

CHAPTER 4

Making Space for the Sharing Economy: Fablab Torino and the *Performativity* of Democratized Production

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Abstract

The spreading of collaborative practices in the production and consumption of goods and services constitutes an unavoidable challenge to researchers aiming at understanding the sociospatial dynamics of economic life. Fablabs in particular are identified as expressions of a new form of material production pivoting on collaboration and democratised innovation. Embracing a recent claim in economic geography for an appreciation of the relevant role of spatial dynamics in organizations (Müller 2015), I argue for an investigation of collaborative workplaces through an ethnographic research of the situated practices involved in the process of organising a Fablab. Drawing on Actor-Network Theory and the ‘performativity programme’ launched by Michel Callon (1998), the chapter argues that collaborative economies could be analysed as the emergent outcome of the interaction between economic theories and heterogeneous socio-technical arrangements through which they are brought into being, showing

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how economics performs the economy. In order to unpack the contingent, situated, and fragile nature of this process with regards to Fablabs and Makers, the chapter discusses the data from an ethnographic investigation of a Fablab in Turin, Italy, working on two levels. Firstly, it identifies the economic theories involved in the process of performing Fablabs as collaborative and open spaces within contemporary urban economies. Secondly, it shows how sociospatial processes of organizing participate in the enactment of an economy where production and innovation have been ‘democratised’ and where collaboration and sharing are at the core of value production. However, the chapter highlights also how the process of actualization is never stable, resulting sometimes in failures and ‘misfires’ (Callon 2010).

Introduction

So-called sharing and collaborative economies represent one of the most relevant transformations in the economy of the last decades. Usually, digital technologies are considered the main trigger of this innovation, enabling the collaboration of heterogeneous economic actors. Although the labels ‘sharing economy’ and ‘economies of collaboration’ have become widely employed, these new forms of coordinating economic activities are characterised by a high degree of internal variety and heterogeneity. What is shared could be either material goods, such as houses and cars, or something immaterial, such as digital objects or services. At the same time, the spatialities related to practices of sharing are multiple, ranging from pure digital space – as in websites such as Wikipedia – to the bounded physical space of an organization – as in coworking spaces – and to the hybrid spatiality of platforms used to share physical goods or experiences – such as Airbnb and social eating platforms. Moreover, understandings of the sharing economy as a form of economic exchange alternative to the capitalist market have been widely disputed (Shor et al. 2015). Thus, claims have been made to conceive the sharing economy as something that is *performed* in multiple, contingent, and situated ways (Richardson 2015), rather than as an economic object that is distinctly identifiable. These multiple performances depend not only on what is shared, but also on the material and immaterial devices for sharing, the values inscribed in those practices, the economic discourses and imaginaries behind them, and the space through which sharing happens.

Among these multiple examples of sharing and collaborative economies, spaces for making and coworking spaces are frequently read as part of the same phenomenon, corresponding to the spreading of urban alternative spaces of work where flexible, entrepreneurial, and collaborative forms of value production can be fostered by the multiple potentials of digital technologies (Mariotti et al. 2021). In particular, the practices performed by the members of the so-called Maker Movement and the spaces they use are considered a new urban

form of small manufacturing pivoting on collaboration and sharing (Davies 2017; Gauntlett 2011). The label ‘Maker’ is usually applied to people engaging in various ways in a high-tech version of DIY (do-it-yourself), employing digital machines such as 3D printers, CNC milling machines, Arduino micro-controllers and laser-cutters to autonomously produce customised artefacts. The work and activities performed by Makers are usually associated with small workshops called Makerspaces and Fablabs, which provide access to digital fabrication machines and other tools.

Despite the rise of these spaces specifically devoted to Makers, the spatial dimension of the phenomenon is still a poorly explored topic, and the mainstream literature stresses instead that the heavy reliance on communities of peers connected through online open platforms makes the geography of Makers an irrelevant issue. On the contrary, scholars in both economic geography and urban studies have recently drawn attention to the spatial dimension of the phenomenon, claiming that the rise of Makers represents an innovation in the production system that entails important socio-spatial transformations too. However, these works generally assume that the most relevant spatial dimension of the phenomenon is constituted by the city, considering Makers as part of a univocal shift in contemporary urban economies in the era of digital capitalism (Armondi & Bruzzese 2017; Armondi & Di Vita 2017; Capdevila 2018). In so doing, they also take for granted the relevance of the phenomenon in terms of its capacity to constitute a shift in contemporary urban economies, usually drawing on a mainstream discourse that portrays Makers as examples of democratization of production and a new way of organizing the innovation process (cf. Doussard et al. 2017; Powell 2012; Vicari et al. 2015). Considering the rise of Makers and Fablabs as a relevant economic transformation, this literature pigeonholes Fablabs through the mobilization of concepts such as open innovation, sharing economy, and collaborative production.

