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Crowding at the frontier: boundary spanners, gatekeepers and knowledge brokers

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Abstract

Purpose – This paper aims to contribute to defining the concepts of boundary spanner, gatekeeper and knowledge broker.

Design/methodology/approach – A review of the literature covering more than 100 sources.

Findings – A review of past research leads to proposing a set of new definitions and also to the detection of six research avenues.

Originality/value – The ability of organizations to recognize, source and integrate key information or knowledge is important for their strategy, innovation and performance over time. Three types of individuals have information gathering and knowledge dissemination roles at the frontier of organizations and groups: boundary spanners, gatekeepers and knowledge brokers. Although research on these individuals is well-developed, we found that in practice, the definitions of the concepts overlap and still need a clarification. So far, no systematic comparison of these roles has been undertaken.

Keywords Organizational learning, Boundary spanner, Knowledge transfer, Knowledge management, Gatekeeper, Knowledge broker

Paper type Literature review

The ability of organizations to recognize, source and integrate key outside knowledge is important for their strategy, innovation and performance over time (Grant and Badden-Fuller, 1995; Nahapiet and Ghoshal, 1998; Teece, 2009). Within organizations, facilitating knowledge exchange between communities is also essential to develop an organizational advantage (Ancona and Caldwell, 1992; Brown and Duguid, 1998). Despite their importance, sourcing and integrating knowledge remain difficult tasks. Boundaries between groups or between the organization and its environment can be an obstacle to knowledge sharing and innovation (Brown and Duguid, 1998; Leonard-Barton, 1992).

Three types of individuals play major roles in the transfer and integration of external knowledge: boundary spanners, gatekeepers and knowledge brokers. These actors work at the frontier of organizations and groups and are important interfaces between organizations and their environment (Leifer and Delbecq, 1978; Evers and Menkhoff, 2004). Although research on these individuals is well-developed, in practice the definitions of the concepts overlap and still need a clarification. This article proposes a new set of definitions which articulate the differences and links between these concepts. Avenues for future research are also identified.

The “boundary spanner” phrase has been used in a variety of contexts with diverse meanings (Kostova and Roth, 2003; Kusari *et al.*, 2005; Levina and Vaast, 2005). Several works on individuals crossing the borders of organizations use the concepts of gatekeeper, boundary spanner and, sometimes, knowledge broker in an interchangeable way (Cohen and Levinthal, 1990; Nochur and Allen, 1992; Ramirez and Dickenson, 2010). An analysis of the origins of the gatekeeper concept allows defining the central role of gatekeepers as

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information controllers and decision-makers (Lewin, 1947). From there, the functions of gatekeepers have been defined as either environment monitoring and information dissemination (Katz and Tushman, 1980) or as regulators of information (Awazu, 2004; Barzilai-Nahon, 2008a). The definition of knowledge brokers is also unclear. Researchers have defined them either as individuals participating to multiple groups and facilitating the transfer of information among them (Brown and Duguid, 1998) or as “people moving between the two different worlds of knowledge producers and knowledge users” (Meyer, 2010a).

A review of the literature covering more than 100 sources permits to propose a new set of definitions of the concepts of boundary spanner, gatekeeper and knowledge broker. Boundary spanners are interfaces between a unit and its environment (Cross and Prusak, 2002; Leifer and Delbecq, 1978) who can play several different functions, including information exchange and access to markets and resources (Adams, 1976; Jemison, 1984). Depending on the context, gatekeepers are either a sub-category of these individuals who focus on knowledge gathering and dissemination or filters and controllers. Knowledge brokers also center on knowledge transfer, but contrary to boundary spanners and gatekeepers, they do not belong to either group that they span. Our research contributes to clarifying the three concepts and their use, underlining overlaps as well as pointing out differences.

Avenues for future research are also identified. First, the lack of measuring tools to evaluate the behaviors and performance of boundary spanners, gatekeepers and knowledge brokers might be a source of confusion when trying to define and operationalize these concepts. Second, research on boundary spanners, gatekeepers and knowledge brokers would gain from the inclusion of the power dimension to understand their performance in transferring and diffusing knowledge. Third, the practices of gatekeepers to transfer information and knowledge have yet to be analyzed, as few studies focus on this aspect. Fourth, the influence of new technologies on boundary spanners could be analyzed. Fifth, the main difference between gatekeepers and knowledge brokers is their position. The influence of their positions on their behaviors needs to be studied. Finally, I call for the diversification of case studies used to analyze these roles. Differences between internal and external boundary spanning could be studied.

Our article has six parts. The first part analyzes the role played by individuals crossing organizational frontiers in relation to organizational learning and knowledge management. The second part outlines the methodology used in the review of the literature on the concepts of boundary spanner, gatekeeper and knowledge broker. The third part focuses on the concept of boundary spanner. I articulate the different definitions of the concept and outline the key dimensions and levers of this role. Gatekeepers are analyzed in the fourth part. The fifth part focuses on knowledge brokers. This analysis provides the basis for a comparison of the concepts of gatekeeper, boundary spanner and knowledge broker, which leads to proposing new avenues for research in the last part.

1. Crossing organizational frontiers and learning

Individuals crossing organizational boundaries contribute to firm performance by supporting transfer and integration of new knowledge.

