Facilitating creativity and social sustainability: A mission impossible for the management of Fablabs?

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Abstract

Fabrication laboratories (Fablabs) can be perceived as new organizational forms and forerunners in interorganizational collaboration and in the usage of novel technologies. The missions and aims of such organizations often include the fostering of creativity, innovations, economic impact and social sustainability through the promotion of communitarian relationship and collaborative work. Yet, the challenges managers face in facilitating these rather abstract aims is vastly understudied. To address this research gap, we have studied the management of two Fablabs, in Italy and Finland, respectively. Drawing from cultural-historical activity theory, our analysis reveals a complex network of activity systems with contradictions within and between them. To facilitate creativity and social sustainability successfully in new forms of organization, the contradictions need to be recognized by the management. Overcoming the contradictions calls for change efforts and for the development of community and tools that will be shared by the management and other stakeholders.

Keywords: Creativity, social sustainability, contradiction, management, fabrication laboratory
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Introduction

During the last three decades at least, the technological revolution based on digital information and communication technologies has challenged work organizations and production, in businesses and increasingly also in the public sector. This has generated a growing interest among organizational scholars toward studying new organizational forms and work processes (e.g. Engeström, 2008; de Mul, 2011; Lawton-Smith & Bagchi-Sen, 2012). In recent years, as a response to the multifaceted development needs, “a movement” toward new forms of organization, which may be labelled “creative and sustainable” has increased rapidly. An example is the proliferation of the so-called fabrication laboratories (FabLabs), which are easy-access, small-scale, local spaces, workshops or laboratories, operated by researchers, teachers and students and other staff with expertise in entrepreneurship education, novel technologies and digital design.

Recent studies indicate that Fablabs can potentially enable a historical shift from mass production to new forms of creative and socially valuable, technology-supported production, which is perceived as more creative and socially valuable (Maldini, 2014; Maffei & Bianchini, 2015). More specifically, FabLabs have shown their potential in empowering small communities of professionals and amateurs to the collaborative production of smart devices and enhancing open collaboration and self-production. Ideally, they provide a space for facilitating creativity, collaboration, cooperation, intergenerational equity and multi-stakeholder dialogue, which are core ingredients for social sustainability (see Diez, 2012; Celani, 2012; Lawton-Smith & Bagchi-Sen, 2012; Paio et al., 2012; Hatch, 2013; Maldini, 2014; Maffei & Bianchini, 2015). Yet, Fablabs present a rather new and understudied research context. Even less is known about the managerial challenges of facilitating creativity and social sustainability in Fablabs. Further, empirical research on management of interorganizational settings, such as Fablabs, is rare and needed. To narrow this research gap, we studied the management of two Fablabs on university campuses in Italy and in Finland. As our research question, we asked: what challenges do Fablab managers face in the cases studied in Italy and Finland?

In Italy, the novelty of the Fablab in focus stems from it being one of the first FabLabs established on the campus, serving the institutional purpose of providing high-quality education and innovation research. It was established in 2014 by one of the largest Italian universities, with the aim of becoming a vibrant and collaborative environment for sustaining
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innovative projects and collaborative learning. The FabLab under study in Finland, established in 2012, focuses on the enhancement of entrepreneurship via the creation of innovative products, services and start-ups. It is based in a Finnish university city that suffered sudden high rates of unemployment due to the closedown of global telecom giant, Nokia. To explore the managerial challenges of these Fablabs, we have drawn from cultural-historical activity theory, which is a practice-based approach to the study of work and production (e.g. Engeström & Sannino, 2010; Engeström, 1987).

Our analysis makes four contributions. First and foremost, it contributes to research on the management of “new forms of creative organizations”, such as Fablabs. Second, our analysis adds to research on the facilitation of creativity and social sustainability in these contexts. Third, our activity-theoretical analysis provides a new way of conceptualizing the management of new forms of organization the aim of which is enhanced organizational creativity and social sustainability. Fourth, our paper offers ideas for developing practices to manage interorganizational settings, including multiple activity systems and contradictions, better.

