

Part II Literature review – The benefits of co-location

When an inventor in Silicon Valley opens his garage door to show off his latest idea, he has 50 per cent of the world market in front of him. When an inventor in Finland lifts his garage door, he faces 3 feet of snow.

Jorma U. Nieminen, CEO Nokia⁶

The following chapters address the question of why the issue of cluster adaptation to change cannot be covered with the tools provided in the existing literature. It finds that while the argument for the existence of clusters always lies with agglomeration externalities, their respective treatment differs between the concepts introduced in chapters 2 and 3. This has important repercussions for the issue of clusters, change and adaptation: Those theories investigating cluster dynamics as a consequence of the developments in the spatial distribution of industries (chapter 2) arrive at deterministic models where changes in parameters result in an inevitable spatial concentration of industries equalising cluster growth or a spatial dispersion of firms that implies decline of existing clusters. Agents in a cluster have no means of changing these outcomes through adaptation.

The deterministic outcomes in the models provided are attributable to their limitation of proximity benefits to pecuniary effects influencing the benefits and costs of being in an area. The concepts describing the success of clusters as attributable to both pecuniary and technological externalities (chapter 3) in turn are more involved with studying how both aspects work to make a specific cluster successful at a given point in time. As a result, one could say (at the risk of oversimplification) that those concepts investigating spatial dynamics do not cover the topic (adaptation). Those concepts that would be able to include adaptation are not involved with a study of dynamics. The literature review will show that accepting the notion of clusters as spatial constructs exhibiting both pecuniary *and* technological externalities between agent activities means that their adaptation to change is no longer a deterministic process. Due to the possible non-linear effects of some technological externalities, agent adaptation in such clusters can only be studied by advancing another perspective on the phenomenon which is based on new findings in complexity science.

⁶ Quoted in: van Tulder 1988, p. 169.