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## Introduction: Agribusiness clusters in Europe, 19th and 20th centuries

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# Introduction: Agribusiness Clusters in Europe, 19<sup>th</sup> and 20<sup>th</sup> Centuries

Marijn Molema, Yves Segers & Erwin Karel

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## Abstract

Clusters and the spatial concentration of economic development are themes which crop up more and more in recent debates in social and economic history. This special issue wants to foster an interdisciplinary crossover of theories and ideas between economic geographers and historians, and focuses on the development of several branches of agribusiness (dairy, horticulture, olive oil and agricultural machinery) in South-western and North-western Europe during the past two centuries. The five case studies unravel and analyse the connections and interdependencies between economic actors, knowledge institutions and the State in the agro-food chain. This analysis results in four main conclusions. Firstly, in the formation of regional economic clusters not only natural conditions played a major role, or other economic determinants such as an easy access to markets. Social and cultural connections between individuals and organizations that were shaped over time, and related to geographical proximity, were important too. Secondly, governments, entrepreneurs and interest organizations, who were firmly rooted in the region's history, often cooperated and stimulated cluster development via regulatory frameworks, educational and scientific policies. Thirdly, not only consensus but also discord and competition can foster the clustering of economic activities. Finally, multi-scalar perspectives are needed in order to grasp the importance of connections between clusters and actors outside the region.

The Industrial Revolution's effect on agriculture led to the introduction of new processing methods for raw materials: manual production techniques were replaced by mechanical technologies driven by steam power. As a result, financial and organisational ties between agriculture and the food

processing industry (often referred to as agro-industry) intensified. The term 'agribusiness', which is common nowadays, refers to the interdependency between the two, and illustrates the blurring of the dividing line between the 'primary' and 'secondary' sectors. Agribusiness in Europe began around 1850, when agro-industries started to develop. The term itself was introduced in Europe from the United States at the beginning of the 1960s.<sup>1</sup> It was mostly concentrated in those agricultural sectors – such as dairy, potato flour, sugar, meat production, canning industry, olive oil and other commodities – where the output could be processed industrially. Nowadays, however, it refers to a larger sector comprising the economic activities on both the input and output sides of a farm. Agribusiness pushed farmers in the direction of bankers, transporters, agrochemical and agro-pharmaceutical industries, knowledge and (public or private) service sector institutes. The farm turned from an autonomous entity into a small link in the food production chain.<sup>2</sup>

The variety of actors and the clustering involved in agribusiness makes this type of activity appropriate for research into the relationships between the different links in the 'economic chain'. Above all, agribusiness grew from local conditions, and the geographical correlation between the producers and processors of agricultural commodities played an important role in the origins of the agro-industry. Proximity of actors is an essential aspect in the development of the agribusiness. And one may hypothesise that this geographical correlation also was affected by social and/or cultural aspects.

This special issue brings together five case studies in which the internal dynamics of economic sectors is explained (implicitly or explicitly) by matters of proximity between actors.<sup>3</sup> It presents regional case studies from Spain, the Dutch provinces of Friesland and Limburg, and the west of Sweden. In this introduction we present and unravel the conceptual framework which binds them together. Various approaches to economic

1 J. Davis, *A concept of agribusiness* (Boston 1957); G. Sykes, *Poultry – A modern agribusiness* (London 1963).

2 J. Bieleman, 'Boeren werd agri-business – een synthese', in: J.W. Schot et. al. (eds.), *Techniek in Nederland in de 20<sup>e</sup> eeuw. Landbouw en Voeding* (s.l., 2000) 337-233; Y. Segers, J. Bieleman and E. Buyst (eds.), *Exploring the food chain. Food production and food processing in Western Europe, 1850-1990* (Turnhout 2009); L. Van Molle and Y. Segers (eds.), *The agro-food market: production, distribution and consumption* (Turnhout 2013).