Toward collective creativity and social sustainability

New forms of organization, such as Fablabs go further than merely challenging the “traditional” theoretical frameworks on creativity and social sustainability. In the following, we will briefly present previous studies, which have, one way or the other, challenged the traditional frameworks and are thus particularly useful in positioning our study. Some studies (see e.g. Mohrman & Woreley, 2010; Ehnert & Harry, 2012; Docherty et al., 2009; Lifvergren et al., 2009; Kira & van Eijnatten, 2008, 2011) take us beyond the “traditional” view of sustainability which is characterized by instrumental logic, mostly driven by economic concerns, and defined by a low level of exchange and collaboration among different organizational stakeholders. From an expanded view, sustainability can be described as a constitutive part of the ethos and the mission of an organization, whose management is committed to creating multi-stakeholder processes in order to generate societal value, and rethinking the present in order to build a new, common future (see Hemmati, 2002; O’Higgins, 2010).

Social sustainability can be defined as the opportunity to safeguard and develop the internal organizational, human and social capitals through the sustained application of participative policies and practices; prompting equity and justice in human resource management; transparent internal communication; and well-developed training
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and career programs (Ehnert & Harry, 2012). Moreover, social sustainability refers to the responsibilities taken by the organization toward the social community: “A socially sustainable organization gives back to society rather than simply exploiting the resources made available to it and takes some measure of responsibility for externalized costs and free goods” ( Docherty et al. 2009, p. 5). To be socially sustainable, every organizational and managerial practice should be underpinned by certain specific values (Galuppo et al., 2014; see also Kira & van Eijnatten, 2008, 2011; Lifvergren et al., 2009; Porter, 2008; Roloff, 2008).

The previous literature concerning creativity often refers to creativity as a quality and mental property of an exceptional and innovative individual, or as a novel outcome of an individual’s action (see e.g. Amabile, 1997; Ekvall, 1996; West, 1990; Woodman et al., 1993; Sternberg & Lubart, 1999; also, Sannino & Ellis, 2013). Organization scholars taking steps beyond this cognitively oriented and individualist view, have suggested that creativity needs to be considered as a collective phenomenon. For example, according to Anderson et al. (2014, p. 13000) “creativity and innovation at work are the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things. The creativity stage of this process refers to idea generation, and innovation to the subsequent stage of implementing ideas toward better procedures, practices, or products”. Anderson et al. (2014) take a multilevel view and define creativity as consisting of four levels, namely individual level (containing e.g. personality traits, orientation towards learning, cognitive abilities, autonomy), group (e.g. the structure and composition of the group), organizational level (use of knowledge networks, organizational strategy and structure, material and immaterial resources) and integrative level (connections between the previous levels, and various related aspects).

Some previous studies have importantly made efforts to connect the notions of creativity and sustainability, and to facilitate creative processes for enhanced sustainability in practice. For example, it has been stated that creativity is necessary for a sustainable organization, on the one hand, and that sustainability is a trigger to creativity, on the other (Schulz et al., 2017?). Activity theory provides tools for expanding our understanding of complex, historically distinct organizations with different aims and interests and is thus particularly useful for studying creativity in connection with social sustainability in new organizational forms such as Fablabs. Our study adds to the previous research by taking a collectivist view of creativity and a holistic view of social sustainability, emphasizing the intertwinment of creativity and sustainability.
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We draw from activity theory, which has added to the literature stressing collective and collaborative process of creation. In this view, culture and communities of actors with different understandings (novices and experts) play a central role in contributing to creative knowledge-creating practices with novel outcomes (Hakkarainen et al., 2013). Exceptionally, activity-theoretical and sociocultural studies connect creativity and learning, viewing creativity as an expansive learning process toward transformation of practices (see Connery et al., 2010; Sefton-Green et al., 2011; Sawyer, 2012; Littleton et al., 2012; Sannino & Ellis, 2013). These studies highlight that in order to produce novel and societally relevant outcomes, creative efforts need to involve multiple activity systems, establishing a dialogue among them (Yamazumi, 2013; Engeström, 2008). From an activity-theoretical stance, creativity can be viewed as involving personal and societal struggles and tensions as well as critical transitions in the complex steps of learning (Sannino, 2013). We stress the importance of collaboration between the various organizational stakeholders, here called activity systems (Engeström, 1987) in creative processes and in the transformation of practices toward social sustainability. In our perspective, creativity and social sustainability stand not for something that organizations have, but rather for something that organizations are. We view social sustainability as a joint creative endeavor of a complex network of interrelated and interdependent stakeholders, here called activity systems aiming at co-constructing shared values and socially useful and sustainable outcomes.

