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# Multiscalar institutional complementarity and the scaling of clusters

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- 1 It is widely agreed that the form of capitalism has changed over the last three decades. To use the labels of similar but nevertheless different theories, there has been a transformation from fordism to post-fordism, from mass production to flexible specialisation or from a Keynesian welfare state to a Schumpeterian workfare state. According to the glocalisation thesis (Swyngedouw, 2000 and 2004), this broad political-economic transformation has been accompanied with a rescaling of the economy and the state. The local and the global have become the most important levels of economic and political action while the national level has declined in importance. The world economy is no longer fuelled by national economies and national states but by urban and regional economies and their concomitant (in)formal institutions of urban and regional economic governance on the one hand and by global economic processes (international trade, financial flows, global companies, foreign direct investments, and international strategic alliances) and supra-national political organizations on the other. Rescaling is not just a “by-product” of the above-mentioned political-economic transformation but an integral part of it because it is simultaneously medium and outcome of the latter.
- 2 The voluminous new-economic-regionalism literature of the 1990s, be it industrial districts, clusters, new industrial spaces, innovative milieux and learning regions, is broadly in line with the glocalisation thesis. It says that the place-bound assets for global competitiveness are no longer national but regional. Because it equates globalisation with a rising dominance of global markets (it largely ignores non-market modes of economic coordination at the global level), it focuses almost exclusively on those place-bound assets of cities and regions that are hard to imitate elsewhere. That is why it strongly gazes at the region while ignoring other spatial levels. In most of the

literature on new economic regionalism, spatial clusters are defined in relatively self-contained terms, with little attention paid to how inter-firm relations and the (in)formal regulatory institutional framework in which they are embedded are scaled.

- 3 Over the last five years or so, however, there has been a growing attention to how clusters are scaled. It has been shown that clusters are simultaneously governed by non-market modes of economic coordination at the global level, such as hierarchies, networks, and even communities. It is now increasingly argued that the latter modes of global economic coordination, networks in particular, are at least equally, if not more, important for well functioning clusters as regional ones. Thus a more sophisticated version of new economic regionalism says that regional and global modes of economic coordination complement each other, which is why the assets for regional competitiveness are simultaneously both regional and global. But this is even better in tune with the glocalisation thesis because its view regarding the global and the local is more balanced.
- 4 Although the glocalisation thesis and its closely related literature on new economic regionalism is very attractive and has inspired my research, I feel dissatisfied with it because it is too much downplaying the national level and hardly has an open eye to dissimilar or divergent trajectories of glocalisation. The glocalisation thesis implicitly assumes that all countries have followed more or less the same trajectory from a nationally embedded fordism towards a glocalised post-fordism. It does hardly pay attention to varieties of glocalisation. No wonder that it largely ignores the variety-of-capitalism thesis that claims a persistent continuity or, more precisely, a strong path dependency of different *national* forms of capitalism and different *national* forms of the state in the era of globalisation. Nor that it largely disregards how spatial clusters are intertwined with national forms of capitalism and national forms of the state. According to the variety-of-capitalism thesis, national forms of capitalism and national forms of the state show a strong path dependence because there is a strong coherence or institutional complementarity in different spheres of economic and political life. Although institutional complementarity has different meanings (as we shall see later), in the economist's sense it comes down to the fact that the presence of one institution increases the returns or efficiency of the other.
- 5 In the literature on new economic regionalism, one can find plenty of examples of "horizontal" institutional complementarity, although the term is never explicitly used here. The idea that different institutions at the regional level complement each other and form a coherent regional whole that is more than the sum of its parts, runs as a red line through this literature. But it largely ignores a "vertical" complementarity of local and national institutions. Adherents of the variety-of-capitalism thesis, on the other hand, stress a "horizontal" institutional complementarity at the national level but, being blind to geography, ignore a "vertical" institutional complementarity between the national and local level. In this paper I aim to bridge both bodies of literature and to explore the "vertical" institutional complementarity between national forms of capitalism and spatial clusters. I do this because I have the feeling that this is a promising way to get a better grip on the (re)scaling of clusters.
- 6 My paper is organised as follows. In the first section I say no more than a few words on the literature of new economic regionalism followed by arguments why the scalar perspective on clusters is changing. There is growing recognition that clusters are embedded in a broader institutional matrix at national and supra-national levels, and

economic geographers are increasingly stressing the relational character of scale. In the third section I discuss the variety-of-capitalism thesis followed by a discussion of institutional complementarity. To give my arguments flesh and blood, I present a case study of the Dutch vegetables-under-glass cluster in the final section. It is an example of strong institutional complementarity between the local and national level because the cluster is tightly interwoven with national corporatist institutions. By this case study I do *not* want to suggest that all Dutch clusters are so closely intertwined with national corporatist institutions. They are not. The “coupling” of national and local institutions can vary even within one country. In short, there is variety within variety and Swyngedouw’s glocalisation thesis should be reformulated into a “variety of glocalisation thesis” that reflects the varying role of the national level.

## Monopolies of Place and New Economic Regionalism

- 7 We hear it almost every day. “In the era of globalisation, there are no alternatives to free markets ; all alternatives lead to economic stagnation”. At first look it just seems a matter of common sense but it is in fact much more. It is the kernel of neoclassical economics and liberal political theory that equates perfectly competitive markets with economic growth and the rise and spread of global capitalism with a successful introduction of perfectly competitive markets.
- 8 Schumpeter (see Clemence and Doody, 1966) and Braudel (1982) have radically inverted the conventional wisdom that equates the rise and spread of capitalism with the successful establishment of markets, and market competition with the motor of economic growth. Capitalism, they argue, is inherently anti-market. No capitalist wants to operate in fully competitive markets because that is not where the biggest profits are made. They are made in monopolies or oligopolies. That is why the spur for economic change is not market competition but how to keep out of such competition. Historical capitalism is, for Braudel, a world of multi monopolies, not multiple markets. Schumpeter’s view on capitalist dynamics is very similar. Real entrepreneurs try to escape from competitive markets through innovations or so-called “new combinations”<sup>1</sup>. New combinations are not only the outcome of the actions of heroic private entrepreneurs, as was thought by Schumpeter (in his early works), but also the result of collective action and non-market coordination. In other words, not only firms but also national states, regions and cities try to escape from fully competitive markets by making new combinations. True, national states are very active in creating fully competitive markets at the national, European, and global level but, contradictorily, attempt simultaneously to get away from them by creating national competitive advantages that cannot be easily imitated elsewhere (for instance, the Dutch mainport policy, the Finnish innovation policy and the Swiss banking policy). The same applies to cities and regions that, in response to ever increasing European and global competition, try to create monopolies of place that are hard to imitate.
- 9 Although such strategies are followed at the national and regional level, the new-economic-regionalism theory of the 1990s stresses the growing political economic importance of the region in the global era. The theory of new economic regionalism is not really one theory but rather a collection of partial approaches with different labels : flexible specialization and industrial districts (Amin, 2000 ; Beccattini *et al.*, 2003 ; Sabel, 1994), clusters (Porter, 2000), new industrial spaces (Scott, 1988, 1998), the regional

