

Endogenous Rerouting, Longevity in Systemic Organisations of Production, and Policies of Manufacturing Recovery in Europe

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In many areas of industrialised countries, economic growth and competitiveness emerged from local models of industrial organisation, such as industrial districts (IDs) and local production systems (LPS). They were characterized by populations of small and medium-sized firms, highly specialised in traditional manufacturing sectors (see Becattini, 1990; Porter, 1998). The analyses of structural change in IDs and LPSs spread across different research fields during the 1990s and early 2000s, aiming at understanding either their systemic capacity to adjust in the face of gradual and abrupt changes (see Grabher, 1993; Audretsch & Feldman, 1996; Bellandi, 1996), or instead situations of path dependency and lock-in. The balance depends on the trade-off between the positive and negative effects of local specialisation in terms of learning and innovative activities (Visser & Boschma, 2004; Storper et al. 2015). The specialised knowledge accumulated over time would either favour the adaptation of IDs as evolutionary systems, or weaken their adaptability in face of radical and rapid changes. Indeed, while according to some authors industrial specialisation still plays a key role in economic growth (Storper et al., 2015), a recent debate on the constraints of specialisation has suggested that diversity or ‘related variety’ (Frenken et al., 2007) might be a better driver of regional economic development in the longer term.

The nature of learning processes and knowledge accumulation within IDs and LPS have been the object of in-depth analyses (see Becattini et al. 2009; Belussi and Sedita, 2012; Lombardi, 2003; Menzel & Fornahl, 2010). In this relation, Crevoisier and Jeannerat (2009) have introduced the concept of “territorial knowledge dynamics” as a systemic process that takes place thanks to different components of endogenous and exogenous type. Knowledge in IDs and LPS is not a datum: various features affect its capacity to face both gradual and rapid changes, identify multiple path alternatives, including possible switching across renewed development paths (Bellandi & Santini, 2017). Contemporary challenges in global markets and technologies may lead to the emergence of a new generation of IDs, as the so-called ID Mark 3 models (Bellandi & De Propris,

2015). Here, local structural configurations strongly related to the inherited identity of the place, and combined with regional, national and global networks, assure customisation and *servitization* bringing to renewed opportunities of competitive advantage.

In this paper, we introduce the concept of *endogenous rerouting* to suggest that the realisation of structural transitions (or *traverses*) may ensure the longevity of socio-economic ecosystems, like an ID and LPS. The changes are characterised by the combination of many tendencies, internal and external, and the preservation of a strong local identity: “*the one in the many and the many in the one*” (the motto of Marshall, 1919).

To explore this issue, Section 2 presents the gradual and non-gradual sources of instability and the related systemic adjustments which may justify crises and changes in IDs and LPS. Endogenous dynamics of IDs and LPS may embed sets of knowledge and mechanisms of rerouting able to promote longevity of the same systems, even if the risks of lock-in, fragmentation and inertia cannot be underrated.

Section 3 illustrates IDs’ learning processes and the spawning of new know-how nuclei thanks to endogenous processes drawing on the concept of “useful knowledge” (Kuznets, 1965). We explore here processes of knowledge accumulation and the roots of endogenous rerouting in ID, in particular focusing on the new wave of technological change related to digital manufacturing, servitization, new makers, and circular economy processes.

Section 4 applies this framework to outline endogenous rerouting processes. Some adapted forms of ID configurations (Mark 3) may be able to explore, absorb and exploit creatively the knowledge related to the new wave of technologies. Here, the endogenous rerouting is supported by the inherited identity of the place that virtuously combines regional, national and global networks, together with a multiplicity of competences and know-how nuclei spawned into the ID area. However, the embedding of new knowledge and competencies may be blocked by the local institutional context because of the dominance of strong ties presiding exploration and exploitation of useful knowledge. This would take to lock-in conditions, crisis and decline.

Section 5 argues that, without the previous qualifications, misleading interpretations of ID development paths - in terms of lock-in and decline, or rerouting and longevity - can be easily given. To explore these processes of endogenous rerouting, empirical research needs to align ‘place-based’ and ‘cross-sectoral’ perspectives. It is crucial to understand and verify empirically the key elements of endogenous rerouting, in particular in face of a new wave of technological change, impacting extensively, at least in prospects, with place-base manufacturing development and systems of SMEs in Europe.

Section 6 turns to look at the role of the institutional context. The exploration of the new opportunities revealed by changes in the multiplicity inside districts leads to adjustments of the traditional core network that are difficult and costly. In the case of small and medium sized firms, specialized in manufacturing activities, such exploration and adjustment can be prevented and lock-in conditions may appear. Systemic institutions at the local and regional level are needed to share risks in relation to investment and to connect stakeholders to activate an efficient exploration of local resources able to reroute local economic development. This is particularly crucial at time of radical innovation when new technologies redefine the production possibilities of firms across all sectors.

Industrial and territorial policies have to address and respond to the challenges that traditional districts and LPSs are likely to experience in the next 5-10-20 years. Technological change will impact on three levels, firms' internal technological capabilities; the functioning of systemic dynamics, be these innovation systems or external economies and finally, skills and knowledge. Industrial policy needs to work at the intersection between technologies, sectors and value chain with a place-based focus to guarantee a balanced socio-economic development. As also suggested in the EU debate, the "Industrial Renaissance" is not only related to the upgrading of existing manufacturing competences but, more importantly, it needs the anchoring of new technological capabilities across EU regions. The disruptive introduction of new technologies reinforced by Industry 4.0 phenomena (see Hermann et al., 2015; Berger, 2016) have enlarged much the importance of synergies between specialised manufacturing industries and new technologies. In this context, industrial policies are needed to promote investment and multi-actors sharing local platforms to promote local experimental processes that are able to find prompt solutions and make manufacturing process specific technologies.