

Kaethler, Michael

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CASE STUDY

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Curating creative communities of practice: the role of ambiguity

Michael Kaethler

Correspondence: michael.kaethler@kuleuven.be
KU Leuven, Kasteelpark Arenberg 1,
3001 Leuven, Belgium

Abstract

Communities of Practice (CoPs), it is argued, are loci for creativity, innovation and problem-solving. Instigating a CoP and harnessing this creative energy from an external position (be it institutional or individual) is, however, problematic. Literature surrounding CoPs emphasises the delicate manner in which they are formed and sustained. Those instigating these communities from an external position, such as curators, managers, or educators, do so at the risk of undermining some of CoPs' fundamental qualities. Namely: the fluid social relations, the level of informality and the processes of self-selection and moderation that characterise CoPs. Asking the question 'how, if possible, can one instigate creatively-oriented CoPs?'—in particular those composed of experts working within limited timeframes—this paper analyses eleven newly formed groups partaking in an experimental design biennial (BIO50) organised to foster collaborative learning and practice. The study focuses on the relationship between a curatorial structure with high degrees of ambiguity and participant collaboration. The paper provides practical implications and theoretical elaborations for those seeking to organise creative collaborations.

Keywords: Curating, Ambiguity, Creativity, Collaboration, Community of Practice

Introduction

The Icelandic singer Bjork's oft-quoted lyric: 'I thought I could organise freedom, how Scandinavian of me'¹ summarises succinctly the tension between organisation and freedom that is inherent in organisational and managerial pursuits. In many of today's creative hubs, from silicon valley offices to faculty lounges at art schools, managers, educators and curators are asking a similar question: 'how can we organise creativity, or more specifically, creative exchange and learning?' Much of creativity remains in the knowledge realm of the tacit (Polanyi 1966) and is bound up in practice and poorly articulated in formal language; creative knowledge is also referred to as sticky (Szulanski 2002) or intangible knowledge. The field of organisation studies has for some time made compelling arguments that such knowledge can be transferred in Communities of Practice (CoPs). This view, based on a social learning theory, emphasises the importance of collaboration, of learning collectively through participation in a shared activity, and of the development of a common repertoire (Wenger 1999; Cox 2005). These activities form the basis for a transfer of a broad spectrum of knowledge(s) and can act as a locus for creative and innovative problem-solving (Mørk et al. 2008; Cook and Yanow 1993; Lindkvist 2005). However, the few studies detailing attempts at instigating

CoPs from an external position (such as that taken by an educator, manager or curator) have shown it to be problematic due to the informal, self-regulated, non-canonical and spontaneous nature of these communities. This brings us back to the tension between organisation and freedom (Thompson 2005; Contu and Willmott 2003; Brown and Duguid 1991; Wenger 1999; Breu and Hemingway 2002).

This tension appears to have been ignored in much of the practitioner literature on forming CoPs. In the 28 years since Lave and Wenger (1991) introduced CoPs, there has been an abundance of tips, tricks, guides and how-tos, on forming such communities. These, with few exceptions, are activity oriented and often follow a pattern of procedures that include *developing clear objectives and purpose, creating a clear plan or infrastructure, selecting strong leaders, facilitating dialogue* and so forth. Recommendations are highly pragmatic and belie a notion that exchanging knowledge is straightforward and procedural. In other words, there is an underlying assumption that a CoP can be structured with the right set of managerial actions. Notions of self-regulation, informality and spontaneity are largely absent or trivialised.

This paper seeks to nuance this procedural approach by focusing on how introducing certain qualities (as opposed to activities) such as ambiguity into an organisational approach can create the basis from which a CoP can emerge and thrive. This research intends to provide useful practical material as well as a theoretical elaboration to those taking an organisational role in creative contexts who are seeking innovative methods to inspire collaborative learning and practice. To do so, the article empirically situates the discussion of CoPs in the world of design, where collaborative learning plays a significant part in the development of creative solutions. The case study focuses on the experimental curatorial methods employed at the 50th anniversary of the Slovenian Design Biennial.

Following the introduction, the paper is broken down into the consequent order. Section 2 elaborates on CoPs and their relevance for creative collaborative production. Section 3 highlights the debates surrounding the instigation of CoPs and analyses the types of conditions that can underlie and support their emergence. Section 4 presents the data source and methodology. Section 5 discusses the findings of the empirical research, and Section 6 provides concluding reflections on these findings.

Communities of practice: creativity, knowledge and organisation

According to Wenger (1999), a CoP is a *joint enterprise* which is continually being renegotiated by its members; it functions through binding relationships of *mutual engagement* that coalesce into social entities; and it produces a *shared repertoire* among its members that acts as a communal resource and is composed of elements such as sensibilities, artefacts and/or vocabulary. Wenger understands practice to be an act of negotiation of meaning (and with it, identity) with the interlinked processes of participation and reification. Participation suggests both action and connection; more specifically, Wenger refers to participation as ‘a process of taking part and also to the relations with others that reflect this process’ (1999: 63). As such, participation is characterised by the possibility of mutual recognition or as Handley et al. (2006) stress, by a sense of belonging with a progression towards *full* participation. Reification then is ‘the process of giving form to our experience by producing objects that congeal this experience into “thingness”’ (Wenger 1999: 58). Viewed socially, it is the moment that

knowledge of a group is synthesised into a material and symbolic system (Gherardi and Nicolini 2000, Moulaert and Van Dyck 2012).