3 The connections and relationships between actors within agribusiness were analysed and discussed during Rural History 2017, the international conference organised by the European Rural History Organisation (EURHO) in September 2015 in Girona (Spain).

geographical concepts and their operationalisation will be emphasised in the individual articles. These contributions make clear why research on clusters and economic activities are valuable not only for the study of rural and food history, but also for economic and social history in general. They show that economic relations are rooted in regional conditions and give examples how to interpret these territorial conditions. It is shown that social and cultural connections which are embedded in a region's history do affect the process of economic development within particular branches of the economy. Moreover, most of the case studies stress the important role of the state. Governments have stimulated the geographical concentration of economic activities with the use of regulatory frameworks and educational and scientific (regional) policies.

## 1 Connectivity

One way of underlining the relevance of this special issue is by starting with the general problem of connectivity. Many of those who want to disentangle the complex process of history will take off by identifying the most important actors and then asking how they have influenced each other. Taking the evolution of agribusinesses as an example of a complex historical process, we can pick out various economic and interdependent actors, whether they are individuals or single organisations/institutions. In addition to (1) farmers and (2) their suppliers of machinery, seedlings etc., (3) the food processing industry occupies a central position in the network. Other agents within agribusiness are (4) financiers, (5) knowledge institutions as innovators, (6) consumers and consumer organisations, (7) distributors and (8) governmental organisations. From the perspective of the farmer, suppliers as well as financiers, knowledge institutions and governmental institutions belong to the input side, while the other actors mainly concentrate on the output side. However, the historical development of the relations within agribusiness is much more complex than the restricted dimension of the farmer.

In order to understand the mutual relationships involved in food production, recent contributions have used the metaphor of a 'chain'.<sup>4</sup> This growing literature about food chains emphasises the need to study power relations within chains of economic activity. Relationships and their devel-

4 Y. Segers, 'Food systems in the nineteenth century', in: M. Bruegel (ed.), *In the age of empire. A cultural history of food* (New York and London 2012) 49-66.



opment over time is a process with its own (positive and negative) dynamics. During the previous two centuries the food chain witnessed fundamental changes. The literature distinguishes four basic processes. First, the food chain or system was lengthened, which means that the number of intermediate links increased. Secondly, there was a process of differentiation. The individual links in the chain became far more complex. Thirdly, a process of intensification took place. The interdependence of the various links became ever greater, and the system became more tightly intermeshed. Finally, a power shift occurred. Scholars have underlined that large companies and supermarkets became increasingly dominant in agribusiness during the twentieth century.<sup>5</sup>

For a long time, farms had a direct relation with the market. Farmers themselves or tradesmen sold their agricultural products at the market, directly to the consumers, but this situation changed from the nineteenth century onwards, parallel with industrialisation. This 'classical' model morphed over the next century into what Bruno Benvenuti called the TATE (Technical Administrative Task Environment) model. Agro-industries, banks and the government started to 'surround' the farm. Their influence on farmers and farming policy grew steadily. The vertical organisation of this chain is relative. In most cases a chain is dominated by one organisation (often a transnational company), but the individual parts of the chain are able to cross over to other chains. This way of networking is, in fact, the continuation of specific forms of agribusiness cluster systems which have been in existence for longer. Local conditions (such as soil, climate, access to markets) stimulated the rise of a specific farming activity (see also von Thünen's regional land use model), which formed the basis for the development of agro-industrial activities.<sup>6</sup> At the same time, new initiatives and economic actors emerged that meet the new needs of farmers and firms, such as knowledge institutions, and producers of agricultural equipment and other inputs. In the former peat colonies in the northern part of the Netherlands, for example, at least four agro-industries (dairy, sugar, potato flour and strawboard) developed and interconnected in this way during the second half of the nineteenth and first half of the twentieth century.

Conceptualising agribusiness as a network opens interesting research

5 B. Benvenuti, 'General systems theory and entrepreneurial autonomy in farming: towards a new feudalism or towards democratic planning?', *Sociologia Ruralis* 15 (1975) 46-64.