However, works inspired by a post-structuralist approach to the study of economic geography have stressed that the economy is something that *is done* through practices and performances that depend on specific socio-material orderings (Jones & Murphy 2010; Müller 2015). Indeed, as the sharing economy should be used ‘as a prompt rather than the target of geographical research’ (Richardson 2015: 128), the extent to which a Fablab could be considered a workplace and a space of production that participates in new urban economies should be proved rather than postulated. In other words, drawing on analytical approaches that ‘investigate the formation of economic realities through contingent, heterogeneous, and local processes’ (Barry & Slater 2002: 180) would allow us to overcome the use of concepts such as open innovation, sharing economy, and collaborative production as explanatory categories from which to start in investigating the role of a Fablab. Rather, the present chapter claims that these concepts come from economic theories that frame the activities of Makers and contribute to the coming into being of a Fablab.

To illustrate this process, the chapter draws on the performativity programme in economic sociology and on Actor-Network Theory (ANT) in arguing that a Fablab is performed as a space of collaborative production and open innovation through a precarious process of socio-material ordering. This performance is produced precisely by the economic theories on Fablabs and Makers as harbingers of a democratization of production that are usually used to *describe* them.

The chapter starts with an introduction on the rise of Makers and Fablabs and situates them within the spreading of economic theories on a paradigm shift in the economy, pivoting on sharing practices and an open ethos towards production and innovation. The following section is dedicated to the description of the case study and the methodology employed. Showing the dialectical movement between the evidence from the field coming from the ethnographic research and the theoretical framework employed, the chapter then introduces the performativity programme in economic sociology and post-structuralist geography of organization as original theoretical frameworks to reconceptualize the relationship between economic theories on Fablabs and Makers and the concrete reality of specific Fablabs. The final sections discuss the empirical material. After showing how economic theories on collaborative economies, open innovation, and autonomous production have contributed to the creation of Fablab Torino in Turin, Italy, the discussion of the empirical findings highlights how the socio-technical arrangement constituted by the Fablab has partially failed to enact these theories. Thus, the chapter claims that, rather than being mere descriptions of what Fablabs and Makers are, economic theories envisaging the rise of collaborative economies and democratization of production participate in bringing this transformation into being. Moreover, the discussion of the empirical findings highlights that a Fablab could fail in performing this shift when the human and non-human entities that are part of the organization do not act in the way described by the theories themselves.

Collaborative Production in the Digital Age: The Rise of Makers and Fablabs

During the past decade, innovation in digital technologies and the rise of entrepreneurial forms of work, together with the increasing dematerialization of value production, have fostered highly autonomous forms of production. At the same time, the shift towards the individualization of work and production typical of this phase of capitalism has paradoxically ‘produced an idealisation of community in different ways’ (Rossi 2017: 179), thus combining with a simultaneous rising importance of various forms of collaboration and sharing (Gandini 2015; Schor et al. 2015). This transformation is frequently labelled “sharing economy” or “economy of collaboration”, thus stressing the advent of material and immaterial platforms that enable new forms of production, consumption, and distribution among networks of peers (Ramella & Manzo 2021).

Within urban contexts, transformations in the practices of work and production have brought with them the proliferation of coworking spaces and sites of open production and open innovation, such as Makerspaces and Fablabs.

The first Fablab opened in 2001 out of a course on digital fabrication organised at the Massachusetts Institute of Technology (MIT), in which Prof. Neil Gershenfeld set up a small workshop made of personal digital fabrication technologies through which everyone can produce physical objects autonomously. Since then, the label 'Fablab' has been used to identify open workshops where people can have access to machines such as 3D printers and laser cutters, learn how to use them thanks to ad-hoc courses and to the experience of other Makers, and produce digitally fabricated artefacts either independently or working on a collaborative project with others. The MIT, the US company *Make Media* and some business consultants contributed to the rise of a discourse that praises the innovative potential held for the future of work and production by Fablabs and the people attending them, called Makers (Anderson 2012; Dougherty 2012; Hatch 2013). According to this discourse, the availability of shared digital fabrication machines and the diverse practices of knowledge sharing performed at Makerspaces and Fablabs make these sites the drivers of a democratization of production (Anderson 2012) and the catalysts of an open innovation ecosystem (Chesbrough et al. 2006). Thus, Makers are considered 'hi-tech do-it-yourselfers who are democratizing access to the modern means to make things' (Gershenfeld 2012: 48). For this reason, Makers are depicted as bearers of a 'third industrial revolution' (Rifkin 2011) that holds at its core the encounter between digital technologies and the organizational innovation represented by forms of commons-based peer production (Benkler 2006). According to the ideologists of the Maker Movement:

everything that the web has enabled – new forms of collaboration, easy sharing of designs, readily available desktop tools – can now be used to support digital production and entrepreneurial activities connected to such production. (Davies 2011: 6)

