

## Innovating onsite or coordinating online? An exploration of how knowledge practices shape the onsite and online collaboration interplay across the lifecycle of collaborative communities

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### ABSTRACT

This paper inquires about how collaborative communities configure online and onsite collaboration practices throughout their lifecycle, paying specific attention to how knowledge practices and online-onsite collaboration practices interplay. While previous literature shows that the same online and onsite collaboration practices can be both good and bad for an organization's ability to generate new knowledge, we show that this insight can be better understood at the light of an organization's lifecycle. By studying the evolution of a collaborative community of designers, we show that different stages of development afford different types of community structuring, identity processes and knowledge practices, which in turn shape different needs in terms of online-onsite interplay. We contribute to the literature on collaborative spaces by underscoring the importance of considering hybrid workspaces where the interplay of onsite and online collaboration assumes complex and dynamic configurations.

*Keywords: online collaboration, onsite collaboration, collaborative community, collaborative space, knowledge practices, co-creation, new idea generation, coordination, lifecycle.*

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### INTRODUCTION

Recent studies highlighted the role played by collaborative spaces (co-working, social hubs, etc.) in sustaining creativity of individuals, groups, and organizations (e.g. Capdevila 2015; Furnari 2014). The main reason could be traced back to the fact that such spaces favor spontaneous exchange, knowledge generation, and sharing and collaboration among different actors (Spreitzer et al. 2015). More specifically, proximity and physical characteristics of collaborative spaces could facilitate face-to-face interactions and provide a sense of community, thus triggering relational dynamics conducive to creativity (Oksanen & Ståhle 2013). However, studies on open spaces, which often characterize collaborative and creative spaces, provide contradictory results as they demonstrate that open spaces are associated to reduced creativity and increased coordination costs (Fayard & Weeks 2007). Such a mixed evidence therefore provides a theoretical puzzle that calls for further empirical studies. We argue that an enhanced comprehension of these issues cannot be decoupled from a consideration of the latest developments of technology, that could support online interactions, e.g., via email,

instant messaging, ad-hoc collaborative platforms. Creative collaborative spaces are often set up to support R&D groups and collaborative communities (Adler et al. 2011; Benyon & Mival. 2012). Collaborative communities are forms of organization that encourage people to continually apply their unique talents to group projects, by becoming motivated by a collective ethic of sharing and not just following personal gain or autonomous creativity (Adler et al. 2011; Frieling et al. 2014; Garrett et al. 2017). Such communities avail themselves of a number of online collaboration practices above and beyond what happens in co-localized spaces. To the best of our knowledge, extant literature has overlooked how individuals and groups in collaborative communities interact using different onsite and online mechanisms and how such interplay may affect creativity.

The exploratory study reported in this article aims at filling this gap by examining the development of a designers' collaborative community over time. Specifically, we investigate how the interplay of onsite and online interactions evolved according to the different stages of development of the community, affording different configurations of organizational factors such as community structuring, identity processes and knowledge practices. The model that we developed adopting a

grounded theory approach adds to extant literature on collaborative communities and collaborative spaces, shedding light on the hybrid (mix of onsite and online) interactions among actors of creative spaces and investigates how such interaction may affect collaboration and creativity.

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## THEORETICAL BACKGROUND

Recent literature argues that collaborative communities often encompass multiple modalities of collaboration that span across physical and virtual spaces, interrelating onsite and online practices and, thus, contributing to the creation of hybrid workspaces (Halford 2005; Vartiainen & Hyrkkänen 2010). The emergence of such hybrid organizational arrangements poses several challenges to collaborative communities in terms of identity processes, organizational structuring and knowledge practices. Identity processes refer to the development and sharing of an understanding regarding the central, enduring, and distinctive characteristics of a collaborative community (Patvardhan et al. 2015; Ren et al. 2007), while structuring mainly refers to how collaborative communities decide to manage coordination needs and role definition processes (Faraj & Xiao 2006; Kellogg et al. 2006). Knowledge practices refer to community's capability to coordinate and integrate dispersed knowledge and to generate new one, especially in contexts that require creative and innovative approaches to problem-solving (Brown & Duguid 2001; Gardner et al. 2012; Geroski 2000).