6 M. Kopsidis and N. Wolf, 'Agricultural productivity across Prussia during the Industrial Revolution: A Thünen perspective', *Journal of Economic History* 72:3 (2012) 634-670.

perspectives and the possibility of investigating the mutual interdependencies of the various actors of the food chain. One of these perspectives is the already mentioned geographical dimensions of networks. Concentration of businesses, including agribusinesses, often happened in towns, cities and agglomerations. The main factors behind these concentrations were the availability of natural resources, manpower/labour and infrastructure, such as harbours or well-developed consumer markets. Moreover, modern growth and development is connected to knowledge infrastructures that can be entrenched in regional environments too.<sup>7</sup> The spatial concentration of production factors, including knowledge, is all but self-evident, however. In fact, the relationship between spatial proximity and economic development is disputed among economic geographers.

## 2 Clusters

In various publications the Italian professor of regional economics Roberta Capello proposed a paradigmatic alternative to the neoclassical view on economic space. She framed this new approach as the ‘diversified relational’ conception of space, which emerged at the expense of the ‘uniform abstract’ conception. The latter, which dominated economic scholarship during the twentieth century (and which is still influential) uses macro-economic models to explain regional phenomena. It is grounded in neoclassical regional growth theory. This approach was criticised from the 1970s onwards for its neglect of specific (sometimes unique) circumstances within regions. Therefore, a bunch of ‘diversified relational’ theories were developed, stressing singular aspects of regional economies. These theories try to ‘identify all the tangible and intangible elements in a local area which determine its long-term competitiveness (...)’.<sup>8</sup>

Cluster theories were one of the most influential responses to this call for more attention to the uniqueness of regions. Unique aspects are broader than economic variables alone and include social, political and cultural elements. The cluster theory is open to all kinds of variables and combines them in a way which leaves enough space for the study of ‘diversified relational’ processes. Among others, it was the economist Michael Porter

7 B. Johansson and C. Karlsson, ‘Knowledge and regional development’, in: R. Capello and P. Nijkamp (eds.), *Handbook of regional growth and development theories* (Cheltenham and Northampton 2009) 239-225.

8 R. Capello, ‘Space, growth and development’, in: Capello and Nijkamp, *Handbook*, 33-52, 38.

who introduced the cluster concept, which he defined as ‘a system of interconnected firms and institutions whose value is greater than the sum of its parts.’<sup>9</sup> He used the term in order to emphasize the added value of clusters in the process of innovation and economic renewal:

Competitive advantages emerge from close working relationships between world-class suppliers and the industry. Suppliers help firms perceive new methods and opportunities to apply new technology. Firms gain quick access to information, to new ideas and insights, and to suppliers’ innovations (...). All these benefits are enhanced if suppliers are located in proximity to firms, shortening communication lines.<sup>10</sup>

Since the early 1990s, many scholars worked with the concept and contributed to the cluster theory. An instructive literature review summarized three key elements within the use of the cluster concept:

1. Components of a cluster have to be located in their geographical proximity;
2. Clusters are social networks in which information about technology, the labour market and infrastructure is shared;
3. Cluster development is guided by cultural aspects, such as institutions, shared standards and values, a business-friendly climate, cooperation and informal contacts.<sup>11</sup>

Recently, a policy document of the European Commission defined clusters as a ‘group of firms, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialized expertise, services resources, suppliers and skills’.<sup>12</sup> In our own and alternative definition we want to broaden the scope and connect it better to (regional) economic history. Therefore we define economic clusters as regional embedded systems and/or geographically dependent networks of cooperating organisations, such as enterprises, suppliers, knowledge institutes and governmental organisations. The geographical scope of a cluster

<sup>9</sup> M. E. Porter, *On competition* (Cambridge 2008).

<sup>10</sup> M. Porter, *The competitive advantages of nations* (New York 1990) 103.

<sup>11</sup> M. T. Martínez-Fernández, J. Capó-Vicedo and T. Vallet-Bellmunt, ‘The present state of research into industrial clusters and districts. Content analysis of material published in 1997-2006’, *European Planning Studies* 20:2 (2012) 281-304.

