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Bespoke Innovation: filling the gap between the classic and user-centred open innovation

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In this paper, we explore the possible boundaries of open innovation by looking at the properties and problems associated with various forms of governance which all have claims to be regarded as open innovation. We look first at some basic forms of open innovation governance before looking at the case of a relatively neglected but increasingly important variant, bespoke or customised innovation. We discuss the implications before finishing with some tentative conclusions.

keywords: open innovation; bespoke innovation; user innovation; standard setting innovation

Forms of open innovation

The concept, problems and opportunities of open innovation were first scoped out and elaborated in some detail by Chesbrough (2003). More recently the concept has been defined as “a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organizations business model” (Chesbrough and Bogers, 2014, p.17). The transaction may be pecuniary or non-pecuniary, for example in a dynamic knowledge sharing network there may be loose norms of reciprocity and obligation in which a beneficiary from network membership at one time and context may contribute into the network at another time and context (e.g. Dyer and Nobeoka, 2000).

Perhaps very appropriately this is a very open definition which might in principle cover a variety of governance regimes and practices. However, in his original statement of the open innovation agenda, Chesbrough (2003) argued that intellectual property (IP) only has



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value in open innovation if it leads to commercialisation (2003, pp.57 and 156). Open innovation as framed in Chesbrough (2003) placed heavy emphasis on business models and management of IP on a private good basis to exploit opportunities in pursuit of commercial profit. We shall describe this as “classic” open innovation.

In recent years, the scope of open innovation has been broadened (or loosened) to include other forms of governance that can appear difficult to square with the original statement of intent set out in Chesbrough (2003). For example, there are numerous technical standard setting organizations or committees (SSOs) which may involve various interested parties such as commercial organizations seeking to influence the setting of a standard to enhance their own chances of subsequent innovative success. The interaction between parties may involve transfer of technical knowledge, e.g. in the form of contributions to technical specification drafts (Leiponen, 2008. p.1906).

The intended outcome of many of these SSOs is a public good in the form of a technical compatibility standard (Lemley, 2002; Simcoe, 2012). At first sight it would seem difficult to square with the notion of open innovation because the direct output is an agreed standard, not a commercial innovation. However, from the perspective of participating firms the SSO may be regarded as an open exchange stage of a fuller innovative process that will intendedly lead to commercialisation. If such a transaction seems consistent with the spirit of open innovation as originally intended, then it becomes more difficult to exclude SSOs from inclusion in the open innovation tent. Indeed, Waguespack and Fleming (2009) analyse the Internet Engineering Task Force (IETF), a community that develops standards for the Internet as pursuing a form of open innovation.

The private good – public good relation is a crucial discriminator between SSOs and what is more commonly seen as open innovation. But many of the characteristics and problems of, for example, alliance formation, transactions and IPR are common to both SSOs and conventional forms of open innovation. At the very least gains may be made from exploring lessons to be learned from comparing (and possibly contrasting) the respective cases.

A further related innovation process is what Bogers and West (2012) describe as user innovation and Chesbrough and Bogers (2014, pp.20-21) describe as open collaborative innovation, this most notably analysed by Von Hippel (1988; 2005). Like many SSOs, user innovation governance systems such as the open source movement are concerned with the production and use of public goods; however, unlike SSOs the donor in the case of open innovation is typically not seeking any direct payback (pecuniary or non-pecuniary) for providing the technical information. While there may be some (often minimal) restrictions placed on the use of information by a user, there is typically no direct reciprocity between donor and user such as are common in commercial technical transfer agreements.

Chesbrough and Bogers (2014) and Dahlander and Gann (2010) note potential commonalities and complementarities between open and user innovation, including that business models may help to commercialise innovative possibilities after the public good knowledge has been captured by user initiated innovation. In these respects, there are also potential commonalities between SSOs and user innovation despite the differences

already noted; both SSOs and user innovation focus on the public good stage that can be intended to be a prelude to eventual commercial innovations.

All three forms of governance could be said to be concerned with processes involving distributed innovation with purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms. The organizations' business models may not be so visible at the public good stage of SSOs and user innovation, but in each case, may begin to kick in once organizations have the opportunity to exploit the output of the respective public good stages. So it would seem that all three forms of governance are at least broadly interpretable as open innovation consistent with Chesbrough and Bogers' definition (2014, p.17)

However, there is a fourth distinctive form of innovation which may also merit consideration in this context; bespoke or customised innovation. This can be another form of user-oriented open innovation where the knowledge required to produce a specific new product may be distributed across the partners contributing to the final innovation (Rayna, Striukova and Darlington, 2015). It is also an area where technological advances are disrupting traditional scale-based methods of manufacture. For example, 3D printing is a type of manufacturing process where a three-dimensional object is created by adding successive layers of materials. Its ability to reduce minimum efficient scale of output and increase potential variety of innovative outputs means that barriers to potential users customising innovation to their needs can be considerably reduced. While not all 3D printing activity need involve collaboration, Rayna and Striukova (2014) note cases where 3D printing can be analysed as business model open innovation and observe that customers can take a stronger and more active driving force in the innovation process because of the co-creation process between customers and firms. By implementing reliable, tracable and structured web-based communication channels between customers and firms, the bespoke innovation facilitates an emerging and growing industry of personalised/customised mass production of goods. Great opportunities of bespoke innovation in industry of medical devices, wearables, jewellery, car industry etc.

