# Knowledge brokers in service design: lessons from organizational studies

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## Abstract

With service design taking increasingly strategic and transformational roles, effective organizational partnership and engagement has become crucial. However, since organizational communities are structured and function differently from social communities, participatory service innovation methods like co-design need to take additional factors and different strategies into account for effective engagement and participation in these settings. We draw from discussions in organizational studies to highlight challenges with regards to engagement in innovation processes within and across communities in organizations. Further, we look at knowledge brokers, a concept that features prominently in discourse in this area and outline it theoretically and through a strategy of application in co-design settings. Hence, we contribute to the current service design discourse by adding insights to both theory and practice. Finally, we describe the application of this strategy in two exploratory case studies with differing scales in terms of both the service being designed and the nature of participation from organizational communities.

KEYWORDS: service design, knowledge brokers, co-design, design legacies, organizational studies

## Introduction

The scope of service design projects is expanding rapidly from the design of product centric service ecosystems to the design of business and organizational practices (Daniela Sangiorgi, 2011; Martin, 2009). This is also having an impact on the nature of the service design practice itself, which has evolved from being focused on improving efficiency in the methods of production to involving strategic dimensions around value propositions, considerations around the back-end and the front end of the service and a focus on the overall experience as it relates to the business and the brand (Newbery and Farnham, 2013).

This requires a holistic understanding of services during the design process by integrating perspectives both from the consumption, production and business sides through cross functional collaboration for more strategic service innovation (Möller et al., 2008).

Consequently, service design projects regularly involve co-design methods and practices (Marc Steen et al., 2011) including workshops with consumers and external users as well as with organizational partners. This is attributed to the importance of utilizing cross functional expertise and multiplicity of perspectives allowing for innovative and cross functional solutions that address the root cause of issues (Roser et al., 2009) and the identification of opportunities in unseen areas of a service's ecology rather than cosmetic solutions that address just the consumer side of things (Möller et al., 2008). Hence, with the increasingly strategic nature of service design, effective organizational partnership and engagement has become crucial. However, organizational communities act and work differently than social and institutional communities (Wenger, 1999) and therefore, participatory service innovation methods like co-design need to take this factor into account for these settings. We have found that while organization studies has a rich history of studying models of engagement and co-operation and its impact on innovation within organizational communities (Brown and Duguid, 1998; Franke and Shah, 2003; Wenger, 1999), the discussion around the impact and possible ways of working with these communities in service design and co-design has been limited. The concepts of knowledge brokers (Wenger, 1999) and boundary objects (Star and Griesemer, 1989) feature prominently as channels within the organizational studies discourse (Kimble et al., 2010). Out of these, boundary objects have been used to describe the use of tools in co-design settings and in service design to discuss engaging and involving users with differing functional expertise (Brandt and Messeter, 2004). However, there has been little discussion around knowledge brokers and their potential impact in these scenarios.

This paper presents observations and reflections from two cases that describe co-design workshops that were conducted in the early stages of the service design process. Both these cases differ in terms of scale of the service being designed and the nature of participation from organizational communities. The authors were invited into the process as a part of a longer engagement with an institutional department to develop tools and methods intended to introduce design considerations and methods within its existing practices. These cases present early results from our ongoing investigations into outlining an approach for creating sustained organizational engagement and motivation towards design methods and practices. Hence, while we wanted to identify service opportunities and strategies in each of the cases involved, a broader research goal was to study the effects of our methods, tools and approaches on the nature of engagement and exchange in these settings.

## Background

Co-design emphasizes the role of tools to support users/non-designers in the act of creative ideation and expression. Sanders (2000) describes them as "generative tools" - open ended artefacts that can take two or three dimensional forms and can be configured into "an infinite variety of meaningful ways" for meaningfully and visually representing ideas and shared understandings. Within service design contexts, co-design is typically conceptualized as an innovation process driver where participants collaborate on a shared problem using their own unique functional expertise and perspectives mediated through shared tools designed to provoke and promote communication and creativity (Marc Steen et al., 2011; Sanders and Stappers, 2008). This process becomes especially valuable in the design process because of its ability to catalyse innovation through knowledge sharing and communication across functional and boundaries of practice (Marc Steen et al., 2011).

