Corporate hub as a governance structure for coupled open innovation in large firms

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The open innovation model has been recognized as an emerging paradigm by scholars, practitioners and policy-makers within the broader innovation management field (Bogers, Chesbrough, & Moedas, 2018; Chesbrough, Vanhaverbeke, & West, 2014; Randhawa, Wilden, & Hohberger, 2016). The concept was introduced by Chesbrough (2003) as a new paradigm where firms, instead of viewing spillovers from R&D investments as an inevitable cost (Arrow, 1962; Rosenberg, 1994), build mechanisms to purposively transform such inflows and outflows of knowledge into value streams through new open business models (Chesbrough, 2006; Chesbrough & Bogers, 2014). Since then, the understanding of the open innovation model has been significantly improved due to an increasing number of empirical case studies (e.g., Chiaroni, Chiesa, & Frattini, 2011), large-scale quantitative studies (e.g., Chesbrough & Brunswicker, 2014) and conceptual works (e.g., Dahlander & Gann, 2010; Enkel, Gassmann, & Chesbrough, 2009).

However, the field of research is still relatively new and in need of further inquiries (Bogers et al., 2018; Cheshbrough, 2017), especially since the concept can be used in many different ways (Dahlander & Gann, 2010). Open innovation has, for instance, been linked to crowdsourcing (Poetz & Schreier, 2012), user-centric innovation (von Hippel, 2005), platforms (Bullinger, Rass, Adamczyk, Moeistein, & Sohn, 2012) and intellectual property markets (Arora & Gambardella, 2010), all of which arguably work under specific conditions, applying distinctive organizing mechanisms and emphasizing different modes of governance (cf. Demil & Lecocq, 2006; Nambisan & Sawhney, 2011). The inclusiveness of the concept is allowing actors to adopt it in their own ways, but it also poses challenges when navigating the motley landscape precisely because different meanings are being ascribed to the same notion.

Hsieh and Tidd (2012) state that the theorizing of open innovation tends to be general rather than specific to particular contexts and contingencies, but naturally it is very different to design an open business model for a small app developer than for a large bio-pharmaceutical firm. Moreover, there may be significant differences and challenges in enacting open innovation initiatives based on controlled transactions similar to “business-as-usual”, such as buying or selling intellectual properties (IP) on the market, compared to facilitating ongoing, serendipitous interactions where the results and the value are unknown a priori. Often, the greatest value potential for large corporations is through what Gassmann and Enkel (2004) phrase as a coupled process of open innovation, i.e., continuously connecting internal and external knowledge through collaborative innovation work, but this is also where the risk for battles of IP rights are most likely.
The broad open innovation concept can become a communication barrier to theory development for academicians (Linstone, 2010) if scholars, when analysing various initiatives, are comparing “apples with oranges”. Moreover, the vast amount of design options available for practitioners may provide ambiguities on how to enact open innovation in practice. The research on the governance of open innovation is still under-researched, which is why there is a need for further theorizing about how different governance structures of open innovation relate to value creation and value capture processes. Although previous research has described and categorized open innovation activities into distinctive classes, the theoretical understanding is still limited regarding why organizations design their open innovation initiatives in certain ways, and what consequences such structures may have on the coordination and control of the cross-boundary interactions. In this paper, we will explore the governance structure of a specific form of coupled open innovation, and analyse how this governance structure can provide new potentials for innovation between large and small firms. The research question that guides the reminder of the paper is: How can a large corporation design a governance structure for coupled open innovation with small firms?

In the paper, we link the governance structure to the consequences for the open innovation initiative, in terms of who are invited to participate, and how are they being coordinated and controlled. We do so by empirically reporting a study from Sweden on how AstraZeneca, a global bio-pharmaceutical corporation, enacted an open innovation initiative called AZ BioVentureHub (BVH). It was based on the idea of creating a “hub” inside the corporate walls, where small external innovative firms are invited to locate their development work, with the possibility to interact also with the large firm. The study’s unit of analysis is AZ BioVentureHub, which is a corporate initiative and thus mainly rests on an organizational level of analysis. However, as we also include the participation of small hub companies in the discussion, the study also to some degree engages in an inter-organizational level of analysis. We will in the paper explain and analyse AstraZeneca’s approach, in order to identify the specific governance structure that characterized this specific design. BVH, we argue, moves away from the more traditional view that firms are best governed through either the hierarchy of the firm or the price mechanisms of the market, depending on the context (Williamson, 1998). We propose that an attempt such as the BVH is better described as a corporate hub, and we analytically distinguish this governance structure in relation to markets vs. hierarchy (Coase, 1937; Williamson, 1975; Williamsonson, 1985; Williamsonson, 1998), but also against network (Powell, 1990) and bazaar (Demil & Lecocq, 2006) governance.

This study directly links open innovation research to the governance discussion within the broader management and economics fields, and specifically directs attention to the governance of inter-organizational dynamic relationships, which has been pointed out as a central question for open and distributed innovation research (Bogers et al., 2017; Tiwana, Konsynski, & Bush, 2010). The governance structure of a corporate hub is grounded in the resources of a large corporation, but where informal and relational ties are allowed to evolve among carefully selected participants. The BVH is an interesting example of how large corporations within a local environment can maintain their internal control over key assets and IP while simultaneously sharing and utilizing certain resource and R&D spillovers emerging over time. The empirical and theoretical conclusions advance the knowledge about how the governance structure of coupled open innovation between large and small firms can be designed and implemented, and the study sheds light on how such governance structure shapes both the content and the form of open innovation in practice.