Sourcing and using external knowledge has an impact on organizational performance (Cohen and Levinthal, 1990; Huber, 1991; Liebeskind *et al.*, 1996). Capturing knowledge outside the organization is favorable to innovation (Katz and Tushman, 1980). Among others, Brown and Eisenhardt (1997) show that the managers of successful companies gather information about the future outside the borders of their organizations. Individuals spanning organizational boundaries play a role as conveyors and translators of knowledge, and contribute to the absorptive capacity of the firm (Allen and Cohen, 1969; Cohen and Levinthal, 1990). Actors crossing external boundaries, such as board directors, can transmit experience or knowledge about other organizational practices (Shropshire, 2010).

Inside organizations, individuals crossing the boundaries of sub-units or groups permit better team performance (Ancona and Caldwell, 1992) and diffusion and utilization of knowledge. Leonard-Barton (1998) points out the roles of T-shaped, A-shaped and “multilingual” managers whose deep functional knowledge combined with an ability to understand different perspectives accelerate innovation projects and conflict resolution between professionals with different expertise. Team boundary spanning allows coordination with other parts of the organization and active management of important relationships outside the team (Marrone, 2010). In the context of emerging communities of practice, boundary spanners contribute to knowledge sharing, resource gathering and relational intermediation (Castro-Gonçalves, 2007). They maintain communication flows between the community of practice and its organizational environment, which helps to manage the perverse effects linked to the functioning of communities of practice (Castro-Gonçalves, 2007). Interactions between individuals play a central role in learning (Ingham, 1994; Wenger, 1998). The integration, coordination and awareness of the knowledge embodied and possessed by individuals in the organization contributes to organizational performance (Jacquier-Roux and Paraponaris, 2012).

Several concepts describe individuals crossing organizational or group frontiers: boundary spanners, gatekeepers and knowledge brokers. Research on these individuals refers to different perspectives on knowledge. Knowledge can be perceived either as a static object or as dynamic and enacted (Fillol, 2006). Tsoukas (1996, p. 13) pointed out two main research approaches. The first one proposes to “classify the different types of organizational knowledge and to draw out each type’s implications”, whereas the second approach underlines the emergent and collective nature of knowledge. Taking into account both structural and communal aspects is important to understand knowledge transfer and integration in organizations. “Know what” is easier to transplant in another community or group, whereas “know how”, which is embedded in practice, is difficult to transfer. Whereas early research on gatekeepers in R&D settings and on knowledge brokers has adopted a structural approach and refers to explicit knowledge, analysis of boundary spanners in a variety of contexts also includes a communal perspective. Intensive research production about these roles has led to overlaps and confusion between the concepts.

2. Methodology

This article contributes to defining the concepts of boundary spanner, gatekeeper and knowledge broker. Using the EBSCO Global Source database, a research on “boundary spanner”, “gatekeeper” and “knowledge broker” in peer-reviewed journals produced the results detailed hereafter. General attention to the concepts of boundary spanner, gatekeeper and knowledge broker is significant. Between 1965 and 2014, 501 published references contain “boundary spanner”, 3,495 cite the gatekeeper concept and 38 of the

“Efficient gatekeepers and boundary spanners are rare individuals who have developed specific competencies.”

“Knowledge brokers share similar characteristics to gatekeepers, but span groups to which they do not belong.”

articles use both terms. Contrasting with the boundary spanner concept, which is mostly used in research on strategy and organizations and in marketing, a large range of disciplines utilize the gatekeeper notion. The gatekeeper terminology has entered everyday language and is used in an anecdotal way in a variety of contexts, which explains the number of publications mentioning the concept. The notion of knowledge broker emerged in the 1990s. To date, only 167 published references mention knowledge brokers. The data indicate a surge in interest for these concepts since 2000.

Focusing on leading management journals (*Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Human Relations*, *Journal of Management*, *Journal of Management Studies*, *MIS Quarterly*, *Management Science*, *Organization Science*, *Organization Studies* and *Strategic Management Journal*), I found 56 articles mentioning the boundary spanner concept. In these journals, 133 articles mentioned gatekeepers, but only 5 contained knowledge brokers. Research on boundary spanners includes research on innovation, strategic alliances and intergroup coordination. Analysis of gatekeepers focuses on their contribution to innovation and knowledge transfer and on their filtering role in media and services industries. The concept is used a few times in research on diversity management. Research on knowledge brokers also focuses on innovation and knowledge transfer and diffusion.

This article discusses boundary spanners, gatekeepers and knowledge brokers in research in management. Results from the database search were refined by reviewing each article. I excluded articles using the concepts in an anecdotal way. The analysis of the literature was also completed ad hoc when a reviewed article mentioned a relevant reference. Finally, the examination of literature was completed following the suggestions of reviewers and peers during three recognized research conferences.

This process resulted in the identification of 113 references (mainly, but not exclusively, articles). Each reference was analyzed following a grid of analysis which included the following themes: origins and definition of the concept, type of research (theoretical background, objective, methodology), functions and levers influencing the performance of the individuals under study. The results of our analysis are presented below.

