COLLABORATIVE INNOVATION IN THE PUBLIC SECTOR

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ABSTRACT

This article claims that there is a need for a new form of innovation in the public sector because bureaucratic (closed) ways of innovating do not yield the quantity and quality of innovations necessary to solve emergent and persistent policy challenges. Based on these shortcomings the article defines a set of criteria, which a suitable form of public sector innovation needs to fulfill. The article shows that collaborative innovation meets these criteria because it opens the innovation cycle to a variety of actors and taps into innovation resources across borders, overcomes cultural restrictions and creates broad socio-political support for public sector innovation. The article highlights risks and issues associated with collaborative innovation and that the concept should not be discarded on these grounds since there is no suitable alternative to tackle emergent and persistent challenges. Finally, the article suggests capacities, which government needs to develop to successfully implement collaborative innovation. However as research on innovation in the public sector is rather thin the article suggests a map for further research to substantiate the role of collaborative innovation in the public sector.

INTRODUCTION

Those less concerned with the study and practice of innovation in the public sector might claim that innovation in the public sector is an oxymoron. However, that conclusion is a fallacy if one considers the numerous innovations, which the public sector produces. Some of the most celebrated innovations are the Open University and the National Literacy Strategy in the UK. The yearly award winners of the Ford Foundation's Innovations in American Government program, administered by Harvard University's Kennedy School of Government, serve as another example in the US. There are probably various examples of public sector innovation from other countries, which could prove that innovation and public sector are not mutually exclusive.

However, some professionals and academics claim that the public sector needs to find radically new ways of innovating (Harris and Albury, 2009; Eggers and Kumar Singh, 2009; Nambisan, 2008). The simple reasoning behind this claim is that current public sector innovation would not yield the innovations necessary to tackle today's radical challenges such as climate change, aging society, obesity and the financial crisis (Harris and Albury, 2009). These academics and professionals propose a new form of innovation, which is called "collaborative innovation", as the cure for the alleged innovation problem of the public sector. One might readily accept that the public sector faces complex challenges, which are unmet. However, one might less readily accept that a different form of innovation constitutes a convincing alternative. One reason for this doubt is that research about public sector innovation is rather thin and the level of conceptualization low (Hartley, 2005). For example there are various definitions of what counts as an innovation in the public sector (Moore, 2005). In this research environment it is difficult to clearly establish what is different about the alternative form of innovation and to claim that it possesses characteristics which make it more suitable

than current forms. In order to be persuasive a proposal for collaborative innovation needs to offer clear answers to what Simons (2001) calls stock issues such as: is there a need for change? Is the proposal workable in theory? Is it the best solution? I will address an adapted version of these stock issues to investigate the research question: *Is collaborative innovation a suitable form of innovation in the public sector?*

To answer this research question I first present the proposals of collaborative innovation and their origins. Second, I will investigate the need for a new form of public sector innovation. Third, I will set up criteria to investigate whether collaborative innovation meets this need. Fourth, I will evaluate the risks and delineate issues of collaborative innovation. Fifth, I will discuss alternatives. Sixth, I will point out which capacities government[1] needs to develop to adapt collaborative innovation. Finally, I will draw a conclusion and outline aspects for further research.

PROPOSALS FOR COLLABORATIVE INNOVATION

In this part of the part the article I will introduce proposals for collaborative innovation and relate them to relevant public and private sector theories. Most recent and prominent proposals for collaborative innovation have been made by Nambisan (2008), Eggers and Kumar Singh (2009) and Harris and Albury (2009). Even though the proposals differ in depth and scope the core suggestion is similar: government should adopt a form of innovation, which "utilizes the innovation assets of a diverse base of organizations and individuals to discover, develop, and implement ideas within and outside organizational boundaries" (Eggers and Singh, 2009: 98). Nambisan defines collaborative innovation as a "collaborative approach to innovation and problem solving in the public sector that relies on harnessing the resources and the creativity of external networks and communities (including citizen networks as well as networks of nonprofits and private corporations) to amplify or enhance the innovation speed as well as the range and quality of innovation outcomes"(2008: 11). From these statements one can derive the principal feature of collaborative innovation, which is that the innovation process is opened up, that actors from within the organization, other organizations, the private and third sector and citizens are integrated into the innovation cycle (idea generation, selection, implementation and diffusion) from the earliest stage onwards. Proposals for collaborative innovation are based on the assumption that the active participation of a wide range of actors with their innovation assets (intangible: knowledge, creativity etc. and tangible: money and other physical assets) will increase the quantity and quality of innovations.