The reminder of the paper is organized as follows. First, we present an overview of the literature on open innovation in relation to collaboration between large and small firms and linking it to the governance literature. After a method section, the case of the BVH is introduced and analysed from a governance perspective, ending up in concluding remarks.

2 OPEN INNOVATION BETWEEN LARGE AND SMALL FIRMS

Open innovation is defined by Chesbrough and Bogers (2014) as “a distributed innovation process based on purposively managed knowledge across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with each organization’s business model.” In recent years, various definitions and conceptualizations of open innovation have been proposed (e.g., Bogers et al., 2017; Bogers & West, 2012; Dahlander & Gann, 2010; Gassmann & Enkel, 2004; Huizingh, 2011; Remneland Wikhamn, 2013), which have furthered our understanding of open innovation, and advanced open innovation as an academic field as well as in managerial practice. For instance, based on an analysis of 43 cross-sector firms, Mortara and Minshall (2011) argue that organizations tend to adopt open innovation differently depending on why and when the implementation occurs, and what culture exists in the focal firm. They suggest that firms may need innovation just to support their current innovation pipelines, but they may sometimes also have a need for organizational transformation and enhanced ambidexterity. If the motive is the latter, Mortara and Minshall (2011) propose that firms need to pursue both inbound and outbound activities and continuously interact with external actors to challenge and renew the internal organization. Put differently, apart from advancing the innovative capabilities, open innovation has also been argued to enhance the firm’s dynamic capabilities and absorptive capacity (Remneland Wikhamn & Styhre, 2017; Teece, Peteraf, & Leih, 2016; Zobel, 2017).

Engaging with small firms, such as start-ups or scale-ups, is a specific open innovation approach to enhance both innovation and business transformation simultaneously in large corporations (Richter, Jackson, & Schildhauer, 2018; Weiblen & Chesbrough, 2015). Synergies can emerge when large and small firms interact, where the small firms can gain access to knowledge, resources and legitimacy, while the large firm can become inspired by the small firms’ agility and entrepreneurial spirit (Weiblen & Chesbrough, 2015). Examples of open innovation between large and small firms involve, for instance,
innovation contests (Bullinger, Neyer, Rass, & Moeslein, 2010), corporate accelerators (Kohler, 2016; Richter et al., 2018) and the engagement in broader innovation ecosystems (Rohrbeck, Höhle, & Gemünden, 2009). Also, the BVH initiative explored in this paper can be placed under this open innovation category. Following the argumentation of Mortara and Minshall (2011), all these different forms of initiatives can differ in motivations, implementations and consequences for inter-organizational innovation work, thus warranting a closer examination of the designs and effects of governance structure.

3 | OPEN INNOVATION AND GOVERNANCE

In his seminal text The nature of the firm, Coase (1937) laid the grounds for the transaction cost theory, which was later popularized by Williamson (1975, 1985) and has grown to a substantial area of research on rationalizing strategic firm behaviour. The theory explains when and why firms decide to make business operations in-house or to trade them on the market—i.e. the classical question of “make vs. buy” (Walker & Weber, 1984). This question is naturally of greatest centrality for scholars of open innovation, as it involves the demarcation of firm boundaries.

The theorizing of governance is a central theme in transaction cost theory (Coase, 1937; Williamson, 1975), where a governance structure develops and maintains “a good order and workable arrangements” (Williamson, 2005) when different actors need to coordinate their work efforts. A core argument for why governance matters lies in that interactions among humans involve uncertainty of the outcomes due to, e.g., bounded rationality and opportunism (Williamson, 1998), which is why such interactions also bear transaction costs. Such costs can, for instance, involve the costs of searching and evaluating information, bargaining and acquiring it, and controlling and policing external counterparts (Demil & Lecocq, 2006).

In short, transaction cost theory suggests that firms should organize business operations internally, governed by hierarchical orders and management supervision, unless the transaction costs of utilizing the market are lower than the gains. When innovation occurs within the hierarchy of the firm, the value that is created is also captured by the same entity, and the corporation facilitates the innovation work through conventional human resource management. When extending the boundaries of the firm, large corporations have traditionally primarily solved the governance issue through the market function, governed by contracts and price mechanisms, as predicted by transaction cost theorists. Consequently, open innovation activities based on a transactional perspective of organizing approach knowledge as packaged into IP-based commodities that can be acquired and sold, or delimited and controlled, through contractual agreements. This transactional governance structure more or less resembles the original definition of open innovation by Chesbrough (2003), or what Remneland Wikhamn (2013) labelled open as controlled.

However, many forms of transaction costs have arguably been reduced and altered in contemporary business practice, through the introduction of new ways for communication, knowledge diffusion and project collaboration across traditional organizational boundaries (Benkler, 2006). Within the academic field of open innovation, attention has thus also been increasingly drawn to open as libre (Remneland Wikhamn, 2013), which is approaching knowledge more as relational and ongoing. The driver for such value creation is generativity (Remneland Wikhamn, Ljungberg, Bergquist, & Kuschel, 2011; Zittrain, 2008), in which voluntaristic and spontaneous ongoing interactions create positive feedback loops to leverage knowledge generation. Informal ties like these open up possibilities for serendipity (Murayama, Nirei, & Shimizu, 2015) and radical innovation, and scholars have suggested that the firm’s innovation performance is enhanced when more relational approaches are utilized (Felin & Zenger, 2014; Fey & Birkinshaw, 2005). Conversely, such open innovation activities may need new modes of governance, different from both hierarchy and market mechanisms.

