

## Who talks about collaborative spaces, how, and why

Andrea Ciaramella,<sup>1</sup> Cristina Rossi-Lamastra,<sup>2</sup> Paola Rovelli,<sup>3</sup> Chiara Tagliaro<sup>4\*</sup>

<sup>1</sup>Politecnico di Milano, via Bonardi 9, 20133 Milano;

<sup>2</sup>Politecnico di Milano, Via Lambruschini 4/b, 20156 Milano;

<sup>3</sup>Free University of Bozen-Bolzano, Universitätsplatz 1 - Piazza Università 1, 39100 Bozen-Bolzano;

<sup>4</sup>Politecnico di Milano, via Bonardi 9, 20133 Milano

\*Corresponding author: [chiara.tagliaro@polimi.it](mailto:chiara.tagliaro@polimi.it)

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### ABSTRACT

Communities in urban contexts and firms in corporate offices have recently started to implement collaborative spaces. Several authors from different disciplines are currently advancing knowledge in this realm. Systematizing this diverse knowledge base helps to advance our understanding of this novel phenomenon. To this end, the present work reviews 29 papers focusing on collaborative spaces. We analyse these papers in terms of contents, research methods, fields of study, authors' background, and impact on the academic community. Grounding on this analysis, we outline new relevant research questions and opportunities for future investigations.

*Keywords:* collaborative space; interdisciplinarity.

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### INTRODUCTION

In the past, office work mainly supported the manufacturing function, having paper handling as the main task. Nowadays, office work deals primarily with ideas' generation and exchange (Goodrich 1982). In the economy of yesteryear, workers created value by *doing things*, as described by Michael Porter's classic model of the industrial value chain. Conversely, in today's economy, value creation happens when workers think, talk, and brainstorm (Colpaert, et al. 2014). In so doing, they generate and share knowledge, which currently is the main source of competitive advantage, especially in knowledge-intensive industries (e.g., Palvalin & Vuolle 2016).

Evidence exists that both individuals and groups play a key role in current work environments (e.g., Kämpf-Dern & Konkol 2017) as the new ways of working encompass many collaborative tasks and group activities. On a typical working day, employees spend in collaborative activities roughly the same amount of time that they spend carrying out individual tasks (Tagliaro & Ciaramella 2016). In particular, the time spent by workers in some type of conversation takes up to 50-80 percent of their whole working day. This is in line with the common belief that, by talking together, employees come up quickly with new solutions that probably no single individual could develop alone (Allen 2007).

Moving from these premises, it comes with no surprise that the topic of collaborative spaces has gained momentum. Publicity materials, white papers and grey literature addressing collaborative spaces from different angles are multiplying. Magazines and reports on the

Web diffuse daily the latest news about the implementation of collaborative spaces. For the sake of brevity, we mention here a few renowned examples. *Deskmag* (<http://www.deskmag.com>) is an online magazine available in five languages and focused on co-working spaces. *WoW! Ways of Working* (<http://wow-webmagazine.com/it>) is a Web magazine born in Italy, but available also in English, which focuses on new ways of working, especially for what concerns their impacts on physical spaces. *Harvard Business Review* (<https://hbr.org/>) is a general management magazine, diffused in 13 countries around the world, which occasionally proposes special issues on office spaces (e.g., October 2014 Issue). *Leesman review* (<http://www.leesmanindex.com/leesman-review/>) is an online journal published in English, which broadly debates workplace with particular attention on how office space is supporting employees.

In parallel, academic journals are fuelling scholarly debate on collaborative spaces by publishing an increasing number of contributions on this topic. These contributions position in various research streams, including micro-geography (e.g., Soreson & Samila 2016), epistemic communities (e.g., Cohendet & Grandadam 2010; 2014), collaborative working environments (e.g., Spinuzzi 2016; Olma 2012; Parrino 2013; Laing 2014), knowledge sharing, and innovation studies (e.g., Storper & Venables 2004). In sum, academic research on collaborative spaces appears somehow dispersed, rather inconsistent, and showing blurring edges. In such a context, a systematization of current literature is of paramount importance for

knowledge advancement and identification of opportunities for future research.

To this end, the present work reviews 29 papers on collaborative spaces. We analyse the selected papers in terms of contents, research methods, fields of study, authors' background, and impact on the academic community. In particular, deepening the analysis on the authors that actually approach this topic and on their background provides insights about how the diverse literature streams on the topic relate to each other. Thus, this analysis favours the understanding of what perspectives are emerging and what gaps are worth to fill. Finally, we resort to citation count to assess the impact of the papers on the scientific community.