CoPs are fundamentally self-organising and self-moderating systems (Wenger 1999), which like most innovative endeavours have a tendency to reject canonised and formalised received wisdom in order to pursue creativity (Brown and Duguid 1991; Litchfield et al. 2015). Indeed, CoPs are often understood to be a locus of creativity and innovation and offer explanations for the relationship between practice, learning and innovation (Mørk et al. 2008; Cook and Yanow 1993; Lindkvist 2005).

Structuring or seeding communities of practice

Despite considerable literature foregrounding the difficulties or questionability of giving intentional form, or 'structuring', a CoP (Thompson 2005; Contu and Willmott 2003; Wenger 1999; Cox 2005; Breu and Hemingway 2002), popular literature on workshops and collaboration are abuzz with proposed solutions. These, upon closer inspection, neglect important social learning facets of CoPs such as informality, the non-canonical or spontaneity. Additionally, many tend to take on characteristics that Wenger (1999) originally cautioned against, such as hybrid working groups (defined by a task and not by knowledge), functional units (defined by a charter and not by action) or networks (defined by relationships as opposed to the act of doing).

'How-to' guides for structuring a CoP tend to oscillate between prescriptive actions and generic recommendations. In 2002, Wenger, McDermott and Snyder published a practitioner's guide for 'Cultivating Communities of Practice'. The book rode the wave of interest in CoPs but was controversial and heavily criticised as commodifying, oversimplifying and fundamentally redefining the concept of CoPs (Cox 2005: 533). It was a departure from Wenger's earlier work: attempting to appeal to the broadest possible audience and to provide clear guidelines, bypassing the inherent tensions that come with structuring. Perhaps it is for this very reason that the guide found a wide appeal among practitioners and has been influential in shaping organisational practices. The surge of interest in CoPs has led to its application in all manner of contexts and with a range of formulaic approaches leading to a deterioration of its original qualities that emphasised situatedness, social interaction, materiality and so forth (Amin and Roberts 2008).

A study conducted by the author of 20 websites that offer advice or instructions on creating, cultivating, forming or building CoPs shows that the field is dominated by a highly procedural understanding of how a CoP can be formed; the advice closely mirrors the Wenger et al. (2002) guide. The study found that little to no consideration is given to the difficulties and tensions of instigating a CoP. Recommendations emphasise the need for ensuring a clear objective and definite purpose, a strategic plan and appropriate infrastructure for its execution, the selection of strong leaders, and the facilitation of dialogue and collaboration. Knowledge is perceived as accessible and easily transferable, diminishing the dimension of *practice* in CoPs and emphasising community as a group connected through a verbal exchange of thoughts, ideas and feelings. None of the 20 sites reviewed warned of the difficulties or complications in forming such a community, of the need for creative freedom, spontaneity, non-canonical problem-solving and informality outside of managerial reach.

These findings contradict Wenger's (1999) earlier work, which emphasises that one cannot reproduce the structural components of a CoP, such as the types of actors, locations, objectives or actions and expect a similar set of social relations and coalescence to emerge. In other words, it is one thing to provide support for the structural components; it is another to facilitate the types of exchanges within the community—such as identification with the goals, a sense of ownership and wanting to contribute to bottom-up interactions.

Wenger (1999: 229) sums this up:

Communities of practice are about content—about learning as a living experience of negotiating meaning—not about form. In this sense, they cannot be legislated into existence or defined by decree. They can be recognized, supported, encouraged, and nurtured, but they are not reified, designable units. Practice itself is not amenable to design. In other words, one can articulate patterns or define procedures, but neither the patterns nor the procedures produce the practice as it unfolds... Learning cannot be designed: it can only be designed *for*—that is, facilitated or frustrated.

Brown and Duguid's (1991) influential study on Xero repairmen, a key contribution to the discourse on CoPs, emphasises its bottom-up nature. It tells a story that stresses the informality at the heart of CoPs, one that addresses problems that are deemed relevant but does so in a counter-cultural or non-formalised way. An underlying factor is the argument that canonical accounts of work are inevitably flawed, inflexible and limited and as such require local and situated understanding and action for the completion of the task (Cox 2005). Brown and Duguid are essentially arguing for collectively improvised knowledge, emphasising 'shop floor' innovation through informal exchanges. This provides little in the way of practical guidance or quick tips for CoP formation other than elusive qualities such as spontaneity.

With a focus on informality, self-regulation and self-management, structural components of a CoP tend to be mediatory—taking the form of what Wenger (1999) includes as artefacts, documents, terms and concepts. Thompson's (2005) empirical findings echo Wenger's (1999) theories on the use of boundary objects as structuring mechanisms including instruments, monuments and points of focus. As Thompson points out, *if* these boundary objects are significant as mediators for CoP growth and development, then working with boundary objects can possibly yield results in influencing the instigation and development of CoPs. However, based on his research on a web-design agency, Thompson (2005: 162) emphasises that such objects must be used in a "non-prescriptive way" in the hope of indirectly seeding future collaboration'. He distinguishes between structuring and seeding, controlling the present verses influencing future collaborations. His research exhibits the fragility of a CoP, as a delicately formed network of relationships, which could come crashing down given a change in conditions.