When analysing governance structures, several parameters have been proposed as being of importance; for example, the forms of selection in which external actors are allowed to participate; the forms of interactions that the initiative is designed for; the control mechanisms established to avoid opportunism and unethical behaviour, and the forms of value generated and shared among the participants (c.f. Demil & Lecocq, 2006; Felin & Zenger, 2014; Pisano & Verganti, 2008; Powell, 1990; Williamson, 1975, Williamson, 1985, Williamson, 2005). In Table 1, these parameters are used for distinguishing hierarchy vs. market, based on the above discussion, but we have also added two other governance structures that are related to open innovation—network and bazaar governance.

Powell (1990) explains networks as “more dependent on relationships, mutual interests, and reputation [than in markets]—as well as less guided by a formal structure of authority [than in hierarchy].” The relations developed in a network are indefinite, sequential, long-term and complex, where sanctions are normative rather than legal. The different actors’ complementarity and reciprocity help them agree to abandon self-maximization and opportunism in favour of network maximization. In short, networks are non-market, and non-hierarchical modes of exchange that represent a distinct governance structure of collective action.

In similar vein, Demil and Lecocq (2006) posit the emergence of bazaar governance as a separate governance structure, drawing on the open source phenomenon in software development. Bazaar governance differs from network governance in that no long-term relations are required, and that it is more open to access and enrolment due to its anonymity, absence of selection processes and no requisite for long-term relations. Furthermore, it utilizes a legal contract—the open license—that prevents users from appropriating the end-result for their own profit maximization, but also facilitates strong network externalities and generative knowledge transactions.

The BVH initiative that will be analysed in this paper is governed neither through the hierarchy of the firm, nor through market mechanisms. It shows more resemblance with networks of learning (Powell, 1998; Powell, Koput, & Smith-Doerr, 1996) and bazaar governance (Demil & Lecocq, 2006), as it shares the relational view (Dyer & Singh,
In 2019, AstraZeneca has about 61,000 employees and has operations in more than 100 countries worldwide. The turnover in 2017 was $22.5 billion. The company runs production facilities in 18 countries and has six different R&D sites. AstraZeneca’s core focus is to develop drugs for (a) cardiovascular and metabolic diseases, (b) oncology and (c) respiratory, inflammation and autoimmunity. The company operates in infection, neuroscience and gastrointestinal areas. In 2012, the life sciences industry in Sweden encompassed 40,764 employees in 1,487 companies (Sandström, 2014). Among these firms, 791 were active in research and development, product development, consulting or manufacturing (Sandström, 2014). Until the late 1990s, Sweden had two multinational pharmaceutical firms in Astra and Pharmacia. Both companies were involved in separate mergers in the late 1990s: Pharmacia with the American company Upjohn (later acquired by Pfizer), and Astra with the British Zeneca Group. This led to a general downsizing in the Swedish life sciences industry, where the headquarters of both AstraZeneca and PharmaciaUpjohn were relocated outside of Sweden, and some operations were closed down.

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In the autumn of 2013, key people in AstraZeneca Mölndal started to build the foundations for what eventually would be called AZ BioVentureHub (BVH). The idea initially grew from the awareness that the site had surplus office and lab space, and this eventually turned into an innovative open business model, where the big biopharmaceutical company hosts smaller life sciences firms in order to enhance knowledge exchange in formal and informal ways.

4 | METHOD

4.1 | Life sciences in Sweden

Sweden has a long tradition of developing innovations in the life sciences, with world-leading university and industry expertise acting as contributors of medicines (e.g., Bricanyl, Losec/Prilosec) and medical technologies (e.g., pacemaker, respirator). In 2012, the life sciences industry in Sweden encompassed 40,764 employees in 1,487 companies (Sandström, 2014). Among these firms, 791 were active in research and development, product development, consulting or manufacturing (Sandström, 2014). Until the late 1990s, Sweden had two multinational pharmaceutical firms in Astra and Pharmacia. Both companies were involved in separate mergers in the late 1990s: Pharmacia with the American company Upjohn (later acquired by Pfizer), and Astra with the British Zeneca Group. This led to a general downsizing in the Swedish life sciences industry, where the headquarters of both AstraZeneca and PharmaciaUpjohn were relocated outside of Sweden, and some operations were closed down.

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4.2 | Research design

The paper applies a single case study approach (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Flyvbjerg, 2006; Ragin & Becker, 1992). The study of the BVH was part of a research programme that explored innovative forms of organizing in the Swedish life sciences industry, including biotech, pharmaceutical and medtech areas. The BVH emerged as an interesting attempt from a large corporation to create an open business model in practice, acting within an institutional setting based on closeness, regulatory control and intellectual property orientation. While similar initiatives have been launched by universities and various public or regional actors, such as incubators and science parks, the case of the BVH differs in that it is facilitated by a for-profit Big Pharma corporation, with unique skills, experiences and resources for disposal. For sure, this is not the first time that big corporations have launched incubators, science parks, accelerators and open innovation initiatives, but the BVH is a forerunner in its specific design and content within the bio-pharmaceutical industry.

Although a single case study is by definition unique and bounded to its empirical specifics, it is a well-established method for generating
theoretical insights in early stages of theory building (Eisenhardt & Graebner, 2007) and to provide analytical generalizations in transforming empirical data to theory, rather than to population (Flyvbjerg, 2006; Yin, 1994). That being said, the BVH has gained much attention among policy-makers as well as from other companies in both the life sciences industry and in other industries.

4.3 Data collection

In total for this study, 74 interviews were conducted with 54 individuals. The research project focused on open innovation in life sciences, and due to the exploratory and longitudinal research design, operationalization of this purpose was influenced by inductive inquiries and empirical curiosity. Interview guides were developed to structure the interviews around a number of thematic questions (e.g., background questions, motivations for moving to the BVH, challenges, difficulties, activities), still allowing for a certain flexibility in the specific interview situations (Kvale & Brinkmann, 2006).