Indeed, the sharing dimension is considered particularly relevant for Makers. On the one hand, the very organising principle of a Fablab lies in the opportunity to use shared machines and to share knowledge with other Makers locally. On the other hand, Makers could rely on various online tools that constitute a crucial part of the infrastructure that sustains the global community of Makers, such as open sources to share the code or the instructions of a project.

The discourse that incorporates Makers and Fablabs into a broader structural change in the production of artefacts and in the way economic value is produced pivots on two pillars coming from recent theories in economics. The first is the mantra according to which collaborating with others who have different skills and sharing knowledge and material assets represent the main economic transformations of the present time. Sharing and collaboration as sources of

value production are said to go beyond the walls of these organizations too, giving birth to a form of collaborative production among distant peers, as in the case of commons-based peer production (Benkler 2006; Tapscott & Williams 2006). According to these theories, the contemporary organization of value production has changed, giving birth to a form of ‘open innovation’ in which:

useful knowledge is widely distributed and ... even the most capable R&D organizations must identify, connect to, and leverage external knowledge sources as a core process in innovation.’ (Chesbrough et al. 2006)

In line with these theories, the economic discourse that portrays coworking spaces as accelerators of serendipity has been extended from immaterial labour (Moriset 2014) to material production with Fablabs.

The second economic discourse that resonates with the birth of Fablabs and Makers focuses on the role of individuals within a broader reconfiguration of the productive paradigm, theorising the fall of the boundaries between experts and amateurs, consumers and producers. Albeit strongly interlinked with the former, these theories focus on the changing role of the individual and the rise of a new *Homo economicus*. The division between who produces and who consumes and the clear distinction between what is produced within a capitalist economy framework and what is done out of passion during free time are increasingly undermined by those digital technologies that facilitate participation in the production of immaterial contents and material devices. The ‘prosumption’ (as a mix of production and consumption) discussed by critical sociologists (Ritzer & Jurgenson 2010) was preconceived in the 1980s by the futurologist Alvin Toffler, who claimed that the old distinction between work and leisure would fall apart thanks to technologies enabling people to produce almost everything autonomously (Toffler 1980). In line with Toffler, the recent theorisation of the Pro-Am, that is, the professional-amateur (Leadbeater & Miller 2004) and cognate economic theories on the changing relationship between consumers and companies concerning the process of value production (Prahalad & Ramaswamy 2004; Von Hippel 2005) have contributed to defining how the role of consumers has been progressively transformed by their involvement in the production process.

Most of the analyses conducted on Makers and Fablabs from the perspective of social sciences employed the analytical lenses provided by these economic theories to read the phenomenon as part of this broader transformation in the economy. Notably, these works took for granted that labels such as ‘open innovation’, ‘commons-based peer production’ or ‘prosumption’ could be used to *describe* Makers’ production and the role of Fablabs. Some authors mobilize the framework of commons-based peer production and open innovation to look at the experience of the first Makerspaces (Arvidsson et al. 2015; Smith et al. 2013), eventually stressing their role to act as alternatives to the capitalist economy (Chiappini & Törnberg 2018). Others emphasize the capacity of these spaces to create new urban and regional entrepreneurial ecosystems

(Doussard et al. 2017; Fiorentino 2018) and to contribute to the rise of new urban economies in the era of digital capitalism (Armondi & Di Vita 2017). These double, contradictory frameworks resonate with the apparent paradox that characterizes the so-called sharing economy, defined either as an alternative to capitalism or as part of a digitalized form of it (Richardson 2015).

In general, a key assumption underlying much research is that these spaces actually succeed in fostering a reconfiguration of production and innovation processes that would transform the market economy as we know it. These studies on Makers and Fablabs take for granted that the discourse on Makers and the actual creation of open workshops such as Makerspaces and Fablabs should be assumed as starting points, providing the analytical lenses useful to read the experience of all Fablabs and Makers.