These proposals imply that the locus of innovation should be determined by the availability of innovation assets and not by the formal boundaries of a bureaucratic organization[2]. Moreover, the role of the actors is less defined by formal rules as in a bureaucratic organization but by the match between innovation assets and the problem. Consequently, the innovation cycle can be divided between different actors or entirely entrusted to one based on the availability of innovation assets.

[1] The term government refers to government organization (national, regional and local) and public service organizations. The difference is the degree of autonomy from the central authority as defined by Moore and Hartly, 2008

[2] Characterized by a closed/silo structure and hierarchy/top-down processes

Proponents of collaborative innovation also point out the important role, which ICT (Information and Communication Technologies) play in collaborative innovation. According to Eggers and Singh "technology has made it possible for governments to build networks that promote the flow of ideas and information in and out of organizational boundaries" (2009: 91). ICT facilitates coordination and knowledge sharing at low costs across boundaries and thus supports collaborative innovation. Even though this section presents the principal features of collaborative innovation our understanding is only limited without knowledge about the origins of collaborative innovation. In the next sections I trace the origins of collaborative innovation in the public and private sector.

ORIGINS OF COLLABORATIVE INNOVATION

Public Sector Origins

Collaborative innovation can be connected to the concept of networked government[3]. According to Moore "the concept of networked government includes not only effective coordination across government organizations but also the possible integration of both for profit and non profit sector organizations into production systems designed to achieve public purposes" (2009: 191). This loose definition of networked government underlines the idea of collaborative innovation in the sense that assets of diverse actors across organizational boundaries should be used. However, this concept refers to the production process of public value (Moore, 1995) and not the innovation process.

Arganoff (2007) on the other hand emphasizes the value of networked management to enable government to find solutions to complex problems. According to Arganoff the work of contemporary public management is "enmeshed in the symbolic-analytic challenge of applying particular types of data, information, and knowledge to complex situations" (2007: 221). The network approach helps to overcome this problem solving challenge because "multiple parties mean multiple alternatives to suggest and consider, more information available for all to use, and a decision system that is less bound by frailties of individual thinking" (2007: 221). In contrast to Moore, Arganoff points out the value which networked management plays in the idea generation and selection stage. Arganoff categorizes these kinds of networks as "informational networks". Besides the benefits of networked management for idea generation Arganoff also presents evidence for its value in implementation and diffusion. In comparison to collaborative innovation proposals, Arganoff focuses only on a small number of "parties". He only considers the value of "human capital and other resources" (221) within "governments, inter-governmentally and with NGOs" (221) and not of the private/third sector or citizens.

Besides Arganoff, Hartley (2005) points out an explicit relation between networked governance and innovation and describes the different levels of innovation and roles of policy makers, public managers and citizens. However, assumptions about the degree of collaboration and scope of actors involved remain unclear and if at all seem to fall short of the degree and scope of collaborative innovation. It is not made clear who participates in the innovation process besides policy makers, public managers and citizens neither in which stages of the innovation cycle these actors should participate.

[3] The article treats networked governance and networked government as synonyms

Concluding this section one can say that there is a relation between theories of networked governance and collaborative innovation in the public sector with regard to the integration of a variety of actors. Yet, the views on networked governance do not sufficiently explain the scope and width of collaborative innovation. Explanations based on networked governance either only focus on collaborative production of public value or do not recognize the importance of wide and diverse range of actors for collaborative innovation. The circumstance does not mean that public sector theories about networked governance are meaningless in explaining collaborative innovation; however one needs to look outside the boundaries of public sector theory and practice to trace further origins of collaborative innovation. Since many management theories and tools applied in the public sector come from the private sector (Albury, 2005), it is reasonable to investigate in how far collaborative innovation has roots in the private sector.