The interviews can be divided into three categories; (a) the AstraZeneca representatives who established and actively manage the hub, (b) representatives from companies that have located their business in the hub, and (c) representatives from other actors within the wider life sciences innovation system of Sweden, such as science parks, incubators, hospitals, IP consultants, university scientists and research institutes. Interviews were conducted by either one or two senior researchers, and they were tape-recorded. Most of the interviews were held at the respondent's workplace. Three interviews were made by telephone, due to long geographic distances.

For category 1, we conducted recurrent interviews over a period of about 4 years (from autumn 2013 to autumn 2017) with key informants working “in the making” with setting up the hub (in total 19 interviews). Here we aimed to develop an understanding of activities, milestones, challenges, motives and goals, and how these changed over time. For category 2, we aimed to get as many voices as possible from firms located in the hub, in order to get an understanding of experiences of and motives for moving into the new environment (in total 21 interviews). For category 3, we aimed to get a broader understanding of the situation of the life sciences industry in Sweden—its challenges and potentials—and to get an overview of how open innovation can fit in this context (in total 34 interviews). For this specific paper, this latter category of interviews was not explicitly used in the empirical analysis, as it is focused on the business model of the BVH, but they provided us with background information about the institutional conditions of the industry.

4.4 Data analysis

The interviews were either summarized, including quotes that were perceived as interesting, or fully transcribed (Poland, 2001). The transcribed texts were continuously coded in NVivo by one of the two senior researchers conducting the interviews, following the recommendations of Clarke (2005), Corbin and Strauss (2014) and Miles and Huberman (1984) in relation to general coding practices of qualitative research. In what is often referred to as open coding (Corbin & Strauss, 2014), we inductively marked, collected and labelled text sections into various categories based on recurring themes in the empirical data. This coding work was iterative, eventually becoming more structured, emerging into about 30 first-order concepts (Van Maanen, 1979), including, for instance, internal transformation, mobilization, intellectual property, culture, communication, top management support, value, and trust.

The empirical data, structured as first-order concepts, was then compared, refined and aligned to key notions in the open innovation literature, such as transactions, relations, inflow, outflow, coupled, pecuniary, non-pecuniary, value creation, value capture, and in the governance literature, such as selection, control and interactions. These second-order themes, situated on a higher level of abstraction in order to “explain the patterning of the first-order data” (Van Maanen, 1979), helped us to advance the theorizing process (Swedberg, 2012), in relation to the stated research question. Naturally, some overlaps of empirical and theoretical categories emerged, exemplifying the blurring of boundaries between theory and practice. From the iterative process of analysing the tensions between the empirical themes and the theoretical concepts, we emplotted the categories and their relations, which are illustrated with quotes in Table 2 and visually presented in Figure 1 in the empirical section of the paper.

5 THE AZ BIOVENTUREHUB

AstraZeneca officially established AZ BioVentureHub (BVH) in early 2014. The Business Development Director of AstraZeneca left this role to become the CEO of the new subsidiary. The initiative was formed based on the situation that the large company occasionally had abundant resources (knowledge, facilities and equipment) that potentially could generate value to a wider network of actors. The CEO explained:

Like many large companies, we have too many facilities and we need to save money. It was decided that we [in Mölndal] should rent them out, similar to what has been done in Great Britain and in the US where they had used external rental agencies. Then I got the question from our CEO, and I said that if we would do something here, we should do it differently. To make a long story short, we got more or less free hands to come up with a suggestion of how to better utilize our knowledge, processes and assets in a way to enhance innovation, rather than to just cut costs. (CEO, BVH, 22 April 2014)

A conventional model would have leaned towards cutting resources, and outsourcing work to consultants. The value proposition that instead emerged was to open up office and lab space in the centre
| Categories                  | Examples of illustrative quotes                                                                                                                                                                                                 | Characteristics                                                                                                                                                                                                 |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Forms of selection          | "We need to keep a balance, and to bring in companies that are skilled and have interesting projects. Then they will attract other companies. We have turned down many requests, because we do not believe that the main drive to sit here should be that they want to have a low rent" (CEO, BVH, 1 April 2016).  
"It is part of my daily work to discuss with various companies about locating their businesses here. The lead time is long, because we are very careful and selective. The main principle is that the hub companies will benefit from sitting here, and also that they can add something to the hub themselves. [...] We are not a landlord that just wants to rent out square meters. We try to create a special environment, and therefore we have a mutual dialogue with each candidate that often takes several months. [...] We need to get to know each other, and get a sense of that this is something that suits both parts" (COO, BVH, 7 October 2015).  
"When we discussed about moving here, we talked much with [the CEO of BVH]. They wanted to know if we had secured funding, and that we did not have too high expectations. The main idea is that everyone should be able to run their own companies" (Head of research, hub firm, 17 September 2015). | Host decides who is allowed to participate                                                                                                                                                                                                                           |
| Forms of control mechanisms | "We do not have any own interests invested in these hub companies. We do not own them or have legal contracts to have the right to acquire them later. Therefore, we can speak from our hearts when we guide them, and they can trust that we do not say things just because we want to sell them something" (COO, BVH, 25 May 2015).  
"There is a sort of social contract. There is an understanding that even if something could be seen as confidential, in this hub we trust each other. Contracts and legal documents have their purpose, but it is not that we will sue each other. What is important is that we have shared—you and me as human beings" (COO, BVH, 1 April 2016).  
"I think that it is very brave of AstraZeneca to create this hub. Firstly, that they give us facilities in the heart of the R&D centre and not somewhere in the outskirts, and secondly that they give us the same access as anyone else in AstraZeneca. I can go around anywhere I want, and that shows a lot of trust. The | Control by trust and contracts. Each actor owns their IP                                                                                                                                                                                                                  |
of the Möln达尔 R&D site for carefully selected small and mid-sized life sciences companies facing the transition from pre-clinical research to clinical studies. The governance structure of BVH that eventually emerged was somewhat in contrast to how AstraZeneca previously had worked with external collaborators. A challenge when collaborating externally is that the shared work in the end may result in value that needs to be protected by IP and divided among the participants. The traditional way of sorting this issue with IP in AstraZeneca was to