Extant literature underlines a relationship between specific configurations of physical environments –e.g. setting up barriers or enclosures, providing adjustable work arrangements, allowing people to personalize the workspace– and onsite collaboration (Dul et al. 2011; Elsbach & Pratt 2007). For instance, studies show that spatial barriers may increase privacy and autonomy, determining individual creativity on the one hand, and increased time for coordination, on the other (Sundstrom et al. 1980). We also know that flexible arrangements affect people's perception of control on the space thus, either facilitating or undermining creative knowledge practices, identity and coordination (Brown & Humphreys 2006; Hedge 1982; O'Neill 1994; Rafaeli & Pratt 1993). Yet physical space configurations, identity processes, structuring and knowledge practices have rarely been studied together, and so there is little understanding of their interplay.

On the other side, online collaboration plays a key role in terms of knowledge generation and integration, thus fostering creativity and innovation in knowledge-intensive activities such as those carried out by the community of designers presented in this study (Geroski

2000). In terms of structuring, research about online work arrangements underlined multiple challenges, such as the ability to work and coordinate across different geographic areas (O'Leary & Cummings 2007) and difficulties in establishing a common identity due to the interplay of different cultures (Hardin et al. 2007; Cramton & Hinds 2014). However, just as in studies about physical space configurations, research about online configurations has produced contrasting results. On the one hand, literature suggests that flexible organizational environments where people are allowed to work from different locations can increase employees' creativity and the generation of new ideas (Amabile & Conti 1999). On the other hand, literature on distributed work underlines that the reduced opportunities of working face-to-face compared to traditional co-localized settings can hamper both coordination and knowledge integration (Mattarelli 2011).

Drawing on emerging evidences (e.g. Chidambaram 1996; Garrett et al. 2017; Turner & Reinsch 2010; Ungureanu et al. 2018), we suggest that adopting a temporal perspective may allow making sense of the contrasting findings on the affordances and constraints of online and onsite collaboration and, thus, provide an integrated perspective on the tensions that characterize hybrid configurations. Specifically, through a process-based approach, we explore how the interplay of online-onsite collaboration changes in the lifecycle of a collaborative community in terms of relationship between identity processes, structuring and knowledge practices.

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## METHOD AND DATA

We conducted a qualitative case study in accordance with the grounded theory approach, which implies iterations between data collection, data analysis and theorizing (Strauss & Corbin 1998). Such process led to the development of a grounded model about different online and onsite collaboration interplay throughout the evolution of a community.

In particular, we investigated COPE<sup>1</sup>, a collaborative community of professionals (i.e. designers, architects, researchers) who work together to develop service design principles for social innovation projects. The core of the community was composed by 15 individuals. Since members were distributed across several regional and national territories (different regions in Italy, Spain, Portugal), shared different online communication tools, and made use of a common physical space, the case was particularly relevant for our research goals. Additionally, the high level of access allowed us to study the evolution of the community throughout its lifecycle.

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<sup>1</sup> The name is fictitious to protect the privacy of the community and its members.

## Data collection

We conducted 15 semi-structured interviews with all the core members of the community. Interviews lasted, on average, 95 minutes. 4 were with founding members who were able to give us full details about the birth of the community, the intentions beyond it, its critical events and transition stages through time. Some interviews were conducted in the collaborative space in Milan, the remaining by Skype. The semi-structured interviews followed a protocol focusing on history, organization, values and identity of the community, onsite and online communication tools and their outcomes in terms of creativity and innovation. The interviews were recorded and then fully transcribed. In addition to interviews, we collected public documents (e.g., articles, reports) about the community and we consulted their website and blog.