Thompson (2005: 162) argues that an emphasis on 'culturally symbolic infrastructure can set the emergent properties for subsequent interaction'. This however, is premised on an infrastructure that supports interaction and strong personal identification. Likewise, imposing structural constraints is to ignore the fundamentally social and informal nature of its emergent social dynamics and will fail to materialise a CoP. As such CoPs,

he argues, can be indirectly given form through a focus on symbolic monuments, infra-structural instruments and conceptual points of focus.

Knowledge types, organisational dynamics and conditions for emergence

Amin and Roberts' (2008) important survey of the existing literature on CoPs highlights the distinction between four different types of knowledge in action—craft/task, professional, virtual and epistemic/creative—and how these affect social interaction, innovation and organisational dynamics. Epistemic/creative knowledge CoPs, which this paper focuses on, emphasises short-term collaboration involving participants who come together with the purpose of experimenting with new knowledge in order to unleash creative energy. Members of these types of communities tend to be autonomous and specialised and have substantial egos and high expectations; these environments are characterised by high turnovers, rudimentary rules and tight deadlines (Amin and Roberts 2008; Lindkvist 2005). This typology commonly takes place in creative organisations, academies or across a network of specialists.

Amin and Roberts' typology of epistemic/creative knowing² highlight three common underlying qualities (degrees of uncertainty, variety, and ambiguity) and four common factors that channel uncertainty, variety and ambiguity towards creative openings (peer recognition, problem loyalty, slack space and alignment mechanisms). These are identified as critical elements found across a range of practices involved in this epistemic/creative type of knowledge community and open up another perspective on seeding structures. Instead of focusing on boundary objects, it specifies the prospective qualities—uncertainty, variety or ambiguity—around which such objects emerge. These have the potential to produce conditions where individuals converge and consolidate around certain factors such as peer recognition or problem orientation. Amin and Roberts do little more than identify these factors, leaving it to others to expand upon their observations. For the sake of brevity, this paper focuses on ambiguity, which involves elements of uncertainty and to a lesser degree variety, in its role as a force for establishing creative communities of practice.

Ambiguity

For many in the organisational and management fields, ambiguity is perceived as an 'ugly' quality (Alvesson and Sveningsson 2003), a barrier for pursuing collective action (Jarzabkowski et al. 2010), and something to eschew especially in the context of time-limited and market-oriented transactions. Ambiguity, according to the Stanford Encyclopaedia of Philosophy (Spring 2016 Edition), is composed of two meanings: (1) uncertainty or dubiousness and (2) a sign bearing multiple meanings. If your goal is clarity, then ambiguity is counter-productive. However, other fields have applied ambiguity as a tool or method for achieving a variety of objectives. Ambiguity enables the co-existence of multiple meanings, which may prove plausible and are not resolvable through clear definable rules. The room for interpretation afforded by the presence of ambiguity can enhance or deepen the act of personal engagement (such as in the arts: poetry, literature, visual arts); it can also enable differing parties to come together as described in Eisenberg's 'strategic ambiguity' which is now used across a range of fields such as political science, corporate communication, and urban activism (Kaethler et al.

2017). In order to explore ambiguity as a condition for seeding, the paper empirically investigates its influence on the four factors of peer recognition, problem loyalty, slack space and alignment, as emphasised by Amin and Roberts as channels for creative openings.

Case study: Slovenian Design Biennial (BIO50)

The motto for the 50th anniversary of the Slovenian Design Biennial (BIO50) was '3,2,1...test'. The event lived up to its motto: it was a design expo aimed squarely at experimentation. BIO50 was organised around 11 loose thematic categories and participants came from a variety of backgrounds, levels of expertise and cultures; hierarchical structure was undefined and required outputs were vague and unclear.

The curatorial structure focused on collaboration without providing an explicit prescription of how collaboration is made manifest. One of the two curators, Jan Boelen, states, 'If design is the answer, what is the question? The Biennial is a question. They [the participants] have the tools and we are facilitating them with mentors and structures so that they can develop their own stories.' Boelen views the collaboration of experts through a learning prism. Specialists are brought together to merge fields of knowledge through periodic exchanges involving collective as well as autonomous reflection—in a pendulum of individual and collective learning. To do this, he argues, 'You must adopt a position of ignorance, recognising not what you know but what you don't know'. In this regard, the structure of BIO50, he claims, is a 'learning structure for the participants and for me, as a curator'.

The curators provided a structure of openness. The 11 rather ambiguously defined thematic categories (including themes such as Designing Life, Knowing Food, Walking the City, Observing Space, and Nanotourism) were given autonomy and freedom with little intervention from the curators. Boelen's curatorial partner, Maja Vardjan, referred to their level of involvement as 'commentators in the process, not intervening in the content of the work'. These groups were obliged to present *something* at the end of 6 months for the opening of BIO50. How they were structured or the internal workings were a matter for the individual group and the mentor(s) to decide. One hundred seventy-five participants initially joined with 21 mentors. Over the 6 months, 52 participants dropped out and 18 additional participants joined.