Participants in a co-design process reach a point of agreement by deliberating over each other's points of views and subsequently reaching a commonly agreed end result. However, this cross functional exchange also creates difficulties of effective communication and collaboration and therefore co-design processes are typically facilitated by designers using contextually relevant tools that act as boundary objects between communities involved in the activity. Boundary objects, described as objects that embody shared meanings and are of

interest to each community involved (Brown and Duguid, 1998), help clarify the assumptions and attitudes of each community to others involved and to themselves as well (Buur and Mitchell, 2011). Moreover, they are also known to enable reflection and second degree learning within communities engaged by them (Brown and Duguid, 1998).

While boundary objects serve as effective tools for engaging non organizational participants, we argue that the co-design process needs to consider additional factors when being conducted in an organizational setting. Wenger (1999) describes organizational communities as separate from social or institutional communities because of being built around shared practices and also conceptualizes organizations as "constellations of practice". By virtue of being situated within organizations, these communities have their own shared ways of working, communicating and more often than not, an understanding and realization of the design process. Junginger (2015) has also discussed this as a challenge from a service design standpoint and argues that design practices and methods, "however flawed they might be", are deeply embedded in all organizations since they need to deliver some kind of service or product. Factors like differing levels of acceptance for the design process and the presence of design legacies (Junginger, 2015) within organizations can have a significant impact on the level of engagement and communication facilitated by designers and consequently the boundary objects both of which could be seen as external to the organization. Hence, processes working within organizational settings need to account for these shared practices and design legacies specially when working across boundaries, as in the case of service design. Literature within organizational studies discusses similar issues in the context of knowledge exchange and cross collaborative innovation (Franke and Shah, 2003; Kimble et al., 2010) and proposes the concept of knowledge brokers in addition to boundary objects as an additional channel to facilitate communication and engagement across communities.

## Introducing Knowledge Brokers

Wenger (1999) defines brokering as a "process of translation, co-ordination and alignment between perspectives. It also requires the ability to link practices by facilitating transactions between them." Brown and Duguid (1998) apply this concept in an organizational context by identifying knowledge brokers as people who "participate in the practices of several communities" and hence open up possibilities of meaningful exchange and deliberation between them. They also suggest that knowledge brokers are true participants in the communities they are a part of and hence are invested in the consequences of any exchange they facilitate.

Additionally, Mayer (2010) argues that brokering is a combination of differing practices including making knowledge contextually relevant by scaling, appropriating and disseminating. Hence, the act of brokering is not a simple act of transfer but rather an act of transformation and translation (Carlile, 2004). The knowledge broker does this by creating a common language that all communities can understand, use and engage with. Mayer (2010, p. 119) also observes that brokering tends to happen in specific spaces that "privilege" it to happen and takes on differing shapes and forms based on the spaces and communities involved. Therefore, we see co-design processes as natural spaces that lend themselves to brokering by virtue of being exploratory spaces designed for cross functional collaboration, knowledge transference and deliberation.

The differences in the nature of brokerage and its expected functions is further discussed by Boari and Riboldazzi (2014) who propose a brokerage typology based on Gould and Fernadez's (1989) brokerage relations and suggest that differing roles can be adopted by the same person depending on the time and context (see Figure 1). The roles are that of the coordinator, where participants and the broker are from the same community; the representative, where one participant deliberates over exchanges with "outsiders"; the gatekeeper, where the broker acts like a link between outsiders and members; the liaison, where the broker is an outsider who links communities together during exchange and deliberation; the cosmopolitan, where a member of a community acts like a broker between

members of other communities. Further, they suggest that brokers add value by making the participants from the involved communities aware of the interests and issues faced by all others, increase process approachability and relevance by drawing contextual analogies and lastly synthesize broader patterns from the community specific elements from the discussions. Considering that the typology of brokering is primarily driven by the nature of communities the broker is interacting with, we suggest an understanding of the communities participating, their structures and the participant's roles would help identify the nature of brokering that would be needed during co-design. Further, we also recommend transitioning natural knowledge brokers within and/or amongst these communities into brokers in design settings and partners in the design of activities and tools.