Methodology

Data and data collection

Our data consist of 20 semi-structured and video-recorded interviews of Italian and Finnish Fablab managers. We followed the principles of narrative interviewing (Czarniawska, 2004), where the narrative accounts are understood not as carrying “the whole objective truth”, but rather are co-constructions of the interviewee and the interviewer (Kajamaa, 2011a).

In Italy, ten interviews ranging from 60 to 90 minutes were conducted with the managers, namely three founders (the Head of Department, the Laboratory Scientific Director, the Laboratory Manager) and seven collaborators (PhD researchers involved as tutors of the new-born community of students). In the Finnish case, ten interviews (of about 120 minutes) were conducted
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with the managers of the Fablab. Four of those interviewed were involved in project management (Fablab is funded as a project) and six were employees in other managerial positions within the Fablab. In both contexts, the interview questions addressed the founding, missions and the evolution of Fablab activities, as well as the success and challenges experienced by the management. All of the interviews were transcribed verbatim by a professional transcriber. We conducted the analysis in the original languages (Italian and Finnish) and we translated the quotes we have presented in the findings section.

To note, we carried out participant observation of Fablab activities and meetings in both countries, over several months, involving managers and staff members (students, researchers, teachers and managers/founders). This reflexive ethnography (see Liberati et al., 2015) supported our interpretations based on a limited number of interviews.

Methods of data analysis

We have applied an exploratory case study method (e.g. Hartley, 1997; Yin, 2009). The case study method is well suited for this study as it embraces the importance of the establishment of a close relationship between the researcher and the research site. We chose to apply narrative analysis, which has proved to be especially useful in revealing managers’ experiences in creative organizational processes (Edwards & Thompson, 2013). With the aim of deepening our analysis of the managerial challenges, we reviewed previous activity-theoretical studies that had conducted analyses of dilemmas, conflicts, disturbances and contradictions (Engeström, 1987; Virkkunen, 2006; Sannino, 2008; Engeström & Sannino, 2011; Kerosuo, 2011). As our first analytical step, the managers’ narratives were depicted from the transcripts by following an inductive and thematic approach (Miles et al., 2014). For this, we first engaged in close and iterative readings of all the interview data and started to extract narratives relevant to our research question from the data. In extracting the narratives, the interviewees’ experiences were organized into sequences with beginnings, middles and ends (Czarniawaska, 2004; also, Ricoeur, 1984; Kajamaa, 2011a). We gave the singular narratives codes, looked for connections among codes, and progressively then clustered the codes in emerging main themes.

We then focused on further analyzing the parts of the transcripts in which the interviewees described the challenges related to the management of the Fablabs. Inspired by activity theory, and especially Engeström’s (1987) typology of contradictions, we
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traced (a) primary, (b) secondary, (c) tertiary and (d) quaternary contradic-
tions, possibly appearing (a) within each element of the activity system, the second (b) between two elements of an activity system (e.g., between a new object and an old tool), the third (c), between the object/motive of the prevailing activity and the new activity that is being developed, and (d) in parallel with the generalization of the new activity between the new ac-
tivity and its neighboring activities. The findings section of this chapter integrates the results of our thematic analysis (focused on challenges) and the activity-theoretical interpretations of these.