3. The boundary spanner: a generic concept?

3.1 Origins and definitions of boundary spanners

Friedman and Podolny (1992) date the concept of “boundary spanning” back to the early 1920s. In management, early research referring to boundary spanning behavior includes the works of March and Simon (1958), Brown (1966) and Katz and Kahn (1966). The “boundary spanner” phrase was introduced by Tushman in his 1977 article on special boundary roles in R&D departments (Tushman, 1977).

Seminal work on boundary spanners focus on their contribution to innovation and present them together with the gatekeeper role (Katz and Tushman, 1980; Tushman, 1977), which can be a source of confusion. Research analyzed their role in information gathering and dissemination (Leifer and Huber, 1977; Tushman, 1977; Tushman and Scanlan, 1981). In early years, boundary spanners are most frequently defined as interpreters of environmental conditions and providers of information to decision-makers (Leifer and Huber, 1977). This primary focus on the information exchange role of boundary spanners is still in use today. Inside organizations, boundary spanners also play an important role in

knowledge exchange between a unit and its environment (Barner-Rasmussen *et al.*, 2010). They contribute to bring together knowledge from different groups (Lessard and Zaheer, 1996). Boundary spanners are crucial conduits of information, especially in situations where having access to different expertise is important, such as product innovation (Cross and Prusak, 2002). They reduce uncertainty thanks to their various activities (Jemison, 1984; Leifer and Delbecq, 1978).

The “boundary spanner” terminology is also a generic concept which is used to describe different functions, both inside and outside the organization. They are “persons who operate at the periphery or boundary of an organization, performing organizational relevant tasks, relating the organization with elements outside it” (Leifer and Delbecq, 1978, p. 41). Other definitions of boundary spanners describe them as individuals responsible for contacting persons outside of their own group (Adams, 1976; Cross and Prusak, 2002; Friedman and Podolny, 1992). Boundary spanners can play many different functions in organizations. Leifer and Delbecq (1978) underline the variety of terminologies applying to boundary spanning activity. They list 12 names given to boundary spanning individuals in the literature, including *linking pin*, *gatekeeper*, *liaison role* and *marginal man*. In their study of the role of boundary spanners in geographical clusters, Abittan and Assens (2011) define boundary spanners as individuals who play at least two functions in a territory or group from the following list: *gatekeeper*, here defined as the quality controller of knowledge; *bridge*, who connects individuals who have no common language; *central connector*, who connects knowledge seekers and sources of knowledge; and *expert*, who has intellectual capital and the ability to transfer knowledge to other individuals. Six main functions played by boundary spanners can be identified:

1. information exchange, including information acquisition and control;
2. access to resources;
3. access to markets and commercialization of outputs;
4. organization or group representative;
5. trigger of organizational change; and
6. coordinator and facilitator (Aldrich and Herker, 1977; Ancona and Caldwell, 1992; Jemison, 1984; Katz and Kahn, 1966; Leifer and Delbecq, 1978).

The relational view of boundary spanning has been well-developed (Gittel and Douglass, 2012; Dyer and Singh, 1998; Okhuysen *et al.*, 2013). Inside organizations, boundary spanners can enable other actors to link up, facilitate transactions by assisting other actors and intervene to create positive outcomes (Barner-Rasmussen *et al.*, 2010). Recent work also focuses on inter-team coordination and leadership (De Vries *et al.*, 2014; Hogg *et al.*, 2012). Boundary spanners allow the solving of conflicts (Adams, 1976) and contribute to strategic decision-making (Hsu *et al.*, 2007; Leifer and Delbecq, 1978; Thompson, 1967).

The concept of boundary spanner is versatile and has been applied to different positions in a variety of sectors. These actors can be middle managers (Pappas and Wooldridge, 2007; Richter *et al.*, 2006). Part of research also covers the boundary spanning activities of top managers and board directors (Huber, 1991; Shropshire, 2010; Tyler and Steensma, 1995). Well-developed research in marketing uses the boundary spanner concept to describe salespersons (Kusari *et al.*, 2005; Lovett *et al.*, 1997; Seabright *et al.*, 1992). Empirical studies on boundary spanners occur in a variety of sectors, including healthcare (Richter *et al.*, 2006), advertising (Ibarra, 1993) and public services (De Vries *et al.*, 2014). Several studies focus on R&D settings (Tortoriello and Krackhardt, 2010) and on the role of these actors in geographical clusters (Abittan and Assens, 2011). Boundary spanners are often analyzed inside organizations, with a specific focus on their role within information technology departments (Castro-Gonçalves, 2007; Levina and Vaast, 2005) and multinational corporations (Kostova and Roth, 2003).

Following previous research, I define boundary spanners as links between a unit and its environment (Cross and Prusak, 2002; Leifer and Delbecq, 1978) who can play several different functions, such as information exchange, access to resources (Adams, 1976; Jemison, 1984) and group representation (Cross and Prusak, 2002; Friedman and Podolny, 1992).

3.2 The performance of boundary spanners

While part of the literature focuses on the different components or functions of the boundary spanner's role, other researchers studied the levers that impact the performance of these actors at the individual and organizational levels.

It takes several competences which are hard to develop to become an efficient boundary spanner, in particular, breadth of intellectual expertise, social contacts and personality traits enabling the individual to be accepted by different groups (Cross and Prusak, 2002; Levina and Vaast, 2005) and "influence collectively shared perceptions" (Kostova and Roth, 2003, p. 314). In new projects, boundary spanning competences can be slow to emerge and nominated boundary spanners can even fail to attain their goal (Levina and Vaast, 2005; Nochur and Allen, 1992). There are potential harmful effects of boundary spanning with other organizations when external relations are negative (Ramarajan *et al.*, 2011).