According to the curators, this model was deemed a success. It was noted that 1 year after BIO50, a number of the projects from across the 11 themes continued to be developed. Some of the BIO50 designs have since circulated events and exhibitions around the world, while former partnerships and collaborations have in the meantime birthed new projects and collaborations. The model has been re-applied for exhibitions in the Museum of Architecture and Design (MAO), Ljubljana, and the Istanbul Design Biennial.

Research methodology

The question, 'how does one curate creative collaboration?' was the starting point for this research. After discussions with the curator of BIO50, which led to a better grasp of the organisational structure of the biennial, the author spent several days immersed in the exhibitions and in an informal conversation with participants. Researching collaboration is not without difficulties; it involves considerable assumptions on what is considered a 'successful' collaboration and what are the corresponding determining

factors, most of which remain unobservable and intangible. To capture this, the researcher used in-depth interviews as the central methodological approach to examine the social, epistemic and structural components at BIO50.

The author selected a loose sample of respondents from 7 of the 11 themes with a minimum of 2 participants or mentor; for the other 4 groups, the author used a more intense selection process, interviewing 70–100% of the participants. The 4 groups were chosen according to two criteria—size and perceived level of successful collaboration—in order to compare and contrast findings. The four thematic groups (large/small, perceived success/failure) included Affordable Living and Nanotourism (large groups) and Designing Life and Engine Blocks (small groups).

In total, 51 interviews were conducted with the 42 participants, 7 mentors and the two curators. These interviews ranged from 35 min to 2.5 h in length, with an average lasting approximately 1 h. Interviews were initially semi-structured; questions ranged from very practical to experiential. As an idea of each group's collaborative experience grew clearer, questions became more exploratory and probing. Questions were used to prompt the respondent to tell the story of their experience within the group from day one to the present (shortly after the final exhibition) with as little interjecting as possible from the interviewer.

As this paper focuses on the social and situated nature of knowledge, it naturally follows that this be applied to its research methodology. Interviews can elucidate how individuals perceive the world and how they choose to communicate it (Silverman 1985). The author recognises the activeness of interviews and that since meaning is socially constituted, interviews provide the site and occasion for producing knowledge (Silverman 1985). Both parties, the researcher and respondent, are thus responsible for creating this knowledge as active parties in a two-way relationship. As Gubrium and Holstein (1997:106) argue,

Meaning is not merely elicited by apt questioning, nor simply transported through respondent replies; it is actively and communicatively assembled in the interview encounter. Respondents are not so much repositories of knowledge—treasuries of information awaiting excavation—as they are constructors of knowledge in association with interviewers.

As the respondents are co-creators of this knowledge, the findings and discussions in this article were fed back to the respondents for further comment, discussion or suggestions. This open loop enabled a greater reflexivity on their individual process within the wider set of experiences documented in this article.

Interviews were placed within the context of each group's design production and process. Not only was the experience discussed, it was situated within the multiple other data forms such as the final exhibition, the tools for group communication (Facebook group chats, Google hangout, etc.) and boundary objects such as concept notes, sketches and models. These helped ground the discussions.

The interviews aimed at identifying how the group functioned as a whole, breaking down the social and structural elements and describing the process of collaboration within the group such as knowledge transfers or group alignment (the latter being more difficult to articulate). The respondents led with their narrative of the experience

and the author intervened from time to time to enquire about structural elements; these were identified using follow-up questions such as ‘how was it done, why was it done that way, how was it organised?’ At the end of the interview, the author would encourage discussions on the nature of collaboration and design. The author was inspired by Douglas’ (1985) creative interviewing, which seeks to uncover more than just opinion through an openness to mutual disclosure by the interviewer expressing some of his/her feelings on the subject. This approach helped place respondents’ narratives of BIO50 within the broader perspective of design collaboration.

Notes and voice recordings were taken during the interviews. These were compiled and sifted through; the relationship between features such as social interactions, boundary objects, organisational structure, roles and rules was analysed in order to identify structural components and epistemic dynamics. These were compared and contrasted with broader experiences of collaboration, group dynamics and the overall outlook on the experience and quality of cultural production. For the sake of anonymity, the discussion on findings will only make reference to prevalent themes.

Discussion on findings

This section explicates the relationship between ambiguity with the channelling factors of problem loyalty, peer recognition, slack space and alignment as elucidated by Amin and Roberts (2008). Based on these findings, I discuss the merits and constraints of uncertainty, variety and ambiguity in relation to these factors for seeding Creative CoPs (CcoPs).

Problem loyalty

The development of loyalties to a shared problem or goal orients actions and attitudes and provides what Lindkvist (2005) describes as a relevance structure based on self-organised discovery. Problem orientation provides a platform for shared identity and in some cases can lay the foundation for deepening social ties while still allowing for a high turnover of participants. Wenger (1999) argues that the act of participating in the common problem forges strong social bonds. Brown and Duguid’s (1991) research provides an account where problem-solving through situated approaches and reformulating canonical methods is the pinnacle for creative collaboration.