Here we look at the case study of bespoke product development processes in a heavy manufacturing environment of a market-leading company designing, engineering and supplying air and gas handling equipment. The case serves the purpose of illustrating the proposed conceptualisations, rather than representing a structured case study. The method employed to analyse the case was action research. Action research aims at solving real life problems within a specific context, thus the objective of knowledge developed from action research is to "provide a better understanding in order to support and promote better managerial and organisational practices" [Palshaugen, 2009, 231, cited in Kocher et al, 2011]. This ultimately suggests that researchers and practitioners should design field-experiments in order to provide a novel solution to a specific problem the practitioners' organisation is facing [Fendt and Kaminska-Labbe, 2011]. We are using a flipped approach to argue this case. The conceptualisation of the proposed theoretical frame emerged from exploration of innovation practices within this case.

The case

The case company operates in a traditional heavy-engineering environment delivering only bespoke products tailored to the need of the customer on a contract basis. Due to

the nature of such work the product development process needs to be both transparent and articulable within the company to facilitate communicability, traceability and accountability. However, the product development process also has to be flexible enough to accommodate innovative approaches brought about by different expertise within project teams. It is thus paramount that cross-functional collaboration is established internally with the voice of the customer delivered from external sources. The case company has developed selection software in collaboration with key customers to achieve the integration needed across these different levels of internal and external collaboration. This software is distributed to the new customer and used to define the specification of a desired product. The sales and R&D functions continuously interact with the customer in order for the specification to deliver all the relevant requirements of the product.

The interaction between the case company R&D and sales functions and the customer continues until the company understands exactly what the customer needs in terms of general technological knowledge, eg. what pump pressures they want to achieve, the system within which the product will be integrated, etc. This intense collaboration typically diminishes progressively through the course of product development. Once the product requirements are agreed with the customer through the selection software, the R&D function within the case company takes over full responsibility for design and development. At the same time, there is no transfer of knowledge to the customer as to how the product is actually developed, the IP remains with the case company. A monitoring regime is agreed once the new product is actually installed at the customer site. This enables the company to monitor performance of the product and more closely match actual performance to the needs of the customer as originally specified through the selection software. The benefit to the customer at this stage comes through just-in-time maintenance with the monitoring system also delivering data on potential issues and break-downs. This in turn provides technical feedback to the case company that can inform and improve the product development process to help serve future customers.

Discussion

We have looked at variants of what have been described in the literature as open innovation: standard setting organizations; user innovation where the raw material to be transformed into innovation comes in the form of a public good; and bespoke innovation. What has been relatively neglected up until now is how these family derivatives of the open innovation imperative compare with the original conception of open innovation as set out in Chesbrough (2003).

Chesbrough (2003) built up the case for open innovation by looking at numerous examples of open innovation success (and failure). In the panoramic audit of corporate innovation performance carried out in Chesbrough (2003), the key question that kept on recurring was whether or not the corporate boundaries were permeable in terms of managing flows of new ideas in either direction - what were to be later christened as Inside-Out and Outside-In open innovation. Central to this open mind-set was the notion of IP management (Chesbrough 2003, pp. 56-57; 155-76) with the firm being an active buyer and seller of IP using mechanisms such as corporate venture capital, licensing, spinoffs and external research projects (Chesbrough, 2003, p.155).

We note that what is Outside-In open innovation from the perspective of one partner is Inside-Out open innovation from the perspective of the other partner. They are both sides of the same coin. Essentially all open innovation in the sense typically adopted by those following the trajectories signposted by Chesbrough (2003) has at its core the powerful unifying notion of a transaction where a technological idea developed in one organization is traded on a private good basis and finds a use in another organization. It is this emphasis on the open innovation firm actively buying, selling and transferring IP on a private good basis (what we describe below as “classic” open innovation) that could be said to potentially differentiate it from the other forms of open innovation discussed above.