To explain the performance of boundary spanners, recent research focuses on the social capital of these individuals (Barner-Rasmussen *et al.*, 2010; Kostova and Roth, 2003) and on social psychology dimensions (Richter *et al.*, 2006; De Vries *et al.*, 2014). The social capital of a boundary spanner depends on two factors: the scope and efficiency of interactions (Kostova and Roth, 2003). Interactions across boundaries "should be meaningful, productive and directed toward mutually-beneficial work-related goals" (Kostova and Roth, 2003, p. 313) to reap the benefits of social capital. In multinational settings, the most efficient boundary spanners cumulate different types of social capital: structural, relational and cognitive, which includes language and cultural skills (Barner-Rasmussen *et al.*, 2010). These aspects relate in particular to the communal perspective of knowledge sharing (Van Krogh, 2003). Inside organizations, boundary spanners who benefit from a strong dual identity which includes both group and organizational identities contribute positively to intergroup relations (Richter *et al.*, 2006). Due to their interfacing role, boundary spanners are prone to high levels of stress (Goolsby, 1992). Perception of justice and role stress have an influence on the willingness of boundary spanners to share information (Wachner and Arthurs, 2007; Yadong, 2007).

Organizational context influences the performance of boundary spanners. Organizations sometimes have difficulties accepting the boundary spanning activities of individuals. Managers might find these activities unfocused or out of control (Davenport and Prusak, 1998). An organic structure is more favorable to the development of boundary spanning (Leifer and Huber, 1977). Monitoring, incentives and expectations of hierarchy have an influence on the performance of these actors (Leifer and Delbecq, 1978; Wachner and Arthurs, 2007). Perceived environmental uncertainty and the current performance of the company also influence their behavior (Leifer and Delbecq, 1978; Wachner and Arthurs, 2007). Gittel and Douglass (2012) point out that boundary spanners are able to support relational processes only if they are sufficiently staffed to dedicate time to engaging in relational practices. Social network theory also gives insights on levers influencing the performance of boundary spanners. Relations embedded in a dense social network mitigate the risk that individuals will pursue their self-interest and facilitate cooperation and conflict resolution (Tortoriello and Krackhardt, 2010).

The concept of gatekeeper is sometimes used in the same context as the concept of boundary spanner, as a synonym or a sub-category. In the following part, we propose to focus on gatekeepers, defining more precisely their attributes and specific contributions.

4. Gatekeepers: only monitoring the frontier?

4.1 Origins and definitions of gatekeepers

Initially, the gatekeeper concept focused on its filtering role at the frontier of organizations. In his seminal work, [Lewin \(1947\)](#) identified a specific category of individuals, named gatekeepers, who played an important role in decision processes by regulating information flows. The initial context of the research was the decision process that led to the preparation of food in the household, but [Lewin \(1947\)](#) also used his findings to explain discrimination in organizations, as gatekeepers could withhold access to the firm to some categories of population. The gatekeeper concept has been subsequently used to study persuasion and mass media communication flows. In this perspective, gatekeepers control the access to organizations, and can thus be perceived as a barrier to overcome ([Donohue et al., 1989](#); [Shoemaker et al., 2001](#)). Part of the literature sees the gatekeeper as an obstacle to information exchange ([Awazu, 2004](#)) or to access to decision-makers within the organization ([Gross, 1967](#)). Some recent research in the media ([Shoemaker et al., 2001](#)) and services industries ([Shumsky and Pinker, 2003](#)) as well as in the marketing and sales field continues to focus on gatekeepers' filtering role. For example, personnel doing the triage of patients coming to hospitals or working in hotline call centers are called gatekeepers ([Shumsky and Pinker, 2003](#)). In these contexts, research focuses on the decision-making process of gatekeepers and on principal-agent issues ([Shumsky and Pinker, 2003](#)).

Contrasting with this approach, another well-developed research stream focuses on the role of gatekeepers in R&D settings. [Allen \(1967\)](#), [Allen and Cohen \(1969\)](#) introduced the term of "technical gatekeepers", defined as individuals who have a wide network outside the group or organization and who are also chosen as internal references by their colleagues. In later related research, the word "technical" disappeared but the initial meaning remained. The introduction of the concept of "technical gatekeeper" by [Allen \(1967\)](#) and [Allen and Cohen \(1969\)](#), who aimed at differentiating these communication stars from individuals with a high boundary spanning activity but no ability to transfer information ([Katz and Tushman, 1980](#); [Von Hippel, 1976](#)), led to confusion regarding the concepts of gatekeeper and boundary spanner. Gatekeepers play an important role in innovation ([Ettlie and Elsenbach, 2007](#); [Utterback, 1971](#)). They share with boundary spanners many characteristics and functions. Gatekeepers are "individuals in the communication network who are capable of understanding and translating contrasting coding schemes" ([Katz and Tushman, 1980](#), p. 1072). They are points of contact for individuals outside of the organization, they link the organization with its environment and, internally, they play liaison and coordination roles ([Paul and Whittam, 2010](#)). The most salient role of gatekeepers is information gathering and dissemination, even though the primary objective of their lookout for information is for personal use ([Macdonald and Williams, 1993](#)). Information selection by gatekeepers can have positive impacts, as it prevents information overload of other collaborators ([Oldroyd and Morris, 2012](#)). Like boundary spanners, gatekeepers experience a higher level of perceived uncertainty than other employees ([Brown and Utterback, 1985](#)). They play a "buffer" role, absorbing and reducing the level of uncertainty for their colleagues ([Tushman, 1979](#)). This phenomenon can be explained by the fact that information conveying uncertainty is not communicated to other members of the organization ([Boulton et al., 1982](#)).