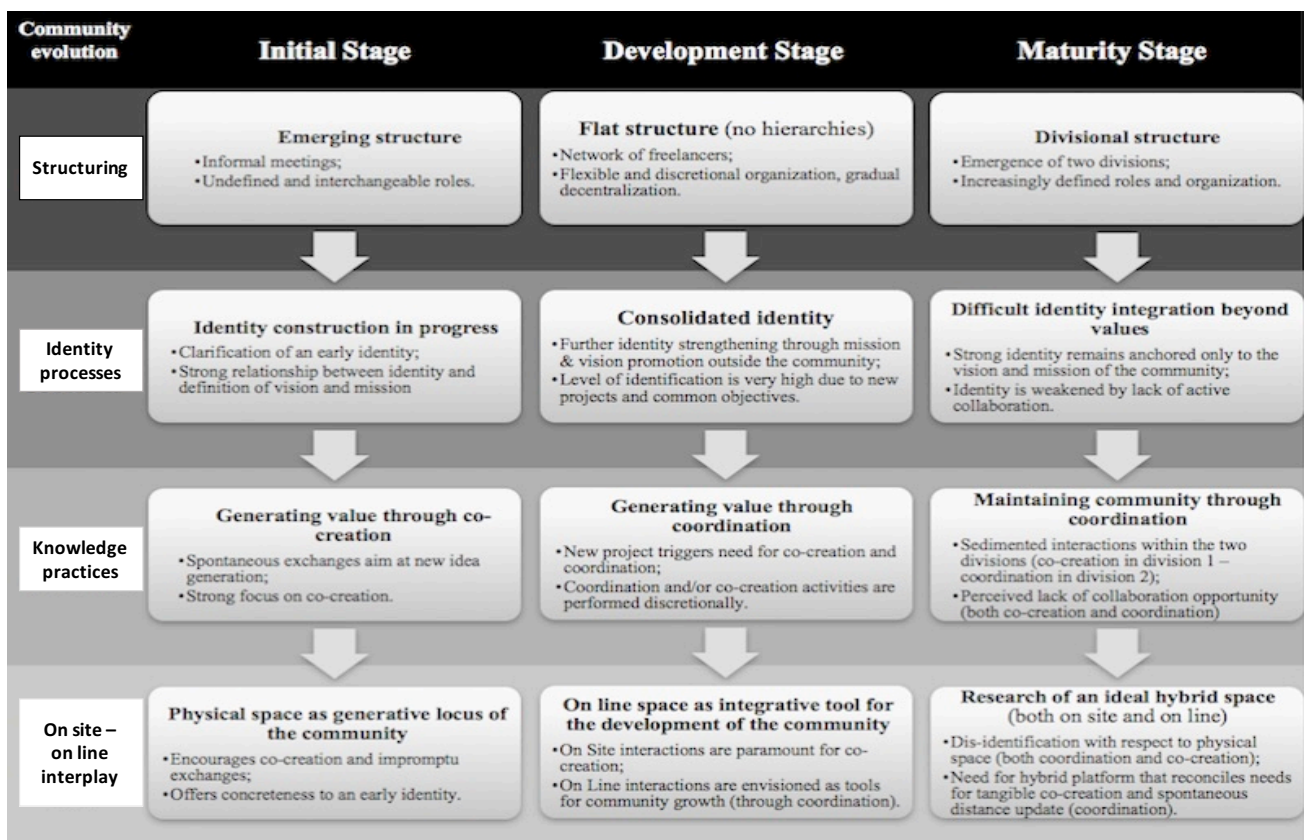
## Analysis

We read interviews' transcripts and documents with the objective of gradually moving towards higher degrees of abstraction. We derived recurrent categories, and their relationships, by using three types of coding: open, axial, and selective (Strauss & Corbin 1998). As we moved back

and forth between in-vivo codes and categories, we used a temporal basis to identify "stages" that characterized the process, decomposing data based on continuity and discontinuity patterns (Langley 1999). We identified three distinct phases in the evolution of the community characterized by different attributes in terms of structuring, identity processes, knowledge practices and onsite–online interplay. Our analyses are synthesized into a grounded model, which we describe next.

## RESULTS

Our grounded model (see Figure 1) portrays three distinct stages of evolution of the community: initial, development, and maturity stage. We found that each stage was characterized by a different online-onsite interplay, which depended on the structure, identity processes and knowledge practices that the community had in place at each stage. We describe our findings following a temporal order. Appendix 1 provides examples of interview excerpts for each of our categories.



**Fig. 1.** Grounded model on how collaborative communities configure onsite and online collaboration practices across their lifecycles (initial, development and maturity stages).