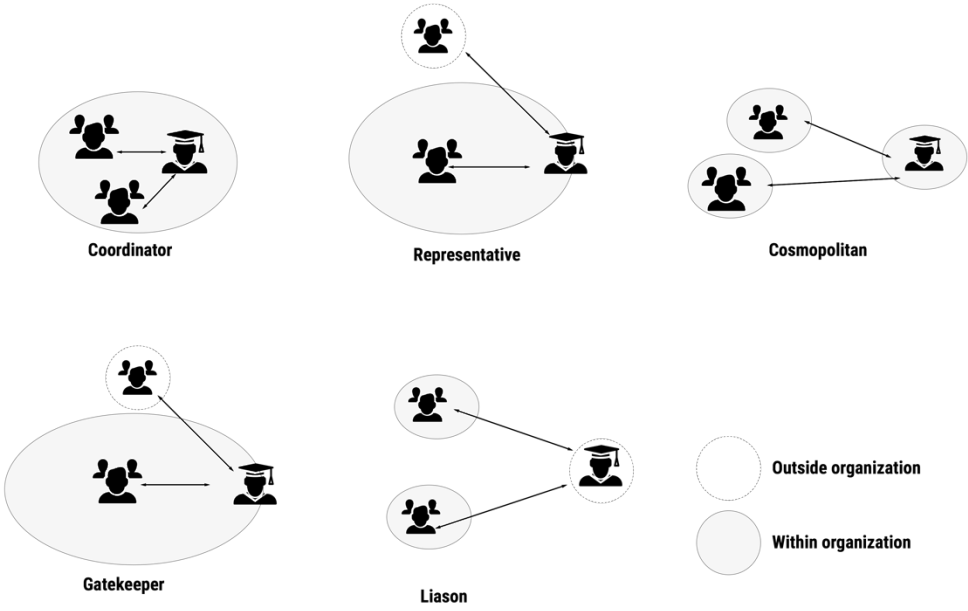


**Figure 1: Five types of knowledge brokers and community relations**

As discussed above, while service design is increasingly being recognized as a strategic driver for organizations little has been written addressing the unique challenges an organizational setup may offer (Junginger, 2015) and strategies for working with these challenges. Through this paper, we therefore aim to address the challenges that arise due to the practice based legacies in an organizational setup and offer a possible strategy that could help translate and appropriate service design methods and practices for these settings. To do this, we borrow the concept of knowledge brokers from organizational studies, where, in contrast, the discourse on cross functional collaboration and innovation across boundaries is very rich and bridge this concept with service design methods and practice. Hence, we contribute to the current service design discourse by adding insights to both theory and practice in the service design discourse.

## Case Studies

This section describes two cases where co-design workshops were conducted in the early stages of the service design process. Though these workshops present results from public organizations, we think our results would be valid even in the context of private organizations. This is because the conceptualization of an organization as a 'constellation' of communities with shared practices and ways of communicating and understanding design methods, would be applicable for private organizations, even though their practices might be more malleable than what we have encountered. The two cases outlined here present two different contexts for evaluation - one where all participants were members of a single

department within an organization but came from different branches and the other, representing a larger scale project, had participants from different departmental disciplines from an institution along with external participants as well. However, both of these workshops were conducted early on in the design process to identify learnings from the existing service delivery mechanisms and channels involved, explore possible opportunities and constraints and outline a shared vision for new service development and redesign.

The workshops consisted of a series of design tasks structured to evoke exploration and discussion and organized so that each task would build on the outcome of the former. Open-ended tools were used in each workshop to aid communication and exchange. However, while both the workshops consisted of extensive exploratory deliberation and ideation resulting in outcomes of various forms, we describe select tasks and the broker's role within those design tasks for the sake of greater clarity with respect to ideas presented in this paper.