Technological changes have contributed to the evolution of the gatekeeper concept and of the way it is applied. Some researchers now label search engines such as Google as gatekeepers, as they filter access to knowledge and information ([Baye and Morgan, 2001](#)). Whereas early descriptions of technical gatekeepers emphasized their roles both outside and within the organization, more recent work demonstrates that they presently tend to focus on expert knowledge gathering (mostly on the Internet) and information interpretation, leaving to others, its dissemination inside the organization ([Whelan et al., 2010a](#)). Communicating new knowledge to others necessitates both time and effort from

individuals (Reagans and McEvily, 2003). The rapid growth of the amount of data available to gatekeepers might explain their new focus on information filtering and lack of time for other activities.

Contrary to boundary spanners, the gatekeeper concept is currently used both at the individual and firm levels. For example, the gatekeeper phrase is utilized in research focusing on organizational learning and innovation in geographical clusters to identify organizations which capture external relevant knowledge, absorb it and diffuse it within the cluster (Morrison, 2008; Rychen and Zymmerman, 2008). Gatekeepers can also be departments within organizations. For example, competitive intelligence services generate representations of the competitive environment and transfer new knowledge to decision-makers (Belmondo, 2008). Among other activities, such services identify sources of information, gather and interpret data, prepare knowledge diffusion artifacts and diffuse new knowledge (Belmondo, 2008).

The review of past research leads to defining gatekeepers as a sub-category of boundary spanners whose main role is to monitor the environment and acquire, transfer and, sometimes, diffuse information inside the organization or group. The concept can also be used to describe individuals, groups, organizations or technologies playing the role of filter.

4.2 The performance of gatekeepers

Effective gatekeepers share several characteristics with boundary spanners. They need specific competences, in particular the ability to communicate with external areas, which is not something natural (Katz and Tushman, 1980).

Several other factors might influence the performance of gatekeepers. Their behavior depends on the kind of information collected (Macdonald and Williams, 1994). Barzilai-Nahon's (2008a) review points out six forces which influence gatekeeping:

1. subjective factors, such as trust and personal judgment of the gatekeeper;
2. information characteristics (clarity, visual, number);
3. external constraints (cost, time constraints);
4. organizational characteristics and procedures (role, policy, standards);
5. institutional environment (opinion leaders, group consensus, market pressure); and
6. social environment (newsworthiness, cultural differences).

Power also plays an important role in the behavior and performance of gatekeepers (Pettigrew, 1972).

The necessity of having one or several gatekeepers to transfer information inside the organization's boundaries depends on organizational context. The role of gatekeepers has to be situated in the larger context of the firm, and, especially, compared with the knowledge and expertise of people within the organization (Cohen and Levinthal, 1990; Katz and Tushman, 1980). Cohen and Levinthal (1990, p. 132) differentiate three types of situations:

1. In situations where all collaborators have sufficient previous knowledge to grasp external information, the role of the gatekeeper could be limited to environment monitoring.
2. When the knowledge gap between individuals inside the organization and external actors is high, a gatekeeper is needed to monitor the environment and "translate the technical information into a form understandable for the rest of the group".
3. Centralizing the interface with the environment could reduce the firm's absorptive capacity, "when information flows are somewhat random and it's not clear where in the

firm [. . .] a piece of outside knowledge is best applied” (Cohen and Levinthal, 1990, p. 132).

In such contexts, the researchers suggest to put in place a number of “receptors” in relation to the environment (Cohen and Levinthal, 1990, p. 132). Barzilai-Nahon (2008b) also suggests taking into account the individuals belonging to the group where the gatekeeper performs his tasks, labeled “the gated”.

In summary, personal characteristics, context and the nature of information and knowledge influence the behavior and performance of gatekeepers, who appear to be a sub-category of boundary spanners focused on knowledge acquisition, transfer and – sometimes – diffusion. In some contexts, gatekeepers only play a filtering role.

5. Knowledge brokers

A third concept – the knowledge broker – is used by researchers to describe individuals crossing organizational borders to gather and disseminate information and knowledge. Although the concept of broker has been used for decades (Simmel, 1908; Park, 1928), the concept of knowledge broker is quite recent.

A first research stream defines knowledge brokers as individuals belonging to overlapping groups who allow knowledge sharing between communities (Brown and Duguid, 1998). In this vision, knowledge brokers bear a resemblance to gatekeepers.