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## METHOD AND DATA OF THE LITERATURE REVIEW

We identified and collected papers to review via a search process through keywords using both "Scopus" ([www.scopus.com](http://www.scopus.com)) and "Google Scholar" ([www.scholar.google.com](http://www.scholar.google.com)); through the first source we scouted significant scholarly literature, whereas through the latter source we identified relevant working papers. In particular, we chose seven keywords: "collaborative space", "collaborative workplace", "co-working space", "open space working", "open space organization", "open space office", "work in collaborative spaces". On "Scopus", we searched these keywords in the article's title, abstract and keywords, while we made an unrestricted search in "Google Scholar".

By this approach, we found 52 papers published or in press and 15 working papers, spanning the period January 2001-February 2017. Then, two authors independently evaluated the relevance of these papers with reference to the topic of this literature review by basing on their own reading of the abstract and of the entire paper in case of doubt. They considered as relevant the papers that, in line with the keywords used to identify them, explicitly focused on collaborative spaces. Conversely, they excluded papers just mentioning collaborative spaces while focusing on other topics. The outcome of these independent analyses was then compared, and discordant cases were solved by discussing them also with the other authors. In the end, we selected 29 relevant papers for inclusion in our literature review. Of these 29 papers, 21 are published or in press, while 8 are working papers.

We have subsequently examined these papers by assessing the following aspects: i) overview of the papers and of their contents; ii) research methods adopted; iii) fields of study, as proxied by the papers' publication outlets; iv) authors' background; and v) impact on the academic community as assessed by citation count.

Each of these elements is punctually reported on a table collecting the 29 relevant papers, which is provided as a supplementary material because of space reasons.

While discussing the results, we make specific reference to it, thus it is recommended to take a look at this material.

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## RESULTS

### Overview of the papers and of their contents

The papers included in our review span more than 15 years, from 2001 to the beginning of 2017. Noticeably, most papers are very recent. Indeed, only 9 papers appeared in the decade 2001-2010, while 20 papers (69%) appeared between 2010 and the beginning of 2017, suggesting that academic literature has been rapidly growing over the last years. While co-working spaces, open-plan offices, and science parks are increasingly diffusing, academicians have become more and more interested in these spaces. In sum, as aforementioned, academic research accompanies the rise of the phenomenon on collaborative spaces, which has also become apparent in grey literature and reports. From the analysis of the contents of the 29 papers included in the review, we conclude that they revolve around three distinct, but interrelated macro-themes.

The first macro-theme deals with the relationship between collaborative spaces and innovation, not only by firms, but also by communities of practice. The importance of face-to-face interactions for innovation is well-established in the literature (*e.g.*, Storper & Venables 2004). Contributions in this macro-theme acknowledge that collaborative spaces enable these interactions (Soreson & Samila 2016) and, thus, foster innovation. As to the level of analysis, it is observed that spatially bounded patterns of interactions cause new ideas to transit from the informal micro-level of individuals to the formal macro-level of the firm/community (*e.g.*, Cohendet & Grandadam 2010; 2014). In addition, this stream champions the idea that epistemic communities play a crucial role in developing creativity and radical innovation. The same macro-theme includes an interesting case of successful implementation of spaces that fosters experimental innovation, *i.e.* an open day workshop organized by a video game firm in collaboration with artists and creators working in the local visual arts field (Cohendet & Grandadam 2010).

The second macro-theme partially overlaps to the former one, despite showing distinct traits. Indeed, it focuses explicitly on individuals' behaviours in collaborative spaces and on the possible outcomes (apart from innovation) of these spaces. Works in this macro-theme conceive collaborative spaces as areas where individuals with heterogeneous backgrounds and/or assigned tasks are co-located and thus can interact and network their respective activities. In particular, these work environments enable to alternate concentrative work, collaborative work, and social activities (Spinuzzi 2016; Olma 2012; Parrino 2013; Laing 2014). Studies in

this second macro-theme mainly examine the outcomes of two types of collaborative spaces: co-working spaces and corporate offices. Contributions on co-working spaces analyse mainly community building within co-working spaces and the effects of their presence on local economies (Merkel 2015; Russ & Orel 2015; Capdevilla 2015). Studies on corporate offices instead explore the relations between office design and firms' performance.