At BIO50, forging loyalty to a common problem through ambiguity was evidenced in several groups’ attempts at defining a shared theme. The group Nanotourism spent much of their collaboration on defining what this term meant in theory and practice. This was done through shared exploration and co-definition. The group was broken down into 5 subgroups, each working separately in 5 different cities on projects related to the evolving concept of Nanotourism. The sub-groups explored what it could mean based on initial plenary discussions and consistently reverted back to the main group with reflections on their experience. ‘Homework’ was regularly assigned by the mentors requiring all participants to submit sketches, ideas, and documentation of progress, which would feed into the larger discussion on Nanotourism. In this way, loyalty to a common problem was the starting point for the group; its very identity was in a state of being defined. The abstract and elusive term *Nanotourism* acted as an anchor point

and boundary object around which the group pivoted and exchanged their ideas, while simultaneously forging a common identity.

The act of co-defining became a central point of focus and gave meaning to participation. The process of co-exploration through word and deed replaced what one participant called 'the tyranny to produce', stating that 'the collaborative act of defining made the entire BIO50 thing worthwhile'. This process-driven attitude, which had been fostered by the curators, trickled down into some of the mentors' approaches. For Nanotourism, one of the mentors stressed that 'it was not the theme that defined the process but the process that defined the theme; getting the process right was crucial to the project.' Discussions across the sub-groups of Nanotourism turned up the same thing over and over again: the importance of co-defining a concept, especially one which had no pre-existing meaning—conferring ownership and building a shared identity. In other words, positioning the 'problem' in ambiguity forged social and cognitive ties. After the fact, many of the participants in that group continued to pursue Nanotourism as a concept in their practices.

The experience of co-defining was shared by the smaller group Designing Life, where the mentor structure offered a horizontal organisational dynamic, one with a high threshold of diversity in backgrounds and nationalities. For the first while, the group struggled to congeal around a shared vision and to understand each other's ideas across disciplinary boundaries. Coming to terms with the thematic category of Designing Life forced the members into somewhat uncomfortable synergies, which would not have happened otherwise. The diversity of opinions and ideas within the group was particularly evident when they were tasked to narrow down the question they wanted to respond to, showcasing the realisation of a need to find a shared purpose. As one member stated, 'It was very challenging to solidify all the opinions [of the group]... into a question. It was like our differences were tied to a single topic.'

Both Nanotourism and Designing Life are examples where negotiating the ambiguity of their project conferred a sense of solidarity, ownership, and collaboration. These groups were able to overcome significant cultural and disciplinary boundaries to communicate ideas based on different ways of knowing—including scientists, anthropologists and designers. The ambiguity forged the basis for a collective learning experience in which knowledge bases were linked together through the act of a shared learning experience. As such, they provided the conditions for shared learning and reification. Conversely, the thematic group of Affordable Living started the process off with a pre-determined idea of the project, programmed by the mentors and without the consent of the participants. Before long, frustration and disinterest began to set in. Some participants spoke-up and the group was subsequently re-structured, opening up new avenues to address the original theme. Despite reverting back to a more ambiguous position, a number of participants voiced that it came too late; the sense of community had failed to materialise.

Peer recognition and trust

Community is formed not only by mutual recognition of those on the 'inside' of a community (Wenger 1999) but also through a recognition of the qualities that those individuals possess as being of value to the community. In CCoPs, an expert

working autonomously does not have time to establish professional trust through time-bound means in collaborations and relies instead on peer recognition (Amin and Roberts 2008).

Ambiguity, in the case of BIO50, was fomented through the loose framing of groups' objectives, the desired processes and even the theme in which they were formed—vague and under-defined. As explained in the '[Problem loyalty](#)' section, each group sought to develop a collaborative relationship whilst interpreting and developing their own perspective of the biennial. The variety of participants in each group with unique cultural and professional perspectives rendered the intentionally ambiguous exhibition as a powerful force for two opposing experiences—group solidification and atomisation. Ambiguity, without structure or guidance, was responsible for derailing peer recognition and trust within heterogeneous groups.

Initial acceptance of the multiplicity of specialities present in groups was appreciated and praised by participants as 'exciting' or 'challenging'. A positive and excited spirit existed around transdisciplinarity and multiculturalism but it grew increasingly difficult to integrate different approaches and methods without clear objectives, approaches and modes of operation in the face of looming deadlines. Eventually, frustration and fractures began to emerge and participants looked to the mentors and curators for clarity in order to tame the systemic ambiguity of the biennial.

Without mentors safeguarding inclusion and promoting peer recognition, ambiguity resulted in hierarchies within groups. As this occurred, certain disciplinary logics or cultural groups came to disregard or instrumentalise others. One example is when a biologist was responsible for contributing a particular piece of specialised research but another member of the group from a design background did not trust the quality of that research (despite the qualifications of the biologist) and without explanation simultaneously attempted to duplicate the research. This undermined both individual and group trust. On a larger scale, this was apparent in another group, which saw a split between local Slovenians and international participants. Unclear expectations from the start as to the 'purpose and focus of the theme' resulted in a significant schism. This group, despite later attempts to reign in misunderstandings, lost over one third of its participants. New members already known to some in the group and sharing the same approach and background were invited to join in order to shore up efforts for the final exhibition—in effect replacing diversity with homogeneity. In the end, there was a lack of trust among members, leading many respondents to claim that there was 'no collaboration' whatsoever.