However, this approach does not leave room for interpreting those cases in which the relevance of Makers and Fablabs to the urban economy is unclear. Indeed, sharing economy in general and Maker production specifically are better understood not as labels that describe coherent sets of economic practices but as heterogeneous performances that configure production and its spatialities in multiple and contingent ways (Richardson 2015). In line with this perspective, recent studies on Makers have stressed the importance of focusing on the practices and place-based specificities of each Fablab in order to deconstruct the homogenizing narrative that sees them as all belonging to the same democratizing turn in production and innovation (see, for example, Johns & Hall 2020).

The present chapter situates within this body of works, sharing with them not only the claim that more empirical, place-based analysis of what occurs in different Makerspaces and Fablabs is needed but also a connected conviction that alternative methodological approaches would help to reach the goal. Notably, rather than relying exclusively on interviews with founders and managers of these workshops, ethnographic research on Makers' practices and the organisational life of a Fablab allows providing more nuanced accounts of the actual innovative scope of Makers and Fablabs as transformative economic subjects and organizations.

Case Study and Methodology

The chapter is based on ethnographic research conducted at Fablab Torino in Turin, Italy. The fieldwork was conducted over a period of 18 months, between November 2016 and June 2018, and employed a mixed-method approach. Both participant and non-participant observations were conducted three times per week, usually during the evening and the night, the Fablab being open to the standard members from 4 pm onwards. Observations were supported by secondary data such as online projects' documentation and websites, and 36 semi-structured interviews with Fablab Torino members, managers, and founders. Besides conducting participant observation during the hours devoted

to independent production, I attended both community nights (i.e., self-managed meetings of Makers sharing an interest in either the same technology such as Arduino or the same application of digital fabrication techniques) and workshops.

Opened in 2011 as a temporary Fablab within a one-year exhibition on the future of work, Fablab Torino's location changed one year later, becoming permanently hosted by a coworking space. The same building also hosts a start-up that used to have strong ties with Arduino, the company producing the single-board microcontroller renowned among Makers and born near Turin.

Members are mainly men, of an average age of 40. The youngest members (in their 30s) are designers who either use the space for their professional activity or work for the connected start-up. Three female members regularly attended the space. The association counts approximately 200 members, whereas the messaging chat of Fablab Torino gathers approximately 100 people. However, during my fieldwork, I used to meet no more than 30 people.

Indeed, the most pressing challenge was the fact that during the afternoons barely two or three people were using the space, which used to become more crowded after 6 pm, especially during the communities' nights. For this reason, I shared the puzzling feeling described by Kohtala and Bosqué when facing a lack of attendance at the lab, since:

what was at first problematic from the perspective of ethnographic research (but something that emerged as a key finding) is that there was surprisingly little activity ongoing in the Lab during our visits that we could observe. (Kohtala & Bosque 2014: 2)

Moreover, even during the night gatherings, it was rare for me to observe someone making a prototype or working on a project. Thus, an important part of my fieldwork was based on 'netnographic explorations' (Smith 2020; see also Kozinets 1998) through members' chats occurring in groups on instant messaging platforms, used both to share useful information and advice and to simply chat about daily lives. The observation of what happened on the chats, together with the interviews, allowed me to go beyond the apparent lack of activity at the Fablab, following the practices beyond the physical space of the organisation, which consequently appeared instead 'as a nodal point of momentary contact' (Johns & Hall 2020: 25).

Thus, in a sort of dialectical movement between theory and empirical work, the scarce evidence of Fablab Torino as an innovative workplace and the more general lack of productive activities demanded a critical approach towards the actual correspondence between the descriptions of Makers as a relevant economic phenomenon and the case investigated. The inconsistency between, on the one hand, the descriptions of the phenomenon provided by both the mainstream literature and the first studies in social sciences on the topic and, on the other, the specific case I was investigating triggered a reformulation of the research question. Therefore, rather than asking which kinds of transformations Fablab Torino and its Makers represented for Turin's urban economy, the

research focus shifted to the relationship between the description of Makers and Fablabs as innovative subjects and spaces of contemporary (urban) economies and the contingent, situated evidence of a specific Fablab. In other words, the research question became: How do the spaces and practices of Making become (or, eventually, fail to become) a relevant economic transformation, corresponding to the autonomous, highly digitalized production of physical artefacts enabled by sharing practices and the collaboration of communities of peers? And how does a Fablab become a space for open innovation, collaborative economy, and democratized (eventually, entrepreneurially oriented) production?