<sup>12</sup> Commission of the European Communities, *The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned*. Commission staff working paper SEC (2008) no. 2637, 5.

cannot be defined a priori, because this depends on local and regional contexts. Moreover, clusters do evolve over time and therefore their geographical manifestation may change too. Defining and delineating clusters in particular regions is one of the problems that should be studied historically.

To sum up, clusters share information on new opportunities faster and more clearly. Moreover, clusters have a good learning capacity and may act more flexibly than companies outside clusters. This is also true for R&D processes, which can be organised more efficiently and at a lower cost when institutions within a region cooperate. The cluster concept itself has raised criticism too. In contrast to the 'uniform abstract' conceptualisations of space, variables of economic growth are more difficult to group in quantitative models. This makes theoretical concepts such as clusters vulnerable to the critique of being too vague and too much policy-driven.<sup>13</sup> Besides, several economic geographers have problematized the relationship between spatial proximity and economic development.<sup>14</sup> According to them, the relation between clustering and economic development is contingent and depends on the regional context, which do change frequently. Such critiques underline the need for empirical studies, which show how the cluster ideas work (or don't work). Historians have something to offer here.

### 3 Interdisciplinary connections with economic and social history

In order to make these ideas productive for historical research, we can study how proximity relationships have evolved within cities, agglomerations, regions or even within a group of countries. From the perspective of cluster theory, one could expect that direct contact between individuals and organizations in a specific area results in an atmosphere of trust and cooperation, thus providing space for open innovation and shared facilities. Undoubtedly, Silicon Valley is today an iconic example of this.<sup>15</sup> But

13 G. Duranton, "California Dreamin": The feeble case for cluster policies', *Review of Economic Analysis* 3:1 (2011) 3-45.

14 R. Boschma, 'Proximity and innovation: A critical assessment', *Regional Studies*, 39 (2005) 61-74; R. Martin and P. Sunley, 'Conceptualizing cluster evolution: Beyond the life cycle model?' *Regional Studies*, 45 (2011) 1299-1318; B. Asheim, 'The changing role of learning regions in the globalizing knowledge economy: A theoretical re-examination' *Regional Studies*, 46 (2012) 993-1004.

15 M. Kenney and U. von Burg, 'Technology, entrepreneurship and path dependence: industrial clustering in Silicon Valley and Route 128', *Industrial and Corporate Change* 8 (1999) 67-103.

in the past one can find many other examples of clusters. Sometimes they developed as a result of accidental (historical) circumstances but often assignable causes played a major role, such as the geographical characteristics of a region, the availability of skilled workers, easy access to new knowledge about production processes, etc. These theoretical possibilities are interesting enough to link them to economic and social history and to explore what the cluster concept has to offer.

Scholars from the fields of economics, geography and history have been puzzled by the question of how and why industrial activities joined together in particular regions. On a theoretical level, the French economist François Perroux proposed his 'growth pole' idea, in which a big industry functions as an engine for economic development within a particular area, because such growth poles unchain a complex of related economic activity.<sup>16</sup> The Swedish scholar Gunnar Myrdal worked on similar notions. His concept of 'cumulative causation' introduced the powerful idea of interwoven economic activities that strengthen each other within a regional production system.<sup>17</sup> Since the 1950s agglomeration theories have become more refined.