Table 1 illustrates the major difference between these four forms of open innovation, with the caveat that we are representing extreme or ideal types here and in practice actual governance systems may not fit so neatly into just one of the four boxes. Open innovation in the “classic” sense described by Chesbrough (2003) tends to describe a cooperative agreement between two or more organizations to pursue innovative opportunities involving transfer of technical knowledge on a private good basis. That tends to contrast with the roles and preoccupation of both SSOs and user innovations in respect to their emphasis on the *public* good characteristics of technological knowledge. But bespoke innovation of the type looked at here and user innovation are similar in that there is no technology trading agreement. In the case of user innovation, the firm draws on a pool of technological knowledge without reciprocal obligations in the form of pecuniary or non-pecuniary benefits to the donor organization(s). And in the case of bespoke innovation looked at here, it is market and user knowledge and specifications which crosses organizational boundaries, what Teece (1986) described as the complementary asset of technical knowledge tends to remain locked up within the boundaries of the firm undertaking the product development.

Table 1 Forms of openness in innovation (Source: authors)

	Private Goods	Public Goods
Technology transfer agreement	“Classic” open innovation	Standard setting organization
No technology transfer agreement	Bespoke innovation	User innovation

The implications of all this encourage a reconsideration of the generality and specificity of principles and findings related to open innovation. The original core idea of “classic” open innovation where technological knowhow is traded across organizational boundaries on a private good basis raises potential issues of transaction costs (Keupp and Gassmann, 2009), appropriability problems (West, 2006) and absorptive capacity (Spithoven, Clarysse and Knockaert, 2011) to name just some areas of concern. The public good nature of both SSOs and user innovation would seem to mitigate some of these issues, and up to a point that may be true but they can raise other issues. User innovation may be able utilise the knowledge source on a free or low cost basis, but there are questions over whether this governance model is transferable outside certain special or limited cases given it lacks the hard-edged market incentives and rewards that can accrue from controlling or selling IPR as in “classic” open innovation. Also, SSOs may notionally be in the business of generating a technical standard as public good, but that does not mean they can necessarily avoid

such issues as game playing by participant organizations, domination of the SSO by powerful firms or alliances, and proprietary concerns that signalling preferences might leak clues to other participants regarding the trajectory of the firm’s commercial aspirations.

Like SSOs and user innovation, bespoke innovation may avoid some of the most severe issues associated with “classic” open innovation since the knowledge flow across organisational boundaries tends to be predominantly market or user specific and not involve technology transfer. However, this can be at the expense of introducing, exacerbating, or just illuminating other problems. For example, there can be internal cross-function problems of coordinating and integrating the technical and marketing assets necessary for fully bespoke delivery of a new product, as well as possible issues of balancing and integrating the roles and needs associated with generating new products with the dictates of current business. Also, there may be the opportunity cost of the loss of scale that a more standardised off-the-shelf approach to technology provision might have achieved.

Table 2 provides comprehensive comparison of all four different innovation forms. Classic open innovation and SSO innovation were well described already in the past, thus hereby we would like to emphasise another important difference between user innovation and bespoke innovation: namely user innovation typically focuses on communicating with customers/users or only observing them in order to obtain ideas and solutions which would be beneficial for the company. This can be done by marketing research campaigns exploring how the customers use existing products from company’s portfolio, or by investigation of customers’ needs and wishes, but with no immediate compensation of them. On the other hand, bespoke innovation is designed to serve both, customer and company. The customer initiate the innovation process by providing the company with all details about requirements and needs and then the innovation is proceeded by the company to provide the customer with personalised/customised end product or service. After the end of the innovation process, the IP rights normally remain in the company if there is no other agreement.

Table 2 Differences of open innovation forms

	“Classic” open innovation	Standard setting organization	User innovation	Bespoke innovation
Owner of IP	Upon agreement	Internal or public domain	Shared	Internal
Innovation flow direction	Coupled	Outwards	Inwards	Coupled
Public/private good	Private	Public	Public	Private
Management of innovation	Shared	Internal	Shared	Shared
Innovation outputs	Missing knowledge	Standards and guidelines	Public opinion	Customer needs, requirements, customisation

Application of innovation form outputs	Licensing, subcontracting, joint venture	Exchangeability, comparability, control of products and services	New products through customer innovation, new use of existing products	Customised or personalised goods and services
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Conclusion

In the final section, we tie some of these threads together with some provisional conclusions.

In this paper, we looked at open innovation and compared the original or “classic” interpretation of open innovation with broader interpretations that have developed in recent years. From our perspective, it appears that each variant offers valuable issues and lessons related to the core open innovation problem of purposively managing knowledge flows across organizational boundaries using various incentivising mechanisms in manners that are consistent with organizations’ business models. What we conclude from this study is that it is important to identify the types of knowledge flows and property rights issues in analysis of different forms of open innovation. That is the key to differentiating the major variants of open innovation, and it is hoped that the sorting and classificatory process we have pursued here will help provide a useful basis for identifying and analysing the similarities and differences between these alternative forms of open innovation governance.

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