Theoretical Framework: How Economics Performs the Economy

Considering both the rise of Fablabs as collaborative spaces for digital fabrication and the individual practices constituting customized and autonomous production, the phenomenon has been read as part of a broader transformation in the economy, merging the increasing openness and accessibility of knowledge and tools of production with the rise of the entrepreneurial self as the contemporary form of *Homo economicus*. Moreover, as discussed in section 2, the academic literature that investigates the spatialities of the new form and organisation of production fostered by Makers and Fablabs assumes that they represent important economic transformations in urban economies in the era of digital capitalism, thus identifying ‘the city’ as the exclusive spatial dimension to refer to in conducting a geographical analysis of the phenomenon.

However, as the previous section illustrated, the first evidence from the field showed that the discourse that portrays Fablabs as sites of open innovation and sharing economies could not be seen as a mere description of the place-based practices performed by the Makers attending a specific Fablab, since the reality investigated does not always fit these definitions.

An alternative theoretical approach, developed in the field of economic sociology and then adopted by economic geography, allows to understand the role played by economic discourses and theorisations differently. This approach to the relationship between economic theories and economic phenomena derives from the performative programme in economic sociology, inspired by the work of Michel Callon (1998). Theories on economic performativity contend that ‘economics, in the broad sense of the term, performs, shapes and formats the economy, rather than observing how it functions’ (Callon 1998: 2). In other words, the way the economy functions is *performed* by economic theories, rather than being described by them.

This body of work is inspired by the tradition of Actor-Network Theory (ANT), specifically by its emphasis on socio-technical networks as the locus of agency and the refusal to consider the relation between theoretical constructs and the reality they refer to as one of representation (Callon 1986, 1987; Latour

2005). The semiotic understanding of agency developed by ANT views an actor in relational terms, as an *actor-network* whose coming into being depend on the material ordering established among the heterogeneous entities that constitute the network itself. The agency of an actor-network is therefore distributed among different human and non-human actants.

In line with that, performative understandings of economic theories read the relationship between economic descriptions and the economy as practice in terms of performance and enactment, claiming that economic discourses materialize into complex socio-technical systems (*agencements*) that enact those theories, that is, that make those theories true. Practices and socio-material arrangements consisting of buildings, devices, texts, rules, human agents, etc. make the economy (Mitchell, 2008); that is, they make specific economic entities emerge through a *performativity* process (Callon 2007) that aligns humans and non-humans (Callon 1986, 1987) in actualizing the world described by theories. In ANT's vocabulary, this corresponds to a process of *translation* (Callon 1986), through which heterogeneous entities are enrolled into an actor-network that assigns roles to them, producing specific socio-material orderings. The successful enrolment of all the entities allows the stabilization of an actor-network (or *agencement*).

When it comes to the translation of economic theories into concrete economic subjects and organizations, the socio-technical arrangements through which they are enacted are made also of specific non-human entities such as rooms, spatial configurations, and tools (Beunza & Stark 2004; Garcia-Parpet 1986/2007). Indeed, a branch of organizational studies and cognate research in the geography of organizations argue that organizations represent typical economic *agencements*, and organizing processes are crucial components of the *performativity* process, highlighting how organizations come into being also as the result of a complex array of socio-material and spatial practices. An organization is therefore 'a sociomaterial accomplishment, in which things – whether mundane such as partition walls or complex such as software – often provide the cohesive glue to make organizational arrangements durable at least for some time' (Müller 2015: 305).

Framing Fablab Torino as a Space for Open Innovation and Collaborative Production

As anticipated, the history of Fablab Torino started in a temporary exhibition on the future of work. The decision to build a Fablab as an example of the evolution of work and production was strongly influenced by the mainstream, US-based discourse on Makers and Fablabs that represents them as harbingers of an economic revolution.

When [the tech-magazine] Wired Italia was launched and Riccardo Luna became the director, he came to Milan and asked people to be

introduced to someone who was doing something ... So, he said to Chris Anderson, *Wired America's* editor-in-chief: but we're doomed in Italy, there's no innovation! And he replied: are you kidding? Don't you know Massimo Banzi and Arduino? ... So, Riccardo was asked to organise the exhibition for the 150th anniversary of Italy in Turin and he asked me to collaborate for the part on the future of work ... I said: let's build a Fablab there! But it cannot be something where people go and there's a turned-off 3D printer and that's all. We should have something alive!' (Interview with Massimo Banzi, CEO of Arduino, December 2017)

In this narrative of Fablab Torino's origins made by one of the main figures of its foundation, the active role played by specific economic theories in the decision to build a Fablab is apparent. This discourse was firstly moved from the US to Turin via some *intermediaries* (Latour 2005) constituted by the exhibition and two key persons who were variously connected to the sites where theories about the potentialities of Makers for the economy were developed. One of these people, Massimo Banzi, was already familiar with the Maker Movement thanks to his experience in the US, where he used to attend the first fairs of Makers, described by him as a moment that was 'needed mainly by us, to count us as Makers'. In particular, when a permanent Fablab was built after the exhibition, the idea inspiring Banzi was to foster a community of Makers as a sort of external R&D for Arduino,¹ as he explains in the interview: 'I wanted to build a community. Cause I wanted to have a space where ... actually, in the past, we [Arduino] did manage to glean from the Fablab culture to look for people who could do things.' Thus, Fablab Torino was conceived and designed as an organisation responding to the principles of open innovation, according to which amateurs that have access to material and immaterial tools of production and knowledge could be incorporated into the innovation process.