### **Initial stage**

COPE was born in 2013 around a Future Founder's course on "Product Service System Design" held at an Engineering Design University degree. The professor taught the course to a mix of Italian and international students, combining lectures with applied side-events such as workshops, conferences, and leisure activities.

*The structure.* Initially the community does not have a formal structure. A group of 25 people who are introduced to, and particularly interested in, design (for products or services) meet regularly to brainstorm about future opportunities for collaboration and groundbreaking design ideas. During informal meetings, aperitifs, workshops, and discussion tables, participants progressively focus their interest around design projects with a *social* mission. As the idea takes more concrete forms, 10 of the participants decide to formalize the community by giving it a name, i.e. COPE, a statute and a physical space, becoming thus, the founders of the community. The structure of interactions is flat and fluid, roles are interchangeable and mostly based on improvisation.

*Identity processes.* During the first meetings, the community develops a clear mission based on using design principles for the common good. The mission, and the associated values, not only made it easy for members to identify with COPE, but it also represented the main engine for the community's first social innovation projects. For instance, informants praised the sense of community that the social mission occasioned and their willingness to participate as active members (see Table 1).

*Knowledge practices.* As our informants explained, the first phase was characterized by a strong focus on co-creation as a form of professional and personal growth. By co-creation informants generally referred to joint idea generation, while knowledge coordination across projects played only a marginal role, given that most projects were in an early stage. Informal interactions were the principal means by which co-creation occurred. Creative and generative processes are highly facilitated by the informality and spontaneity of interactions between members who meet frequently in the community's physical space to brainstorm about possible collaborations. Thus, continuous, spontaneous and informal onsite feedback exchanges are the cornerstone of co-creation in this first stage and the main tools by which individuals achieve creativity (Shalley et al. 2004).

*Onsite-online interplay.* Initially, meetings occur in various locations (private and public). With time, the University professor who founded COPE transformed a portion of his architecture office into a collaborative

work space for COPE. Throughout the first stages, the space plays an incubator role for the community's ideas and is slightly personalized to suit the community's heterogeneous members (international students, researchers with heterogeneous backgrounds, designers) and their informal interactions. The space is designed as 'open', 'flexible', and 'friendly', as our informants termed it, in order to maintain the 'aperitif mood' that characterized the genesis of the community. Co-creation, especially through joint new idea generation, is stimulated through informal spontaneous meetings inside the space. In line with their strong identification with the community values, members show strong personal and collective motivations to show up in the collaborative space on a frequent basis (2-3 times a week), looking for on-spot feedback and face-to-face updates. At this stage, online collaboration technologies play a minimal role.

### **Development stage**

In 2014, COPE takes the legal and societal form of a collaborative design community. The Milan collaborative space becomes their official headquarter and a practice code is drafted to make sure that each new member understood and committed to COPE's values and mission. This phase is characterized by expansion objectives and a proactive search for new projects and clients.

*The structure.* Association to the community becomes more structured, as members must pay an annual association fee but it remains flexible as each member can decide how and when to contribute to the life of the community. The structure is flat and fluid as there are no hierarchies, while roles are highly flexible, and project-based.

*Identity processes.* The values and mission of COPE are strengthened by the practice code, as well as by the new logo and by the slogan "common place to call home". As the community develops its first projects, founders begin to set expansion goals. Accordingly, each member commits to promoting maximum diffusion of COPE's mission and goals in order to recruit new members and scout for new funding and collaboration opportunities. The commitment to COPE's expansion increases members' identification with the community and their faith in the future of the community (see table 1 for examples).

*Knowledge practices.* This phase is characterized by a focus on both coordination and new idea generation. The interaction between community members is dense, frequent and fluid; proximity afforded by the physical space allows for both creative brainstorming and quick coordination sessions within and across projects. Collaboration with external stakeholders (e.g., clients, other designers, international associations) creates new

project opportunities, increasing the need for both co-creation and coordination.