world (Storper, 1997), innovative milieus (Camagni, 1991), regional innovation systems (Braczyk *et al.*, 1998), and learning regions (Cooke and Morgan, 1998 ; Cooke, 2002). Notwithstanding their subtle and, in some cases, large differences of these approaches (Porter deviates most from the others), they all agree with Allen Scott's (1996) catchy phrase that "the regions are the motors of the world economy", which are based on the following arguments.

### Flexible specialization and transaction costs

- 10 The political-economic crisis of the 1970s and 1980s in Western Europe and the US as well as Europeanisation and globalisation have stimulated the rise of flexibly specialized production systems and has forced horizontally and vertically integrated firms to externalize their production. In addition, new economic activities in the sphere of business services, ICT, media and culture have appeared on the economic scene accompanied with the establishment of new small firms that are very dependent on an urban environment. All this stimulates spatial clustering because it reduces transaction costs between firms, particularly in case of irregular, unpredictable or complex transactions. These transaction costs are not so much related to traded interdependencies (physical input-output relations) as to *untraded* interdependencies (all non-market transactions and relations between firms).

### New mixes of modes of economic coordination

- 11 All theorists of new economic regionalism (except Porter) share the institutional economic starting point that economies are governed by mixtures of various modes of economic coordination: markets, hierarchies, associations, communities, networks, and the state (see for more Boyer and Hollingsworth, 1997 and Crouch, 2004). While hierarchies and the state (and, to a lesser extent, associations) were the dominant modes of economic coordination in the fordist era, we see a growing importance of mixtures of markets, communities, and networks (and, to a lesser extent, associations) in the globalised post-fordist era. A spatial clustering of similar firms stimulates market competition (particularly Porter emphasizes this point). But spatial clusters can only be successful in the global economy if markets are combined with networks and communities. And it is precisely the latter that are much more localized than other modes of coordination.

### Innovation processes according to interactive model of innovation

- 12 Were fordist economies driven by cost reduction through mass production, post-fordist economies are propelled by innovation. Innovation is much more than radical innovations and high-tech. Also "traditional", low-tech industries can be very innovative, be it by means of incremental innovations. In addition, innovation processes are no longer based on the so-called linear model of innovation (the lab invents a new product that subsequently is produced in the production department and finally put on the market by the marketing department) but on the so-called interactive model of innovation, in which there is all the time feedback between all actors involved inside and, more importantly, outside the firm. And it is precisely these

innovation processes along the interactive model that are much more localized than those along the linear model.

### **New forms of spatial clustering based on local circulation of tacit knowledge and local buzz**

- 13 The rise of new forms of clustering is based on pools of specialized workers and firms that are the “hot spots” of specialized knowledge. Because specialized knowledge is becoming increasingly codified and more widely accessible (internet), the competitive position of regions is increasingly based on the local circulation of *tacit knowledge* and *local buzz* (Storper en Venables, 2004), that is to say : on the circulation of non-codified knowledge that can only be learned by doing and only picked up by “being there” (Gertler, 1995). For *tacit knowledge* and *local buzz* circulate most easily through face-to-face interaction between actors that speak the same language, use the same codes of behaviour and communication, adhere to the same conventions and norms, and know each other on the basis of an informal contact or an earlier successful cooperation.

### **Innovation and learning supported by regional coalitions**

- 14 Innovation and learning are processes of collective action that are supported by coalitions of private and public actors. The state no longer plays a dominant role in it but is at best a *primus inter pares*. Due to an increasing regionalization of the economy and a devolution of state power to the regional level, innovation and learning are increasingly supported by regional alliances of businesses, trade unions, universities and research institutes, vocational training colleges, economic development agencies, and local governments among others.

### **Growing industrial specialization of regions**

- 15 The tendency towards clustering in learning regions is accompanied by a growing spatial specialization of industrial sectors (at four or five digit level). In other words, localisation economies are becoming ever more important and the growing specialization of national exports are increasingly based on so-called “technology districts” (Storper, 1997, pp. 195-220).

### **Path-dependent development**

- 16 Economic regionalization is always a matter of long-term processes. It is a path-dependent development process but due to a very well-developed regional division of labour between firms the risk of lock-in is much smaller than in corporate hierarchies.

## **From Regional Gaze to Scaling of Clusters**

- 17 By hammering at the point that competitive advantages are no longer found in national states but in the regions, the adherents of the theory of new economic regionalism seem to have become obsessed by the region : “a regional gaze” (Lagendijk, 2002). No wonder that it is mostly assumed that clusters of similar and related industries,

networks of competing as well as collaborating firms, labour markets for specialised skills, external economies of scale and scope, low transaction costs, circulation of non-ubiquitous (tacit) knowledge, trust and (in)formal institutions of economic governance are all found at the regional level. Little attention is paid to how inter-firm relations and the (in)formal regulatory institutional framework in which they are embedded are scaled.

- 18 While much of the above-mentioned literature focuses predominantly on the influence of *regional* factors on cluster development, there is, however, a growing attention to the scaling of clusters and a growing recognition that clusters are embedded in a broader institutional matrix at *supra-regional* levels. This changing perspective is based on the following arguments.