The third macro-theme is transversal to the former ones and focuses on knowledge sharing inwards and outwards the work environment. When referring to the corporate environment, studies in this realm usually relate (inwards and outwards) knowledge sharing to measures of functional distance such as proximity (Catalini 2015), paths overlap (Kabo, et al. 2013; 2014), accessibility, visibility, and intelligibility (Fabbri & Duboc 2013). When dealing with communities and local environment, these studies analyse how the presence of collaborative spaces, such as hubs and co-working spaces, in an urban area enable (inwards and outwards) knowledge sharing in that area (Fabbri & Duboc 2013; Capdevilla 2015; Rammer, et al. 2016; Rosenthal & Strange 2005).

### Research methods

One can evaluate the state of maturity of scientific research on a topic by observing whether scholars investigate the topic itself mainly through qualitative or quantitative methods (*e.g.*, von Krogh, et al. 2012). More specifically, scholars resort to qualitative methods in initial stages to grasp insights on the phenomenon and on its most relevant variables. Quantitative research comes later to test relations among the most relevant variables. Coherently, we analysed contributions by classifying them depending on the fact that they adopt qualitative or/and quantitative research methods. In line with the emerging nature of research on collaborative spaces, we found that 48% of the papers in our literature review adopt qualitative research methods. Besides, 22% rely on both the approaches (*i.e.*, mixed methods), whereas only 30% apply exclusively a quantitative methodology.

More specifically, quantitative analyses on collaborative spaces investigate either "space variables" or "human variables". For instance, studies on research offices and science parks tend to focus on space variables, which regard physical distance/proximity, overlapping paths, accessibility, number of collaborative spaces, and building layouts. Papers addressing knowledge sharing in collaborative spaces generally consider human variables such as tendency to collaborate, individuals' creativity, frequency of face-to-face interactions, social integration, and productivity. Intuitively, our analysis confirms that authors who use space variables mainly come from an architectural or design background, whereas authors with a background in sociology or economics tend to focus on human variables.

### Fields of study

As aforementioned, almost one third of the articles included in the literature review are unpublished working papers. The 17 publication outlets of the 21 published (or in press) papers, instead, confirm that collaborative space is an interdisciplinary topic, which attracts the interest of scholars from two main fields: *economics and management* and *geography and environmental planning*. Specifically, 12 of these papers are published in 10 different economics and management journals, while 9 papers are in 7 geography and environmental planning journals.

Distribution of publication years in economics and management journals and geography and environmental planning ones shows that the interest on collaborative spaces developed almost in parallel in the two fields. As expected, working papers appeared instead in the last five years, from 2013 up to 2017. Basing on a preliminary analysis of their contents, it seems that they belong to both the fields of study.

### Authors' background

The 29 papers included in our review are authored by 55 scholars. The number of co-authors varies from one to five and, on average, papers are co-authored by two scholars. Just 8 authors are involved in more than one paper (*i.e.*, in two papers each).

Most of the authors are affiliated to European universities (70%), whereas 30% are based in North America. Specifically, countries of affiliation include Austria, Canada, Finland, France, Germany, Greece, Italy, Singapore, Slovenia, South Korea, Spain, Sweden, Turkey, UK, and USA.

Authors have various backgrounds, as defined by their affiliation and PhD field (Tab. 1).

**Tab. 1.** Authors' background.

Disciplines	# Papers
Economics	5
Architecture	4
Innovation studies	3
Sociology	3
Architecture, Innovation studies, Sociology	2
Innovation studies, Computer science	2
Entrepreneurship	2
Architecture, Sociology	1
Computer Science	1
Innovation studies, Design	1
Innovation studies, Entrepreneurship	1
Economics, Sociology	1
Engineering, Economics	1
Entrepreneurship, Economics, Engineering	1
Sociology, Economics	1

Backgrounds range from Economics (27 authors – 49%), Architecture (11 authors – 20%), Sociology (8 authors – 15%), Entrepreneurship (4 authors – 7%), Engineering (3 authors – 5%), and Computer Science (2 authors – 4%). Authors with diverse backgrounds sometimes collaborate to the same articles. However, papers whose authors have the same background are still prevalent, totalling 18 contributions out of 29 (60%). We document this evidence in table 1, which reports the authors' scientific background by number of papers.

### Impact on the academic community

To assess the impact of the reviewed papers on the academic community, we refer to the citations' count (see Ghio *et al.*, 2015 for a similar approach), which we retrieved on "Scopus" (or on "Google Scholar" in case of working papers). Unsurprisingly, the most cited papers are also the less recent ones. These deal with macro-themes one and three. Moreover, the three most impactful articles are published in economic journals (Dicken & Malmberg 2001; Löfsten & Lindelöf 2002; Phan, *et al.* 2005).