Private Sector Origins

The idea to include a broad variety of internal and external actors in the innovation cycle originates in the private sector. Chesbrough (2003) describes the opening of the innovation cycle as "Open Innovation". Open innovation means, "that valuable ideas can come from inside or outside the company and can go to market form inside or outside the company as well"(2003: 43). Chesbrough argues in his book "Open Innovation - The New Imperative for Creating and Profiting from Technology" (2003) that the era of closed innovation, within the boundaries of a company, has passed, since the knowledge monopolies, which some companies once held, were broken up for two major reasons. First, knowledge monopolies often coincided with industrial monopolies, which were largely stripped apart by antitrust laws and secondly knowledge became more widely dispersed "among companies, customers, suppliers, universities, national labs, industry, consortia, and start-up firms" (Chesbrough, 2003: 21). From these circumstances Chesbrough concludes that companies need to open their innovation process to systematically source external ideas and also to leverage their internal knowledge externally[4]. Thus companies can make the greatest use of the dispersed wealth of innovation assets inside and outside of their companies. Consequently, the innovation cycle should be divided between different actors based on the availability of innovation assets to solve innovation problems.

Besides these general theories more concrete approaches to open innovation have been developed. Von Hippel claims in the book *Democratizing Innovation* (2005) that innovation becomes increasingly democratic in the sense that "that users of products and services—both firms and individual consumers—are increasingly able to innovate for themselves" (29). These innovative users are called "lead-users" who are "at the leading edge of an important market trend, and so are currently experiencing needs that will later be experienced by many users in that market" and "they anticipate relatively high benefits from obtaining a solution to their needs, and so may innovate." (Von Hippel, 2005: 22). Moreover, Von Hippel argues that companies should search and integrate lead-user innovations because these innovations promise to be more successful than innovations developed in-house. Von Hippel supports his claim with various examples. One of these examples is that " 3M divisions funding lead user project ideas experienced their highest rate of major product line generation in the past 50 years"

[4] Glassman and Enkel (2004) conceptualize the flow of ideas for innovation as "outside-in", "inside-out" and "coupled processes" (outside-in and inside-out)

(Von Hippel, 2005: 37) and that the management made sales forecasts for lead user projects, which were 8 times higher than for in-house products.

While Von Hippel investigates the benefits of opening the innovation process to lead-users, others concentrate on strategies to "crowd-source" large networks of people for the innovation process. According to Howe "simply defined, crowd-sourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" (2006). [5] The assumption behind this extreme approach of open innovation is that crowds of people "are remarkably intelligent, and are often smarter than the smartest people in them" (Surowiecki, 2004: 14).

This section shows that the principal idea of collaborative innovation to open the innovation process to a large group of actors, to internalize external ideas but also to leverage internal knowledge externally stems from the private sector. Collaborative innovation shares the underlying assumption of open innovation that tapping into the vast innovation assets across organizational boundaries will increase the quantity and quality of innovations. Moreover, it is expected that these innovations will add value in the private sector in terms of higher revenues and in the public in terms of public value.

However, the public sector is in various ways different form the private sector and therefore one should not take for granted that the open innovation approach is serviceable in the public sector (Moore, 2009; Windrum and Koch, 2008)[6]. In the next section I will start to analyze whether open innovation in form of collaborative public sector innovation matches the innovation needs of the public sector.

THE NEED FOR A NEW FORM OF PUBLIC SECTOR INNOVATION

Unmet challenges

The first step to investigate the claim whether collaborative innovation is a suitable form of innovation in the public sector is to analyze whether there is generally a need for a new form of public sector innovation. The first guiding question is whether there are unmet public sector challenges. Most proponents of the claim that a new form of public sector innovation is needed argue that the public sector has been unable to respond to large scale social, economic and environmental challenges (Harris and Albury, 2009; Albury, 2005; Nambisan, 2008; OECD, 2009; NAO[7], 2008; H.M. Government, 2009; Eggers and Kumar Singh, 2009). Harris and Albury (2009) categorize these challenges into emergent and persistent ones. Emergent challenges are climate change, aging society, rise in long term health conditions etc. Amongst persistent problems are mental-health, crime and social order; and alcoholism. Both emergent and persistent problems share that the public sector has not yet found suitable answers (NAO, 2008; H.M. Government, 2009).

[5] http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html

[6] Windrum and Koch mention as some differences: "Social responsibility and accountability …very different set of barriers and enablers for the diffusion of innovations"(2008, 4).

[7] National Audit Office

The supporters of new forms of innovation in the public sector add an element of urgency to their claim by arguing that the current financial crisis exacerbates these challenges. The financial crisis imposes budget constraints and requires governments to find new less costly ways to respond to social, economic and environmental problems.

