

New Forms of Industrial Districts

Bellandi, Marco; De Propris, Lisa

DOI:

[10.1007/s40812-017-0082-9](https://doi.org/10.1007/s40812-017-0082-9)

License:

Other (please specify with Rights Statement)

Document Version

Peer reviewed version

Citation for published version (Harvard):

Bellandi, M & De Propris, L 2017, 'New Forms of Industrial Districts', *Economia e Politica Industriale*, vol. 44, no. 4, pp. 411-427. <https://doi.org/10.1007/s40812-017-0082-9>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

The final publication is available at Springer via <http://doi.org/10.1007/s40812-017-0082-9>

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

New Forms of Industrial Districts

Marco Bellandi[^] and Lisa De Propris^{*}

[^] Department of Economics and Management, University of Florence, Via delle Pandette 32, 50127 Florence, Italy – marco.bellandi@unifi.it

^{*} Department of Business and Labour Economics. Birmingham Business School, University of Birmingham, Edgbaston B15 2TT Birmingham, UK – l.depropris@bham.ac.uk

Abstract: The industrial district may be seen as a species hosting not only many different cases, but also, more generally, some ideal-typical forms that characterize different historical contexts. The form that, according to previous contributions, seems to emerge in contemporary contexts of advanced economies under globalisation, technological and societal challenges, is the so-called Mark 3 ID. This paper expands precisely on differential features, contexts, and factors of strength and weakness of ID Mark 3. The thought of Giacomo Becattini, in particular his conception of the Marshallian industrial district, is assumed as a central reference point. The Mark 3 ID is discussed in this paper under the frame of such conception of industrial organization and development, centred on place-specific collective capital and specialized small-to-medium sized firms.

Keywords: industrial districts and Giacomo Becattini; forms of Marshallian industrial districts; globalisation, technological and societal challenges.

JEL codes: R12, L61, L67

Acknowledgements

This research was supported by the EU under H2020 Marie Skłodowska-Curie Actions project “MAKERS: Smart Manufacturing for EU Growth and Prosperity”, grant agreement n.691192

1. Introduction

The *Handbook of Industrial Districts*, endorsed and edited by Giacomo Becattini (2009) hosts with a breadth of perspectives, a rich variety of contributions. They concern cases of industrial districts emerging and taking-off, developing and changing, but also at times declining and transforming, along cycles of national and international pre-industrial, industrial and post-industrial processes of market expansion and capitalist accumulation (see references in Becattini et al. 2011).

More recently Bellandi and De Propris (2015) take such historical perspective and related cases, and suggest considering the concept of industrial district (ID) as a species hosting not only many different cases, but also, at a more general level, some ideal-typical forms that characterize different historical contexts. It suggests three generations of IDs, designated as Mark 1, Mark 2, and Mark 3. The third one is emerging in contemporary contexts of advanced economies under globalisation, technological and societal challenges.

In this paper, we intend to expand precisely on ID Mark 3's differential features, contexts, and factors of strength and weakness, as a contemporary form of industrial organization and local development. By this we also aim at contributing to recent debates, in streams of regional and industrial economics, on changes in IDs and similar phenomena (Giarratani et al. 2013; Boix et al. 2015, Belussi and Hervás-Oliver, 2017). We maintain that, in order to progress on such matters, a couple of crucial points should be tackled at least, as regards the contemporary role and nature of manufacturing-centred specializations, and the sources of competitive advantage of the new forms in terms of renewed combinations of external economies and economies of business specialization.

A main source of inspiration is represented again by Giacomo Becattini and his conceptions, in particular in relation to concept such as the "Marshallian industrial district" (MID), the "district processes", the "conscience of place", and the "productive chorality" (Becattini 2004, 2015). We assume that the ID Mark 3 can be understood under the MID frame, as a general model of industrial organization and development, centred on place-specific collective capital and specialized small-to-medium sized firms.

This paper proceeds as follows. Section 2 introduces an evolutionary approach to IDs and recalls the concepts of MID and forms of IDs; Section 3 considers the question and the importance of manufacturing specialization; and Section 4 focusses on the new ID external economies and economies of business specialization. Section 5 concludes recalling some questions that, not tackled here, remain in need of discussion, for a wider understanding of the place of the new forms of industrial districts within both the contemporary real-world tendencies in industrial organization and development, and their theorizing.

2. The industrial district as a species hosting various forms

Alfred Marshall's (1919) passages on industrial districts derived from the observation of the first industrial revolution and what he witnessed throughout the nineteenth and early twentieth centuries. He pointed to cases of compact centres of industrial and social life, characterized by the prominence of one or a few localized industries, a quite large set of various specialized firms contributing to such industries, an important role played by a composite collective capital rooted in the "spirit" of the place, seen as "a small nation within a nation". Particularly interesting to Marshall were the cases of IDs whose localized industries hosted many small and medium sized enterprises (SMEs). In such cases, he found compelling examples of the strength of external economies that balanced economies of scale - internal to the resources of single firms - as the dominant principles of industrial progress.

Becattini, from his first writings in the 1960s and 1970s touching upon some of such Marshall's concepts, developed a model of auto-reproductive local development, i.e. the MID (see various papers re-published in Becattini, 2004), characterized by: 1) an evolving polycentric structure of sub-sectors within and around a main localized industry that supports a stable manufacturing specialization (*specialization*); 2) a population of changing SMEs, not dominated by local or non-

local big firms, which articulate continuously the local division of labour in relation to the extent of end markets, and thrive thanks to evolving combinations of specialization economies and external economies supported both by local labour and business-to-business markets and by specific public (collective) goods (*de-centralization*); 3) a community of people in the place, with its inherited identity and its relations to open flows of goods, persons and knowledge, driving the accumulation of the local composite capital to the strengthening and renewal of both the local manufacturing specialization and the population of SMEs (*endogeneity*).