The less cited articles are instead those concerning the (architectural) design of spaces for collaboration, which is a very new research stream. The limited number of citations may also depend on the fact that architecture is a practical-oriented discipline, which is traditionally less concerned with scientific dissemination. Moreover, architecture responds to the needs for certain human actions to find proper accommodation. Therefore, the design of collaborative spaces and the related discourse often come after collaborative activities have been established in practice.

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## DISCUSSION AND CONCLUSIONS

Our literature review highlights the need for an interdisciplinary approach to the study of collaborative spaces that features their definition, organization, planning, and outcomes. The specialized approach, which traditionally characterizes scientific research, indeed allows interpreting just some dimensions of the phenomenon, not taking a sufficiently broad vision. However, (inter-disciplinary) research on collaborative spaces is still in its infancy and leaves ample room for further investigations in experimental settings like IdeaSquare. For the sake of brevity, we cite here just few lines of potential investigation, in a random order.

First, a widely accepted definition of collaborative spaces is still missing. The term "collaborative spaces" takes on different meanings, linked to fields of studies and to authors' background. We welcome works, which take stock from current definitions to elaborate a comprehensive definition, which is the starting point for the development of a shared language among scholars interested in the topic.

Second, scholars currently address relationships between collaborative spaces, behavioural aspects, and organizational models from different points of view. We acknowledge that understanding these relationships is crucial for knowledge advancement and invite researchers to go deeper into these aspects. For instance, it would be important to unearth linkages between design choices, individual and organizational needs, and individual and organizational performance. In addition, it would be interesting to analyse in-depth experimental innovation experiences that remain marginal in the present literature review. In order to explore these topics, we suggest revising and expanding the keywords that we have chosen, since they demonstrate not to be sufficient for embracing such contents.

Third, we need to reflect on how to develop educational programs, which provide students with the competences for designing and organizing collaborative spaces. The discourse on education is missing in the current literature and this is a major shortcoming in face of the increasing diffusion of collaborative spaces.

Forth, as the literature is rapidly evolving, we need to keep it constantly updated. In our view, such updates may require to change the set of keywords in response to evolution of scholarly language on the topic. Moreover, it may occur by starting from general keywords, such as "creativity" and "innovation", and checking whether there are papers that consider collaborative spaces among the key antecedents and/or outcomes.

Finally, we assess the impact considering citation count. This approach is rather established in the literature. However, future reviews may refine this measure considering, for instance, the quality of the journal in which the citing papers are published (*e.g.*, through the impact factor) or the speed at which citations accumulate over time.

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## SUPPLEMENTARY MATERIALS

A separate table is available containing all the information related to the 29 papers included in our review, *i.e.* authors' names, year of publication, title of the paper, journal, fields of study, research methods, authors' nationality, authors' background, number of citations.