### Case 1: Informational services redesign for the library at an academic institution

The goal of this project was to identify possible opportunities and areas of change in a service redesign exercise for the information and support services at the University of Oslo's academic library. We were invited to run a workshop by the library leadership aimed at defining the brief and vision for the overall project. The leadership by extension became an early point of contact for getting an understanding of the context of the project and practices of the community which helped us shape the tools needed for this exercise. Interpreting this from the knowledge broker typology discussed earlier, the role of the leadership was initially that of a gatekeeper (i.e. a link between community and outsiders). Since in this case, all the participants involved belonged to the same community, we tried to identify knowledge brokers for playing the coordinator role (i.e. where the participants and the broker are in the same community) for the workshop. As discussed earlier, based on our strategy of transitioning natural brokers into these roles, members from the community playing leadership roles were identified as brokers because we felt brokering coordination would act as an extension of their day to day practice dealing with inter and intra-team coordination and management. The broker in this scenario was expected to provoke discussions amongst participants and translate the design tools and intent.

Before the workshop, setup meetings were conducted with the leaders (who were also acting like brokers) where the role and intent of the tools was explained and the goals of the workshop deliberated upon. Based on these discussions, the initial goals of the workshop were collaboratively expanded and detailed further. Four primary areas of investigation - user identification, service opportunities, requirements and perspectives and consequently, four design tasks - service ecosystem mapping, user journeys, constraint mapping and perception mapping were defined.

The workshop was conducted with twelve participants from different branches of the institute library including two library leaders playing a broker's role. These participants were split into two groups of five with one broker in each group. The workshop started with the exploration of the service ecosystem and while the process was explained to the participants through a small example and a interactive demo by us, the brokers in each group explained the process further by providing contextual analogies from technical and content maps which formed a part of the participant's routine practice (see Figure 2). Not only did this help get the participants started but also allowed them to draw from their own personal experiences and apply them to gain richer insights. Additionally, it helped them see a process level analogy and possible ways in which the outcome from this task could inform the subsequent tasks. For example, one of the groups decided to expand the scope of a touch point's access channels, an internal web-page in this case, to incorporate remote access scenarios along with localized usage as well. This consideration directly fed into the user journeys created and the constraints mapped for the touch point. While this was a macro level translation and transformation of the design intent to make it more relatable, we also

observed that the brokers clarified thoughts and questions on much more micro level as well within each task. We think that these micro translations represent a much closer approximation of their day to day practice and hence was a role they adopted naturally without any deliberate intervention or suggestion from our side. Consequently, this allowed the participants to engage more freely in more meaningful exchanges. Finally, they also prevented ideas from getting lost in discussions and filtered out by actively taking notes and provoking relatively silent participants to contribute.