### TABLE 2 (Continued)

| Categories | Examples of illustrative quotes | Characteristics |
|------------|---------------------------------|-----------------|
| Forms of interactions | trust is fundamental for everything here” (CEO, hub firm, 28 May 2015). | Ongoing, informal and facilitated through formal process |
| Forms of interactions | “I think that the most positive consequence is that we unconditionally and continuously identify new opportunities for collaboration. On other occasions, one actor goes to another actor with a clear perception about what to collaborate on. [...] Here we sit down and have a coffee, and new things pop up that we have not thought about before” (COO, BVH, 1 April 2016). “This is the beauty of sitting here. Everyone has the same keycards. When we eat lunch together, we just say; ‘Okay, which project should we discuss this time?’ So it is really good for building relations with AstraZeneca, but we also discover the other hub companies and start to interact with them” (Head of science, hub firm, 28 May 2015). | |
| Forms of value | “We have formed a specific collaboration project with one of the hub firms. We have realized that we learn a lot from them, and at the same time, we do stuff for them that they are not able to do. So one plus one equals three. One of our guys works about 60% for them, with their stuff, but with a technology that we really would like to learn about. This is stone age economy, in a sense, but it works” (CEO, BVH, 28 October 2015). “Just as an example, I just came from a lunch where I have talked with two guys from AstraZeneca who are experts in Phase I studies, and we discussed various important challenges that we face at the moment. This lunch costed us 250 SEK, and it gave us more knowledge than we could ever buy from an expensive consultant” (CEO, hub firm, 10 October 2014). | Value is based on reciprocal and ongoing exchange for generating synergies |

### FIGURE 1

The governance structure of BVH and its consequences for value creation

![AZ BioVentureHub Governance Structure](image_url)
formalize and lock relations in contracts. An AstraZeneca manager described such partnerships in the following terms:

> It becomes much more formal. You do not as easily enter collaborations just because you want to explore interesting things without knowing where it will lead. You have to negotiate everything from A to Z. (Business Development Manager, AstraZeneca, November 2013)

Instead of these traditional arrangements, the purpose of the BVH was to develop a milieu where knowledge and ideas could flow between the large corporation and the small innovative firms more informally, and where synergies could be developed and taken advantage of, as relations and mutual trust emerged.

5.1 The governance structure of AZ BioVentureHub

The BVH governance mode is built on a formal structure of the firm and the protection of IP, but it also constitutes the facilitation of informal, relational and inter-organizational ties, where the serendipity of knowledge generativity is collaboratively emerged within pecuniary and competitive areas. To explain the design of the BVH in more depth, three interrelated areas of its governance structure can be highlighted: (a) how the small firms were selected and mobilized, (b) how interactions were facilitated, and (c) how control mechanisms were established in the hub. Also, the consequences of this specific governance structure are explained, in terms of the structure’s influence on the open innovation work, and the value it brings for the incumbent firm as well as for the participating small firms. Figure 1 summarizes the governance structure of BVH, and each area will be discussed in greater detail below.

5.2 Form of selection

In the beginning, the mobilization process of hub companies was based mainly on personal connections and accidental meetings, in a search of a mutual companionship. The companies needed to fit into the general profiles set up by AstraZeneca, but they also themselves needed to be convinced that this was the right move for them. Hence, a lot of interviews and discussions took place. In this initial phase, AstraZeneca located three companies that agreed to be somewhat test-pilots. This was even before the hub was officially announced and before the lab facilities and offices had been renovated. As the hub received more attention in the press and became known to the public, requests to join from small and mid-sized enterprises (SMEs) increased. Over time, new companies entered one by one. In February 2019, more than five years after its launch, the BVH hosted 29 companies and one academic group and the plan was to continue the growth.

Already from the beginning, some unofficial criteria were developed for selecting which companies would be allowed to locate their operations in the new hub. First, the companies targeted for the hub should have reached a level of maturity in terms of sound long-term stability, and engaged with promising research. In other words, the purpose of the BVH was not primarily to help these companies create intellectual property from their own research processes, but rather to act as a lever for enhancing the companies’ already existing IP, and to guide them in the later stages of drug development. The second motivation was that the hub company works with something that is of interest for AstraZeneca and where AstraZeneca’s knowledge and resources could be helpful for the small firm’s value growth. “One example could be a company that works with gastrointestinal research, which is something we more or less have stopped to do, but where we still have a lot of knowledge” (CEO, BVH, 22 April 2014). The third criterion was if the hub company could provide synergy to the other firms in the environment. The BVH was also looking to attract stakeholders working with areas such as venture capital, business development and IP.

5.3 Form of control

The basis for participation in the hub is a standard rental agreement, defining the rights and obligations of the small firms. From this contract, the tenants gain access not only to their offices and research labs, but also to the vast knowledge that AstraZeneca has incorporated over the years, and they become part of an attractive and diverse open innovation environment together with other life sciences SMEs. The tenants also have to sign a confidentiality agreement with AstraZeneca, as they can come across classified information. Apart from these contractual arrangements, however, the SMEs located in the hub do not have any legal ties to AstraZeneca. The hub firms thus own and control their IPs, and choose themselves in which areas they want help or guidance. AstraZeneca does not have any contractual terms of, for example, right of first refusal (RFR) or other options to be the partner of choice if or when that time comes.