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Author(s)	Year	Title	Journal	Field	Research methods	Nationality	Background	Citations
Avdikos V., Kalogeris A.	2017	Socio-economic profile and working conditions of freelancers in coworking spaces and work collectives: evidence from the design sector in Greece	Working paper	-	Qualitative	Greece	Architecture	0
Backman M., Palmberg J.	2015	Contextualizing small family firms: how does the urban-rural context affect firm employment growth?	Journal of Family Business Strategy	Economics and management	Quantitative	Sweden	Economics	1
Brown G.	2009	Claiming a corner at work: measuring employee territoriality in their workspaces	Journal of Environmental Psychology	Geography and environmental planning	Qualitative, Quantitative	UK	Sociology	29
Capdevila I.	2014	Co-working spaces and the localised dynamics of innovation in Barcelona	International Journal of Innovation Management	Economics and management	Qualitative	Spain/Canada	Economics and innovation	1
Catalini C.	2015	Microgeography and the direction of inventive activity	Working paper	-	Quantitative	Italy/USA	Entrepreneurship	0
Cohendet P., Grandadam D., Simon L.	2010	The anatomy of the creative city	Industry and Innovation	Economics and management	Qualitative	France/Canada	Economics and innovation, Computer science	38
Cohendet P., Grandadam D., Simon L., Capdevila I.	2014	Epistemic communities, localization and dynamics of knowledge creation	Journal of Economic Geography	Geography and environmental planning	Qualitative	France, Spain/Canada	Economics and innovation, Computer science	58
Danielsson Bodin C., Bodin L.	2009	Difference in satisfaction with office environment among employees in different office types	Journal of Architectural and Planning Research	Geography and environmental planning	Qualitative	Sweden	Architecture	28
Dicken P., Malmberg A.	2001	Firms in territories: a relational perspective	Economic Geography	Geography and environmental planning	Qualitative	UK, Sweden/Sweden	Economics	273
Fabrizi J., Charue-Duboc F.	2013	The role of physical space in collaborative workplaces hosting entrepreneurs	Working paper	-	Qualitative	France	Economics and innovation	0
Feldman M.P.	2014	The character of innovative places: entrepreneurial strategy, economic development, and prosperity	Small Business Economics	Economics and management	Qualitative	USA	Entrepreneurship	21
Fuzi A., Clifton N., Loudon G.	2015	New spaces for supporting entrepreneurship? Coworking spaces in the Welsh entrepreneurial landscape	Working paper	-	Qualitative, Quantitative	UK	Entrepreneurship, Economics, Engineering	0
Gertler M.S.	2003	Tacit knowledge and the economic geography of context, or the undefinable tacitness of being (there)	Journal of Economic Geography	Geography and environmental planning	Qualitative	Canada/USA	Architecture	2
Kabo W.F., Hwang Y., Levenstein M.C., Owen-Smith J.	2013	Shared path to the Lab: a sociospatial network analysis of collaboration	Environment and Behavior	Geography and environmental planning	Quantitative	USA, South Korea	Architecture, Economics and innovation, Sociology	0
Kabo W.F., Cotton-Nessler N., Hwang Y., Levenstein M.C., Owen-Smith J.	2014	Proximity effects on the dynamics and outcomes of scientific collaborations	Research Policy	Economics and management	Quantitative	USA, South Korea	Architecture, Economics and innovation, Sociology	7
Kojo I., Nenonen S.	2014	Evolution of co-working places: drivers and possibilities	Intelligent Buildings International	Geography and environmental planning	Qualitative	Finland	Economics and innovation, Design	0
Löfsten H., Lindelöf P.	2002	Science parks and the growth of new technology-based firms - academic-industry links, innovation and markets	Research Policy	Economics and management	Quantitative	Sweden	Economics	160
Merkel J.	2015	Coworking in the city	Ephemera - Theory & Politics in Organizations	Economics and management	Qualitative	Germany/UK	Sociology	0
Ollila S., Elmquist M.	2011	Managing open innovation: exploring challenges at the interfaces of an open innovation arena	Creativity and Innovation Management	Economics and management	Qualitative	Sweden	Economics and innovation	15
Phan P.H., Siegel D. S., Wright M.	2005	Science parks and incubators: observations, synthesis and future research	Journal of Business Venturing	Economics and management	Qualitative, Quantitative	USA, UK/USA	Engineering, Economics	214

Author(s)	Year	Title	Journal	Field	Research methods	Nationality	Background	Citations
Rammer C., Kinne J., Blind K.	2016	Microgeography of innovation in the city: location patterns of innovative firms in Berlin	Working paper	-	Quantitative	Austria, Germany	Economics	0
Rosenthal S.S., Strange W.C.	2005	The geography of entrepreneurship in the New York metropolitan area	Economic Policy Review	Economics and management	Quantitative	USA, Canada/USA	Economics	20
Rus A., Orel M.	2015	Coworking: a community of work	Working paper	-	Qualitative	Slovenia	Economics, Sociology	1
Samila S., Sorenson O.	2016	Community and capital in entrepreneurship and economic growth	Working paper	-	Qualitative, Quantitative	Finland, USA/Singapore	Economics and innovation, Entrepreneurship	17
Spinuzzi C.	2012	Working alone, together: coworking as emergent collaborative activity	Journal of Business and Technical Communication	Economics and management	Qualitative, Quantitative	USA	Computer Science	47
Storper M., Venables A. J.	2004	Buzz: face-to-face contact and the urban economy	Journal of Economic Geography	Geography and environmental planning	Quantitative	UK	Sociology, Economics	3
Tagliaro C., Ciaramella A.	2016	Experiencing smart working: a case study on workplace change management in Italy	Journal of Corporate Real Estate	Geography and environmental planning	Qualitative, Quantitative	Italy	Architecture	0
Toker U., Gray D.O.	2008	Innovation spaces: planning and innovation in U.S. university research centers	Research Policy	Economics and management	Quantitative	USA, Turkey/USA	Architecture, Sociology	41
Tynjälä P., Häkkinen P., Hämäläinen R.	2014	TEL@work: toward integration of theory and practice	Working paper	-	Qualitative	Finland	Sociology	8