### Localisation and urbanisation economies can be diffuse

- 19 Although the scale of Italian industrial districts – *the* paradigmatic example of flexible specialisation – can be fairly simply demarcated by the “daily urban system” of the actors because they are strongly embedded in their local communities (a key characteristic of these districts), all other approaches deal with geographic proximity in very loose way. Porter is going farthest in this respect. The scale of his clusters can vary from a neighbourhood to a number of adjacent countries (for instance, Toulouse’s Airbus cluster includes northern Germany and parts of the UK). That is the reason why Malmberg (2003, p. 151) proposes to leave out geographic proximity altogether from the definition of a cluster and to limit the term to a non-spatial “industry cluster”, i.e. a set of functionally linked economic activities (cf. Perroux’s *espace economique*), and to make *degrees of agglomeration* an attribute of such a cluster rather than part of its definition. Phelps (2004), in the same vein, argues for an “economic geography of the banal” that pays attention to *diffuse forms* of external economies and agglomerative effects.

### Importance of extra-regional networks

- 20 In the theory of new economic regionalism it is often assumed that spatial clustering is strongly, if not exclusively, based on regional networks (and communities). And these place-bound networks play a key role in the competitive advantage of regions in global markets. In other words, non-market modes of economic coordination are particularly found at the regional level while the market mode of economic coordination dominates at the global level. In doing so, it overlooks the fact that spatial clustering is based on other mechanisms than regional networks, such as presented in the “classical model of pure agglomeration” in which economic actors are anonymous, and in the “model of industrial complexes” (Gordon and McCann, 2000). In addition, and more importantly, the scale of clustered firms does not necessarily coincide with that of networks. In most cases it does not. And non-market modes of economic coordination can be very important at the global level. A large number of authors (Amin and Thrift, 2002, pp. 51-77; Bathelt *et al.*, 2004; Bunnell and Coe, 2002; Clark and Tracey, 2004, pp. 84-89; Isaksen, 2005; Lagendijk, 2004; Oinas and Malecki, 2002; Simmie, 2004; Sturgeon, 2004; Wolfe and Gertler, 2004) show that the *extra-regional*, i.e. national and particularly global, non-market relations of firms are equally, if not more, important for the competitiveness of firms, particularly with respect to innovation and learning,

as intra-regional ones. Even the commonly consented idea that tacit knowledge circulates only locally is being challenged. Gertler (2003, pp. 105-109) discusses a recent body of work based on concepts of “microcommunities of knowledge” and “communities of practice”, which shows that dense communities of people can develop around a certain trade or profession and such communities can develop relations of trust and shared cognitions that allow for the sharing of tacit knowledge, despite being globally dispersed. Thus according to this approach the relational proximity of some groups of professionals is much more important for the circulation of tacit knowledge than geographical proximity.

## National context still very important for transnational corporations

- 21 The national level still is very important for the globalisation strategy of transnational corporations (Gertler, 2003). In addition, studies on so-called transplant geography point out that branches of transnational companies have to adapt themselves strongly to their host countries, i.e. to their national institutional context, regarding their daily practices as well as their long-term strategies (Gertler, 1995 ; Schoenberger, 1999).

## New perspectives on scale and (re-)scaling

- 22 Geographers traditionally conceive scale in terms of size of a delineated area or a hierarchy of delineated areas like in Christaller’s theory of central places or in the territorial organization of national states. And traditionally social scientists, including geographers of course, have a “zero-sum conception of scale” (Brenner, 2000, p. 364), i.e. the notion that scales operate as mutually exclusive rather than as co-constitutive territorial frameworks for social relations. The traditional intellectual division of labour is based on such a “zero-sum conception of scale”: economics, sociology, and political science is about (national) societies while geography about cities and regions. That is why social scientists are by tradition inclined to limit their research to one scale only, and they seldom focus on several scales simultaneously. Over the last two decades, however, a lot of literature on scale and (re-)scaling has been published that conceives scale or, more precisely, scaling in a radically different way (see for overview of this voluminous literature Herod, 2003 and Mamadouh, 2004). In this new perspective the relational character of scale is stressed, which means that different scales constitute each other. The global constitutes the local and the local constitutes the global. And the relations between scales are neither priori given nor are they fixed but are actively (re)produced all the time. Relations between scales are object of societal and political struggle, which is why they are changing in time. Since scale is conceived in dynamic terms, the term (re)scaling is preferred to scale. According to this “scalar” perspective, no theoretical priority can be given to one particular geographical scale since the process through which particular scales become constituted and subsequently transformed is an object of research in itself. Research on scaling, for instance the scaling of clusters, should, therefore, not so much be focused on defining which relations are exclusively local and which are exclusively global but as how global and local relations are interwoven and how both local and global relations are modified by the specific way they are intertwined.



- 23 The above-mentioned studies that show how global and local relations are intertwined are a good example of this new scalar perspective. This even more applies to Swyngedouw's (1997 en 2000) glocalisation thesis that is completely integrated with this perspective. No surprise because he is one of its founding fathers. The fact that the national level is downplayed in the glocalisation thesis does not necessarily result from a relational approach to scale. The national level can very well play an important role next to other levels, as has been argued by Boyer en Rogers Hollingsworth (1997). In other words, spatial clusters are not only made up of mixtures of regional and global modes of economic coordination but of national ones as well. And the latter can vary significantly between national states. This brings me to the variety-of-capitalism thesis.

## Variety of capitalism and multi-scalar institutional complementarity

- 24 Over the last decade a growing amount of literature on the variety-of-capitalism thesis has been published (Amable, 2003 ; Boyer, 2003 ; Coates, 2005 ; Crouch, 2005 ; Hall and Soskice, 2001 ; Rogers Hollingsworth and Boyer, 1997 ; Soskice, 1999 ; Kitschelt *et al.*, 1999 and Whitley, 1999). Contrary to what the glocalisation thesis and the theory of new economic regionalism say, adherents of the variety-of-capitalism thesis stress a persistent continuity of different *national* forms of capitalism in the era of globalisation. The variety-of-capitalism thesis can be roughly summarised in three points.

### Political-economic institutions in different spheres of action form a coherent whole

- 25 Political-economic institutions in the sphere of capital-labour relations, vocational training and education, corporate governance, financial system, inter-firm relations, and social protection form a coherent whole. There is a complementarity of institutions. For instance, the emphasis on short-term strategies in the financial relationship between the firm and financial markets in US-capitalism is complementary to a non-commitment of the firm towards its employees, as a consequence of which workers are reluctant to invest in firm-specific skills. The concept of institutional complementarity plays a key role in the variety-of-capitalism thesis (just as in regulation theory) and is conceived in different ways. Crouch (2005, pp.46-73) distinguishes three different types of institutional complementarity.