In a context of distinct cultural and professional differences ambiguity provided novelty and potentiality but under the pressure to perform peer recognition and trust were quickly replaced by hierarchy and exclusion. Without proper channelling such as establishing clarity of purpose and general direction, ambiguity, in a context of heterogeneity shows itself to be a factor that is potentially socially destructive, leading to collaborative breakdown, individualistic approaches, hierarchies and schisms.

Slack space

Slack space is unsanctioned space, which as Thompson (2005) states allows a group to 'consciously cultivate informality'. Amin and Roberts (2008, 362) note that 'informality,

iterative purposefulness, and productive idleness' are commonly found in groups from scientists to artists. This involves elements of freethinking, imaginative play, 'serendipity' and so forth.

Collective slack space thrives within conditions of ambiguity, whereby the drive for efficiency is moderated by the need for creativity and innovation. Being able to move between the professional and the social and to bond and interact in a different manner was perceived by group members as a unifying force and at times a pinnacle moment for pooling creativity. Ambiguity here was experienced as the freedom to determine the 'house rules' of a group, how they could organise their own processes and practices. The extent to which slack space was formally directed or emerged spontaneously differed across groups with various attributing factors including peer recognition and problem loyalty. As such it is difficult to study slack space as it is both exogenous and endogenous to the group. The social interactions that occurred in the inner workings of the group were factors for developing the desire to spend unsanctioned time together.

One group's slack space consisted of simply having drinks in the evening after the day's meeting. 'Beer after meetings changed how we worked [formally],' reflected a participant. Another group, which already had a history together, attributed their creative process to a period of sitting in a living room smoking cigarettes. Such events were not sanctioned from the organisers and there was no intentionality in the structure for these; instead, they emerged naturally out of a desire for time together outside of the working rhythm.

The autonomy with which groups worked enabled them to direct their *modus operandi*. Some groups emphasised slack space as part of their creative process while others kept it to a minimum, treating the process as a professional project constructed around professional relationships. Informal bonding was cumbersome to realise in large groups where there was a sense of conviviality without the time to develop a sense of unison within the group. For example, the largest of the groups, Affordable Living, reported nearly no slack space and little to no social bonding outside of work routines resulting in only a superficial knowledge of each other. This is the same group that reported a negative sense of inter-participant hierarchy and very limited collaboration.

Slack space was particularly important for groups who were interacting extensively through virtual means. However, despite attempts to create informal 'hangouts' online, such as the Knowing Food group, preparing a dish based on the same key ingredient and then eating together networked via webcams and Google hang-out, these were unanimously perceived as lacking in social character. As it was pointed out, 'one day together [in person] is like three weeks virtually [connected]'. Another participant specifically referring to virtual meetings emphasised, 'it's not nice sitting for two hours in a meeting, it's a lot worse sitting for two hours in a Skype meeting'. Discussions with respondents on the topic of virtual communication were overwhelmingly negative; only one group had a positive experience, which they explained was due to some members having a pre-existing virtual relationship of collaboration together. Many felt that it was difficult to have informal or casual 'banter', feeling the pressure to get straight to the point and not linger unnecessarily. One respondent, speaking of a group trip to London and referring back to virtual communication, alleged, 'before London it was like talking into a dark room.'

Alignment

Alignment is intended to provide cohesion and mutuality through managing dissonance or creating coordination (Regeer and Bunders 2003; Wenger 1999). As covered by the work of Wenger (1999), Thompson (2005), and Nonaka and Takeuchi (1995), boundary objects, entities that hold and link the interest of diverse groups, provide powerful sources of knowledge alignment (Nerland and Jensen 2012; Lindkvist 2005). These are important for sense-making, for distributing 'know-how' (as opposed to know—*that*), and for facilitating communication on complex issues (Star 2010; Bucciarelli 2002). Similarly, Wenger's emphasis on the dual importance of participation and reification are pivotal in aligning actors within a community. Experiences at BIO50 confirm this. Regular assignments by mentors to provide sketches, concept notes, models or blueprints were extremely powerful tools for aligning differences in the group. As one participant exclaimed, 'the way you work with people [in the group] becomes embedded in the artefact.' Theoreticians like Karin Knorr Cetina (2007) would add that the artefact becomes embedded in the way you work with those people to create a culture around a practice. Indeed, boundary objects are recognised as a crucial part of the design (Carlile 2002; Bucciarelli 2002).

As there already exists considerable literature on boundary objects for the purposes of alignment, including Thompson (2005) and Wenger (1999), the rest of this section focuses on alignment through mediatory roles such as the role of convenor, moderator or broker in conditions of ambiguity. While not a precondition, a mediatory role has an important part in fostering collaboration (Wood and Gray 1991). Wenger (1999: 109) acknowledges the complex and important job of the broker as involving processes of 'translation, coordination, and alignment between perspectives' and goes on to say 'it requires the ability to link practices by facilitating transactions between them, and to cause learning by introducing into a practice elements of another'. Breu and Hemingway (2002), however, caution that beyond informal inter-group alignment, CoPs are predominately self-organising and self-determining. In the case of BIO50, convenors are evident on several levels—curator, mentor, and in some cases participants. Each of these provides different traits; the curator as legitimising, the mentor as guiding, and the participant, in cases where he/she took a role within their group or sub-group, as broker. These roles can be fluid and reflect the nature of the individual's influence in the broader organisation. Amin and Roberts are relatively silent on this, mentioning 'meta-coding' and 'visionaries'.