Economic historians have been working on the regional dimension of economic development too. Through a combination of quantitative and qualitative methods, they have tried to capture the dynamics of areas situated between the local level of individual towns or cities and the national level of the state. The British economic historian Sidney Pollard has played a major role in the historiography of regional industrialisation. In 1981 he published his book *Peaceful Conquest*, in which he reinterprets the Industrial Revolution as a set of regional processes.<sup>18</sup> A generation of German historians analysed the Industrial Revolution in their country from a regional perspective. In the work of Hubert Kiesewetter, for example, regions are seen as engines of growth.<sup>19</sup> According to Kiesewetter, the causes

16 F. Perroux, 'Economic space: theory and applications', *Quarterly Journal of Economics* 64 (1955) 89-104.

17 G. Myrdal, *Economic theory and under-developed regions* (London 1957).

18 S. Pollard, *Peaceful conquest. The industrialisation of Europe 1760-1970* (Oxford 1981); Idem, 'Regional and inter-regional economic development in Europe in the eighteenth and nineteenth centuries', in: P. Subacchi (ed.), *Debates and controversies in economic history. Proceedings nth International Economic History Congress* (1994) 57-92.

19 H. Kiesewetter, *Industrielle Revolution in Deutschland. Regionen als Wachstumsmotoren* (Stuttgart 2004). The German tradition within this respect is older, see for example: R. Fremdling, T. Pierenkemper and R.H. Tilly, 'Regionale Differenzierung in Deutschland als Schwerpunkt wirtschaftshistorischer Forschung', in: R. Fremdling and R.H. Tilly (eds.), *Industrialisierung und Raum. Studien zur regionalen Differenzierung im Deutschland des 19. Jahrhunderts* (Stuttgart 1979) 9-26.

and effects of industrialisation can only be explained by regional comparisons. History should therefore focus on the development of regional economies, compare them with each other and scrutinise their interdependencies. This regional approach was later embraced by other German historians, who made use of economic theoretical notions too. These and other contributions changed the historical understanding of the Industrial Revolution.

Nevertheless, although regional approaches to economic history are all but extraordinary, explanations for economic growth and development are mainly focussed on national or even on continental aggregate levels. Historiography is still dominated by national comparisons of economic growth and individual countries' institutions. Transitions from an agrarian and industrial to a knowledge-based economy do raise opportunities to revive regional dimensions in economic history. The work of the American social scientist Anna Lee Saxenian on, again, Silicon Valley has illustrated how rewarding the study of regional knowledge economies can be.<sup>20</sup> However, sociologists and economic scholars are more conceptual than empirical. Occasionally, social scientists and historians work together and historicise the relationships between technological innovation and economic development.<sup>21</sup> These interdisciplinary initiatives may be the outset of historical explorations in which the geographical dimension is an integral part of the analytical framework. After all, there still is a need for historical studies which can explain the relationship between knowledge-based economies and the spatial dimension of economic activities in more detail.

The reason why such studies are scarce may be due to the insufficient intellectual exchange between historians and economic geographers. Nevertheless, the study of both economic geography and history can strengthen each discipline. Concepts and theories from the field of economic geography can inspire historians to ask new questions. In answering them, historians can provide economic geographers with empirical studies which contribute to the improvement of their theoretical notions. Both disciplines have shown a recent interest in the institutions which affect economic growth and decline. Therefore, the meeting point between the two could be the socio-economic and cultural aspects of (regional) economic processes.

20 A. Saxenian, *Regional advantage: Culture and competition in Silicon Valley and Route 128* (Cambridge 1994).

21 M. Davids and K. Frenken, 'Proximity, knowledge base and the innovation process. The case of Unilever's Becel diet margarine', *Papers in Innovation Studies* 7 (2015).

#### 4 Proximity and clusters in the history of agribusiness

John Wilson and Andrew Popp made a thorough and provocative contribution to both economic geography and economic history by scrutinising the temporal aspects of clusters.<sup>22</sup> Economic clusters do not occur immediately, according to these British business historians, but evolve over time. New alliances between actors and new power relationships are the result of developments within a network. Sometimes networks succeed in adapting to changing circumstances, but sometimes fixed interests are so dominant that lock-in processes lead to the decline of economic clusters. The strength of their research is the historical narrative in which the different choices of various actors come to the fore. Their comparative approach lays bare the variables which affect the origins and development of clusters. These variables are, among others, the learning capacity of a network and the economic structure of a cluster. Unfortunately, the edited volume and other work of Wilson and Popp don't include case-studies on agribusiness. Literature on the geographical dimension of agribusiness is still scarce and is mainly written from a national perspective.<sup>23</sup>