- Institutions cohere through a *logic of similarity*. Institutions with similar properties are found together as actors adopt similar approaches or institutional solutions to different spheres of action. For instance, Dutch political elites applied the same principles they used to pacify conflicts in the religious sphere (pillarisation) to conflicts in the political-economic sphere (corporatism).
- The second form is an opposed *logic of complementarity* in which one institution makes up for the *deficiencies* of the other. In doing so, it raises the returns to actors from the first institution. For example, when strong familial social support networks offset the vicissitudes of a highly liberalised labour market. In such a case, the existence of the former makes the latter more socially and politically acceptable, thus allowing society to gain the advantages of a liberal labour market. To give another example, well-functioning free markets require a strong state.

- The third form of institutional complementarity lies at the heart of most theories of variety of capitalism : *logic of synergy* or complementarity in the economist's sense.
- 26 According to Amable (2003, pp. 54-73), whose view is close to that of the regulation school, institutional complementarity means that one institutional form makes the other institutional form more efficient. And the change of one institutional form in one area leads to the change of an institutional form in another area. All this does not imply that all institutions are equally important for the structure of complementarity. Some institutions are more important for it than are others, which is why there is simultaneously a hierarchy of institutions. In some countries, for instance, the capital-labour compromise has dominated all other institutional forms for a long time and nowadays it is argued that a financialisation of the economy is *the* driving force behind all other institutional changes.
- 27 It is the complementarity and the hierarchy of institutions that explain the variety of capitalism.

### **Hardly any convergence of national forms of capitalism in the era of globalisation**

- 28 Due to institutional complementarity, social systems of production change only slowly and their development path is highly path dependent. That is why there is hardly any convergence of different forms of capitalism in the era of globalisation. In addition, and more importantly, each specific national institutional configuration provides a comparative advantage to certain economic activities and stimulates a specific economic specialization. And this specialization reinforces each specific national institutional configuration. For instance, Germany's education and industrial institutions, such as the dual apprenticeship system, its specific management-union cooperation in the definition of required skills, together with a corporate-governance system based on close ties with banks supplying "patient" capital, have encouraged the growth of competitiveness in industries where technology diffusion and workers' skills matters most : quality-sensitive, engineering-intensive industries such as advanced machine tools, luxury cars and specialist chemicals.
- 29 Some adherents of the variety-of-capitalism thesis simply distinguish liberal market economies from coordinated market economies (see, for instance, Hall and Soskice, 2001) but others use much more refined typologies. Whitley (1999) distinguishes, on *theoretical grounds*, six ideal types of business system (fragmented, coordinated, compartmentalised, state organized, collaborative and highly coordinated) on the basis of ownership integration, alliance forms of coordination, owner control type, firm size and intersectoral coordination. These different kinds of business system are generated and reproduced by a number of key institutions such as the state (kind of state-industry relations), the financial system (capital market of credit based), capital-labour relations, and trust and authority relations. Because these different institutions have co-evolved with business-system characteristics in course of time, they all form, to a large extent, a coherent whole. Amable's (2003) typology is based on *empirical grounds*, not on ideal types. He collected quantitative data on a vast range of characteristics of the national economies of most OECD countries : product-market competition, the wage-labour nexus and labour-market institutions, the financial intermediation sector and corporate governance, social protection, and the education sector. And he uses

dozens of individual indicators to assess each. On the basis of these empirical data he constructs a typology of groups of countries. This procedure gives him five types of capitalism: market based (primarily Anglophone), social-democratic (Nordic), Asian (Japan and Korea), Mediterranean (Italy, Spain, and Portugal) and Continental European. The latter group of countries does not show much internal coherence. The Netherlands and Switzerland form a specific subset that is in-between the market-based model and the social-democratic model. These different types of capitalism are, to a large extent, shaped by a left-right differentiation and institutional features of political systems, such as the “Westminster model of democracy” versus “consociational democracy”, and the number and power of veto-players.

- 30 At first look it does not seem to be important whether different forms of capitalism are distinguished on the basis of ideal types or empirical research. But it is very important because the ideal-typical approach is much more open to the possibility that one specific national form of capitalism can consist of a mixture of two or more ideal types. In other words, it is more open to hybrid cases and admits that there is variety within variety. For instance, Whitley’s (1999) ideal typical distinction between a “fragmented” and a “compartmentalised” model, which is dominated by large firms, enables him to see the US as a hybrid case of two different forms of capitalism (just as the German form in the Ruhr area strongly differs from that in Baden-Württemberg) while in Amable’s (2003) typology the US is market based only. That is why the latter author is forced to see the American “military industrial complex” as an example of market based capitalism, which obviously is not. The fundamental point is, as Crouch (2005) argues, that empirical cases must be studied, not to determine to which of a number of theoretical types they should be allocated, but to determine which of these ideal types are to be found within them, in roughly what proportions, and with what change over time.
- 31 The fact that individual cases might well comprise more amalgams of elements from two or more theoretical types undermines, to some extent, the logic-of-synergy argument, i.e. that all institutions of a specific national form of capitalism are institutionally complementary to each other. Many authors admit that the *degree* of institutional complementarity between as well as within different subsystems can vary from loose integration to tight integration (or from a tight fit to a loose coupling). However, the logic-of-synergy interpretation of institutional complementarity does not allow for a too loose coupling because it undermines the efficiency of institutions. This implies that “pure” cases perform better than mixed types. For instance, Calmfors and Driffill (1988) found in their now widely known study that inflation was lower in countries with either highly centralised collective wage bargaining or completely unorganised labour markets. Mixtures in between these extreme types produced much higher inflation.
- 32 The adherents of the variety-of-capitalism thesis are largely blind to geography. They implicitly assume that only sets of complementary institutions at the *national* level produce variety of capitalisms. But why not sets of national *and* regional institutions? Why is not more attention paid to how national forms of capitalism or business systems are scaled? And why are clusters and the way they are scaled not an integral part of business systems? It is only very recently that adherents of the variety-of-capitalism thesis have begun to questioning how national business systems are. For instance, Whitley (2005) argues that business systems in so-called “business corporatist” states

(Japan comes close to this ideal type) and “inclusive corporatist” states (the Netherlands comes close to this ideal type) are much more national than in “arm’s length states” (the US comes close to this ideal type) and in “dominant developmental states” (South Korea since 1961 or France up to the 1980s with a huge variation between *sectors*). Thus in the former two ideal types business systems are much more nationally specific and homogeneous with similar characteristics throughout the country and across all sectors.