At the same time however government cannot reduce the quality of the services. Citizens demand more and more personalized public services (Albury, 2005, NAO, 2008, H.M. Government, 2009). Albury (2005) characterizes personalized public services as "responsive to needs and aspirations of individuals and communities" (51). These increased expectations towards public service delivery are unmet and pose a challenge to government (Albury, 2005; NAO, 2008; H.M.Government, 2009).

Moore (2009) points out another characteristic of these challenges, which makes it difficult for government to find appropriate solutions. According to Moore (2009) these problems cross boundaries (local, regional, national and international) but government responses have often been confined to boundaries and therefore were of little help in meeting the challenges.

Even though one might readily accept the claim that there are various unmet challenges and that a continuous failure to respond to those might collapse government and lead to a reduction in welfare, the pressing underlying question is why government is unable to find suitable solutions. In the next section I will attempt to explore this question.

DEFICIENCIES OF PUBLIC SECTOR INNOVATION

There are numerous explanations for the deficiencies of public sector innovation in support of new forms of innovation in the public sector. However, these explanations are often shaped to promote a certain case for innovation and remain vague or incomplete. Explanations in the style of "now more than ever, government needs to embrace innovative approaches to daunting problems. The reason is simple: existing practices will not suffice" (Eggers and Kumar Singh, 2009: 3) are overly simplistic and not convincing. I do not intent to establish a complete theory of the deficiencies of public sector innovation in the light of emergent and persistent challenges. Yet, I intend to show in a clearer way what is deficient with regard to public sector innovation and why these deficiencies exist.

Eggers and Kumar Singh (2009) claim that government has problems managing the innovation cycle. They underline that government is weak at idea generation, selection, implementation and diffusion. Moreover, government does not innovate strategically in the sense that it "tend(s) to approach innovation as a "one-off" change, using the "big bang" approach instead of a series of new approaches that make up a broader process" (Eggers and Kumar Singh, 2009: 6). Albury (2005) supports this notion and claims that the lack of a strategic approach to innovation manifests itself in the circumstance that government is not a serial innovator. As a consequence of these deficiencies government does not achieve to produce the necessary quality and quantity of innovations in order to meet the emergent and persistent social, economic and environmental challenges.

Even though Eggers and Kumar Singh (2009) give an account of what is deficient about government innovation and many scholars would share that account (Namibsan, 2008; Moore, 2005; Hartley, 2005), they do not sufficiently explain why these deficiencies

exist. Such an explanation is probably beyond the intention and scope of Eggers and Kumar Singh's practical advice nevertheless it is pertinent to understand the underlying reasons. Such an understanding will put us in a better position to evaluate whether collaborative innovation is a suitable form of public sector innovation.

EXPLAINING DEFICIENCIES OF PUBLIC SECTOR INNOVATION

Many professionals and scholars (Moore, 2009; 2005; Hartley, 2005; Harris and Albury, 2009, Mulgan and Albury, 2003) blame the bureaucratic nature of government expressed in organizational and cultural restrictions for the weaknesses of the innovation cycle. For the purpose of this article I will refer to innovation under these conditions as bureaucratic innovation. Organizational aspects such as hierarchy, silo structures, closed and top-down processes characterize bureaucratic government (Moore, 2009; Borins, 2006; Hartley, 2005) and impact the innovation cycle negatively. Due to these characteristics participation in the innovation cycle is restricted to a limited number of participants on the inside of government. According to a study by NAO "Innovation Across Central Government" (2008) the innovation cycle is dominated by senior management inside the organization and there is no or little integration of other actors (e.g.: private sector, frontline staff, citizens and the third sector). These characteristics of bureaucratic government ignore the innovation resources, which are available on different levels of an organization and across its boarders to fuel the innovation cycle. Hence, it is argued that the quantity and quality of ideas generated, selected, implemented and diffused is reduced. Moreover, the closed nature of public sector innovation reduces transparency, trust and commitment to take up innovations and as a consequence weakens the implementation and diffusion of innovations.

Next to these organizational barriers to innovation in the public sector there are cultural restrictions. A fundamental obstacle is the risk-averse culture which limits leadership, funding and experimentation necessary to generate, select, implement and diffuse ideas (NAO, 2008; Mulgan, 2007; Albury, 2005; Mulgan and Albury, 2003). One reason for risk aversion is fear of public blame for failure (Mulgan and Albury, 2003) or the image that government would gamble with public money (Schorr, 1988). Since the socio-political environment (media, public, politics) is primarily responsible for these allegations one could argue that a skeptical attitude of the socio-political environment towards public sector innovation is at least one of the root causes of a lacking culture of risk taking in bureaucratic innovation.