*Onsite-online interplay.* The space continues to be used mainly for new idea generation activities (i.e., developing design principles) and only marginally for coordinating work. COPE members perceive the space as flexible and open, stimulating creativity and innovation processes. However, they express concern that the space is not completely aligned with COPE's expansion objectives. In particular, the space is not considered adequate for large meetings for coordination with other members and external stakeholders and, in addition, it is deemed as too small and private, i.e. not visible nor attractive to new members.

To address these challenges, COPE aims at becoming also a virtual community. Various virtual instruments and platforms are experimented to allow project collaboration at distance. These tools are used to track, archive, and stay up-to-date about the progress or deadlines of each project. Thus, in this stage, knowledge generation is achieved through onsite collaboration, while coordination mainly occurs thanks to online collaboration.

### **Maturity stage**

In the maturity phase, new 'divisions', i.e. offices, are opened in different locations. Decentralization is triggered by members' difficulties in attracting financial resources for social innovation projects and their desire to develop professional activities different from those supported by COPE. Decentralization poses new challenges for COPE.

*The structure.* Some founding members pursue new professional opportunities away from the collaborative space. In addition to the Milan division, a new division is established in Bologna, Italy and other members operate in Spain and Portugal. However, this transformation does not translate in an organizational change. Although the open and flat structure is maintained, and some roles are increasingly defined at the project level (i.e. project manager, graphic illustrator, controller), specific roles such as community managers are missing at the community level. Despite several attempts to maintain a cohesive and active structure, due to distance challenges, the community activity slows down and becomes increasingly fragmented.

*Identity processes.* Senior members display a consolidated identity as COPE members and design professionals. However, members operating from a distance such as new members in Bologna experience a weak identification (see appendix 1). Although they

draw on COPE's values and mission, they rarely interact with senior members. Since they do not feel active or involved in the community, they mainly identify with the specific COPE project to which they are assigned.

*Knowledge practices.* The interactions between Milan members remained unchanged, as they focus on co-creation for social innovation. In Bologna, Spain and Portugal, the interactions between members take place less frequently and are mainly focused on coordination, as members miss a space in which to meet habitually and generate new ideas. Common perceptions for all divisions include lack of collaboration opportunities and limited community development.

*Onsite-online interplay.* If in the initial phase physical space had a fundamental role in the formation of identity, in the maturity stage it represented a criticality for the evolution of the community. We found that in this stage the Milan space was less frequented than in the previous stages. The same happened for online tools, which were underused because deemed insufficient for supporting the knowledge practices of the community. Importantly, we found that COPE no longer identified with the Milan space. Even the Milan members considered it an environment that no longer brought new stimuli and threatened their ability to generate new ideas. Similarly, the members working at a distance no longer saw the Milan space as their 'home' and fantasized about a new ideal space (i.e. 'utopian space', as some informants termed it) that reconciled designers' primary need for onsite co-creation with the rising need for online coordination.

### **Context conditions**

We found that two specific context conditions (Strauss & Corbin 1998) accounted for how the community evolved: the social innovation mission and the nature of designers' work. First, since COPE had difficulties in appropriating resources out of social innovation projects, members were pushed towards other professional opportunities, triggering the fragmentation of the community. However, it is noteworthy that the community was never intended as an "exclusive workplace", as a founder explained. Another intervening condition is the nature of designers' work that depends greatly on tangible outcomes (sketches, models, prototypes, etc.) and on co-creation practices (drawing together, using boards and post-its, etc.). These practices further explain why onsite collaboration had a predominant role throughout the community lifecycle and prevented the development of online tools in the mature stage.

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## DISCUSSION AND CONCLUSIONS

Based on our empirical evidence, we conclude that the evolution of a community's interplay of online and onsite collaboration strategies depends on the needs that the community faces across its lifecycle. We bring evidence of the role of identity processes, community structuring and knowledge practices in a community's decisions regarding the interplay of online-onsite collaboration. Our study suggests that initial stages related to identity creation and new idea generation trigger the need for proximity, which in turn encourages an interplay with predominant onsite interaction. The site's tangibility offers opportunities to consolidate an emergent identity while proximity encourages knowledge practices related to creativity and co-creation. By contrast, stages of expansion that imply both creative efforts and increasing need for coordination shape a more balanced onsite-online interplay, especially when community growth requires decentralization and delocalization.