The MID is a model that allows both to explain the sources of resilience or decline of actual IDs, and to acknowledge the various forms that IDs may assume depending on the different expressions and combinations of the three main components (specialization, de-centralization, endogeneity) in different technological, geographical and historical contexts.

Technological change has always altered economic activities by introducing new ways of organising production inside and between firms, the use and composition of new resources, and new skill requirement, as well as forcing new constraints. For example, steel, heavy engineering and chemistry, and mass production contributed to the 'second' industrial revolution where many cases of historical IDs were dwarfed or replaced. Standardised demand was satisfied thanks to internal economies of scale and scope. The breakup of mass markets led to the resurgence of firms' localised clusters, within IDs and elsewhere, as accumulation loci for economic growth thanks to their flexibility and innovation. Information and Communication Technologies (ICTs) and new logistic technologies made the world smaller and more interconnected; new players entered global markets and the production paradigm saw multinational corporations controlling global value chains delivering mass differentiated production to a global demand. In parallel, windows of opportunity opened to industries centred on either the technological capabilities of universities or the intangible creativity of embedded competences such as in IDs, that emerged anew or recovered a new lease of life. This last case coincides with locally embedded small-scale manufacturing firms addressing significant and expanding market niches of customised or small batch demand, not controlled by big hierarchal firms, but resting on inter-firm, business-to-customer, and business-to-society organization, able to ensure adaptability, responsiveness and innovation.

Some of such IDs are well within the MID characters, as for many cases of Italian IDs in the second half of the XIX century, those more directly studied by Becattini (Cossentino et al, 1996, Dei Ottati, 2003); others less so, as for some historical English IDs already studied by Marshall that at the beginning of the XIX century registered a strong industrial concentration under the lead of bigger local firms (Cooke, 2009; Popp and Wilson, 2009; Tomlinson and Branston, 2009).

Taking advantage of the large historical frame recalled in Becattini et al. (2011), Bellandi and De Propriis (2015) discussed the possibility to identify different forms of MIDs over time depending on cycles of industrial evolution and change, in particular three main generations. The first one emerged during the industrial revolution from the end of the XVIII century to the second half of the XIX (ID Mark 1); the second generation thrived during the neo-Fordist age in the second half of the XX century (ID Mark 2); finally, the third generation is taking shape in the new age of globalization and ICT revolution from the end of the XX century (Mark 3).

Mark 1 IDs thrived and sometimes led the growth of market systems between the first and second industrial revolutions. They were driven by the constitution and realization of external economies with quite strictly local sources: the advantages of division of labour, mechanization and geographical localisation combined in IDs and were expanded by the learning advantages of the local "industrial atmosphere" (Marshall 1920, p. 271-273). In such IDs, the traditional artisan modes coexisted variously with the emerging factory system, the governance of local inter-firm relations was various as well, and the embeddedness of those relations in local communitarian rules was not a distinctive feature of Mark 1 forms against contemporary non-ID alternatives (Cooke, 2009).

Mark 2 IDs became visible and started to stand out from the 1970s, at the sunset of the golden age of mass production, championing versatile industrial solutions for products with highly variable

and differentiated demand in industrialised countries (Becattini, 1990). They were more distinctively characterized than Mark 1 IDs in terms of specific organizational solutions. In particular (Becattini 2004; Brusco 1992; Dei Ottati 2003): (1) the local specialization in a manufacturing sector was well defined and easily identifiable, though evolving in terms of products and internal phases, and coexisting possibly with complementary and secondary industries; (2) micro to small firms accounted for the bulk of the business population, and the business culture hinged on the single entrepreneur; (3) the local external economies were based on a fine-grained division of labour among specialized firms, on a communitarian-based trust supporting local market transactions, and on learning-by-doing processes of skill development and decentralized innovation helped by a local and regional provision of collective business and social services; (4) finally, external economies drawing on the insertion of the IDs in regional and national industrial systems, though limited to a few fields, were not insignificant. Therefore, Mark 2 IDs were able to combine the local sources of external economies with regional and national sources, as already suggested by the late Marshall.

The Mark 3 IDs takes shape and thrives within the surge of new industries and the restructuring of old industries that are changing the production and social geography of both industrialized and industrializing regions in the XXI century (Giarratani et al. 2013; Baldwin 2013). Some changes imply threats for cases related to the MID model: (1) neo-Fordist trends drive the search for cheap factors, expanding the dominance of global value chains led by trans-national players; (2) the increasing mobility of persons and knowledge from/to the post/industrialized worlds puts local identities under stress; (3) the increasing intrusion of science and high culture within industrial organization and learning seems to reduce the importance of tacit modes of innovation; (4) the increasing importance of intangible factors makes more instable the trust and skill bases of the local division of labour (Rabellotti et al. 2009; Becattini et al., 2011). However, there are also levers that favour MID processes around the world: (1) in new industrializing countries, global value chains combine also with local forces and strong public intervention, triggering new district processes (Bellandi and Caloffi, 2008); (2) liaising with regional/global capital cities at home and with local forces in industrializing regions, IDs extend district processes to trans-local and international scales (Rullani, 2009); (3) smart manufacturing technologies imply a reduction of internal economies of scale and scope in the manufacturing processes or parts of it (Bettioli and Micelli, 2013).