A second research stream based on the theories of social networks (Burt *et al.*, 2000) and of knowledge transfer and organizational learning (Perrin, 2013) define knowledge brokers differently. First, brokers can choose to span boundaries but boundary spanning is not required (Gould and Fernandez, 1989; Fleming and Waguespack, 2007). Second, contrary to gatekeepers and boundary spanners who belong to one of the groups they span, most researchers agree that brokers span groups or organizations to which they do not belong. Brokers link two or more groups or individuals that have no relation to each other. In inter-group contexts, they do not belong to the units they link (Gould and Fernandez, 1989). This can happen either between sub-groups of the organization (Pawlowski and Robey, 2004) or outside organizational frontiers (Meyer, 2010a). This definition of brokers corresponds to Brown and Duguid's (1998) definition of another role, the “translator”.

Knowledge brokers play a major role in knowledge transfer and innovation. They participate in multiple groups and facilitate the exchange of information among them (Brown and Duguid, 1998; Pawlowski and Robey, 2004). In specific contexts, such as education, healthcare and consulting, knowledge brokers link knowledge producers and knowledge users (Evers and Menkhoff, 2004; Lomas, 2007; Meyer, 2010a). They are also sometimes defined as actors who use their “in-between vantage position to support innovation through connecting, recombining and transferring to new contexts otherwise disconnected pools of ideas” (Burgess and Currie, 2013, p. 132), which implies creativity.

Overall, research on knowledge brokers is more recent and less developed than research on boundary spanners and gatekeepers. Early research on knowledge brokers focused on specific sectors, such as the health sector, or on the role of technology transfer officers in universities (Fernandez and Gould, 1994; Lomas, 2007; Meyer, 2010a). While pursuing this approach, recent research also focuses on knowledge brokers within organizational frontiers (Pawlowski and Robey, 2004). Topics covered include how their practices contribute to knowledge diffusion as they interpret, translate and recreate knowledge (Pawlowski and Robey, 2004; Perrin, 2013). For example, the research of Pawlowski and Robey (2004) on IT professionals in a manufacturing and distribution company points out that IT professionals can act as knowledge brokers: “gaining permission to cross organizational boundaries, challenging assumptions made by IT users, translation and interpretation, and relinquishing ownership of knowledge” (p. 645). The authors also show that structure and technical conditions can influence such practices.

Recent research studies the impact of new technologies on knowledge brokers. Researchers have observed the emergence of organizations adopting the role of “virtual knowledge brokers” which are defined as “actors who leverage the internet to support third parties’ innovation activities” (Verona *et al.*, 2006, p. 765). For example, Internet sites dedicated to gathering customer feedback in targeted industries can play this role (Verona *et al.*, 2006). Virtual knowledge brokers give access to organizations to dispersed market knowledge and thus contribute to innovation (Verona *et al.*, 2006).

Brokers are sometimes presented in a negative light due to their unique position that allows them to control information flows (Burt, 1992; Fleming and Waguespack, 2007). However, Gould and Fernandez (1989) point out evidence about brokers who do not get any specific advantage from their brokering activity. Moreover, the intermediation function of knowledge brokers can be abandoned over time, as spanned groups become more familiar with the knowledge transferred (Meyer, 2010b).

Like gatekeepers, knowledge brokers can be individuals or organizations (Hargadon, 1998, 2002; Meyer, 2010a). Research on firms, associations and public agencies that play the role of knowledge brokers is well-developed (Hargadon, 1998; Chataway *et al.*, 2007). In this context, the “technology brokering” terminology is sometimes used to designate the same role (Hargadon and Sutton, 1997). Design and innovation consulting firms adopting the role of knowledge brokers work with organizations to help them create appropriate solutions to innovate (Sutton, 2002).

6. Boundary spanners, gatekeepers and knowledge brokers: comparison and avenues for research

Based on the analysis of the literature, I propose a comparison of the concepts of boundary spanner, gatekeeper and knowledge broker in Table I.

The strong similarities between gatekeepers and boundary spanners lead to asking whether both concepts are still needed[1].

Whereas seminal research on gatekeepers has focused on their role in information gathering and diffusion, studies of boundary spanners cover a larger portfolio of activities, including intergroup or inter-team coordination (De Vries *et al.*, 2014; Okhuysen *et al.*, 2013), resource gathering (Castro-Gonçalves, 2007), knowledge scouting and transfer (Ancona and Caldwell, 1992; Cohen and Levinthal, 1990; Inkpen and Tsang, 2005), ambassadorial activities (Marrone, 2010; Seabright *et al.*, 1992) and unethical behaviors (Brass *et al.*, 1998). Thus, boundary spanners seem to share with gatekeepers important knowledge-related activities, but their scope of action is larger.

Gatekeepers’ position at the frontier raises the issue of using the boundary spanner concept to describe them. Depending on the research field, two answers are possible. Research on innovation and organizational learning refers to technical gatekeepers, who use their personal networks and academic readings to source relevant information (Allen and Cohen, 1969) together with Internet sources (Belmondo, 2008; Whelan *et al.*, 2010b). Thus, even though in some R&D contexts individuals source information primarily on the Internet (Whelan *et al.*, 2010b), most gatekeepers are still spanning boundaries to source new knowledge. The situation is different when the gatekeeper concept is used in other contexts such as the services or media industries, where gatekeepers only play a filtering role. For example, editors select what is going to be published, and GPs provide treatment or refer patients as needed. In these contexts, individuals operate at the frontier of organizations but do not span groups. Thus, depending on the context and activities performed by these individuals, using the gatekeeper or boundary spanner terminology might be more appropriate. In contexts where knowledge is gathered and transferred through social networks, both concepts can be used and gatekeepers are a specialized sub-category of boundary spanners. Using the boundary spanner concept in these contexts allows more flexibility to analyze the different activities of these individuals.