- 33 The fact that business systems in some forms of the state are more national than they are in others makes it highly likely that there is variety in the way clusters are intertwined with them. In countries that come close to the ideal type of a “business corporatist”, and an “inclusive corporatist” state, it is highly likely that spatial clusters are much more interwoven with the national business system than in the “arm’s length state”. More precisely, the “vertical” institutional complementarity (in the sense of logic of complementarity and logic of synergy) in the former two is much stronger than in the latter. In the “dominant developmental state” clusters (in a functional as well as spatial sense) that are the spearheads of the national state also show a strong “vertical” institutional complementarity while this is much less the case in other clusters.
- 34 In analysing varieties of “vertical” institutional complementarity, it is again important to realise whether different forms of national capitalism are distinguished on empirical data or on ideal types. In the former a strong overall institutional complementarity is assumed, which implies that different types of clusters are institutionally complementary to the national form. For instance,
- The combination of “patient capital” and intra-firm learning in Germany makes “job hopping” as a mechanism for the circulation of knowledge in German clusters much less important than in American ones.
  - Venture capitalists are much more important in American clusters than in German ones because they make up for the deficiencies for a “bank based” financial system.
  - Local inter-firm relations are much less important in Dutch clusters because they are regulated by national corporatist institutions.
- 35 However, if one starts from ideal types of national forms of capitalism, then it is highly likely that the national form of a specific country is an amalgam of different ideal types. In that case, there is much more variety within variety, including variety of “vertical” institutional complementarity. This is, to some extent, an advantage to the researcher because it legitimises him or her to study a specific country without being astonished that some cluster are tightly interwoven with the national level while others are not. The case study of the Dutch vegetables-under-glass cluster (see next section) is an example of the former. But this does not imply that all Dutch clusters are scaled in the same way. They are not. The Rotterdam architectural cluster (Kloosterman and Stegmeijer, 2005) and the Amsterdam television advertisement cluster (Knuivers, 2006) are fairly loosely coupled to the national business system. In addition, it seems that the Amsterdam financial cluster is becoming decoupled from the national institutional context (Engelen, 2007). In sum, there are not only varieties of capitalism but also varieties of glocalisation (Van der Heiden and Terhorst, 2007).
- 36 Given the fact that not only the degree of horizontal institutional complementarity at the national level can vary but also the integration of clusters with the national business system (vertical institutional complementarity), we come to the following typology.

Figure 1. Degree of institutional complementarity at the national level.

		strong	weak
Vertical institutional complementarity	strong	<b>1</b>	<b>2</b>
	weak	<b>3</b>	<b>4</b>

37 The following case is an example of cell 1 in the above-mentioned typology.

## Multiscalar institutional complementarity of the Dutch vegetables-under-glass cluster

38 The Netherlands is one of the most urbanised countries in Europe. Yet, paradoxically, Dutch export performance is relatively strongest in agricultural products. Dutch comparative advantage as measured by the Balassa-index<sup>2</sup> is since long by far the highest for flowers (20.1). Indeed, Dutch flowers are world famous and define, to a large extent, Dutch image abroad. Much less known, however, is the strong export performance of Dutch vegetables. The Balassa index for the latter may well be lower than that for flowers but is still very high (12.1). And, strikingly, the export performance of vegetables has increased most during the 1990s (Hinloopen and Van Marrewijk, 1999). A closer look at the export mix of the latter shows that only three products dominate: sweet peppers, tomatoes, and cucumbers that make up about seventy percent of all exports of vegetables and show very high Balassa-indexes. The Dutch share in world trade in 2002 was around 3.5 percent against 15 percent for tomatoes, 17 percent for sweet peppers, and 27 percent for cucumbers. The Netherlands is the second-largest world exporter of cucumbers after Mexico, and is the third largest one of sweet peppers and tomatoes after Spain and Mexico. Germany and, to a lesser extent, Great Britain are by far the most important export markets for Dutch vegetables. This strong export performance is based on tremendously high productivities per hectare, which are by far the highest in the world. Dutch growers produce eleven times more cucumbers and six times more sweet peppers and tomatoes per hectare than their Spanish competitors (*Kwantitatieve Informatie voor de Glastuintuinbouw*, 2001-2002). All Dutch cucumbers, sweet peppers, and tomatoes are produced under glass, which is a *condition sine qua non* for the high land productivity. That is why the vegetable-under-glass industry looks more like a manufacturing industry than agriculture, and fits well in a highly urbanised country. The above-mentioned paradox that the comparative advantage of one of most urbanised countries in Europe is the strongest in agricultural products is in accordance with the theory of Porter (1990, 2000) that says, among other things, that *shortcomings* of factor conditions (such as labour shortage and high wages, and scarce natural resources) can actually trigger technological and institutional innovations that will in the long term contribute to the competitive success of firms in a specific location.

- 39 At an even closer look it turns out that sweet peppers, tomatoes, and cucumbers have followed a different development path in terms of production, floor productivity, and acreage over the last two decades (table 1). Sweet peppers have shown an almost explosive growth rate over the last two decades (+933 %) and have become *the* booming Dutch vegetable.

Table 1. Production, land productivity, and acreage of sweet peppers, tomatoes and cucumbers, 1980-2002.

	Production			Land productivity			Acreage		
	(millions of kilograms)			(kilograms per m <sup>2</sup> )			(hectares)		
	1980	2002		1980	2002		1980	2002	
Sweet Peppers	30	310	+933%	14	25	+79%	214	1235	+477%
Tomatoes	381	560	+47%	17.5	45	+157%	2167	1225	-43%
Cucumbers	299	433	+45%	40	65	+63%	746	658	-12%

