

Part III Towards a complexity perspective on clusters

One of the most highly developed skills in contemporary Western civilization is dissection: the split-up of problems into their smallest possible components. We are good at it. So good, we often forget to put the pieces back together again.

Alvin Toffler 1984, p. xi

The following chapters address the question of how the issue under study here, the adaptation of agents in clusters to changes in their environment could be analysed from a theoretic perspective. It does so by linking the insights on the nature of clusters outlined in Chap. 3 with the notion that their existence cannot be taken for granted due to the dynamics in the spatial distribution of industries (Chap. 2). Accepting the idea of clusters as composed of interdependent agents without a central decision-making authority however implies that adaptation to change is less than straightforward (Chap. 4). Thanks to the interdependence between the (success of) individual activities and the behavioural restraints exerted by the local culture, agent adaptation does not equal cluster adaptation. Maintaining the notion that adaptation in clusters proceeds in a decentralised fashion through the adaptive moves of agents, the question to be asked then is whether there are any cluster-level factors that can steer individual activities towards 'good' collective outcomes.

Outlining the empirical evidence of real world clusters that have survived in a changing environment shows interesting regularities with respect to what could constitute such versions of 'dynamic capabilities' in clusters. In existing case studies, three factors have repeatedly been singled out as relevant for the success of adaptation:

1. internationalisation of cluster agents,
2. the degree of division of labour between them and
3. the way agent activities are co-ordinated in the cluster.

In a bid to overcome the limitations of case study evidence, chapter 5 then highlights how new insights from complexity theory and especially the N/K model could be used to account for the nature of ideal-typical clusters and to investigate the role of two of these factors for cluster adaptation. The influence of the extent of division of labour (2) and the mode of co-ordination (3) on cluster adaptation will then be analysed through the building of a general theoretic model and simulations (part IV).