Early on, a second manager was hired to the hub, a Chief Operating Officer (COO), whose task was more focused on operational issues, for example to develop processes and infrastructure as well as to act as a bridge and gatekeeper to the internal experts of AstraZeneca. In general, the interactions between AstraZeneca and the hub companies are informal and based on trust and a shared goodwill, but when in need of more advanced advice from experts, a rather structured and facilitated process, coordinated by the COO, has been established in order to not disclose any secret information by either side, and to clearly document all discussions. For these meetings, AstraZeneca receives a consultancy fee to cover the direct salary costs involved with the SME spending time with the AZ expert, but without profit margin (as is the same with the SMEs’ utilization of AstraZeneca’s equipment and resources). Hence, the model is designed so that AstraZeneca does not have its own direct profit incentive to contribute to the hub companies in these initial
discussions. However, working in close interactions with the SMEs and actively coaching them in important decisions, gives AstraZeneca asymmetry towards competitors in terms of knowledge about the firm and the compound, as well as in building relationship and trust. Furthermore, by being involved in the process, AstraZeneca can influence the SMEs to set up the development process in a way that resonates with Big Pharma requirements. As one representative of a hub firm summarized it:

Even if hub firms do not have formal contracts with AstraZeneca to give them any priorities, as we work closely with them they start to know who we are, they know how we work, they might even have helped us. Of course, this is a huge advantage for them. (CEO, hub firm, 28 May 2015)

5.4 Form of interactions

All the hub companies’ employees receive keycards to the whole AstraZeneca site, with the same permissions as the regular AstraZeneca staff, and access to the restaurant, the gym and other corporate facilities as well as open seminars and internal courses. The hub companies also have the possibility to utilize AstraZeneca’s state-of-the-art equipment for a cost that only covers the running and maintenance of the machines. On the BioVentureHub webpage it was stated:

Embedded at the heart of AstraZeneca Gothenburg, you become part of a unique, open and collaborative scientific community. BioVentureHub members have the same access to the facilities as AstraZeneca staff. [...] Locating your business in the BioVentureHub at AstraZeneca Gothenburg, you can tap into the power of AstraZeneca’s world-class scientists and state-of-the-art, ‘big pharma’ lab facilities and infrastructure. (www.azbioventurehub.com, retrieved 22 April 2017)

The internal commitment for the hub among the employees has been high on the Mölndal site, and the dynamic environment lifts the spirits above cost-saving and efficiency measures and supports the AstraZeneca organization to become an attractive employer—a great place to work. The COO summarized the interactions with the small firms as:

People here are very committed, so they will do what is good for the firm. Then they also have a personal interest to develop external contacts, since you never know what happens in the future. And last but not least, personal development. This is very exciting. You get a field trip into another world. It costs you an hour, you will feel the appreciation of your expertise, and you can walk away afterwards without further obligations. We ourselves sometimes work with projects that have a timeframe of ten to fifteen years, and then to see something new and fresh for an hour, can be very inspiring. (COO, BVH, 25 May 2015)

Although not being the main purpose in the beginning, relationships among the SMEs emerged informally, often based on serendipitous encounters, which also in several cases eventually led to formal collaborations, such as joint partnerships, new shared projects and co-founded companies. One hub firm representative explained:

I meet a lot of big corporations, and it always a difficult process just to set up a meeting. Here, they have opened up the whole corporation for us. They let a lot of competence in, by allowing access to external people they do not really know. It may sound banal, but I am impressed. And I am convinced that they will gain tremendous from it, just because people will meet, talk, build relations and create new ideas. (CEO, hub firm, 15 November 2016)

5.5 The value generated from the governance structure

BVH has a business rationale from AstraZeneca’s viewpoint, or as the CEO puts it: “This is not philanthropy, it is just an alternative use of resources” (CEO, BVH, 12 December 2014). By carving out the specifically tailored governance structure described above, the BVH can act as a lever for many of the challenges that the large corporation faces, while at the same time offering extremely positive benefits for the involved SMEs within the environment.

The equipment utilized in drug development is rather cyclic, with heavy peaks and periods of downtime, and, from this perspective, BVH can be seen as a proactive way to avoid downsizing. However, while the corporation needs to cut cost, it also needs also to attract competence, scout for new drug candidates, build a scientific reputation, rejuvenate the brand and the corporate culture, and to form new productive partnerships. With BVH, AstraZeneca has gained insights in new scientific areas and practices, as well as being inspired by the hub firms’ entrepreneurial cultures. Furthermore, the BVH has gained a lot of media attention that positively influenced the corporate brand, and received interest and visits from policy-makers and industry representatives. For sure, it is difficult to estimate the total value from this initiative in quantifiable measures, especially as the drug development process is lengthy and complex in nature. But at least the non-pecuniary value streams have been highly appreciated by AstraZeneca and all the stakeholders connected to the hub.