**SOURCES : KWANTITATIEVE INFORMATIE VOOR DE GLASTUINBOUW, 1983-1984, 2001-2002, AND CBS, LANDBOUWTELLING.**

- 40 No doubt that this extremely high growth rate has much to do with the introduction of new product varieties, the most recent of which are the orange sweet pepper, Turkish sweet peppers in various colours, and the more tasty mini-sweet-pepper that is expected to become successful as a snack. But it is doubtful whether the export growth of Dutch sweet peppers is the result of their exceptionally good taste.
- 41 “Carlo Petrini, the founding father of Slow Food, said on a meeting in Amsterdam that he had discovered that the taste of *peperonata* in one of his favourite restaurants in his homeland Italy had changed and was less good. He found out that the dish was prepared with Dutch sweet peppers instead of Italian ones. And the English master chef Rick Stein did in television series *French Odyssey* some shopping on French small markets. He was irritated by the Dutch sweet peppers of the same form and said : ”If the Dutch would grow in their glasshouses sweet peppers that look less well, they would sell much more of them“ (Scheepmaker, 2006, p. 20).
- 42 One should expect that the extremely high production growth of sweet peppers is correlated with an extremely high growth in land productivity. According to ”Verdoorn’s law“, a high growth rate of productivity of industries is accompanied with a high growth rate of output. The causality can run in both ways. Economies of scale and/or process innovations lead to lower prices and higher output while a higher output results in economies of scale and/or process innovations. But, as table 1 shows, the extremely high production growth of sweet peppers is not accompanied with an extremely high growth of land productivity (although still very high). Tomatoes, not sweet peppers, show by far the highest growth of land productivity (+157 %). The very high growth of land productivity of tomatoes is partly related to their quality. Until the early 1990s, Dutch tomato industry was dominated by a fordist-like mass production of low-quality tomatoes with a low content of fructose that were not very appetising. In

the 1980s, the Germans began to complain about the low quality of Dutch tomatoes – they unflatteringly called them "Wasserbomben" (water bombs) – and have increasingly switched to tomatoes from Spain that became an EU-member in 1986. Dutch growers and seed improvement companies have responded to Spanish competition by introducing new varieties such as the Cherries, Romas, Tasty-Toms, Red Pearls, Tominas, and recently the Santessa that are said (but not scientifically proven) to be healthy due to their high level of lycopene. Although the share of the latter varieties is quickly growing, the production of low-quality tomatoes still dominates. The different growth rates of production and land productivity explain the huge differences in land-use change of sweet peppers, tomatoes, and cucumbers. In the period 1980-2002, the number of square meters of greenhouses allocated to sweet peppers increased with 477 percent while that allocated to tomatoes and cucumbers declined with 43 percent and 12 percent respectively (table 1).

- 43 The bulk of tomatoes, sweet peppers, and cucumbers are produced in only a few regions. Dutch greenhouse horticulture originated in the Westland region, south of The Hague and west of Rotterdam, which still is its core area<sup>3</sup>. Over the last twenty-five years, however, it has spread to other regions fueled by increasing internal economies of scale – the average size of vegetables-under-glass firms has been doubled over the last twenty five years – and limited opportunities for extending the greenhouse area in the highly urbanised southern wing of the Randstad. By far the largest majority of the vegetables-under-glass production has been spilled over to the nearby province of Noord-Brabant and the somewhat more distantly situated region of north Limburg. The share of other regions has only slightly increased. Nowadays, more than two-third of all tomatoes, sweet peppers, and cucumbers are produced in the Westland region, Noord-Brabant and the north of Limburg (table 2). Thus the *deconcentration* out of Westland core-area seems to have resulted in a *reconcentration* at a larger spatial scale. The vegetables-under-glass cluster no longer coincides with one labour-market area or daily "urban" system but encompasses many of them nowadays.

Table 2. Regional Share of Greenhouse Area for Sweet Peppers, Tomatoes, and Cucumbers.

	Sweet peppers		Tomatoes		Cucumbers	
	1980 (%)	2002 (%)	1980 (%)	2002 (%)	1980 (%)	2002 (%)
Westland region*	83.6	61.1	73.3	59.7	51.6	26.9
Noord-Brabant	5.5	13.8	11.3	19.7	13.2	24.9
North Limburg	1.0	11.3	5.8	9.8	6.8	17.9
Rest of Netherlands	9.9	13.8	9.6	10.2	28.4	30.3
Netherlands	100	100	100	100	100	100

\*including the regions Groot-Rijnmond and the Hague

Source : CBS, Landbouwtelling, 2004.



## Innovation by poly-scalar networks

- 44 The strong export performance of the vegetables-under-glass cluster is obviously based on (incremental) innovations, as the extremely high land productivity and the new product innovations indicate. Yet, a couple of factors that are very often discussed in the above-mentioned literature on new economic regionalism do not play a role at all in its innovativeness. The cluster's innovativeness is neither based on a strong employer-employee interdependence nor on pools of specialized labour. The typical vegetables-under-glass firm, directly controlled by its owner, employs only few lowly skilled workers that fulfill standardized tasks only. And many workers are recruited on a temporary and sometimes illegal basis. Nor is the cluster's innovativeness based on a "critical home market" that plays such an important role in Porter's theory (Porter, 1990 and 2000). As mentioned before, the introduction of new varieties in the tomato industry was not induced by a critical home market but by a critical export market.
- 45 While the vegetables-under-glass firms are spatially fairly concentrated, the picture changes somewhat when we look at their most important suppliers being of crucial importance to their innovativeness, i.e. glasshouse-constructing firms and seed-improvement companies. Two-third of all Dutch glasshouse-constructing firms are located in or near the Westland area (see [www.avag.nl](http://www.avag.nl)). These firms do not only supply glasshouses to growers of vegetables but also to growers of flowers that are concentrated elsewhere, namely south of Amsterdam. Dutch glasshouse-constructing firms are very innovative in energy technology and CO<sub>2</sub> regulation among others, and export their products worldwide. The highly innovative seed-improvement industry made up of a few Dutch and foreign multinationals, however, is much more scattered over the country.
- 46 Although the vegetables-under-glass cluster is in horizontal terms and, to a lesser extent, in vertical terms spatially fairly concentrated, the scaling of the regulatory framework of the cluster is quite different. The formal institutions are national while informal collaboration between growers is local, i.e. within their daily "urban" systems.
- 47 The Dutch vegetables-under-glass cluster is formally organized along vertical lines in the "Produktschap Tuinbouw" (Horticultural Statutory Trade Association) that encompasses all firms that are involved in producing and selling of vegetables, fruit and flowers. The "Produktschap", which has a semi-public status, represents and regulates the interests of the whole "filière", and is governed by representatives of employers associations and trade unions. Its main activities are product quality control, horticultural research (until recently it had its own breeding stations but they have become independent organizations that are nowadays associated with the University of Wageningen), market research, export promotion, vocational training, and implementation of environmental rules. Until 1995, the vegetables-under-glass growers were horizontally organized in the horticultural section of the "Landbouwschap" (Agricultural Board), which had the same semi-public status as the "Produktschap". But the "Landbouwschap" has been transformed into the private association LTO-Nederland. Since then, the majority of the vegetables-under-glass growers are organized in the latter and, more in particular, in two of its departments, namely LTO-Glastuinbouw (LTO-Horticulture under Glass) and LTO-Groei-service (LTO-Growth Service). The latter is specialized in the dissemination of horticultural knowledge and the diffusion of horticultural innovations. Both LTO-Nederland and



LTO-Groeiservice have regional sections in the north, east, south, and west of the country.