The lack of support in the socio-political environment can also serve as an explanation for the "one-off" and "big-bang" approach towards innovation. These innovations mostly occur in response to imminent threats. In those cases public awareness, media and political support create an environment in which risk taking is legitimized, leadership and funding is made available and experimentation possible. Conversely, if any of the three is missing the window of opportunity for innovations narrows and the innovation cycle slows or breaks down.

Certainly, these explanations of the deficiencies of public sector innovations are not complete. Accounts will vary within jurisdictions and types of government. Moreover, depending on these differences the weaknesses of the innovation cycle and corresponding explanations might differ. Despite these qualifications this part of the article shows that government faces challenges managing the innovation cycle and

producing the right quantity and quality of innovations to meet emergent and persistent challenges. Furthermore, this part explains these deficiencies in terms of the bureaucratic nature of government, i.e. restrictive organizational and cultural aspects. With regard to the later the part draws a relation between risk-taking and the determining influence of the broader socio-political environment and the impact on leadership, funding and experimentation. As a consequence of this analysis, I can say that there is a need for a new form of public sector innovation. In the next part I will analyze in how far collaborative innovation is a suitable form of public sector innovation to meet that need.

COLLABORATIVE INNOVATION IS A SUITABLE FORM OF INNOVATION IN THE PUBLIC SECTOR

Criteria to assess collaborative innovation

Based on the findings of the previous part I can roughly define the criteria, which collaborative innovation needs to fulfill to be deemed a suitable from of public sector innovation. In the previous part I delineated the major causes of the deficiencies of public sector innovation. A criterion, which logically follows from that relationship, is whether collaborative innovation helps to overcome the restrictive organizational and cultural aspects of public sector innovation. Moreover, collaborative innovation needs to be able to influence the broader socio-political environment for public sector innovation.

In response to organizational restrictions, collaborative innovation needs to (1) open the innovation cycle to internal and external innovation assets. With regard to cultural obstacles collaborative innovation needs to (2) facilitate risk-taking. On a broader scale collaborative innovation needs to (3) promote a positive attitude towards public sector innovation and risk taking in the socio-political environment. If the causal relationship holds a fulfillment of these criteria will improve the elements of the innovation cycle and increase the quantity and quality of public sector innovations. In the next section I will apply these criteria and investigate in how far collaborative innovation offers a suitable alternative to bureaucratic public sector innovation.

EVALUATING COLLABORATIVE INNOVATION

Collaborative innovation opens the innovation cycle to a diversity of actors across hierarchies and organizational boundaries (Nambisan, 2008; Eggers and Kumar Singh, 2009; and Harris and Albury, 2009). According to proposals for collaborative innovation government should tap into the vast innovation assets inside and outside of the organization, but also leverage internal innovation assets externally. By opening the innovation cycle and allowing the flow of innovation assets across internal and external boundaries, collaborative innovation meets the first criterion. Consequently, the opening of the innovation process has the potential to improve the elements of the innovation cycle in various ways.

Idea generation is strengthened, because government can use “a wide range of knowledge, (creativity) and expertise that is both local and global, lay and professional” (Fung, 2008: 58) to find better solutions to complex unmet needs. Idea selection can be

improved. One way is that government includes a greater number of actors in the selection process and thus increases the possibility to overcome "groupthink" (Janis, 1972), which arises in small decision making groups.

Idea implementation and diffusion is facilitated. One reason why implementation and diffusion is supported is that actors who have participated in the idea generation and/ or selection process are more likely to accept and promote innovations, because of having ownership and responsibility. Moreover, based on the innovation problem and the distribution of innovation assets external actors might be better positioned to implement and diffuse the innovation. Collaborative innovation gives government the opportunity to shift the locus of implementation and diffusion to the actor who is most capable and thus strengthens the implementation and diffusion elements of the innovation cycle. Entrusting external actors with implementation and diffusion also allows a greater degree of risk-taking necessary for implementation and diffusion. External actors are less likely to be accused of wasting taxpayers' money and therefore enjoy more room for risk-taking (supportive leadership, funding and experimentation). Thus by opening the innovation cycle government can find ways to circumvent cultural obstacles to public sector innovation and improve implementation and diffusion.