The other founder, Riccardo Luna, had a crucial role too, being at that time the director of the Italian branch of the tech-bible *Wired*. Indeed, the magazine represents an important example of the large plethora of subjects that nowadays 'make the economy' by producing economic discourses and theories. As stressed by Barry and Slater (2002: 189–190), economic theories and discourses are no longer produced exclusively by academic economists; they are also the outcome of the work of regulatory institutions, public debates and non-scientific magazines such as *Wired*, in which non-economists too contribute to defining the changing shape of the economy. Thus, the role of the director of a specialized magazine such as *Wired* is indeed crucial for the diffusion and reproduction of theories on Makers that frame them as innovators, empowered

¹ Retrieved from: <https://www.youtube.com/watch?v=4F0BrhVLDQQ>. Last access: 25 April 2021.

by a facilitated access to tools that enable the production of immaterial and material artefacts.

There's something different, something that has changed. Today ... we can do a lot of things by ourselves. We can make a website by ourselves; we can make an app by ourselves, we can make a cup, we can start a business ... Today that the means to produce objects or bits have become so less expensive and easy to use, the barrier of entry to put us to the test and do something by ourselves has become a lot lower ... The ones who are now changing the world are [people like] a hacker from a basement in Brooklyn. (Riccardo Luna at the event Giovedì Scienza – La Terza Rivoluzione Industriale, Turin, 23 January 2014)²

Notably, *Wired* magazine and, more generally, the kind of 'economists at large' (Callon, 2009) connected to it, provide the economics background that also inspired future interventions performed at Fablab Torino on what a Fablab is, in which ideas about open innovation and customization were backed up by concepts such as the third industrial revolution and democratic access to the means of production.

We used to buy games, now we build them, we make them in 3D ... here's my son, he took this toy car and added a star on it. From that moment, the car became his car, it became customised ... This has been defined as the third industrial revolution. As you can see easily from this cover of *The Economist*, it is a revolution where you have direct access to the means of production ... In this book by Rifkin, he deals with the topic more holistically: it's also a revolution of democracy, of trade ... This is the title of a book that Chris Anderson wrote in 2012, *The Long Tail*, a book that I warmly suggest you read. (Fieldnote, member of the Fablab board delivering a speech for a school visiting the space, February 2017)

Summing up, through the 2011 exhibition and the circulation of non-human intermediaries represented by dedicated books and magazines, the Fablab model was introduced in Turin (and in Italy) as an example of the trajectory that the economy and the nature of work and production were about to take. A new socio-technical arrangement was built through, on the one hand, the assemblage in the same place of innovative digital machines that constituted a sample of Fablab and, on the other, the framing of these pieces of machinery as part of a transformation in production and work, thanks to the circulation of economic theories on the role of sharing and collaboration in innovation

² Retrieved from: <http://www.giovediscienza.it/old/modules/conferenze/article.php?storyid=11>. Last access: 14 August 2018.

processes, the increasing relevance of digital fabrication, and the democratization of production.

Enacting: Alignments (and Misalignments) in Organizing a Space for Open and Collaborative Production

Theories on open innovation, sharing economy, the changing role of the consumer and self-entrepreneurialism clearly framed the organizational structure and mission of Fablab Torino. According to the intent of one of the founders who was already part of the US-based Maker Movement, Fablab Torino should have been a space where people with different backgrounds, interests, skills and levels of familiarity with digital fabrication and Arduino could meet and experiment together.³ Therefore, in line with the abovementioned economic tenets, the main features of the space should have been great accessibility to the space itself, free encounter between users and producers of Arduino, and provision of open access to various digital fabrication machines not only to work but also to experiment in a playful way. These three features were inscribed in the material constitution of the space itself, thanks to some non-human entities that took part in the creation of an *agencement* of open innovation and commons-based peer production.