However, the interdisciplinary cross-over from economic geography concepts to the historical study of agribusiness might lead to challenging perspectives. One of the most interesting themes to address is the relationship between the various actors in the food chain. Initially, farmers were the key actors in the food chain. But after the Industrial Revolution, when they started to produce bulk commodities for the processing sector, farmers became more and more connected with and dependent from other actors. Contracts as well as quality requirements of processing companies and the government increasingly determined their farm policies. The modernization of agriculture, first slowly but after the Second World War very rapidly, resulted in the emergence of various new institutions, in what would become agriculture clusters. The relations between the various actors became more complex. For instance: farmers had to borrow more and more money from (often specialised agricultural) banks to finance new

22 A. Popp and J. Wilson, 'Life cycles, contingency, and agency: growth, development, and change in English districts and clusters', *Environment and planning*, 39 (2007) 2975-2992; J.F. Wilson and A. Popp (eds.), *Industrial clusters and regional business networks in England, 1750-1970* (Aldershot 2003).

23 A. Tessari and A. Godley, 'Made in Italy. Made in Britain. Quality, brands and innovation in the European poultry market, 1950-80', *Business history* 56:7 (2014) 1057-1083; S. Hamilton, 'Agribusiness, the family farm, and the politics of technological determinism in the post-World War II United States', *Technology and Culture* 55:3 (2014) 560-590.



investments. Their local connectivity is an example of how clustering often determined and stimulated the agricultural local developments. But the government and its initiatives in the field of knowledge engineering also became an important actor.

For analytical reasons we focus, in this special issue, on the interdependencies between three domains. The first domain is the economic realm, restricted to farmers on the one hand and food processing industries on the other. The second domain is the field of knowledge institutions, such as education and laboratories. The third domain comprises governmental organisations. The relation between the actors in the three domains changed through history, but in what way was proximity due for their sustainability? Although agribusiness seems to be a much globalised sector in the economy from the late nineteenth century onwards, in which global players dictate the direction, it is also a sector that derives its innovative power from local clusters. Even today the Trans National Companies (TNC) in the globalising agro-industry have strong (historical) roots in local networks. Industrial processing methods and economic globalization stimulated, from the end of the nineteenth century onwards, concentration and scaling-up processes in agro-industry. Within specific places and regions, the State, entrepreneurs as well as knowledge institutes stimulated the creation, diffusion and acceptance of innovation. Spatial proximity enhanced not only the circulation of scientific and technological knowledge, but also of more tacit knowledge and skills needed for agro-industrial production.<sup>24</sup> The question of how these proximity relations really functioned (or not), and how the development of agribusiness clusters must be understood, needs further in-depth and comparative historical research.

## 5 This issue: content and main conclusions

This issue presents a number of research articles in which the concept of clusters is operationalised in various regional case studies about agribusinesses in Europe (focussing on different regions in Spain, The Netherlands and Sweden). Together these articles form a collection of perspectives on the connectivity and geographical proximity between economic actors, knowledge institutions and the government. The contribution of Fernando Collantes adopts a comprehensive view of the dairy chain from the 1930s onwards. While analysing the transition from organised capitalism (mid-

<sup>24</sup> H. Collins, *Tacit and explicit knowledge* (Chicago 2010).