Forceful reactions to threats together with fruitful leveraging of strengths demand that old and new emerging IDs adopt partially new features, at least in advanced economies, that may be associated to the Mark 3 form: (1) trespassing the traditional borders of sectoral specialization; (2) growing teams of open innovation entrepreneurial SMEs small and medium sized enterprises, i.e. networks of mutual dependence; (3) embedding the local investments of anchoring medium to large sized firms into projects of business and cultural innovation; (4) combining industry and university, neo-artisan approaches and digital technologies, and incorporating the “intangible” sources of value within personalised products and services for international markets; (5) extending industrial and institutional collaborations and investments to trans-local, national and multinational scales, and finding in this way active positions within global value chains; (7) renewing the programs of technical and higher education in ways consistent with a large mobilization of working and entrepreneurial energies and creative attitudes related to the paths of local development; (8) giving deeper and authentic interpretations to bases of cultural heritage as a source of local identity, social cohesion, shared value, and innovation within globalized networks of migration, production and culture.

The above describe conditions that are significantly different from the Mark 2 features of many Italian IDs in the second half of the XIX century.

Mark 2 ID is sometimes identified with the MID, or even with the (business component of the) ID as such (Porter and Ketels 2009). The difficulties suffered by many cases of Mark 2 IDs in the last two decades have perhaps put an end to the age of their wide success (Visser and Boschma 2004). The 2008 financial crisis hit hard and the ID responses have been heterogeneous (Coltorti

2013; Rabellotti et al. 2009). Other forms of industrial organization and territorial development have (re-) acquired greater centrality, such world cities, regional capital cities, and high-tech districts led by big innovative firms; while global innovation networks expand the power of transnational actors (Derudder et al. 2011; Binz and Truffer, 2017).

In our opinion, it is possible that IDs with Mark 2 (as well as Mark 1) forms might still have a role to play in specific niches in advanced economies, and more so in emerging economies (Sengenberger 2009). But we are interested in the next Sections to expand and deepen our analysis on the nature and factors of strength and weakness of Mark 3 IDs in advanced economies. We would suggest that this helps also understand what Mark 2 cases can embark on a transition to Mark 3 forms. Though, we will not introduce explicitly the question of rerouting (Toddling and Tripp 2013; Bellandi and Santini 2017), and limit the discourse to possible shapes of auto-reproductive (steady state) paths of development. We consider first a central feature in Mark 2 (and more so in Mark 1) cases: the manufacturing specialization. Does not the shrinking of manufacturing jobs and activities imply automatically a reduced importance of manufacturing specializations, and by this a shrinking space for IDs as such, whatever their forms, in advanced economies?

3. Still a role for places with a manufacturing specialization?

We see in advanced economies a long-run tendency to the reduction of jobs and value added directly related to manufacture. Furthermore, manufacturing specializations are being transferred to emerging and industrializing countries, sometimes under ID or more often non-ID conditions.

Indeed, the well-known ‘smile curve’ (see for examples Baldwin 2013) summarizes the rationale behind a trend that saw labour intensive functions being relocated out of advanced (and high labour cost) economies in the 1990s-2000s. This caused a manufacturing hollowing out in traditionally industrial regions, in Europe and North America in particular, that was never fully compensated by the rise of service sectors on a number of levels. Evidence points to a loss of skills and competences, a concentration of economic possibilities in big cities and away from the then deindustrialised suburbs, smaller cities, and IDs, a loss of control over the value chain, and finally a loss of identity for places whose manufacturing heritage was integral to their sense of self.

Answers to this fundamental change in the composition of economic activities in the 1990s in advanced economies pointed to the importance of business services together with the prominent role that creative industries gained (Florida 2002). There was a belief that it was inevitable for advanced economies to move from blue to white collar jobs. So, it could be implied that even if there are still opportunities for district-like processes, they are less and less dependent on a manufacturing specialization of the place. This can be discussed in relation to cases and forms of cultural districts, tourism districts, rural districts, and creative cities (Cooke and Lazzaretti 2008).

However, there is evidence of a true “manufacturing renaissance” within advanced economies. This is the general object of a recent stream of debate inside and outside academia (Andreoni and Gregory 2013) that has unpacked the element of new technological revolution impacting greatly on production organisation, business models, and consumption. The pervasive penetration of digital technology is enabling distributed and cross-media digital communications, while cyber-physical systems, Internet of Things and Services, additive manufacturing and the like, are becoming pervasive applications, leading more broadly to the vision of Smart Manufacturing.

We maintain that some of the emerging manufacturing models can be a favourable play-ground for MIDs that have or are acquiring Mark 3 features.

In what follows in this Section, we expand further some thoughts presented in Bellandi and De Propris (2015), discussing some issues pertaining the nature of the new manufacturing models. In the next Section we will apply them to a renewed understanding of ID external economies and specialization economies.

3.1 The enduring strength of a manufacturing specialization

A first question concerns the enduring importance of a manufacturing specialization for local paths of development, given the great expansion of services and the low share of manufacturing functions in many contemporary value chains. A Communication by the EU Commission (2014) points out that the “economic importance of industrial activities is much greater than suggested by the share of manufacturing in GDP. Industry accounts for over 80% of Europe’s exports and 80% of private research and innovation. Nearly one in four private sector jobs is in industry, often highly skilled, while each additional job in manufacturing creates 0.5-2 jobs in other sectors” (p. 1).

We would say, with Aminson and Bailey (2014), that in many manufacturing activities: (1) the transformation of nature and the making of artefacts is a constant field of experimentation for new materials, new tools, and new services; (2) division of labour applies easily and brings about increasing returns; (3) new jobs may have a professional and artisan content, especially where the object of production is personalized and non-routine, and integrates a set of tasks together with an increased use of smart technologies (Baldwin 2013); and (4) the space for equitable modes of labour organization is correspondingly open to negotiated solutions.