We suggest that the way the onsite-online interplay is managed in development phases is pivotal for how a collaborative community develops. We integrate previous findings by Garrett et al. (2017) that the social processes of a community depend strongly on how well members of the community are able to engage in 'community work' to make sure that physical space organization and community identity co-evolve. In our case, the impossibility to transition from physical interaction to a more balanced (i.e., online) model inhibited the community's ability to grasp new opportunities. It is thus paramount that communities manage the alignment between onsite and online collaboration in a step-by-step manner. Specifically, we have shown that although COPE structured its activities around the physical space, its growth model implied upscaling activities to new locations and external stakeholders. The inability to find the right mode to introduce online tools introduced rigidity in COPE's interaction patterns, leading thus to a fossilization of the community with respect to its physical space.

Paradoxically, the fossilization of the community around the physical space led to a gradual dis-identification with respect to it. While Milan members sought to maintain physical collaboration, they found themselves lacking new stimuli inside that space. Likewise, Bologna members found themselves cut out from the community and identity-less. Our findings resonate with contributions by Ungureanu et al. (2018) showing that the way perceptions of a collaborative space's affordances and constraints change can be understood only by making reference to the stages in a community's lifecycle, and with De Vaujany and Vaast's (2016) descriptions of the need to adopt an iterative alignment between a community's work practices and identity and space configuration (i.e.,

appropriation, disappropriation, reappropriation). From such standpoint, fossilization can be avoided by constantly reflecting not only on the relationship between space and a community's current needs in terms of coordination, identity and knowledge, but also on the extent to which the space creates opportunities for future growth such as dialectics and creative tensions.

We additionally suggest that inability to advance an online-onsite interplay according to a community's changing needs may project members in a dimension of desirability where they crave for a utopian space that combines the advantages of physical and online collaboration and embeds coordination and new idea generation. As implications for practice, we suggest however, that this tendency may be dangerous for a community's growth, because it blocks its ability to experiment with new imperfect solutions (a new online platform, community social media, multiple physical locations, etc.), and to improve them through time. Practitioners thus must pay attention to aligning collaboration tools to the multiple needs of their stakeholders, even when existing tools do not completely satisfy all community needs.

In terms of limitations and future directions for practice, we highlight that the case is based on the specific experience of a community of designers, which may have limited generalizability. While for designers co-creation is highly related to tangibility and proximity (see Bonnardel & Zenasni 2010), it may be less so for other professionals such as software developers (Boudreau et al. 1998; Johri 2011). Future studies may compare the online-onsite interplay in communities with different collaboration practices in in-situ multi-project and multi-group settings like IdeaSquare.

Also, more research is necessary to validate and investigate the micro mechanisms by which, in hybrid workspaces, online and onsite interactions are used for coordination and idea generation.

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**Appendix. 1.** Field note excerpts exemplifying the main categories in the grounded model.