Challenges managers faced in facilitating activities in the studied Fablabs

In both the Italian and Finnish Fablabs, the managers we interviewed faced three main challenges. These are presented next, with illustrative quotes selected from the interview data. The interpretation has been inspired by the activity-theoretical typology of primary, secondary, tertiary and qua-
ternary contradictions (Engeström 1987).

1) An open organization versus a hierarchical institution

A prerequisite and core aim of the establishment of both of the Fablabs studied was to create an open organization for the facilitation of collabora-
tion, creativity and social sustainability. Simultaneously, there was pres-
sure on the Fablab managers for the efficient facilitation of creation of innovations for the market, and for the establishment of start-ups to bring economic growth to the local area. However, the interviewees were also expected to manage the Fablabs by following the educational traditions and efficiency requirements to which the universities owning the Fablabs were subjected to. The following excerpt from an interview of a Finnish Fablab manager illustrates this challenge:

Excerpt 1: The senior managers of the university are developing our activity from the top down. One should see everyone (refers to the Fab-
lab managers, staff and clients) as having interesting ideas. These gen-
tlemen (senior managers) meet and come up with solutions without asking people who know about this activity. Who is the expert here? The senior managers of the universities have no clue about the hub as a whole; they talk about wrong things, they just talk about study credits. We need pedagogical leadership here! Our expertise as educators
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needs to be put to better use to promote co-creation and multi-professional collaboration, to guide others to see issues. But this is not part of the traditional university practice! (Man 1, Finnish case)

The Italian managers experienced this challenge as the FabLab having “two souls”: being an open organization devoted to promoting cultural innovation versus being an institution serving university requirements and students’ educational needs.

Excerpt 2: We have two souls, and this is our challenge: we need to keep them alive in order not to overlook the complexity of our mandate. We have decided to “stay in” academia because we want to be a place where learning and cultural innovation walk together. (Man 1, Italian case)

Despite the many difficulties, the managers in both countries, however, believed in the importance and potential of universities’ collaboration with business and labour markets. Managers justified their decision to stay in the academy as a way of fighting against its traditional culture:

Excerpt 3: We are facing many challenges and one can ask: why didn’t you open the Fablab elsewhere? Because we strongly believe that we can benefit from academia as a place of cultural production; and we also have the ambition of influencing academia’s cultural production, somehow. (Man 3, Italian case)

Excerpt 4: We are brokers and messengers. This hub brings together people, generates start-ups, creates local effectiveness and somehow also manages the organization of this. There is no-one else who can take on this role. No-one else runs this type of a platform. (Woman 2, Finnish case)

In both of our cases, the traditional university practice and culture was also manifested in the role often taken by “the typical” university students participating in the Fablab activities. As depicted in the next excerpt, the students desired to take part in their projects, and the managers felt they needed to force them to engage in collaborative efforts:

Excerpt 5: You know, our “typical students” are often concerned with their professional projects more than with others’ needs and with
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broader cultural or societal issues. We have to force them to participate in the lab’s life, for generating a virtuous cycle in which they improve themselves through improving this place and vice versa. Sometimes students come here, asking us to grant them access and to allow them to do their work here, because of the Fablab facilities. We are trying to fight this instrumental logic! (Man 6, Italian case)

The Fablab managers genuinely wished to facilitate the generation of innovative and community-driven creative innovations and social sustainability, defined by them as societal impact and equitable processes of production and consumption. They were often quite creative in their own strategies for “getting around” the university-imposed constraints, but the opposing requirements created an overall experience for the managers of being without a meaningful solution or a way out. This was a particularly pressing challenge, hindering creativity and social sustainability, and we thus interpret it, preliminarily, as a primary contradiction. It is the contradiction between the creative and entrepreneurial needs of the clients and the need to serve high efficiency and productivity requirements.