1960s – mid-1980s) to the post-1986 period of deregulation in Spain, the author clarifies the continuity of dairy clusters in northern Spain. Strong state intervention resulting in the rise of dairy clusters in other parts of the country, however, underline the importance of political market regulation. Another interesting aspect of cluster economies is raised in the contribution of Collantes. Although the period of organised capitalism waned after Spain's accession to the European Economic Community (EEC), dairy clusters outside the northern part of the country persisted. The Mediterranean region and Catalonia even succeeded to step higher on the 'ladder of value creation' compared to the North, which illustrates the importance of innovation and R&D as location factors. The article written by Ramon Muñoz narrows the geographical scope by focusing on olive oil production in southern and western Catalonia. He makes two interesting points in his contribution. First, he reveals a quantitative way of defining economic clusters in the past. Second, he embraces the concept of 'life cycles' and applies it to the olive oil cluster, thus operationalising an important concept for the analysis of continuity and change in economic history. He shows how individual companies and entrepreneurs took a leading role in the adjustment to a globalized market in the decades between 1890 and 1910. The use of new technologies, such as the hydraulic press as well as marketing techniques, was one of the drivers of this adaption process.

The articles of Marijn Molema and Yves Segers scrutinise cooperation between actors from several domains of society. Both contributions concentrate on the interplay between entrepreneurs, private and public organisations and knowledge institutes in Dutch regions. Molema focuses on a dairy school as a particular knowledge institute in the Friesian dairy industry, which was established as a result of close cooperation between state and economic actors who operated on different scales with various expectations towards each other. He interprets the differentiation of several roles within a regional economic network as a learning process, which was fundamental for the construction of cooperative patterns between economic actors and the state at the end of the nineteenth century. These multi-scalar patterns, as Molema shows, are the result of an historical process itself which strengthened the Friesian dairy cluster. Segers takes a more general view on the fruit sector in Dutch Limburg. He analyses how several experts and organisations reacted to globalisation and fierce competition between the end of the nineteenth century and 1940. He shows how entrepreneurs and the government created shared facilities which operated on a regional scale, such as auctions and a state horticultural consultancy, to respond to global competition and to stimulate the forma-

tion of a regional economic cluster. Moreover, he embeds the process of economic development in the emergence of knowledge networks, in which scientific and economic know how circulated between various actors in the cluster.

The final article brings us to the north of Europe. Lars Nyström analyses the production of agricultural machinery in Kvänum. In this region in western Sweden a network of engineers was formed, closely connected to the practice of arable farming. Most interestingly, Nyström discovers that competition and distrust were two of the forces which gave Kvänum its dynamic power. This final contribution also emphasises that economic geographical theories cannot be translated directly to social and economic history without the narrative skills of the historian being used to illustrate the connections between various actors.

The above-described findings lead us finally to some main conclusions. We started this introduction by raising the problem of connectivity. The cluster concept provides both theoretical and methodological grip to study the spatial dimensions of it. All case-studies include examples of regional responses to economic changes, due to technological shifts and/or the globalisation of markets. Old and new connections with other regional actors, thus stimulating the clustering of economic activities, helped to adapt to changing environments. Within the clusters, the State, entrepreneurs and economic interest organizations played a crucial role. This becomes especially clear in the articles about Catalonia, Friesland and South-Limburg. The majority of the leading actors in the cluster, were part of the territories' histories, thus reminding us that driving forces of innovation can be rooted in regional traditions. Emphasizing the role of social and cultural relations, however, does not mean that cluster development is free of discord. In the cases of Friesland and South-Limburg, but especially in the case of Kvänum, we find clear evidence that competition and disputes can have a stimulating effect on cluster evolution too. Cluster development is for an important part a time-consuming and organizational process, in which expectations between several actors have to be shaped and re-shaped, negotiated and renegotiated. The cases of Spain, Friesland and South-Limburg underscores the relevance of the national state as a mediator and stimulator of regional economic clusters. National legal frameworks and subsidies for shared facilities such as knowledge institutes, can give crucial incentives for clustering.