On the other side, it is true, as Charles Sabel¹ points out considering contemporary tendencies and prospects of productive development in Latin America (Crespi et al. 2014), that agriculture and other activities related to the acquisition of natural resources, as well as the construction industries, are a growing field not only for the application of manufacturing-like and servitized solutions, but also for a wide development of workers’ skills related to the non-standardised combination of technologies and place-specific contexts. A similar consideration applies to the economy of the contexts of life, or residential economy, where places compete over temporary and permanent residents as well as tourists and visitors, on the basis of: their heritage; natural, built and social environments; job opportunities; technological infrastructure; provision of typical products and services; or cultural activities (Segessemann and Crevoisier 2016). Even if such combinations illustrate important opportunities for district processes without a manufacturing specialization, consider that the same arrangements: (1) can benefit from an interaction with some manufacturing and artisan specialization featuring the heritage of either the place or nearby places (Santagata 2002); and (2) may provide the basis for sectorial cross-fertilization and territorial support to renewal trajectories of IDs (Bellandi and Santini 2017), precisely towards Mark 3 forms.

3.2 Smart manufacturing and digital services

A second question concerns precisely the fact that smart manufacturing is strictly interrelated with digital services. Such interrelation expands the possibility of personalisation of private and public goods, and increases the attractiveness of manual jobs even for millennials. It is true that the simultaneous development of communication technologies help the coordination of manufacturing and services at a distance. However, when different stages have not a quite stable and codified interface in terms of informational requirements, they need various forms of proximity, quite often also territorial proximity. In such cases, smart manufacturing should be at least in some parts locally servitized by information services co-developed with the products and the production processes (Baldwin 2013). Services skills are in part integrated within the manufacturing skills and plugged in manufacturing units of production; in part they form the specific business of specialized firms, but together such know-how nuclei take to new cores of production capabilities of manufactured and servitized products. Similar considerations could be applied of course to the galvanisation of neo-artisan producers and makers in tourism, arts and culture, creative industries, and agro-food filières.

¹ C.H. Sabel, “The new organization of production, productive development policies and job creation or Thinking about industrial policy as industry becomes less central to development”, paper presented at the Conference on Relations Between Productive Development Policies, Jobs, Wages And Human Resources Brainstorming Session, Lima, January 22, 2016.

3.3 Quadruple helix models develop around manufacturing jobs and activities

A third question concerns the innovation models related to manufacturing specializations. The organization of innovation activities may be decoupled from the proximity to manufacturing places or market places, according to chains, networks or system at large, even global territorial levels. They are the so called Global Innovation Networks or Systems – GIN/GIS (Binz and Truffer 2017). Actually, even if territorially wide networks have an increasing importance, they may combine with place-based relations of creation and development of part of the new knowledge for manufacturing processes and products. This depends, given the widespread importance of experimental, codified, analytical knowledge, also on the strength of relations between high education/research institutions and entrepreneurial firms at the local level. Such relations are helped by appropriate institutional frames and intermediary functions played or supported by local based governmental entities, as the models of the triple helix have illustrated. Even more important is the engagement of civic society not only to help aligning the incentives of triple helix actors, but also to design multiple-actors models that can translate in lively laboratories of innovation for smart cities and smart land solutions. This brings to quadruple helix constellations (Leydesdorff and Deakin 2011) that are powerful new attractors of place-based relations within GIN/GIS.

It is worth pointing out that, if they have any possibility to develop, quadruple helix constellations can benefit from a context where manufacturing jobs and activities represent a significant portion of the life and knowledge of a civic community. The production of tradable goods characterizes manufacture (though not exclusively), and tradable goods are much exposed to the external winds of competition, pulling cooperation at the local level against delocalisation and de-industrialization. Good jobs and activities have to be rooted in an environment that cannot be easily replicated or duplicated and characterized by high quality and innovation in production and high inclusion/sustainability in society (Amison and Bailey 2014). Also in this case, it could be argued that similar relations apply to models centred on the residential economy, territorial and cultural development plans, and social innovation (Segessemann and Crevoisier 2016), as well as that the two types of models may combine, like in some industrial districts that are cultural districts (Santagata 2002, Cooke and Lazzarretti 2008).

3.4 Place-based policies of integrated productive development

The reference to government brings to the last question, i.e. if there is any real prospect of application for policies focusing on manufacturing, that is industrial policies and related policies (on trade, education, etc.). Old style policies targeting specific sectors or national champions have very narrow objectives as well as strong limits (Baldwin 2013; see also note 1). On the other hand, place-based governmental entities have a role to play in aligning public goods and private initiatives. Actually, applications of such approaches have a wider field than that of technological innovation, and extend to the coordination among various scales of governance (Bianchi and Labory 2011; McCann and Ortega-Argilés 2013). The permanent evolution of the manufacturing sector can be challenging for such multi-scalar policies, as Andreoni and Chang (2016) remark, in terms of, for example: (1) the provision of technological platforms; (2) the reduction of risk for investments in emerging technologies; (3) support to cross-cluster and cross-regional demonstrators and systems of integration; (4) support for the restructuring, sectoral transition and re-building of “diffused industrial competences”, i.e. the so-called “industrial commons” reminiscent of the Marshallian industrial atmosphere. Finally, multi-scalar industrial policies should comprise also non-manufacturing sectors in order to support knowledge-oriented, inclusive, and sustainable productive development at local and regional levels. Their impact would be amplified if the latter were integrated with also interventions targeting manufacturing local systems (Barca et al. 2012; Crespi 2013).