2) A sustainable community versus a pathway for individual actors

On one hand, the Fablab managers were expected to build a socially sustainable work community, but on the other, the participants attending the Fablabs were typically members of short-term projects, often without having any responsibility, and using the Fablab as a kind of a “pathway to promote their individualistic aims.

In both countries, multiple actors shared the physical facilities of the Fablab for varying time periods. They were preoccupied with their own projects and used the Fablab facilities without following shared rules, which imposed a heavy workload on the Fablab managers, taking them away from their core tasks: the facilitation of creativity and social sustainability. The Fablab managers in Finland struggled with this challenge in the following way:

Excerpt 6: Some people think this lab is a hotel. In a hotel, you do not have to worry about the cleaning, or if the light bulbs are out or if the color printer runs out; you do not have to take care of the kitchen to make coffee, you do not have to worry about these issues. We do not have any caretakers, we need to take care of everything as a community, to make the community functional. In a hotel, you can fully concentrate
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in your own thing, you do not need to do laundry. You can focus on progressing your own aims. But this is not a hotel or a restaurant in which one is expecting to be served. This we have tried to say to the students and companies. In a restaurant, you are served. This activity requires an active attitude. Active participation is a key to everything here! (Woman 3, Finnish case)

This challenge also greatly pressured the Italian managers. The following excerpts from the Italian case highlight the need for enhanced commitment and responsibility-taking by the Fablab participants, emphasizing that despite the fact that they come from different backgrounds and attend the Fablab for different reasons, and for varying time spans, the Fablab should be a communal organization:

Excerpt 7: People here should be aware of the fact that they share a common house. The machines and tools are also under their responsibility and they need to be working. It is not only a matter of sharing facilities, and regulating turns and rules of use. We need a formal agreement for those who want to work here. They must commit themselves in making this place evolve. This is what makes us pioneers in some sense. The knowledge we share will make this place develop with the people who are here. (Man 2, Italian case)

Excerpt 8: Some students are worried about not finishing their projects in time, because of the time they are asked to spend in working for the Lab. A student for example, has concluded her project and got her degree, but she has not finished testing the printers and writing her report. This was the agreement she made to stay here. Now we need to ask her to come again and to finish what she started, even if this will happen until after her graduation. (Man 3, Italian case)

The Fablab managers in both countries highlighted the importance of students’ motivation and attitude as a crucial factor in the establishment of Fablab teams, as expressed in the following excerpt:

Excerpt 9: The university student teams do not do this (create innovations and start-ups) themselves but with the company, the company needs to be involved. A typical team is multidisciplinary. A company orders a project from us and we need to find and recruit suitable talents
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...and competences for the specific cases. The students’ individual motivation, interests and passion pay a crucial role in this. (Man 1, Finnish case)

Yet, it was hard for the managers to find participants committed to the sustaining of the Fablab community. In trying to overcome this challenge, the FabLab managers tried their best to facilitate creativity and co-creation processes and to promote a socially sustainable organization: a lively community with efforts around objects of common interests. The managers, however, were constantly challenged to meet this aim and creativity was often “reduced” to an individual level.

In activity-theoretical terms, we preliminarily interpreted this as being a secondary contradiction between the different elements of the activity system of the Fablab. More precisely, this contradiction manifested itself in both of our cases between all elements of the activity system: the subjects (i.e. the Fablab managers, university students, and other stakeholders), rules, the division of labour, tools, community and the object of the Fablab activity (i.e., facilitation of creativity and social sustainability toward innovation creation).

