} century. A plurality of actors took part in the process. The point of departure were the activities of the League of Nations’ Health Committee, often working in coordination with national schools of hygiene in several European countries in the 1930s, with the technical and financial support of the Rockefeller Foundation, and the collaborative expertise of the International Institute of Agriculture. After World War II the World Health Organisation and the FAO assumed food relief strategies in coordinating policies to fight hunger. But a powerful industry emerged in the meantime, and even though the states imposed regulations and quality control, the power of the industry grew more and more at the expense of the regulatory function of the state.

Hunger and poverty had already reinforced national social and public health dimensions in most European countries during the second half of the 19\textsuperscript{th} century.\textsuperscript{118} Consequently, the state participated in the regulation of the social relations affecting labour legislation, the protection of mothers and children, other groups at risk, promoting health and sanitary campaigns, trying to control food quality and fighting adulterations, and promoting school reforms and nutritional education. School medical inspection and school canteens became a tool for medical intervention, checking the new generations within the framework of a eugenic policy intended to improve social hygiene.\textsuperscript{119}

Nutrition, food availability and diet became an essential component of the new state policies promoted by social reformers for human improvement. Summer camps not only sought a contact with the healing effect of nature, but also feeding undernourished lower-class children.\textsuperscript{120} The first municipal institution for school medical inspection was created in Brussels in 1878\textsuperscript{121} and the initiative was extended to most European

\textsuperscript{117} Cullather, 2007, p. 5.
\textsuperscript{119} Barona, 2011.
\textsuperscript{120} Bakker, 2010.
\textsuperscript{121} Barona, 2007b.
countries in the following decades. The First International Conference on School Hygiene was held in Nuremberg (1904), a Second Conference in London (1906) and also in Paris (1906). In April 1912 the First Spanish Conference on School Hygiene took place in Barcelona. It defined the inalienable rights of children, set up a Liga de Higiene Escolar [School Hygiene League] and requested the extension of medical inspection to schools. The health-at-school policy also comprised school meals and canteens, which emerged in Europe from the 1860s onwards in the context of a broad debate on compulsory education and an environment in which hunger and its links with health were becoming far more visible.

A second dimension of nutrition in the context of public health comes from the idea that good nutrition is essential for optimum health status, a condition necessary to fight infectious diseases, indeed the main health problem during the first half of the 20th century. Feeding was to be considered the basis of good body development and a healthy state, a source of organic energy and good defences against external aggression, something fundamental when faced with the threat of hunger and starvation.

The so-called organic energy was considered to be essential to the understanding of the spread of infectious diseases such as tuberculosis. The concept of the pre-tubercular condition in children as a predisposition to the disease was related to defective feeding, excessive work, a lack of hygiene and poor living conditions. These elements cause us to argue that before the emergence of nutrition as an experimental field of scientific research, especially in the 1930s, hunger and feeding became a subject for social concern and social action mainly associated with public health and an optimum health status in order to minimise the risk of suffering infectious diseases.

This stage was prior to the emergence of a new science of nutrition based on experimental research on vitamins, organic elements and specific deficiency diseases. The concept of organic resistance to infection – a useful concept among practitioners – was directly related to

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122 Barona, 2010.
125 Barona, 2010.
the nutritional state and optimum diet. Poor nutrition was claimed to be the main factor for impaired organic resistance as a previous stage leading to losing the battle against infection. From this perspective, vaccines and medicines were important in fighting tuberculosis and other infectious diseases, and also in preventing contagion. But this was not more important than a good nutritional condition, which was considered to be the basis of a good treatment of any infection. In the late 1920s poverty, the problem of children’s health and infectious diseases, as well as the economic crisis, paved the road for a new milestone, namely the big international boost to scientific research on nutrition.

The international will to improve nutrition and public health was even stronger after World War II.\textsuperscript{126} International agencies were established in order to fight nutritional deficiencies and malnutrition, such as UNICEF (1947), the WHO (1948), in addition to the FAO (1943).\textsuperscript{127} A \textit{United Nations Relief and Rehabilitation Administration}-UNRRA was created to face the tragic effects of starvation and malnutrition in the Netherlands in 1944, with the specific target to offer relief to the liberated countries in Europe. Due to the scarcity of funds, the UNRRA received support from the USA and from nutritional experts who helped in the establishment of rationing strategies and food relief for the affected population in the Netherlands, Poland, Greece and other countries.\textsuperscript{128}

From the 1960s new agencies were founded to challenge food conflicts: the World Food Programme (WFP, 1963); the United Nations Development Programme (UNDP, 1965); the United Nations Environment Programme (UNEP, 1972); the International Fund for Agricultural Development (IFAD, 1977), which is closely related to the United Nations System the Consultative Group on International Agricultural Research (CGIAR, 1971).

From 1960 the World Bank and regional banks for development increased their contributions to the modernisation of agriculture and rural development. These strategies were promoted in Europe in the

\textsuperscript{126} Borowy, I., “Crisis as opportunity: International health work during the economic depression”, \textit{Dynamis}, No. 28, 2008, pp. 29-51.


1950s and in other world regions after the 1960s. Underdeveloped rural districts were the focus of most of the efforts.\footnote{129} 

As reiterated in previous pages, historical research that analyses the various factors behind the changes in the diet and nutritional condition of Europeans has highlighted the importance of taking into account a plurality of factors to explain the nutritional transition. These include the progress in scientific knowledge, changes in public health and hygiene and health educational programmes.\footnote{130} In the areas of health care and community nutrition, research has been conducted on the pre-transitional and transitional periods and on epidemiological, clinical and food-diet dimensions after the transition. But it also seems appropriate to delve into this analysis from the viewpoint of the history of health sciences.\footnote{131} It should not be forgotten that the discovery of the role of active principles in caloric values and metabolic processes, together with the discovery of vitamins and nutrients, enabled the consolidation of nutritional science as a solid ground during the early decades of the 20\textsuperscript{th} century. As interest in quantitative nutritional values waned amongst public health experts, research increasingly focused on the qualitative aspects of nutrition, which could have implications for the development of chronic disease, quality of life, physical and intellectual potential and longevity. This new knowledge, collectively applied in preventive programmes and public health campaigns, gave rise to a new functional concept termed \textit{community nutrition}, the aim of which was to improve the nutritional state and the health condition of individuals and groups within a community.\footnote{132} 

Likewise, the problems associated with nutrition, which lay behind the high infant and child mortality rates that characterise pre-transitional demographic systems, have also been paid some historiographical attention. It is generally accepted that the 1920s and 1930s constituted a crucial period in the development of public health in European countries. The specific situation in each country cannot be considered in isolation from the international context. On the other hand, mass consumption and new impulses towards industrialisation and urban planning after 1950 resulted in an improved food intake. The diet became more diversified and changes took place both in its composition and in household consumption: meat, eggs, milk, and animal proteins generally became more abundant. Calculations by FAO experts attributed to the European population modern standards with a daily intake of over 3,000 calories per person. In the 1970s Mediterranean Europe had similar parameters to those in Northern and Western Europe before WWII.

In addition to an analysis of the principle elements that shaped institutionalisation processes, such as that of community nutrition, it would seem appropriate to consider the social, cultural, economic and political contexts within which these phenomena occurred, and to analyse the discourses and practices regarding diet and health that existed in the international context, as well as in European societies, in the middle decades of the 20th century.

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