Specific spatial practices of organizing were put in place, aimed at the facilitation of networking in order to foster open innovation (cf. Lorne 2019), thus performing the serendipitous encounter not only between people working in different sectors but also between professionals and amateurs. Starting from the inner architecture, the premises of the Fablab are connected with both the ones of the coworking space and the room on the second floor occupied by a start-up that used to be the research branch of Arduino. This spatial organization aimed at creating a material connection between the two main business actors participating in the creation of the Fablab. Indeed, this double connection would have spatially enacted both the concept of open innovation and the basic tenets of the collaborative economy, thanks to the facilitated flux of knowledge and information but also material instruments among the various communities inhabiting the building.

According to the performativity theory, one of the most important aspects of making the economy is constituted by the creation of new organizations whose physical space's characteristics have inscribed within them the kind of actions and interactions described by economic theories (Garcia-Parpet 2007).

³ <http://ed2013.makerfairerome.eu/2013/06/25/che-cosa-vi-siete-persi-a-innovazione-dal-basso-e-arduino-camp/>. <https://www.businessadvisor.it/notizie/wbf-news/massimo-banzi-arduino-e-le-officine-nuove-idee-e-prodotti>. Last access: 15 March 2019.

Fablab's walls, desks, and doors participated in organizing a space that performed the unprecedented falling of the boundaries that used to separate consumers and producers. This distinction had to be substituted with the reference to an ill-defined idea of 'community', which the spatial configuration of the organisation aimed at performing. In the original idea of the Fablab creators, spaces for learning, spaces for production and spaces for business had thus to be entangled for the opening up of production to be obtained. Indeed, a Fablab is not only conceived as a space for production but also as a space where knowledge is freely shared in a horizontal way in order to foster innovation. Thus, a room was specifically devoted to workshops.

However, over the years, the architectural design of the space has jeopardized the enactment of an open form of innovation through unpredictable spatial and temporal practices. Besides the clear obstacle represented by the fact that most of the Fablab members use the space after the coworking's closing hour, the material artefacts and the technologies in charge of creating an organizational arrangement enabling the free encounter between people using the coworking space and the Makers actually fail. The coworking space is separated from the Fablab premises by a big empty room, employed as an occasional garage for loading and unloading. No sign indicates the directions for the coworking, and the fact that the Fablab has an independent entrance sometimes leads newcomers to be to unaware of the very presence of the coworking space. Even more strikingly, sometimes the fact of being under the same roof makes the materiality of the two spaces – i.e., furniture, utilities, cleanliness, and level of care – a source of comparison, which undermines the identification of Fablab Torino as an organisation suitable for working on a project.

Gregorio asks me to go for a coffee at the coworking space ... 'They [the coworking's management] did a great job with the space! And this relaxing area ... I like it a lot!'; me: 'Um ... but you have one too, at the Fablab'; Gregorio laughs: '... I don't like that ... It's too ... meagre'. Fablab's relaxing area is actually constituted by two leather armchairs and a sofa, the three of them all evidently second-hand and marked by wear and tear. (Fieldnote, October 2017)

I visited a Fablab in Porto. It's kind of an ex-firm ... the furniture is not very different from ours, very meagre ... even if it's much cleaner and more orderly, with many more tools ... But they're still wooden axes with nails, with the drill inserted on it, that is, that's the drill-holder. It's very functional, let's say. Low budget. But ... but it looks like a space that works, where there is someone with an idea ... with entrepreneurial interests. (Interview with Vincenzo, Maker, November 2017)

DIY furniture was conceived as a crucial and symbolic component of the organization. A cloud-shaped open-source toilet paper holder, 3D printed tap

handles, tables, and laser-cut speakers belong to a specific design style that performs the paradigm of openness and collaboration. Together with some artefacts on display that were fabricated at Fablab Torino in recent years, DIY furniture contributes to actualizing the democratization of production. Notably, the entanglement between artefacts and practices of display aims at eliciting inspiration through imitation, thus producing an arrangement of open production in which artefacts directly affect Makers and translate into visible, material form Gershenfeld's motto on digital fabrication capacity to allow people 'to make almost anything' (Gershenfeld 2005).

Nevertheless, when the basic provisions of the space become intertwined with a diminished functionality, the net result is the organisation failing in being perceived and attended 'like a space that works', as complained by Vincenzo. Indeed, digital fabrication itself is undermined by the misalignment of some non-human entities, as the frequent breakdowns of both machines and the heating system and a general negligence towards shared tools exemplify.