The infrastructure of BIO50 provided the institutional space for a social organisation to autonomously develop under a common theme and purpose. Mentors were given little to no instruction or mandate as to how involved they could or should be in the overall work. It was a laboratory setting with broad parameters in which social organisations emerged through processes of shared learning and exchange. With such high degrees of ambiguity there also exists an increased likelihood of dissonance, chaos and confusion. Mentors took on different roles: some applied strict sets of instructions and deadlines while others took on the role of observers, accepting disorder as part of the creative and collaborative process. In at least three of the groups, particularly in situations of communication breakdowns, a participant took a mediatory role, acting as a broker between participants and mentors.

The curators provided the space for the mentors and participants to find their way and the mentors either structured this space or let it be structured by the emergent group dynamics. Large groups and groups with a high variety of skills and interests relied more heavily on mentor-led directions for alignment and sought out this mediatory role in order to bring together different interests. Small groups tended to develop more horizontally with mentors acting as participants, such as Engine Blocks. It is unclear, however, what type of interaction-effect occurs between ambiguity and role specification for improved commitment. The importance of setting parameters and expectations helped offset some of the negative effects of ambiguity such as frustration and group atomisation. The larger the group, the more these parameters needed to be re-enforced.

Mentors played the role of moderating the degree of ambiguity within the groups by providing clarity, setting certain markers or goals, affirming processes and encouraging novelties. For example, the difficulties in establishing peer recognition and trust, as discussed in 5.2, in circumstances with high degrees of ambiguity were considerably offset with even minimal mentor interventions including slight clarification of goals, provision of direction and/or re-assurance that the process was moving forwards in the intended direction. Likewise, mentors were able to confer authority on productive markers such as keeping to timelines, instituting assignments and fostering a culture of collective inclusion. This held particularly true in groups with more than 10 participants.

Positions of authority reflected certain values and inspiration to the participants. The curators represented an ethos and culture for the Biennial. When asking participants about the extent of their interaction with the curators 80% of participants declared that they had very little or none at all. However, when asked about the role of the curators, it was felt that they reflected a sense of order and meaning amidst the chaos occurring in many of the collaborative situations. One participant spoke of the feeling of 'security' knowing that there was a 'bigger plan', embodied by the curators and also by the institutional support of the hosting Museum of Architecture and Design (MAO). In this sense, curators employed a dual strategy with one hand maintaining a structure of ambiguity with its associated discomfort and confusion and on the other hand transmitting a sense of confidence and reassurance.

The implications of ambiguity in designing Creative Communities of Practice (CCoPs)

BIO50 was designed as a testing ground, a laboratory for collaborative design. Failure was always on the table and was considered an acceptable risk in the larger picture. Allowing ambiguity to be a guiding condition for collaboration entailed embracing the risk but trusting that negotiating this would in the end bring about effectual collaboration and commitment through shared learning and practice. Ambiguity produced a substantial effect on group formation, exchange and co-production. This accelerated group dynamics leading to close collaboration in some cases and fragmentation in others.

The findings provide the groundwork for a framework for collaboration where ambiguity is supported through association with group members and with the design problem ('[Problem loyalty](#)' and '[Peer recognition and trust](#)'), informal exchanges away from the work environment ('[Slack space](#)') and role clarity and alignment within the groups ('[Alignment](#)'). This framework contributes to a collaboration that facilitates the exchange of creative knowledge(Fig. 1).

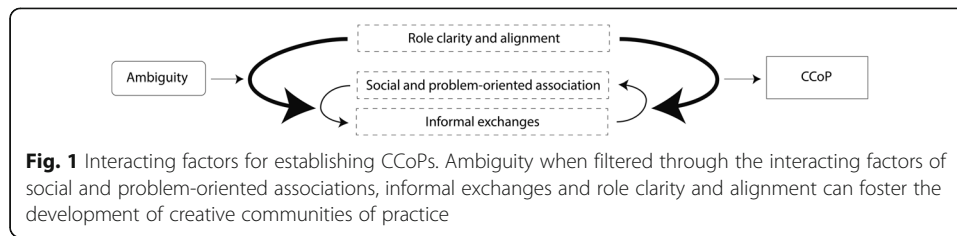


Fig. 1 Interacting factors for establishing CCoPs. Ambiguity when filtered through the interacting factors of social and problem-oriented associations, informal exchanges and role clarity and alignment can foster the development of creative communities of practice

