

Summary

This work explores the spatial relationship between city and manufacturing. In particular, it focuses on how to plan the spatial relationship between the city and the spatial implications of the current manufacturing restructuring process as the rise of a new industrial paradigm can potentially draw a new geography of manufacturing. For almost two centuries – from the first industrial revolution until to the crisis of Fordism – the spatial organization of Western cities was profoundly shaped by manufacturing. Whenever manufacturing experiences a significant change in production systems, a city experiences a new spatial order. For roughly 200 years industry has triggered urbanization processes and fed urban growth “culminating in the large industrial cities of the American and Western European manufacturing belts” (Scott and Storper, 2014: 5). In this context, the spatial configuration of Western cities, their infrastructure, loisir spaces, housing, public spaces, and so on – has been, to some extent, the reflection of the spatial implications of manufacturing.

Although an investigation into the spatial implications of manufacturing could seem to be an anachronistic inquiry, this field of research has a need to renovate its own theoretical frameworks whenever a new wave of technological innovation generates significant changes in the production system and, consequently, in the production of space. Nowadays, indeed, the interest towards manufacturing as a vitally important economic asset for our economic system is increasing. Several gurus of manufacturing innovation tell us that manufacturing is at a turning point. It is experiencing a stage of technological restructuring of similar proportions, in terms of the technological shift of the production system, to past industrial revolutions (Schwab, 2016; Ross, 2016). This emerging “fourth industrial revolution” – for the first time labelled as a revolution a priori, before really understanding its true entity – may influence the location choice of manufacturing firms adopting advanced manufacturing technologies and therefore affect the spatial organization of contemporary cities. How the spatial entity of manufacturing’s restructuring process interests and challenges the planning sphere is the main research question that motivated the design of this research. In particular:

- *In light of the potential spatial implications that the current restructuring process of manufacturing could generate, what are the implications for spatial planning?*

What seems to be evident is that the new industrial paradigm puts into question what Batty (2018) calls “routine behaviour”. Manufacturing’s shifting technologies can in fact potentially affect and change the routine behaviour of both traditional manufacturing and spatial planning. In light of this, spatial planning is to some extent disoriented in providing new insights and envisioning a renovated spatial

relationship between city and manufacturing. This does not mean delegitimizing the regulatory character of planning but flanking it with the approaches, methodologies and instruments of adaptive planning to better deal with the evolutionary trajectories and unpredictability of manufacturing change.

In the context of this research, the adaptive approach assumes a twofold meaning. Firstly, it is a precondition to be embraced in understanding the location process of manufacturing as a process that is strongly shaped by the behavioural dynamics of firms – especially with regard to the advanced firms. Secondly, it entails the adoption of what Rauws (2017: 35) calls “situational understanding,” which in this research means grasping the locational mechanisms of firms before tracing a furrow in the space. In this sense, planning interventions are not a predictive activity for situations of stability (Albrechts, 2010; Albrechts and Balducci, 2013) instead they act both as a process (ex ante and during) and, then, as a configuration of the space (ex post).

It is necessary to have an awareness that planning for manufacturing means operating in a future characterized by uncertainty (Amin, 2011; Batty, 2018; Fainstein and DeFilippis 2015; Albrechts et al., 2013), as well as an awareness of the impossibility of adopting only land-use mechanisms that predict and conform with a long-term time horizon.

Following Rauws (2017: 35), adaptive planning is an approach aimed at “redirecting the focus of planning to influencing and generating conditions under which development trajectories unfold”. He identifies the key elements of this approach as: “accepting these uncertainties and exploiting the opportunities they give rise to, [...], and shifting the focus of planning strategies: from content (i.e. what) and process (with whom) towards conditions for development (Ibid: 35, 42). In light of this, the following research questions linked to the issues of unpredictability in manufacturing innovation was framed:

- *What is the link between a prescriptive and regulatory tool with a phenomenon that is still little understood?*
- *How can a predicting planning approach coexist with the unpredictability of the new industrial paradigm?*
- *Is it possible to fit an unpredictable and elusive object as new forms of manufacturing seem to be within a land-use plan?*

The Turin and Chicago’s case studies are observed as two ongoing planning experiences that are re-imagining their relationship both with manufacturing system and industrially zoned land in light of the new industrial paradigm.