When they laugh, a puff of smoke comes out of their mouths. We all wear scarves and wool hats. 'Come on, let's finish! I want to go back to my desk [N/A at the coworking space], it's freezing!' (Fieldnote, January 2017)

If you go there, you won't find pliers. A hammer? Forget about it! Screwdrivers properly working? Extremely rare!' (Interview with Tiberio, Maker, May 2017)

While sometimes the performance of a democratized production may go adrift due to some 'glitches' in the internal socio-spatial processes of organizing, it could also result in a 'misfire' (Callon 2010), that is, a partial *performativity*, when a proper arrangement to guarantee accessibility fails to emerge. Indeed, while Fablabs and Makerspaces have been considered in the literature parts also of the so-called 'access-based economy', the way this access gets to be assured is usually overlooked.

On the wall next to the door there's an intercom with the names of the various organisations hosted in the building. The sign 'Fablab Torino' is barely readable. No other signs outside help the newcomer ... Laura, a newcomer, suggests to better signal it. Adriano, laughing 'Yes, it's kind of an intelligence test!! Like: if you manage to get here ...' (Fieldnote, November 2016)

An automated door-opening system was developed in the early years of the organization and then continued to be implemented, inscribing into the material artefact a particular social order, and delegating to the technology the accomplishment of a task (i.e., assuring the accessibility of the space in order

to allow people to self-organize and self-manage their productive activities). This system should represent an important factor in performing self-organized production, enacting the Fablab as an organization that takes part in a new economic model in which everyone can have easy access to the means of production. However, the delegation to a non-human agent does not always work as expected. Indeed, the automated entrance system of Fablab Torino was frequently out of order.

The misalignment of the automated door paired with the shortcomings in the role of the most important human actant of the Fablab's actor-network, namely the host, and many complaints were raised about the lack of a proper welcome at Fablab Torino, something that is supposed to be at the core of collaborative workspaces.

Other friends have a little bit suffered from this fact ... that nobody is welcoming you, that nobody is curating the human side. (Interview with Michele, Fablab Torino Maker, March 2017)

Indeed, the role of managers and hosts in collaborative spaces is crucial in organizing a space that performs a form of value production based on openness and collaboration (Brown 2017; Merkel 2015). Therefore, when accessibility is poorly enacted, the net result is that some people are excluded from production, thus making the actualization of the so-called democratization of production partially fail.

Conclusion

Fablabs and Makers are portrayed as part of a broader shift in urban economies characterised by the increased autonomy of the individual in producing value thanks to digital technologies and the rise of collaborative and sharing practices. Although these readings may well describe the role of Fablabs in some typical creative cities, the process needed for a Fablab to be part of this transformation as a space of open innovation and collaborative production usually goes unnoticed. In particular, the chapter has stressed how theories on the increased participation of amateurs into innovation processes and collaborative forms of work cannot be adopted as mere descriptions of what a Fablab represents.

Rather than either considering economic theories simply a wrong description of the phenomenon or interpreting as isolated cases the experience of Fablabs whose inner functioning does not correspond to those theories, the chapter has proposed an alternative analytical path. Drawing on the performativity programme in economic sociology and on the poststructuralist stream of geography of organizations, the chapter has shown how economic theories on open innovation and collaborative production were constitutive components of the rise of Fablab Torino as a new economic organization. The role

of two persons belonging to the global network of ‘economists at large’ that frame Fablabs and Makers as part of an economic revolution was crucial in the opening of Fablab Torino as an organization that embodied the future of work and production.

However, the discussion of the empirical findings has also stressed that the actual enactment of what those economic theories describe depends on the role played by all the human and non-human entities that should take part in the coming into being of Fablab Torino as an organization typical of the sharing economy era. Indeed, although specific socio-technical systems were created to perform collaboration, open innovation, and commons-based peer production, some entities failed to align to the network, thus making the performativity process go adrift. As discussed, not only the socio-spatial practices of the Fablab members compromised the enactment of Making as a form of entrepreneurially oriented open innovation. Also, the frequent breakdown of the machines and the very materiality of the space prevented Fablab Torino from performing a reconfiguration of urban spaces of work and production. Thus, the chapter has shown that it is precisely through the acknowledgement of the performative and contingent nature of economies and the possibility of failure in the performativity process that a more nuanced understanding of Fablabs and Makers could be provided.

Concluding, the adoption of a theoretical framework informed by Actor-Network Theory and by the performativity programme in economic sociology and post-structuralist geography has allowed to provide a nuanced understanding of the role of Fablabs and Makers within new urban economies; one that, although not adopting a normative approach that locates the experience of a Fablab within either true or false forms of the sharing economy (cf. Ramella & Manzo 2021), stresses how economic discourse and theories on collaboration and openness variously take part in bringing into being a Fablab in always contingent and uncertain ways.

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