- 48 The above-mentioned formal organizations are by tradition meso-corporatist based. We speak of meso-corporatism if state agencies negotiate policies with organizations that have achieved monopoly representation of their specific sectoral interests, and have got some form of public authority in order to implement these policies (see Cawson, 1986, pp. 106-118). These meso-corporatist organizations are part of the wider national corporatist framework, which is a key characteristic of the Dutch business system and is broadly and deeply rooted in Dutch history, particularly in the Dutch tradition of pillarisation (Van Waarden, 2002 and 2003). That is why the formal institutions of the vegetables-under-glass cluster are national.
- 49 Apart from these modes of cooperation, growers of vegetables also formally cooperate in other ways. Many (but not all) growers of vegetables are members of the auctions, such as the Greenery, that are organized on a cooperative basis. And over the last ten years, smaller growers of vegetables have set up associations (so-called "telersverenigingen") to sell their products collectively out of the reach of auction.
- 50 Vegetables-under-glass growers do not only cooperate on a formal basis at the national level but also on a more or less informal basis at the local level. Growers of the same crop are locally organized in so-called excursion groups that are made up of five to ten members who meet each other very regularly (Oerlemans *et al.*, 1997 ; Boogaard, 2002, pp. 64-74). The Westland region has by far the highest density of "vegetables excursion groups" followed by Noord-Brabant and northern Limburg and, at a large distance, by the rest of the Netherlands. Due to its high density of excursion groups, growers in the Westland region can much more easily find an excursion group close by than growers elsewhere. This is the more so because growers prefer to meet other growers that do not just produce the same crop but the same crop of the same variety. In such an excursion group growers discuss a wide range of issues that have to do with the production and innovation of their vegetables. And they exchange detailed data regarding the glasshouse climate, labour- and energy-costs, the amount of used artificial fertilizer, and output per square meter. In short, they exchange information that firms in other sectors would keep secret. The open attitude of members of excursion groups is confirmed in interviews with growers of sweet peppers (Boogaard, 2002, pp. 64-74) and with growers of flowers (Alles, 1998, pp. 48-51) who cooperate in exactly the same way. They all emphasize that information circulates openly and no one has the feeling that it is abused. Growers do trust each other because they meet very regularly and, particularly in the Westland region, usually know each other in other roles than as a grower (as a member of a sport club, for instance). Thus their trust is, to a large extent, non-rational in origin. But it is beyond doubt also based partly on a rational strategy (cf. Farrell and Knight, 2003). Interviewed growers stress that they all are better off with cooperation than without, notwithstanding the fact that they are simultaneously competitors ("It is only through cooperation that we can remain competitive on global markets"). And they do realize that whoever breaks the rules of the game is excluded from the excursion group. The view that they all are better off with cooperation than without has certainly to do with the fact that the size of the firms, and therefore the power relations, are more or less equal. Things would be different if large firms would have to cooperate with small ones.

- 51 Tacit knowledge does not only circulate locally in excursion groups but also at larger spatial scale (the north, east, south, and west of the country) in so-called study clubs. Representatives of local excursion groups meet in study clubs in the same region to exchange information discussed in excursion groups. Representatives of these study groups, in turn, meet in a national meeting where the results of regional study clubs are compared (Oerlemans *et al.*, 1997). It goes without saying that the themes discussed at national meetings filter down to the regional and local level. Thus tacit knowledge circulates across various scales. The circulation of tacit knowledge is intertwined with the nationally circulating codified knowledge. Members of excursion groups and study clubs discuss and interpret messages and articles that are published in the horticultural press and on the websites of the "Productschap Tuinbouw" and LTO-Nederland. In the literature codified and tacit knowledge are very often interpreted as forms of knowledge that have nothing to do with each other. But, as Howells (2000, p. 53) rightly argues, both forms of knowledge are never divided because codified knowledge requires tacit knowledge for its interpretation. The specific way in which tacit knowledge circulates across scales and is interwoven with the national circulation of codified knowledge is a key feature of the scaling of the vegetables-under-glass cluster.
- 52 Formal and informal cooperation has become intertwined in other ways too. Both excursion groups and study clubs initially were part of the separate umbrella organization "Nederlandse Vereniging van Tuinbouw Studiegroepen" (Dutch Federation of Horticultural Study Groups) but the latter organization has been merged with "LTO-Groei-service" in the late 1990s. In addition, we have seen that the vegetables-under-glass cluster has deconcentrated from the Westland region to mainly Noord-Brabant and northern Limburg and that there is density gradient of excursion groups (high in the Westland region and low in the rest of the Netherlands), which implies that it is more difficult for growers outside the Westland region to find other growers nearby who produce the same crop of the same variety. The regional sections of "LTO-Groei-service" very often take the initiative to organize excursion groups outside the Westland region (Boogaard, 2002, p. 68).
- 53 Are growers in the Westland region, the core of the vegetables-under-glass cluster, more innovative than outsiders? Malmberg and Maskell (2002, p. 435) rightly point out in their critical discussion of the concept of localisation economies that there is not many research available that compares clustered firms with non-clustered firms that operating in the same market (but see Appold, 1995 and Swann *et al.*, 1998). Boogaard has compared the land productivity of a sample of sweet-pepper growers in the Westland region with those outside (including the rest of the Netherlands). As table 3 shows, land productivity in the Westland region is not higher than elsewhere. Interviewed sweet-pepper growers confirm that one does not have to be located in the Westland region to be innovative because specialized knowledge is diffused very quickly all over the country (Boogaard, 2002, pp. 84-86). This is in line with research done by the LEI (2001) that shows that the vegetables-under-glass firms are no longer more cost-effective than those the rest of the Netherlands.