Table I Comparison of boundary spanners, gatekeepers and knowledge brokers

	<i>Boundary spanner</i>	<i>Gatekeeper</i>	<i>Knowledge broker</i>
Origins of concept	Boundary spanning behavior described in the 1920s March and Simon (1958), Katz and Kahn (1966), Brown (1966) describe boundary spanning behaviors "Boundary spanner" phrase introduced by Tushman (1977)—research on innovation	Lewin (1947) introduced the concept: analysis of decision processes—sociology. Concept used in law, communication, management, information systems and political science. In management: "technical gatekeeper" introduced by Allen (1967), in research on innovation in R&D settings Multiplicity of definitions, depending on the scientific discipline using the concept In management: Controller/guard of information or individual who collects and diffuses information Can apply to an individual, an organization or a technology	Foundational work on brokerage by Simmel (1908). Notion of knowledge broker emerged in the 1990s, related to specialized roles in healthcare, education and consulting sectors
Definition	Multiplicity of definitions. Interface between areas (within or outside the organization), permits information exchanges and access to markets and resources	Well-connected internally and externally External, internal and linking roles Facilitate communication of other group members Contribute to reducing the level of organizational uncertainty Collect, interpret and translate knowledge	Two main definitions (one of them—Brown and Duguid, 1998—corresponds to gatekeeper) Mainstream definition: Individual who facilitates knowledge transfer between groups to which he does not belong More precise definitions apply in education and healthcare contexts Collects, interprets and translates knowledge
Key characteristics	Also: organization/group representative	In more restricted definitions of gatekeepers, controls quality of internal knowledge	Liaison function (does not belong to any group spanned)
References (selection)	Adams (1976), Barner-Rasmussen <i>et al.</i> (2010), Cross and Prusak (2007), Friedman and Podolny (1992), Jemison (1984), Kostova and Roth (2003), Leifer and Delbecq (1978), Levina and Vaast (2005), Tushman (1977), Tushman and Scanlan (1981)	Barzilai-Nahon (2008b), Cohen and Levinthal (1990), Ettle and Eisenbach (2007), Katz and Tushman (1980), Macdonald and Williams (1993, 1994), Nochur and Allen (1992), Paul and Whittam (2010), Utterback (1971)	Brown and Duguid (1998), Hargadon (2002), Pawłowski and Robey (2004), Lomas (2007), Meyer (2010)

Examples of these settings include individuals working in R&D departments or competitive intelligence services. The gatekeeper terminology can also be used in contexts where a precise typology of the multiple activities of boundary spanners is needed, to describe the knowledge-related activities of these actors.

Knowledge brokers are intermediaries between unrelated groups or individuals geared toward knowledge gathering and dissemination. The main difference between gatekeepers and knowledge brokers is their position. Gatekeepers belong to one of the groups they link, but research presents knowledge brokers as “liaisons” linking two different groups without belonging to either, or linking two individuals with no previous relation. [Fleming and Waguespack \(2007\)](#) contrast the roles of brokers and boundary spanners in open communities. The researchers demonstrate that while brokers are quite isolated and might suffer from a lack of trust, boundary spanners benefit from their cohesive social networks.

The comparative analysis of boundary spanners, gatekeepers and knowledge brokers leads to defining future avenues for research. First, confusion on the definitions of gatekeeper and boundary spanner stems from the difficulty to measure the performance of such individuals. For example, in foundational works on technical gatekeepers, researchers insist on the difference between boundary spanning activity and gatekeepers on the basis that despite the fact that they cross borders, some boundary spanners do not allow the sourcing and transfer of relevant information or knowledge. Social network analysis focuses on relations between actors and gives little information on the content of exchanges. Thus, we identify the following avenue for research:

Avenue for research 1: Different measuring instruments to evaluate the performance of boundary spanners, gatekeepers and knowledge brokers could be conceived and tested. A detailed typology of boundary spanners might be useful to develop this set of instruments.

Second, the importance of power to understand the behavior of individuals at the frontier of organizations has been underlined by research ([Crozier and Friedberg, 1977](#); [Pettigrew, 1972](#); [Tushman and Scanlan, 1981](#)). Since this early work, the dimension of power has rarely been taken into account in studies of boundary spanners and gatekeepers. [Van Krogh \(2003\)](#) points out: “it might be more appropriate for future theory and research [. . .] to consider knowledge sharing a problem of collective action among actors with diverse and distributed interests” (p.385). The power dimension is better understood in a dynamic perspective which allows to study the unfolding and articulation of personal agendas, relations, influence strategies and knowledge transfer and diffusion over time.

Avenue for research 2: Analyze power relations influencing the behaviors and performance of gatekeepers, boundary spanners and knowledge brokers in longitudinal studies. The strategies of these actors could also be analyzed.