3) A holistic interorganizational setting versus separate islands

On the one hand, to some extent, the Fablab managers had succeeded in facilitating collaboration between the participants representing different organizations, such as the universities, firms and the Fablab staff members. On the other hand, the university’s senior management wanted to rule the Fablabs and constantly challenged and even harmed the development efforts of the managers of the Fablabs. The Fablab managers were frustrated about the lack of support from the university senior management toward the need of interorganizational collaboration:

Excerpt 10: I am totally annoyed by the cultures of some of our university’s senior managers. Our knowhow should be used as a tool by them, but there is a problem. There is no discussion between us and the senior managers. I would like to include the top managers in our management team. But they want to hold their discussions only between themselves. They say I should not be in contact with them. I say, damn, what are
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you discussing? We should talk about the activity together!! (Man 1, Finnish case)

The next excerpt illustrates how the university managers, however, constantly directed requests to the Fablab managers. This had led to feelings of loss of motivation and lack of control over one’s daily work among the Fablab managers:

Excerpt 11: We have no say about each other’s doings. If a manager from the other organization (university) says something I cannot say anything, I cannot influence anything! It affects one’s motivation. Some days my time and energy goes into fighting about absolutely ridiculous issues! (Woman 1, Finnish case)

The university management dominating the Fablab managers and the lack of shared rules also concerned the Italian Fablab managers. The conflicts caused by this were often about administrative and legal procedures between the local Fablab managers and the university managers, with constant, top down requests directed to the Fablab. In the Italian case, the managers showed resistance and fought to change the traditions of the academia:

Excerpt 12: Yesterday a colleague from the Department of Design called me and asked if we could help one of her PhD students, who had to print something with a 3D printer. We had to say no. There are plenty of printers and many FabLabs around here, but you have to pay and to queue for using them. We can be seen as an easy solution... I am sorry, but we cannot legitimate all these requests. We cannot accept this “old” logic, based on hierarchy and status issues. We are not a (university) campus facility, we are something more and different! (Man 7, Italian case)

Despite the challenge of trying to identify and justify themselves as “real managers” to the university’s senior managers and administration, the local Fablab managers in both countries seemed to have developed an understanding of the urgent need to enhance multi-professional collaboration to serve their clients better. Creativity seemed then to be a strategic means for creating an enabling learning environment within the FabLabs. They knew they needed to respond increasingly to the clients’ calls for unique, technologically supported, enabling learning and teaching environment or
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an “open organization” in which multiple stakeholders could flexibly come together to form multi-disciplinary teams for joint innovation creation efforts:

Excerpt 13: *This is a place where advanced learning and professional development must be promoted. We can make this place into an environment enabling new modes of teaching and learning, based on peer-to-peer relationships, cooperative exchanges and open access to advanced technologies. Lab members are selected according to their talents and different competencies. For developing their projects, they need each other’s help. Here, they can find all they need for improve themselves and their projects.* (Man 1, Italian case)

In both cases, the Fablab managers, however, experienced the activity as “work in progress” as depicted in the following two excerpts:

Excerpt 14: *It is an on-going process...still work in progress. But we have plenty of ideas in this direction, and we need to implement all these operations before it is too late!* (Man 7, Italian case)

Excerpt 15: *One of the core aims of the hub was to create collaboration between universities and business. This was at first a shared project for developing high-growth entrepreneurship. I then also contacted the municipal business promotion service to include them in the project. A core challenge, still, is to develop a shared understanding of the lab activity.* (Man 7, Finnish case)

In activity-theoretical terms, we preliminarily interpret this challenge as a tertiary contradiction between the object/motive of the prevailing university activity and the new Fablab activity that is being developed. This contradiction manifested itself as resistance to change among the university students and the senior management.

**Discussion and Conclusions**

The aim of the present paper was to explore the challenges faced by managers of new forms of organization like fabrication laboratories (FabLabs). Inspired by cultural-historical activity theory and the typology of different contradictions created by Engeström (1987), we carried out an analysis of interviews of Fablab managers we collected in Italy and Finland. As our
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research question, we asked: what challenges do Fablab managers face in the cases studied in Italy and Finland? Putting creativity and social sustainability to work is a great challenge for management (also Baer, 2012). Our study revealed three main challenges. The first challenge concerns the opposing demands for managing an open organization versus obeying the rules of hierarchical universities. The second, challenge is about the opposing demands of creating a sustainable community versus managing the participants using the Fablab as a short-term “pathway” to promote their individualistic aims. The third challenge concerns the opposition between the need to manage a “holistic” interorganizational setting versus the fact that the different stakeholders wish to stay on their “separate islands”.