Table 3. Land Productivity of Red, Yellow and Green Sweet Peppers (kg per m<sup>2</sup>).

	Westland Region	Outside Westland Region

Red	23.6	24
Yellow	26	24.8
Green	27	30

Source : Boogaard, 2002, p. 86.

## Conclusion

- 54 We have seen that in the literature on clusters the attention how clusters are scaled has grown over the last six or seven years. This has particularly to do with new conceptions of scale and scaling in geography as well as with the importance of external, i.e. global, relations for well-functioning clusters. All this is in line with the glocalisation thesis. However, there is an important strain of literature that is in conflict with the latter, namely the variety-of-capitalism thesis that stresses a persistent continuity of various national forms of capitalism. This is so because there is a strong complementarity between national institutions that creates a comparative advantage for specific economic activities. The variety-of-capitalism thesis is weak in two respects, namely (i) on change (it is more focused on continuity than change) and (ii) how business systems are scaled (it is too much focused at the national level). In this paper I tried to bridge cluster literature and the variety-of-capitalism literature in order to explore how and to what extent clusters are integrated with national forms of capitalism and, therefore, are shaped by the latter. My major conclusion is that there is a lot of variety within variety of capitalisms at the national level. The same applies to the degree clusters are integrated with the national level. In other words, there is a lot of variety of horizontal institutional complementarity at the national level as well as of vertical institutional complementarity, that is the degree at which clusters are integrated with national business systems.
- 55 The case of the Dutch vegetables-under-glass cluster is an example of a cluster that is strongly integrated with the specific national form of Dutch capitalism. The fairly strong regional concentration of that cluster suggests that the clue to its strong export performance has to be found in the region. The region does, indeed, play an important role in the global competitiveness of the cluster but at a lower spatial scale. As we have seen, the informal cooperation of growers in excursion groups at the local level is very important for its innovativeness. But the embeddedness of the cluster in the Westland region has not been so strong that it has become "locked in" and has blocked its deconcentration. Indeed, the spread out of the Westland region has kept the cluster in good shape. In terms of productivity per square meter, growers of sweet peppers outside the Westland region are as innovative as those inside. The major reason why the cluster is not so strongly locally embedded is that it organized along functional lines at the national level rather than along territorial lines. The cluster is by tradition organized on a meso-corporatist basis and tightly interwoven with the wider corporatist framework that is a key feature of the Dutch business system. But the formal institutions at the national level and the informal ones at the local level should *not* be interpreted in terms of what Brenner (2000, p. 364) calls a zero-sum conception of scale referred to earlier, i.e. the notion that scales operate as mutually exclusive

rather than as co-constitutive territorial frameworks for social relations. The informal cooperation of growers at the local level is closely intertwined with the formal cooperative institutions at the national level.

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## NOTES

1. The introduction of a new product or (2) a new method of production, (3) the opening of a new market, (4) the conquest of a new source of supply of raw materials or

half-manufactured goods, and (5) the carrying out of a new organisation of an industry, like the creation of a monopoly position through, for example, trustification or the breaking up of a monopoly position.

2. The Balassa-index for industry  $j$  in country  $A$  is:

$$\frac{\text{export value industry } j \text{ in } A}{\text{total export value } A}$$

$$\frac{\text{export value industry } j \text{ group of reference countries}}{\text{total export value for group of reference countries}}$$

3. Already in 1912 about eighty five percent of all Dutch vegetables under glass were grown in the Westland area (Van Doesburg *et al.*, 1999).

## ABSTRACTS

Economic geographers have become strongly focused on two scales over the last 25 years : the local and the global. That's why they mostly ignore the growing literature on the so-called variety of capitalism thesis that, contrary to what the glocalisation thesis claims, stresses a persistent continuity of national forms of capitalism and national forms of the state in the era of globalisation. In this variety-of-capitalism literature the concept of institutional complementarity plays a key role. It means, among others, that one institution makes the other more efficient (and vice versa).

In their studies on clusters economic geographers stress a strong "horizontal" institutional complementarity at the local level (although they do not use that concept) but largely ignore a "vertical" complementarity of local and national institutions. Adherents of the variety of capitalism thesis, on the other hand, stress a "horizontal" institutional complementarity at the national level but, being blind to geography, ignore a "vertical" institutional complementarity between the national and local level.

In this paper I aim to bridge both bodies of literature and to explore the "vertical" institutional complementarity between national forms of capitalism and clusters. To give my arguments flesh and blood, I explore how and why the Dutch vegetables-under-glass cluster is interwoven with the national corporatist institutions, which is a key characteristic of the Dutch form of capitalism and state form.

Au cours de ces 25 dernières années, les géographes économistes se sont fortement focalisés sur deux échelles : locale et globale. Ainsi se détournent-ils de la littérature de plus en plus abondante consacrée à la thèse de la variété du capitalisme qui, contrairement à ce que prétend la thèse de la glocalisation, met l'accent sur une continuité persistante des formes nationales de capitalisme et des formes nationales d'Etat à l'ère de la globalisation. Dans cette littérature sur la variété du capitalisme, le concept de complémentarité institutionnelle joue un rôle clé : il signifie, entre autres, qu'une institution renforce l'efficacité de l'autre (et inversement).

Dans leurs études sur les clusters, les géographes économistes soulignent une forte complémentarité institutionnelle "horizontale" au niveau local (bien qu'ils n'utilisent pas ce concept), mais ignorent largement une complémentarité "verticale" entre institutions nationales et locales. Les partisans de la thèse de la variété du capitalisme soulignent par ailleurs une complémentarité institutionnelle "horizontale" au niveau national, mais, étant aveugles à la géographie, ignorent une complémentarité institutionnelle "verticale" entre niveaux national et



local.

Dans cet article, je tente de rapprocher ces deux corpus littéraires et d'explorer la complémentarité institutionnelle "verticale" entre formes nationales de capitalisme et clusters. Afin de donner du poids à mes arguments, j'examine comment et pourquoi le cluster néerlandais de la culture des légumes sous verre est lié avec les institutions corporatistes nationales, une caractéristique clé de la forme de capitalisme et de la forme d'Etat propres aux Pays-Bas.

## INDEX

**Mots-clés:** échelle, complémentarité institutionnelle, variété du capitalisme, clusters

**Keywords:** scaling, institutional complementarity, variety of capitalism, clusters

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