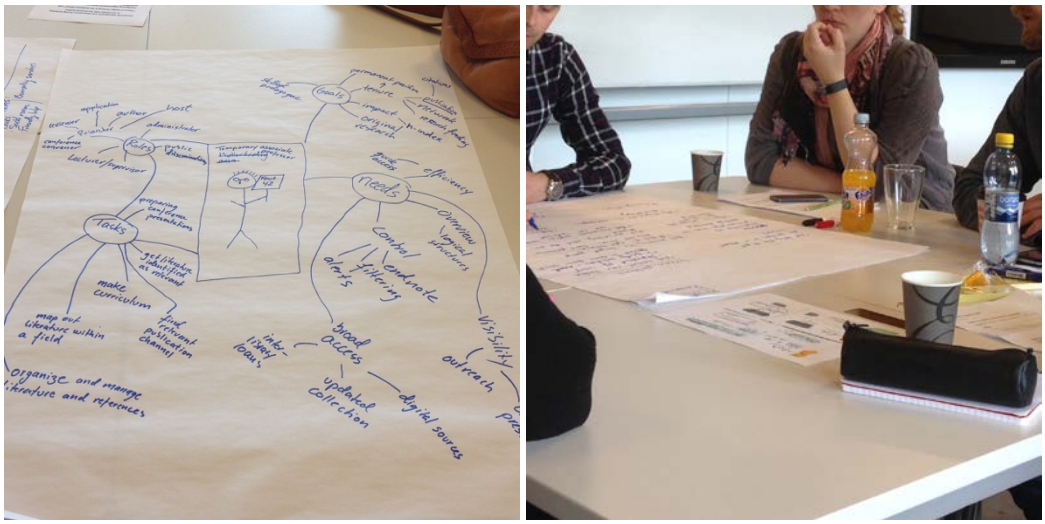


**Figure 2: Ecosystem map developed by participants**

## Case 2: The design of support services for a new departmental building at the University of Oslo

The goal of this ongoing project was to identify the nature, scope and possible functions of a support service for a planned building which would house various disciplines within the life sciences department of the University of Oslo. We were invited to assist with the project by the core driving group for the upcoming building, who, like in the previous case, took on the gatekeeper's role. They helped us get an understanding of the context of the larger project, the nature of communities involved as stakeholders, open questions that needed to be explored and getting a co-design workshop set up with these stakeholders. Since the context of the project was situated in the future, the project involved looking at current support service usage patterns within the institute and visualizing probable futures by building service scenarios. In this case, since the participants involved in the workshop came from different departments and with highly varied functional expertise, project expectations and acceptance of the design process, the ability of the broker to understand and translate exchanges and ideas across different disciplinary boundaries was considered critical. Hence, we opted to involve participants playing cross disciplinary support functions in their practice, in the broker role. We felt such participants would be a natural fit for the role of a cosmopolitan broker (i.e. a member of a community acting like a broker between members of the other communities), since it seemed to be an extension of their practice. We identified subject librarians for this role instead of the leadership because of their day to day interactions with the disciplinary department members involved and their natural role in knowledge support functions for them. Hence in this case, it can be seen how multiple partners can adopt varying knowledge broker roles based on the context and participating communities.

Like in the last case, during the setup meetings, the goals, tools and tasks for the workshop were deliberated upon. We also tried to identify possible participants from the library who could take the broker's role. We realized that subject librarians participating in the project had been involved in hands on design methods seminars earlier and hence had a basic familiarity with the process. Since one of the authors had also been involved in the design of

tools for the seminars mentioned, we decided to make use of this familiarity by building on the tools from the seminars. The librarians nominated for the broker role were also invited for subsequent setup meetings and four primary areas of exploration were decided upon - present service scenarios, future service requirements, attributes and strategies. The tasks finalized were - service discovery, card sorting and ecosystem mapping for understanding the current support services, ecosystem mapping for functional areas in the new building, future user journeys, scenarios and touch point analysis, architectural discussions and constraint mapping.

The workshop was conducted at two locations over the course of two days with twelve participants from four departments including three participants acting like brokers and a representative from the architectural firm involved in the project on the second day. The first location was next to the area where the new building was being planned and the second location was in the existing building that houses the library and the departments that some of the participants worked in. The participants were split into three groups of four including one participant acting as the broker in each team. The workshop started with a session on identifying the channels and nature of support in three different buildings housing various departments. This was followed by a group debrief and a mapping of the service touch points and attributes the participants had encountered using images taken by the participants and cards created for a card sorting exercise (see Figure 3). In this case, the importance of brokers became apparent right from the start where participants in two of the teams, who came from different fields and practices, showed little engagement and motivation in these exploratory tasks. The brokers, in this case, besides playing a translational function, took a motivational and demonstrative role as well. We share a few examples from the initial phase of service discovery and mapping. During the service mapping task, the brokers pushed the participants to explore different touch points by creating possible scenarios of usage that they had to consider. We think that subject librarians, by virtue of being involved in knowledge support functions in practice, could extrapolate from experience and visualize scenarios which were grounded and real. Further, during the debrief and the card sorting exercise, when the participants tended to break into subgroups and de-link the discussions and insights from the cards and did not engage with creating a visual collage, the brokers started to take these insights and linked them back to specific cards and started to classify them in categories and attributes based on accessibility and aesthetics. This provoked the participants to start collaborative discussions over the details of the visual collage and naturally deliberate over insights that linked back to the collage as a common point of reference. We could also observe how these tools mediated and translated by the brokers started to create a common language and reference point for the other participants in the group. Hence, besides offering analogies and highlighting topics for discussion and noting down the outcomes, in this case, the brokers acted like demonstrators by engaging with the tools fully and highlighting the design intent and value through action and helping create motivation and a common language for deliberation.