We interpreted the first challenge as the most pressing and thus preliminarily wish to call it a primary contradiction of activities in capitalism, which pervades all elements of an activity system and it is a contradiction between the use value and exchange value of commodities (Engeström, 1987). The second challenge, we interpreted as a secondary contradiction between all elements of the activity system of the Fablab activity. The third challenge here is interpreted as a tertiary contradiction between the object/motive of the prevailing university activity and the new Fablab activity that is being developed. Quaternary contradictions were difficult to depict from the data between the new activity and its neighboring activities, such as the partner organizations of the Fablabs, as by the time of our interviews, the Fablab activities had not yet been generalized by and large, but were quite encapsulated to single projects.

In both cases, the notions of creativity and social sustainability were conceived as being contradictory: a twofold interpretation of creativity emerged. It was in fact interpreted through an “inward” perspective, namely as a means of pursuing already established individual and organizational objectives (e.g. educational goals, management objectives, individual projects etc.) in a socially sustainable way. However, there was also an “outward” perspective of creativity, by which it was seen as a fundamental resource to reconfigure individual and organizational objectives, with an orientation to the creation of a collective social impact also outside the space of the Fablab – in other words, a means for promoting a more engaged and “pure” social sustainability. Social sustainability was understood, on one hand, as the cohabitation of different voices and interests, which pragmatically relate to each other in order to pursue certain objectives and goals. On the other hand, it was seen as the integration and reciprocal contamination of plural positions and subjects at different levels
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(individual, organizational and institutional level) in order to generate innovative objectives and goals creatively (see also O’Higgins, 2010; Galuppo et al., 2012).

In both countries, the Fablab managers and the participants (university students, Fablab staff, young entrepreneurs, representatives of firms, university senior management etc.) of the Fablab activities were without explicit organizational structures, community, a clear division of labor and shared rules. The Fablab managers lacked an overall strategy and particular solutions for promoting social sustainability and enabling creativity within and between the historically distinct activity systems, carrying different needs and objects. In many cases, they were not aware of the contradictions characterizing the FabLab activity. Our findings clearly point to the fact that to take the managerial attention away from fighting fires caused by this lack of clarity toward facilitation of higher forms of creativity and social sustainability, there is a need to establish some common frames to create safety, trust, community and order for the participants seeking collaborative partners and aiming for innovation creation. Furthermore, there is the need to seek and develop creative, shared tools (Schulz & Geithner, 2013) or “boundary objects” (see Star & Griesemer, 1989) and boundary breaking actions (also Kajamaa, 2011b) in order to coordinate, develop and sustain the dialogue between multiple stakeholders better, acknowledging their multifaceted, pluralistic and contradictory nature. We suggest that participatory workplace interventions, such as the activity-theoretical “Change Laboratory” (see Virkkunen & Newnham, 2013) can assist new organizational forms (and interorganizational settings) in the explication of contradictions and in the definition of a shared object of the activity. We suggest that in this type of a collective, expansive learning process toward something “that is not yet there” (Engeström, 1987), creativity can be harnessed to feed social sustainability, and vice versa.

It is important to note that our data are quite narrow and are based on interviews. It is a limitation that we did not analyze manifestations of contradictions in the observational data of actual activities of the Fablabs. We wish to highlight that our interpretations of the different types of contradictions emerging are only preliminary. We are currently collecting further data and are aiming to undertake a systematic analysis of contradictions in a larger data corpus. It took as by surprise how strikingly similar the findings based on the interviews are in the Italian and Finnish cases. However, through an analysis of an enlarged data corpus, our aim is to make more profound comparisons of the Italian and
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Finnish FabLab cases to test the validity and generalizability of our findings and to provide in depth information on the FabLab managers across cultural contexts.

Bibliography


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