Notwithstanding that the factors of peer recognition, problem loyalty, slack space and alignment are under separate headings they are deeply intertwined and connected. For example, slack space sustains peer recognition, while peer recognition and problem loyalty feed into the desire for slack space. Likewise, alignment is crucial for moderating the negative effects of ambiguity across peer recognition and problem loyalty. These factors stress the social and human-interactive variables that are so crucial in establishing transfers of knowledge, in particular in domains where knowledge is difficult to articulate or share such as in the arts or design. As articulated by Gherardi et al. (1998), CoPs emphasise that every practice is dependent on social processes through which they are sustained and perpetuated and that learning takes place through the engagement in that practice. Structuring design collaboration to facilitate this evidently requires certain conditions for social coalescence. Ambiguity provides circumstances that galvanise group dynamics, challenging groups to move beyond exchanging information as a matter of business as usual to developing close ties based around shared learning through practice. These overlapping and interrelated factors offer insight into the somewhat precarious conditions for sustaining a CCoP, whereby ambiguity provides a certain amount of informal and non-canonical oriented exchanges while simultaneously requiring an alignment for direction and support.

The act of collectively negotiating ambiguous elements such as task, method, approach, objective and even basic definitions related to a group's theme had strong ramifications: it determined how well individuals could collaborate and share types of knowledge that resist easy transfers. It provided the conditions for informal social organisation and collective learning through disentangling, interpreting and ultimately allowing for disambiguation. Depending on factors such as support structures and alignment, for some groups ambiguity was a powerful and stimulating force for collaboration, in others a source of frustration and social irritation which resulted in large numbers of dropouts and isolated work culture.

Discussion and conclusions

By investigating the relationship between ambiguity and the four factors of peer recognition, problem loyalty, slack space and alignment, it is possible to draw out a number of findings on the nature of the emergence of CoPs. First, the empirical data corroborates Amin and Roberts' (2008) description of the importance of ambiguity as a condition for epistemic/creative knowledge communities. Secondly, the findings help substantiate Thompson's (2005) conclusions on the importance of seeding as opposed to structuring CoPs. This directly challenges the procedural approach to forming a CoP being espoused across managerial-oriented websites. Third, and importantly, the

findings provide the basis to develop tools or principles for action for those involved in collaborations that are keen to seek out creativity and innovation through collaborative learning and action.

Ambiguity proves to be a powerful but unwieldy tool for seeding. It was often the underlying quality that congealed the group by activating factors of peer recognition, problem loyalty, and slack space. For example, ambiguity was instrumental in building a sense of ownership, inspiring exploration, and negotiating differences. Likewise, ambiguity aided the development of peer recognition, social ties and a sense of otherness. However, it was not always such a rosy story; the process of carefully executed alignment was necessary to balance out the excesses of ambiguity when it became destructive to group dynamics.

Reflecting on Thompson's argument for an indirect seeding of CoPs, instruments, monuments and points of focus appear insufficient without identifying the conditions in which these are placed. Boundary objects, for example, have the power to consolidate knowledge. But in contexts with high degrees of ambiguity, such as with BIO50, these objects act as strong conveyors of both knowledge *and* shared identity. Likewise, Thompson's 'symbolic monuments, infrastructural instruments and conceptual points of focus' are identifiable in all the groups studied at BIO50 but are only activated in those which sustained a degree of ambiguity throughout the 6 months. Where it was present, it stimulated strong social responses, either towards collaboration, such as co-defining themes or quite the opposite with a me-first attitude.

The importance of a mediator or broker to moderate the volatility of group dynamics proved to be an important and delicate part of the equation. Echoing Thompson and Wenger, there is a fine line between seeding and controlling: the former facilitates and the latter frustrates. Examples from BIO50 demonstrate that without the presence of some type of broker, such as a mentor or lead participant, ambiguity can overwhelm the collaborative process and fracture social learning and practice. However, comparable to Thompson's assertions on the delicacy of managerial over-step in promoting collaboration towards a desired end, in the BIO50 case, delicacy was needed to find a balance for regulating the degree of ambiguity by providing subtle parameters and ensuring the existence of a wider support network.

Taking the experiences of BIO50 participants, mentors and curators, we can assemble a compelling story of experimentation and a willingness to take risks and accept failure. It provides us with 11 cases where different degrees of collaboration took shape over a short amount of time without significant external intervention. Just as there were many successes, as is evident in factors like peer recognition and problem loyalty, so too were there intermittent failures. From both, we can begin to draw conclusions for conducting future endeavours, looking to the discoveries from BIO50 as starting points for new explorations in creating short-term intensive collaborative learning communities. Among these is an awareness of how meaningful collaborations, as with CoPs, can be strategically influenced by the conditions in which they occur and that these conditions can, with delicate hands, be curated. For organisational domains involved in related practices, it raises the question of how to apply ambiguity in different environments, such as the classroom, studio, creative organisations, and of how to manage the risk between its potential to consolidate or atomise collaboration.

Endnotes

¹Hunter, from the album *Homogenic*, 1997.

²To be distinguished from ‘epistemic communities’, which denote groups that work together to master theories, codes and tools of a common practice relying primarily on professional (not personal) ties and a non-experiential set of learning practices with no need for geographical proximity. It also differs from Lindkvist’s (2005) ‘collectivities of practice’, which focuses on accessing distributed knowledge and not on shared learning.

Abbreviations

BIO50: Slovenian Design Biennial (50th anniversary); CCoP: Creative Community of Practice; CoP: Community of Practice

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