The benefits generated to the small firms in BVH were plenty. SMEs that earn the entrance ticket to the BVH gain access to the large smorgasbord of knowledge, experiences and resources of AstraZeneca without losing their strategic independence and
ownership of intellectual property. They gain access to expertise in regulatory issues, which can be extremely labyrinthine and complex to learn. They also gain access to expertise, processes and expensive equipment for clinical research work, which can save them a substantial amount of money if done in a clever manner. The collaboration with the BVH, moreover, gives them an implicit operative license that can attract and convince future investors. In other words, the SMEs in the hub can utilize the knowledge spillovers distributed among the hub companies as well as world-class expertise from AstraZeneca, for example in regulatory issues and advanced clinical research work. Unlike clinical research organizations and external consultants, the advice is not as much coloured by the willingness to sell specific services. The open collaboration in the hub also makes possible various forms of economies of scale, where firms together can share resources and costs. The association to the hub can also potentially attract venture capital investors, knowing that the quality of the development process is in line with Big Pharma standards. The co-location with other firms brings new "colleagues", not only to learn from but also to socialize with, making the workplace more interesting and attractive.

6 | CORPORATE HUB AS A SPECIFIC GOVERNANCE STRUCTURE

What AstraZeneca has done with the BVH is to translate the open innovation concept specifically to a large corporation with abundant internal knowledge and resources. This form of governance, what we have phrased as a corporate hub, takes its point of departure from the benefits of the Big Pharma—e.g., scientific and regulatory expertise, expensive lab instruments, economies of scale, efficiency, social capital, reputation and business orientation—which, by the way, is a quite different point of departure than what normally constitutes science parks and incubators within regional innovation systems and universities. But it adds the benefits from informal relationships and ongoing knowledge exchange between the large and small firms, as well as among the small firms themselves. A comparison can be made with the anchor tenant hypothesis (Agrawal & Cockburn, 2003; Feldman, 2003), suggesting that large corporations, such as AstraZeneca, act as anchors within local environments, to attract skilled labour pools and provide knowledge spillovers that benefit smaller firms within the area. Geographical proximity creates benefits in terms of establishing trust and collaborations between parties (Maskell, 2001) and it has been argued that "tacit" knowledge (e.g., related to how to develop drugs) is favourably transferred through informal communication (Saxenian & Hsu, 2001).

The so-called "Valley of Death" (e.g., Butler, 2008) has been metaphorically illustrating the challenges that small firms face in the transition from research to development, when they encounter huge problems in accessing new capital and new competences. These firms are generally vulnerable to what has been coined as the "liability of newness" (Stinchcombe, 1965) and/or the "liability of smallness" (Freeman, Carroll, & Hannan, 1983), which suggests that smaller firms face challenges for survival and growth just because of legitimacy and resource issues related to their size and age. With the BVH, AstraZeneca infuses their own competences and assets earlier in the value chain to aid the SMEs in progressing across the otherwise deadly valley. The involvement with AstraZeneca and the other hub companies also reduces the SMEs "liability of unconnectedness" (Powell et al., 1996), which is critical for staying tuned in to the knowledge race of the rapidly developing life sciences industry, and continuously opens up possibilities for further collaborations. In a sense, the Valley of Death is thus being replaced by the friendlier Valley of AstraZeneca.

We argue that a corporate hub is a governance structure in its own right, one that differs from the traditional modes of hierarchy, market, network or bazaar (Demil & Lecocq, 2006; Powell, 1990) as it is a blending of all four. It utilizes some of the benefits of hierarchical governance, such as building a shared infrastructure with processes and routines, setting up formal and informal roles and responsibilities, and enforcing control through policies, cultures and norms, and even to some extent through direct supervision. It also encompasses the freedom for each actor to trade or exchange their intellectual property with whomever they want on the open market, in a transaction-based manner. The day-to-day knowledge interactions, however, are more in line with a long-term relational and trust-based view (Dyer & Singh, 1998). Furthermore, it differs from network organizing (Powell, 1990) in that it is somewhat firm-centric and with a carefully selected and limited number of actors which are geographically co-located on the same site. Contracts are important as a basis, for the invitation as well as for potential later outcomes in the form of rather traditionally organized partnerships. Hence, it clearly differs from the bazaar governance (Demil & Lecocq, 2006) in that intellectual property and pecuniary motives are still at the centre of attention for many of the involved stakeholders. Freeriding is not as much in evidence as in bazaar governance, characterized by high anonymity and low restrictions to access. The differences between corporate hubs and other collaborative governance forms are summarized in Table 3.

Much of the previous open innovation literature has focused on the distinction between transactional governance, emphasizing IP as the building block for knowledge exchange and collaboration (Arora & Gambardella, 2010; Gans & Stern, 2003), and relational governance, highlighting legitimacy, interactions, norms and trust as means for successful long-term shared value creation (Dahlander & Frederiksen, 2012; Fauchart & von Hippel, 2008; Powell et al., 1996; von Hippel, 2005). The corporate hub is able to bridge the two modes in a productive way, thus utilizing many of the benefits offered from the relational perspective (i.e., generativity, serendipity, exploration), while still maintaining corporate control over intellectual property for the individual firms. To a limited degree, the innovation process resembles what Henkel (2006) phrases as "selective revealing" in open source projects, where actors freely reveal some information to the community in order to strike a balance between sharing and protection, and between value creation and value capture (von Hippel & von Krogh, 2006). A difference in comparison to the corporate hub is that open source projects have free access and the contributors are numerous.
and often anonymous, while the spillover knowledge in the corporate hub is more controlled and the IP is not diffused to other parties than those directly involved.

Furthermore, the presented case can also be related to Dahlander and Gann's (2010) division into pecuniary and non-pecuniary processes, in that many of the collaborative activities in the day-to-day practice are built on non-pecuniary value creation, where knowledge spillovers are shared and synergized without opportunistic intents to capitalize on the outcome of others. At the same time, participants do not engage with the hub based on altruism, but they are able to transform the available spillovers into long-term pecuniary value in their own innovation processes by improving their innovation scouting (Rohbeck, 2010), absorptive capacities (Cohen & Levinthal, 1990) and dynamic capabilities (Teece, 2007). Put differently, the corporate hub is utilizing (some of?????????) the benefits derived from the network form of open innovation, while maintaining the internal control and independence. Furthermore, the serendipitous emergence of new ideas can be transformed into joint projects or startups, utilizing more traditional contractual agreements but where relationships and trust have been secured beforehand.