Qualitative approaches are suitable to trace the important actors and to make the social-cultural relations between them more explicit. However, the quantitative aspect should not be neglected. Economic history should

give informative ideas about the size of the phenomena we study. Demonstrations of how to measure regional economic clusters are presented by the Spanish dairy chain and the Catalanian olive oil cluster. With the help of statistical indicators, such as employment and production numbers, it is possible to measure the size of clusters. The case-studies demonstrate how fruitful a combination of quantitative and qualitative methodologies can be. Future research should be directed towards such combinations, and must have the ambition to improve the quantitative approaches with new insights from economic geography, which has already been done by several economic historians.<sup>25</sup>

Notwithstanding the heuristic value of the cluster approach, we should not focus on the internal dynamics of economic clusters alone. All case-studies showed, to a greater or lesser extent, the importance of extra-regional connections. Proximity goes beyond space, as has been already put forward by critical economic geographers. Regional change is related to interactions with actors and institutions outside economic clusters. Unravelling the evolution of clusters should take this multi-scalar perspective on regional development into account. As every economic system, clusters have to adapt to (internal and external) changing circumstances, driven by structural economic transformations, technological breakthroughs, and, among others, (geo)political shifts. In order to improve our understanding of such adaptation processes, scholars should invest more in theoretical and methodological reflection, and try to grasp the factors and circumstances that can help to clarify the (un)successful development of clusters. The case-studies in this special issue provide, without a doubt, valuable insights to explore further the processes of clustering and regional concentration of economic activities, in general and in agribusiness in particular.

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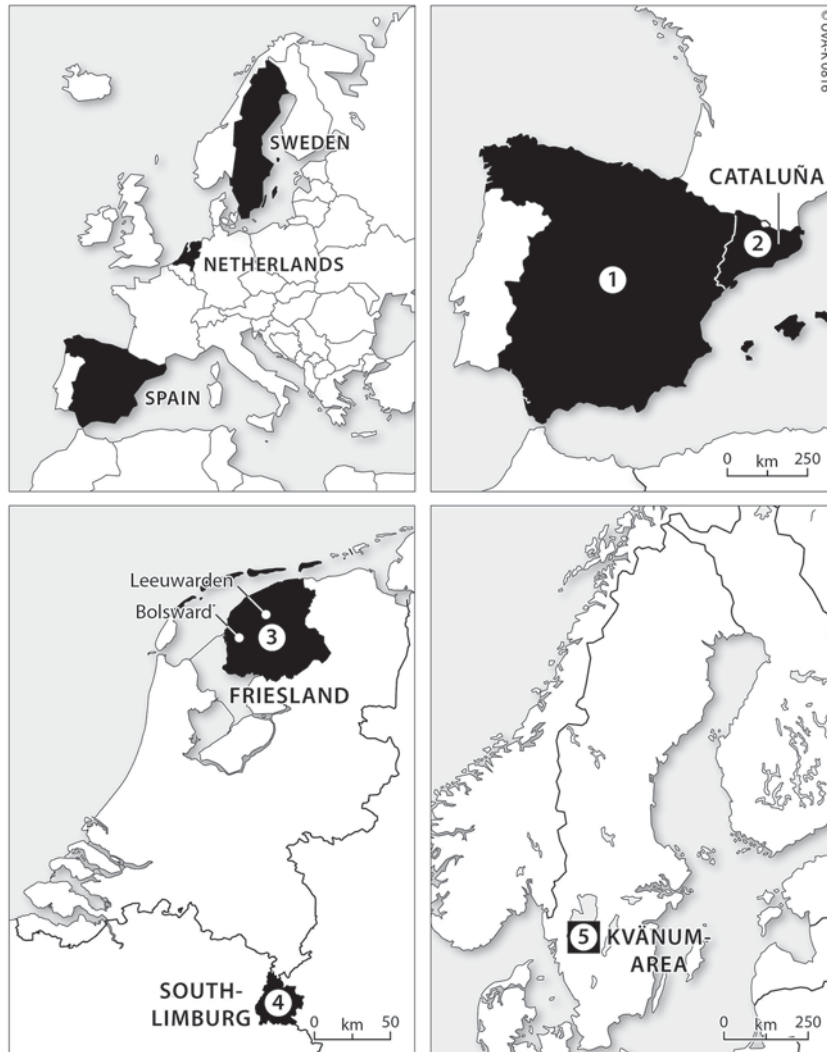


Figure 1. Map of case study regions

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