4. External economies and economies of business specialization in IDs Mark 3

Building on the concepts illustrated in Section 3, we intend now conceptualising external economies (EEs), internal economies of specialization, and processes of endogenous growth in the context of IDs Mark 3. The classical starting point here of course would be the Marshallian external economies (Marshall, 1920; Robinson, 1951). We defer exemplifications and empirical analysis.

4.1. Specialization external economies blur the traditional borders

Two traditional borders are blurred in IDs Mark 3 solutions to contemporary challenges, one concerns manufacture and services, the other economies of scale and scope (Bellandi, 1996).

Consider first the increasing interpenetration of manufacturing phases and an open set of knowledge intensive services and service-based digital tools and platforms (i.e. servitization). Such services become sources of EEs when there are logistics and transaction advantages of proximity, and the demand for solutions at the local level is large and differentiated enough to justify local specific investments by specialized service providers. Notwithstanding this, a qualified local demand for solutions needs an absorptive capacity (Cohen and Levinthal 1990) on behalf of manufacturing firms themselves, so that the latter have crucial internal capacities to develop and manage an interface between manufacturing and services tasks (see internal specialization). Equally, transaction costs associated with exchanges between manufacturing firms and services providers (also those locally based) may become very high, considering the immaterial nature of what is exchanged, unless manufacturing firms develop their own internal digital professionalization able to interface with external digital providers over shared platforms of digital-based projects between local manufacturing and service firms (Sabel and Zeitlin 2004; Iammarino & McCain 2006).

On the other side, there are many types of digitalized services that are on the cloud. Scanning global networks and looking for apposite services may be helped by localized professionals or technological agents also within local universities, and this is a further source of EEs. But the control of giant platforms by national and international providers, or the internalization of such platforms within global oligopolistic producers or traders who buy from IDs, may expand the span of services where ID producers depend on such large providers, and substitute market sub-mission for high transaction costs at the local level.

Coming to economies of scale and scope, it is to be considered that servitization within manufacturing processes and other digital-based technologies (e.g. 3D printers) reduce switching costs in the organization of different lines of production, enlarges the possibilities of automated personalisation within “smart” plants, and makes possible the fragmentation in separable stages of complex production processes needing a high level of coordination (Baldwin 2013; Porter and Heppelmann 2014). In IDs Mark 2, the frame of local business-to-business markets and related institutional and trust relations were like a big shared infrastructure, allowing upstream external economies of scale in business services (actually in a connected set of specific public services). The flexibility and versatility of the district supply rested on the availability of the capacities of many producers specialized in different products and productions, kept together by access to such share infrastructure, and contributing to the district’s external economies of scope. With the new technologies, this asset tends to change, more or less widely. The internal economies of scope realized by the single producer increases - this is true also of producers outside IDs. This represents of course a threat to the competitive advantage of the district.

However, external economies for district producers are still possible and offer a solution to the competitive challenge. They depend on at least four factors: (1) as recalled above, the possibility of sharing specialized knowledge services and capabilities for specific servitization solutions; (2) the competition among teams of ID producers or of larger, medium-sized producers rooted or anchored in the ID, who apply similar, so to say, capacity of product personalization in securing different market niches; (3) thanks to e-commerce and social media, the possibility to reach very small

niches of customers in global markets as well as global networks of suppliers for assuring near-to-market customized services; (4) the possibility for ID firms to come together and create a big enough demand to somewhat counter-balance the market power of oligopolistic digital services providers (Bettiol and Micelli 2013).

These same processes push towards the continuous exploration of original solutions and applications which takes us to the following point.

4.2. Learning EEs depend on deliberate initiatives involving quadruple helix actors

New economies of both skills building and de-centralized innovation depend on the possibility to enlarge the contextual use of codified knowledge beyond the traditional disciplines of formal training at school and of knowledge up-grading through technology acquisition and learning on the job (Jensen et al. 2007). New technologies reduce the costs of innovation for SMEs thanks to the development of *preto*-types, i.e. digital design and test of new solutions, and to distributed realization of prototypes made of clusters of artefacts and services (Bettiol and Micelli 2013).

In IDs, this may be favoured by a proper application of quadruple helix processes referred to above. That is, civic society and social networks within local nodes, helped by locally rooted governments, become active laboratories for SMEs and universities, combining experiential and codified knowledge, on the identification of new private and collective needs. Furthermore, the shared experience in using “the same continuous flow of information that must be exchanged in order to co-design products that no one can specify ex-ante” helps firms learn how and gives them tools “to monitor their partners’ probity as well” (Sabel 2002).

4.3. Economies of business specialization grow in open local firms

An economy of business specialization means that, other things being equal, the efficiency in realizing a delimited production task is bigger within a firm specialized in that task than in a dedicated business unit of a diversified firm. Considering the blurring of borders between manufacture and service, between codified and tacit knowledge, and between scale and scope EEs, small firms in IDs (at least, a number large enough of those playing as local gatekeepers) may enjoy new economies of business specialization if they are able to adopt an appropriate business culture. This should be featured by an open entrepreneurial approach to the sharing of strategic knowledge with professionalized employees and new classes of business, technical and creative consultants; as well as a neo-artisan approach to the use of digital-based technologies as tools servicing the manual and intellectual control of the process by the workers (Rullani 2009; Sabel and Zeitlin 2004).