In relation to the three core mechanisms of inside-out, outside-in and coupled processes of open innovation (Chesbrough & Bogers, 2014; Gassmann & Enkel, 2004), the BVH has shown that within a corporate hub consisting of carefully selected participants, opportunities emerge for all these processes. It also becomes evident that the demarcation between the three processes is not clear-cut. In most knowledge-sharing practices, the revealing of old knowledge (i.e. inside out) leads to dialogue, experiences and own reflections which entail sourcing of new knowledge (i.e., outside in).

To summarize, for a large corporation such as AstraZeneca, this form of governance brings several key advantages in relation to more traditional in-house, contractual or partnership innovation setups.

- First, it provides opportunities for more effective use of the acquired resources, e.g., human capital, facilities and equipment, as an alternative to corporate downsizing. The approach maintains the firm's access to and control over these assets, which are largely already paid for and written off as sunk costs, while sharing the operating costs with the hub companies. This approach could even make possible the acquisition of new equipment or the hiring of new competences and sharing at least some of those investment costs with the external users.
- Second, while the hosting of SMEs in the hub does not give AstraZeneca any contractual rights for future generated value or intellectual property by the small firms, it gives them an informational and relational advantage in comparison to other potential future collaborators. This asymmetry is linked to the better understanding and evaluation of what value is generated, and also a possibility to tailor such development so that it will be compatible with the standards and requirements of a large corporation in case of a future collaboration. Furthermore, it gives a psychological edge, as the ongoing relationships can generate trust and long-term social ties as well as reducing the risk of opportunistic behaviour by either party.
- Third, it can help revitalize the large corporation, which is often stuck in bureaucratic corporate processes, structures and culture, what can be referred to as a “liability of oldness” (Remneland Wikhamn, 2011). In the case of the BVH, it was clear that the SMEs did not only contribute with cultural inspiration, but also with new knowledge to AstraZeneca. It even happened that employees from AstraZeneca were temporarily positioned in hub companies to learn certain skills. In other words, these entrepreneurial influences have transformational power on how the Big Pharma corporation develops knowledge and businesses.
- Fourth, the corporate hub provides new possibilities for the hosting corporation to provide challenging work tasks for its best employees. The internal employees that are being called for meeting with the hub SMEs are treated as experts and they feel knowledgeable and valuable in a different way than in their daily work. It gives them a glimpse of another world—an interruption from their long-term projects—with new challenges and problems to look into, while sparing them any obligation of enacting the advice in practice.
- Fifth, the open innovation initiative can, if handled well, be a good source for corporate branding as it signals creativity,
openness and proactivity to existing and potential employees, partners, shareholders and other key stakeholders. In short, within the corporate hub, the SMEs still have the responsibility for their development processes and are exposed to the risk of failure, and all the above-mentioned advantages for the large corporation are in reach without the need for overly bureaucratic arrangements, project staffing or new venture investments.

7 | CONCLUSION AND IMPLICATIONS

Under the inclusive umbrella of open innovation (Stanko, Fisher, & Bogers, 2017), a vast number of very different forms of initiatives have emerged, with different organizing mechanisms and governance structures. For individual firms to adopt open innovation, hence they need to translate the concept into their own particular situation in order for it to work in practice. In this paper we have empirically illustrated how one global bio-pharmaceutical corporation approached open innovation in an attempt to open up their innovation processes to work with small firms. As such, we have contributed to the field of open innovation by providing an in-depth case study of how coupled open innovation can be utilized in large corporations.

We have contributed theoretically to the field of open innovation by connecting the concept to the governance literature from the broader management field. We have theorized the rationale behind the BVH initiative, and more specifically its governance structure, in terms of who is invited to participate, how they are coordinated and how they are controlled. We have characterized the BVH as a corporate hub, and differentiated it in relation to other “open” governance modes, that is, market, network and bazaar. In the bio-pharmaceutical industry, market governance (e.g., trading with IP) as well as network and bazaar governance (e.g., building collaborative knowledge in mostly early phases of R&D) have all become well-established ways of conducting drug development (c.f. Barbanti, Gambardella, & Orsenigo, 2004; Chiaroni, Chiesa, & Frattini, 2008; Powell, 1998). The corporate hub structure goes beyond the more common transactional activities of selling and acquiring IP (Dutfield, 2014) and the coupled, relational process is applied not only in earlier phases of R&D (Kar, 2010; Trouiller et al., 2002) but also in the later, more competitive stages of drug development.

As a managerial contribution, the in-depth study can provide inspiration and direction to other large corporations aiming to enact coupled open innovation with small firms. We have detailed a governance structure which allows the SMEs to bridge the “liability of smallness” and the large corporations to bridge the “liability of oldness” into a productive symbiosis with reciprocal learning through ongoing day-to-day relations while also facilitating the effective use of otherwise abundant resources and opening up possibilities for new future revenue streams through protected IP routes. AstraZeneca has shown with the BVH that open innovation has a potential for large corporations even in the bio-pharmaceutical industry, which is an environment that Teece (1986) would call a tight appropriability regime. With the emphasis on the governance structure, we also draw attention to the design options that managers need to consider, pointing out that the governance structure has a direct link to potential consequences for the open innovation initiative, in terms of which forms of relations will emerge, and what type of values are being facilitated.

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