FIELD NOTE	Initial Stage	Development Stage	Maturity Stage
Structure	"We did not know what COPE was, we did not know what it was called, we knew that we needed to design something new, that could tackle the themes of the projects that we proposed in a completely different way, so we did a project of co-design, COPE was born after a year and a half of meetings in this studio and also in other places, in which a group of 50-60 people went through a design path that had its roots in design thinking and in the service design (...) COPE has begun to take shape." (Actor 2)	"COPE has a commercial structure that transforms the content that is produced by the COPE collaborative design into content presentable on the market, so there is a commercial structure called COPE Lab which is then the one that signs the contracts (...). So there are some self-financed projects that we do because it is fundamental to do so for various reasons. <i>The design school for children</i> that today is a structure that goes on and that has its projects, for years has been financed by COPE (...). That is to say - <i>I do work that I think leads to an improvement of what I think is important</i> - " (Actor 1)	"So the current members of COPE employed in this project are (...) these are senior tutors. (...) We also try to create the atmosphere of a team in these few moments together (...) (Actor 3) plays a coordinating role so, when there is a problem of any kind or requests, he is a point of reference (...). We avoid contacting the foundation directly (...) As far as Milan division is concerned, this year, in reality, I did not have big contacts with them, apart from a day that we organized, as there is a desire to create a sort of publication with respect to this project SET so that day we had a skype call about it" (Actor 3)
Identity Processes	"At that moment the social side of innovation was not so popular as today, that was 5 years ago, so it was something new and exciting at least for me and for the rest of the 34 people, I guess, that started the meetings. But also the fact that we were all interested in something that we had in common in our professional field, that was design, and then also on the values that we were sharing because that's probably the first, how do you say it, the first thing that made us get together, the values. So we are talking about collaboration, sharing and that was something that, apart from our personal and professional interest about design, it was also the fact of sharing that kind of values that made us become COPE" (Actor 4)	"When we started going in the field and touching the critical situations with hand and then talking together over dinner or while cooking, the fact of being there as COPE, touching a different context, (...) for example I have never been in mobility with Actor 1, we have only crossed once in perhaps Namibia ... then when you find yourself on Skype or in the office in Milan, or in Namibia for dinner, it's time to exchange points of view, doubts, reflections on critical points, (...) we can formulate a strategy there, a next step and ask ourselves, how did we grow up? (...) " (Actor 5)	"Sometimes I do not feel like an actual member of COPE, for example you first asked me about the values and objectives of COPE and I remembered something I had read on the site, but I know more about the values that have been passed to me than I know COPE (...) what I know about COPE, I know by my own initiative, for reading something on their site. I did not participate in training or introductory days about what is COPE " (Actor 7)
Knowledge Practices	"So, some of us had the experience, others came up with a breath of freshness so the fact of being more people meant more points of view and working collaboratively towards something. In fact, in jargon we say this is an iterative process, because there is actually no conclusion. It is like a spiral that starts from the center but each time this circle widens, it extends. And so every time you take a step, you expose it to the judgment of others and this allows you to innovate. Even within innovation, lately I am very much for non-radical but incremental innovation. In fact, in my opinion, you should try to fix before throwing, before saying "it's old, it's wrong, it's just a model ...". (Actor 6)	"Slack in my opinion is not creative, it is collaborative, it helps a lot to coordinate. On Slack the interesting thing is that you can give an organization to the arguments (...) for example (...) you could say here are all the weekly updates, here are all the daily urgencies, the changes, (...) and review the archive, the documentation of conversations, it is much easier, you can tag and then you send something, then the notification arrives to the person you have tagged, but it is viewable by everyone, and you can tag some people in particular (...)" (Actor 5)	"We would like to but we realize we cannot be co-present, we realize that co-presence would give us advantages, the need is obviously to have more communication, easier and with more flexibility, more carefree, also. (...) if we managed to talk to each other every day on the phone to say "How are you? How did it go today? How projects are going etc? it would already be something important but we do not do it." (Actor 8)
On Site – On Line Configuration	"(...) We decided to keep a physical space when we created COPE because we understood that COPE could not only be a platform without something real attached to it (...) Surely there are people who are more accustomed to working remotely, and certainly there are jobs ... If you look at the freelance economy etc. surely there are people much more accustomed to working remotely. What is certain is that if you work in the project world, in the world of collaborative projects ... regardless of whether you are a designer or an economist, you can hardly think of not having a physical touchpoint somewhere. We experience ourselves the issues we do research on " (Actor 1)	"Yes, COPE Milan I go there once every 2-3 months because anyway I go to Milan for other reasons and when I go there I take this opportunity to tell (Actor 1 ... to Actor 2 I know that in the end they are more or less always there, I say "look I come to Division 1, can we meet?" and so we take the opportunity to make an update: I tell him how he is going, they tell me how the other things are going and then let's go for an aperitif. This happens really once every three months. For all the rest are basically virtual spaces, in Bologna there are definitely 4 other people who are very involved with the community and other 3 that are moderately involved" (Actor 3)	"Of course, it's also that. It is that we are not in the same space, we are not looking at the same light, we are not at the same time in the same place so we cannot go beyond a certain level of ability to create new things, and do engage in fruitful collaboration. And so we stop there. It is probably also due to the fact that we have grown as a physical community. Centered on physical collaboration. Maybe, who knows ..." (Actor 2)