On the other hand, medium-to-large companies with trans-local investments and local roots or anchoring may provide market experiments on a larger scale and act as local flagships. Such larger firms are able to preserve their capacities of personalization and authenticity thanks to their local roots or anchoring with IDs. If smaller firms do not enjoy new economies of business specialization, their capacities are either ignored or just subjugated to the strategies of the larger firms. If they do, more equal relations with the larger firms are possible, generating reciprocal EEs.

4.4. Cross-scalar external economies propagate in many fields

The sources of EEs in contexts of dense flows of persons and knowledge across local boundaries depend more and more on the integration of IDs with regional or interregional networks across the specialized production and service functions. Some of these sources can be managed within the regional boundaries, while others require coordination and transcend inter-regional and national levels (Corò and Grandinetti 1999; Rabellotti et al. 2009).

At least three cross-scalar contexts may be associated to Mark 3 IDs: 1) projects of trans-local production, innovation and commercialization supported by the growing ease of international communications, sometimes reinforced by ties, maintained by the communities of migrants, between the old and the new home, according to either the logic of ethno-industrialization (Guercini

et al., 2017), or the activities of international research and training networks; 2) the construction of social and cognitive networks within the ID, that are potentially global, and which are connected with manufacturing expertise and local symbolic resources (Crevoisier and Jeannerat 2009; Corradini and De Propris 2016); 3) innovation platforms geographically and sector focused on the combination between networks of knowledge-intensive services in “post-industrial” city-regions (Cappellin, 2012; Trullen and Boix, 2013) and a variety of social experiences, artisanship, and manufacturing traditions that are rooted in IDs within the region. These networks elevate the ID to a global reference point (a thematic capital city) for the exchange of ideas on professional and socio-cultural issues, as well as shape the coalescence of new senses of belonging to the community (Rullani, 2009), which takes to a last point.

4.5. Expanded cross-fertilization feeds-backs locally if driven by local productive chorality

The integration of IDs in global networks has occurred on different levels: locally embedded social relations interface with global linkages and faceless social media; productive transactions dovetail sourcing and supplying at the global scale; whilst informal channels of learning and tacit knowledge exchange complement more codified technological up-taking. The risk – in this process of international opening – is that the place loses its authenticity and with it awareness of it. This risk is even more severe if we believe that the thinning-down and breaking-up of the socio-economic fabric can be just the beginning of a more fundamental fault line undermining the “productive chorality” of the place. The latter is “based not only on the technical, spatial, cultural proximity of the firms, but also, and more on the strength of the uniformity and congruity of the culture of the people and families who live there” (Becattini, 2015, p. 36).

Exposed to the forces of globalisation, IDs unfold *global pipelines* (Bathelt et al 2004) through which production, consumption, knowledge, and people tend to flow in and out. However, the way in which places more generally relate to globalisation is via ‘a sequence of transactions and interactions’ (*ibid.*) that connects the *local buzz* (*ibid.*) with the outside. The idea of buzz captures the fact that actors just want to be there, and this might be sufficient to allow places to stand out and catch the attention of globalising forces. The buzz can allow places to get noticed. Exposure however to the miscellany and diversity of what is outside the place, could lead places’ actors to believe they must respond with an assortment of offers that pleases everybody. This is not just about products; multinational firms might advance requests in exchange for access to markets or resources, compromising the integrity of the self-determining nature of places.

To avoid a dilution of their identity and to strengthen their position with respect to outside systems, places need to establish in more codified ways what makes them different from other places. In IDs, this is when they articulate their authenticity drawing on the conscience of the place (Becattini, 2015). The different ideas, inspirations, tastes, and experiences that global exposures provide, need to be translated and incorporated in the stock of embedded know-how to constantly innovate and renew the IDs productive core with a high degree of awareness and deliberate initiatives.

5. Conclusions

This paper has attempted to develop further the understanding of what new forms IDs might be assuming in the near future as the geography of production is changing again and new technologies are altering the sourcing of value creation. One caveat of the paper is that it cannot include also empirical analyses for obvious constraints, but we refer throughout to recent in depth investigations of Italian and non-Italian cases.

The balance between global and local scale is yet again in flux. Globalisation seems to be intensifying due to transport and digital technology, and the operations of large visible players such as multinational firms regularly overshadows the capillary activities of SMEs across advanced economies. However, there are real pushes for a meaningful re-localisation of economic activities,

and ‘distributed growth and prosperity’ is a recurring mantra in policy documents. Place matters now as it has always been, fundamentally for the same reasons: people’s ingenuity, creativity, resourcefulness and the ability to *exponentialize* such quality when aggregated.

The opportunity that Manufacturing Renaissance offers with Industry 4.0 touches IDs firstly and crucially because their industrial atmosphere and versatile entrepreneurial context, if not overwhelmed by the difficulties of transition, may help understanding and absorbing the complexity and intricacy of the new ‘making’ processes. This is true for example of some Italian IDs that are becoming authentically Mark 3, see for instance some of the technological districts such as yachting in Tuscany (Giarratani et al., 2013; Belussi and Hervas-Oliver, 2017).

The acknowledgement of new forms that IDs are taking and can take in the current context, together with new mixes of external economies and specialization economies, begs nevertheless the questions,

- Can the competitive and collaborative relations of Mark 3 IDs with high-tech clusters and cities of innovation and creativity bring to a coalescence of logics outside the MID model?
- What other opportunities, barriers and risks do they face? What place-based policies can help the rerouting towards the new forms, both in advanced and emerging regions?
- What issues of empirical identification and investigation are associated with Mark3 IDs? How can they be managed? Are these issues hampering the assessment of such new forms and more generally of a manufacturing renaissance of regions?