**Figure 3: Deliberations over card sorting**

## Discussion

We introduced the concept of knowledge brokers for service innovation processes in an organizational setup and demonstrated how it addresses the challenges posed by existing design legacies in such contexts. The results of this exploration can be summarized around three main areas of insights, all of which attempt to bridge theoretical considerations from organizational studies and observations from service design practice. These are:

» Identifying knowledge brokers
» Partnering with knowledge brokers
» Brokers, boundary objects and service designers

### Identifying knowledge brokers

Knowledge brokers in an organization function at the boundaries of varied forms of expertise and practices facilitating the meaningful exchange of ideas between different professionals and/or departments. The identification and direct involvement of individuals already familiar with working at these boundaries proved very helpful for the service design team. Usually within organizations, there aren't clearly identified roles solely for knowledge brokerage but as discussed earlier, different kind of professionals assimilate various forms of brokerage into their daily practice which could relate to management, strategy, support etc. They function as a bridge or as communicators between different expert groups during the course of their daily practice. Firstly, they were aware of the extent of domain understanding they needed to be able to function as knowledge brokers between organizational communities. Secondly, they actively contributed to the process of tailoring the co-design tools and tasks to be used in the workshop, according to the communities the participants were members of and the overall goals that we were working towards. They were instrumental in informing the service designers about the existing work practices or design legacies that could potentially influence the project at hand, which helped in informing and engaging the participants with the tools and tasks of the workshops by working with language and methods the participants were already familiar with.

### Partnering with knowledge brokers

The pre-sessions with the knowledge brokers before the actual workshop proved pivotal for this success of the cases described. They helped us shape clearer goals and identify appropriate tools and methods for the context we were going to be working with. These sessions also gave a background and understanding of the intent of the design activities to the broker so that they did not need to interpret them directly during the workshop. For example, in the first case, one of the goals was to propose concepts, implementable within organizational constraints. With this background in place in conjunction with their understanding of negotiable and non negotiable library process constraints, the broker was able to highlight and encourage participants to think about constraints from experience, helping them orient themselves towards more realistic solution. For a service designer alone this would have meant evaluating every constraint identified by the team along with feasibility issues with the design concept itself.

### Brokers, boundary objects and service designers

Out of the five roles described for knowledge brokers (Boari and Riboldazzi, 2014), in the scope of the cases we describe, three roles - the "coordinator", the "gatekeeper" and the "cosmopolitan", were clearly observed. The definition and expectations from the roles was completely driven by the context and an understanding of the participating communities in the workshops. The leadership played the gatekeeper role by helping us get a broad understanding of the nature of participant's practice and possible risks with respect to participant engagement in both cases. In the first case, the leaders were invited to participate

in the workshop as coordinators since all the participants were from the same department and we expected the broker role to be an extension of their practice. In the second case, subject librarians were invited to be cosmopolitan brokers between members of multidisciplinary departments because we expected it to be an extension of their support and mediation centric roles in practice.

We observed that brokers helped appropriate the tools, translate their intent and role in the overall process and in the second case, helped create engagement and involvement around the tool itself. Hence using the tools in conjunction with the broker in each group helped create a common language for deliberation and exchange. However, we should highlight that there could be a risk of information bias and filtration on the part of the broker which should be addressed in both the pre-workshop sessions and the workshop itself. In our case, we (the service designers) tried to mitigate it further by becoming overall facilitators and managers in the workshop while also acting like shared or floating members and using the expertise of knowledge brokers for localized translation, engagement and appropriation.

## Conclusion and future work

In this paper, through two cases from different service design exercises, we show how organizational members acting like natural knowledge brokers in their daily practice were identified and partnered with. Further, we demonstrate how this helped us elicit greater engagement and participation from the organizational communities involved in our service design projects and overcome potential challenges that could arise due to inter and intra community work and communication practices or design legacies. We also demonstrate that the nature of knowledge brokers needed for different exercises differs based on community and context. Future work on this topic would address additional brokerage roles in newer contexts and a more thorough evaluation of the relationship between boundary objects and brokers in workshops. Additionally, the long term impact of being design mediators in multiple settings on the broker's practice could also be an interesting area of exploration.

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