Third, research studied gatekeepers to answer the question of how organizations can source external information or knowledge. An important research stream on gatekeepers focuses on understanding which mechanism best links an organization to its environment, with context as a key variable ([Katz and Tushman, 1980](#); [Cohen and Levinthal, 1990](#)). To my knowledge, the detailed practices of gatekeepers have not yet been addressed. On the contrary, research on boundary spanners and knowledge brokers has recently focused on their practices. This leads us to the identification of the following avenue for research:

Avenue for research 3: Identify specific practices of gatekeepers which allow them to gather, select and diffuse outside information and knowledge.

Whereas recent research has explored the influence of new technologies on gatekeepers and knowledge brokers, no studies exist on their impact on the different roles played by boundary spanners. The role of boundary spanners is diverse. New technologies might have different consequences on each type of activity, which might explain such a gap at this stage.

Avenue for research 4[2]: Analyze the influence of new technologies on boundary spanners' activities and performance.

Both gatekeepers and knowledge brokers are focused on knowledge acquisition and transfer. Little research investigates the consequences resulting from the different positions of gatekeepers and knowledge brokers within their social networks (Fleming and Waguespack, 2007).

Avenue for research 5: Compare the influence of the respective positions of knowledge brokers and gatekeepers on their behaviors and performance in knowledge acquisition and transfer.

Finally, empirical research on these concepts could be further developed. Most research focuses on network analysis and other quantitative studies. The use of qualitative studies has developed recently. Furthermore, important work on boundary spanners and knowledge brokers focuses on individuals spanning internal organizational frontiers (Pawlowski and Robey, 2004; Kostova and Roth, 2003). The research by Levina and Vaast (2005) compares two case studies: the first one centers on internal boundary spanning, and the second one on relations between an advertising agency and its client. Research would gain in diversifying the typology of cases used to describe boundary spanners, gatekeepers and knowledge brokers, to understand the influence of context on their behaviors and performance, test the limits to generalization of previous research and possibly make the concepts more operational for managers.

Avenue for research 6: The differences between internal and external boundary spanning could be analyzed.

The distinction between the concepts of boundary spanner, gatekeeper and knowledge broker sheds light on the difficulties faced by managers in dealing with these activities. Individuals adopting these roles contribute to the adaptation, learning, innovation and coordination of organizations and groups, but their activities generate a high level of stress. Nominating individuals in these roles is not efficient in many cases and their actions are difficult to control. Managers should recognize when such activities are necessary at the inter-organizational, firm or group level and identify what type of role could be mobilized in each context. To enhance the performance of these activities, they could identify and leverage individuals playing these roles informally. They could also select them among individuals volunteering to span group boundaries when they identify in these actors, the key characteristics necessary to succeed in these roles. Managers could also work on organizational conditions benefitting to the performance of these activities. For example, they could provide managerial support to boundary spanners, gatekeepers and knowledge brokers to alleviate their stress or ensure that their workload leaves them time to create and sustain social links.

7. Conclusion

The aim of our research is to clarify the use of three concepts applying to individuals playing knowledge acquisition and transfer roles at the frontier of organizations: boundary spanners, gatekeepers and knowledge brokers. We have outlined important overlaps and commonalities. Efficient gatekeepers and boundary spanners are rare individuals who have developed specific competences. Both play a linking role between the organization and its environment, and have strong networks inside and outside the organization. Their position allows them to source information that can contribute to organizational innovation and to strategic decision-making. Boundary spanners have many different functions, including information exchange and access to clients and resources, whereas gatekeepers focus on information gathering and knowledge transfer. Knowledge brokers share similar characteristics to gatekeepers, but span groups to which they do not belong.

Several studies published recently limit the concept of "gatekeeper" to an information monitoring and control role within the organization (Abittan and Assens, 2011; Awazu,

2004). A review of research contributes to clarify the importance of gatekeepers in organizational learning, if not on other dimensions typical of boundary spanning, such as access to markets, clients and suppliers. Gatekeepers play two important functions in knowledge transfer: information control and knowledge gathering and diffusion. This article also contrasts the concepts of gatekeeper and knowledge broker, underlining that these roles have a strong resemblance. Going forward, further empirical research to understand their respective contributions and differences could be undertaken.

The research streams on boundary spanners and gatekeepers complement each other and shed light on the multi-level levers (in particular, organizational and individual levers) that can influence the performance of boundary spanners and gatekeepers. A review of research suggests that the behaviors of boundary spanners and gatekeepers vary according to individuals, general context and local situations experienced by individuals. It also allows to identify several avenues for research, such as the need for measures to evaluate the performance of gatekeepers, boundary spanners and knowledge brokers. Further analysis of the practices of these individuals and a diversification of case studies could help to make the concepts more operational.

Boundary spanners, gatekeepers and knowledge brokers can use their positions in several systems or groups to gain power. They can modify their behaviors according to their personal goals and to organizational and local contexts. Going forward, new research taking into account the dynamic nature of knowledge brokers, boundary spanners and gatekeepers could be performed, to understand the emergence, tensions and evolution of individuals in such roles and identify the levers that might stimulate knowledge transfer and diffusion within organizations over time.

Notes

1. I am grateful to one anonymous reviewer for this suggestion.
2. I am grateful to one anonymous reviewer for the identification of this research gap.

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