Drawing on Becattini’s inspiration, the above issues should be explored bearing in mind that IDs operate in a fast changing environment where linkages are slippery and uncommitted, and where actors are footloose. Within this flux, the real challenge for IDs and the decisive factor of resilience to control is the confidence of their people, enterprises and institutions in constantly innovate and create faithfully to evolving but *authentic* productive cores and social identities.

References

- Amison, P., & Bailey, D. (2014). Phoenix industries and open innovation? The Midlands advanced automotive manufacturing and engineering industry. *Cambridge Journal of Regions, Economy and Society*, 7(3), 397-411.
- Andreoni, A. & Chang, HJ. (2016). Industrial policy and the future of manufacturing. *Economia e Politica Industriale – Journal of Industrial and Business Economics*, 43 (4), 491–502.
- Andreoni, M., & Gregory, M. (2013). Why and how does manufacturing still matter: Old rationales, new realities. *Revue d’Économie Industrielle*, 144 (4), 21-57.
- Baldwin, R. (2013). Global supply chains: why they emerged, why they matter, and where they are going. In Elms, D.K. & Low, P. (Eds.) *Global value chains in a changing world* (pp. 13-59). WTO Publications: Geneva.
- Bathelt, H., Malmberg, A., & Maskell, P. (2004). Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation. *Progress in Human Geography*, 28(1), 31-56.
- Barca, F., McCann, P., & Rodríguez-Pose, A. (2012). The case for regional development intervention: Place-based versus place-neutral approaches. *Journal of Regional Science*, 52 (1), 134-152.
- Becattini, G. (2004). *Industrial districts: A new approach to industrial change*. Cheltenham: Edward Elgar.
- Becattini, G. (2015). Beyond geo-sectoriality: the productive chorality of places. *Investigaciones Regionales*, 32, 31- 41.

- Becattini, G., Bellandi, M., & De Propris, L. (2011). Industrial districts: The contemporary debate. *Economia e politica industriale*, 38 (3), 53-75.
- Bellandi, M. (1996). On entrepreneurship, region and the constitution of scale and scope economies. *European Planning Studies*, 4 (4), 421-438.
- Bellandi, M., & Caloffi, A. (2008). District internationalisation and trans-local development. *Entrepreneurship and regional development*, 20 (6), 517-532
- Bellandi, M., & De Propris, L. (2015). Three generations of industrial districts. *Investigaciones Regionales*, 32, 75-87.
- Bellandi, M., & Santini, E. (2017). Resilience and the role of arts and culture-based activities in mature industrial districts. *European Planning Studies*, 25 (1), 88-106.
- Belussi, F., & De Propris, L. (2013). They are industrial districts, but not as we know them!. In Giarratani, F., Hewings, G.J.D. & McCann, P. (Eds.), *Handbook of Industry Studies and Economic Geography*, Cheltenham: Edward Elgar
- Belussi, F., & Hervás Oliver, J. L. (Eds.) (2017). *Unfolding cluster evolution*. London: Routledge.
- Bettiol, M. & Micelli S. (2013). The hidden side of design: The relevance of artisanship. *Design/Issues*, 30 (1), 7-18.
- Bianchi P., & Labory S. (2011). *Industrial Policy after the Crisis: Seizing the Future*, Cheltenham: Edward Elgar Publishing.
- Binz, C., & Truffer, B. (2017). Global Innovation Systems - A conceptual framework for innovation dynamics in transnational contexts. *Research Policy* (on line from the 13th June, 2017).
- Boix R., Sforzi F., Hernández F. (2015). Rethinking industrial districts in the XXI Century, *Investigaciones Regionales – Journal of Regional Research*, 32 (2015) – Pages 5-8
- Brusco, S. (1992). Small firms and the provision of real services. In Pyke, F. & Sengenberger W. (Eds.) *Industrial districts and local economic regeneration* (pp. 177-96). Geneva: International Institute for Labor Studies
- Cappellin, R. (2012). Growth in post-industrial cities: An endogenous model. In: Cappellin, R., Ferlaino, F., & Rizzi, P. (Eds.) *La città nell'economia della conoscenza* (pp. 29-50). Milano: Franco Angeli.
- Cohen, W.M., & Levinthal, D.A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35 (1), 128-152.
- Coltorti, F. (2013). Italian industry, decline or transformation? A framework. *European Planning Studies*, 21 (12), 2037-2077.
- Cooke, P. (2009). Technology clusters, industrial districts and regional innovation systems. In Becattini, G., Bellandi, M., & De Propris, L. (Eds.), *A Handbook of industrial districts* (pp. 295-306). Cheltenham: Edward Elgar
- Cooke, P & Lazzaretti, L. (Eds.) (2008). *Creative cities, cultural clusters and local economic development*. Cheltenham: Edward Elgar.
- Corò, G. & Grandinetti, R. (1999). Evolutionary patterns of Italian industrial districts. *Human Systems Management*, 18 (2), 117-129.
- Corradini, C., & De Propris, L. (2016). Beyond local search: Bridging platforms and inter-sectoral technological integration. *Research Policy*, 46(1), 196-206.

- Cossentino, R., Pyke, F., & Sengenberger W. (Eds) (1996). *Local and regional response to global pressure: The case of Italy and its industrial districts*. Geneva; International Institute for Labour Studies.
- Crespi, G., Fernández-Arias, E., & Stein, E.H. (Eds.) (2014). *Rethinking Productive Development: Sound Policies and Institutions for Economic Transformation*. Inter-American Development Bank (IDB) series. New York: Palgrave Macmillan.
- Crevoisier, O., & Jeannerat, H. (2009). Territorial knowledge dynamics: from the proximity paradigm to multi-location milieus. *European Planning Studies*, 17(8), 1223-1241.
- Dei Ottati, G. (2003). Exit, voice and the evolution of industrial districts: The case of the post-World War II economic development of Prato. *Cambridge Journal of Economics*, 27 (4), 501-522.
- Derudder, B., De Vos, A., & Witlox F. (2011). *Global City/World City*. In Derudder, B., Hoyler, M., Taylor, & P.J. Witlox, F. (Eds.) *International Handbook of Globalization and World Cities*. Cheltenham: Elgar.
- EU Commission (2014). *For a European Industrial Renaissance*. COM 14/2 – 2014, Bruxelles.
- Florida, R. (2002). *The Rise of the Creative Class: And How it's transforming work, leisure, community and everyday life*. New York: Perseus Book Group
- Giarratani, F., Hewings, G.J.D. & McCann, P. (Eds.) (2013). *Handbook of Industry Studies and Economic Geography*. Cheltenham: Edward Elgar.
- Guercini, S., Dei Ottati, G., Baldassar, L. & Johanson, G. (Eds.) (2017). *Native and immigrant entrepreneurship: Lessons for local liabilities in globalization from the Prato Case Study*. Berlin: Springer.
- Jensen, M. B., Johnson, B., Lorenz, E., & Lundvall, B. Å. (2007). Forms of knowledge and modes of innovation. *Research policy*, 36 (5), 680-693.
- Iammarino, S., & McCann, P. (2006). The structure and evolution of industrial clusters: Transactions, technology and knowledge spillovers. *Research Policy*, 35(7), 1018-1036.
- Leydesdorff, L., & Deakin, M. (2011). The Triple-Helix Model of Smart Cities: A Neo-Evolutionary Perspective. *Journal of Urban Technology*, 18 (2), 53-63.
- McCann P. & Ortega-Argilés, R. (2013). Modern regional innovation policy. *Cambridge Journal of Regions, Economy and Society*, 6, 187–216
- Marshall, A. (1919). *Industry and Trade*. London: Macmillan (rpt. 2011 New York, NY: Cosimo).
- Marshall A. (1920). *Principles of economics*. London: Macmillan (8th ed.; first ed. 1890, re-edited as vol. 1 of Guillebaud, C. W. ed. 1961, 9th Variorum ed. London: Macmillan).
- Popp, A., & Wilson J. (2009). The emergence and development of industrial districts in industrialising England, 1750-1914. In Becattini, G., Bellandi M., & De Propriis, L. (Eds.) *A Handbook of industrial districts* (pp. 43-57). Cheltenham, Edward Elgar.
- Porter, M. E., & Ketels, C. (2009). Clusters and industrial districts: Common roots, different perspectives. In Becattini, G., Bellandi M., & De Propriis, L. (Eds.) *A Handbook of industrial districts* (pp. 172-183). Cheltenham, Edward Elgar.
- Porter, M. E., & Heppelmann, J. E. (2014). How smart, connected products are transforming competition. *Harvard Business Review*, 92 (11), 64-88.
- Rabellotti, R., Carabelli, A. & Hirsch G. (2009). Italian industrial districts on the move: Where are they going? *European Planning Studies*, 17 (1), 19-41.

- Robinson, E.A.G. (1958). *The structure of competitive industry*. Cambridge UK: Cambridge University Press (first ed. 1931).
- Rullani, E. (2009). Global Challenges: Introduction to section 10. In Becattini, G., Bellandi M., & De Propris, L. (Eds.) *A Handbook of industrial districts* (pp. 643-647). Cheltenham, Edward Elgar.
- Sabel, C.H. (2002). What to Make of the Changes in Industrial Districts? Three Questions. Lecture for the 2012 Prize Award, Global Award for Entrepreneurship Research, 1-2 (http://www.e-award.org/web/2002_Becattini_Sabel.aspx).
- Sabel, C.H & Zeitlin, J. (2004). Neither modularity nor relational contracting: Inter-firm collaboration in the new economy. *Economy and Society*, 5 (3), 388-403.
- Santagata, W. (2002). Cultural districts, property rights and sustainable economic growth. *International Journal of Urban and Regional Research*, 26, 9-23.
- Segesseman, A., & Crevoisier, O. (2016). Beyond economic base theory: The role of the residential economy in attracting income to Swiss regions. *Regional Studies*, 50 (8) 1388-1403.
- Sengenberger, W. (2009). The scope of industrial districts in the Third World. In Becattini, G., Bellandi M., & De Propris, L. (Eds.) *A Handbook of industrial districts* (pp. 630-640). Cheltenham, Edward Elgar.
- Sforzi, F. (2015). Rethinking the industrial district: 35 years later. *Journal of Regional Research*. 32, 11-29.
- Tödtling, F., & Trippel, M. (2013). Transformation of regional innovation systems. In P. Cooke (Ed.), *Re-framing regional development: Evolution, innovation, and transition* (pp. 297–317). New York: Routledge.
- Tomlinson, P. R., & Branston, J. R. (2014). Turning the tide: prospects for an industrial renaissance in the North Staffordshire ceramics industrial district. *Cambridge Journal of Regions, Economy and Society*, 7 (3), 489-507.
- Trullén, J., Boix, R. & Galletto, V. (2013). An insight on the unit of analysis in urban research. In Kresl, P.K., & Sobrino J. (Eds.) *Handbook of research methods and applications in urban economies* (pp. 235-267). Northampton, Mass: Edward Elgar.
- Visser, E. J., & Boschma, R. (2004). Learning in districts: Novelty and lock-in in a regional context. *European Planning Studies*, 12 (6), 793-808.