Despite the fact that the opening of the innovation cycle constitutes a possibility to overcome cultural barriers to risk taking, one has to point out that the barriers still remain. However, collaborative innovation can influence the broader socio-political environment, which in turn might change government's culture of risk taking and enable leadership, funding and experimentation. The inclusion of a broad set of actors into the innovation cycle might increase their understanding of the need of innovation and the need of risk taking, which it entails. Especially, in the case of citizens a greater degree of awareness about the requirements of risk taking through participation might result in more understanding, trust and support for public sector innovation (Fung, 2009). This in turn might reduce fear of shaming and blaming and encourage risk taking. Consequently, collaborative innovation enables government to circumvent cultural obstacles towards risk taking but also to remove these through influencing the broader socio-political environment. Based on these results collaborative innovation fulfills criteria two and three and by supporting a culture of risk taking strengthens idea implementation and diffusion.[8]

Concluding this section, collaborative innovation helps to overcome organizational and cultural restrictions of the innovation cycle. Moreover, it has the potential to shape public support for public sector innovation and risk taking. Consequently, collaborative innovation fulfills the criteria set out in the previous section and is likely to strengthen the elements of the innovation cycle and increase the quantity and quality of innovations to respond to unmet persistent and emergent challenges. However, this discussion remains abstract and only few general examples have been given of how collaborative innovation improves the innovation cycle, the quantity and quality of innovations. I will account for these shortcomings in the next section.

[8] Risk taking refers to the support of controlled experimentation and not to excessive spending on uncertain projects.

CASES OF COLLABORATIVE INNOVATION

Blackfoot Challenge

One of the most prominent examples of collaborative innovation is the "Blackfoot Challenge".[9] The unmet challenge or unsolved problem was that the Montana Blackfoot watershed was one of the ten most endangered rivers systems in the US. Environmental groups and agencies were unsuccessful in advocating protection and "the traditional government conservation approach of top-down, agency-led planning and decision-making failed to effectively protect the fragile ecosystems and only led to increasing tension between parties"[10]. Residents of the Blackfoot watershed decided to create a grassroots movement and collaborate with residents who shared the goal of "preserving the single resource the entire community depended on- the Blackfoot watershed". Shortly after its inception "...other state and federal natural resource agencies joined with the U.S. Fish and Wildlife Services" the movement and the "Blackfoot Challenge" was created. This is a non-profit organization, which promotes cooperative solutions to "meet natural resource objectives while maintaining …rural lifestyle activities such as ranching, hunting, fishing, and timbering." By 2006 more than 600 partners had entered the collaboration amongst those landowners; conservation organizers; local, state and federal agencies; timber companies; and private foundations.

The collaborative innovation effort substituted bureaucratic innovation and opened the problem-solving process to various partners and thus improved the elements of the innovation cycle. Collaborative innovation helped to generate solutions, which are responsive to local needs and which single environmental groups or government could not find. Idea selection was improved in the sense that those who are affected by the outcome had a say and the local knowledge to assess which solution is suitable. Participation in the selection process increased transparency, trust and acceptance. Therefore collaboration raised support, which is needed to implement the solutions. Implementation was also strengthened, since those participating were also responsible for the implementation. Moreover, partners in the collaboration possessed the innovation resources (local expertise, funds etc.) to implement solutions. Diffusion was facilitated through a broad network of collaborating partners who shared the same goals.

With regard to cultural restrictions one can say that the "Blackfoot Challenge" encouraged local risk-taking with private assets. Regarding the ability to change the broader socio-political attitude towards public sector innovation one might take the positive feedback, which the collaboration received from professionals, academics, media and society, as an indicator for increased support for risk taking in public sector innovation. Overcoming cultural restrictions and gaining socio-political support for risk-taking further strengthened implementation and diffusion of the innovation cycle.

As a consequence of the move towards collaborative innovation the "Blackfoot Challenge" improved all elements of the innovation cycle and produced the needed quantity and quality of solutions "sustaining a biologically diverse and significant 1.5-million-acre ecosystem while maintaining the economic well-being of the community."

[9] For more information on the "Blackfoot Challenge" see http://www.blackfootchallenge.org/

[10] Quotes below from http://www.innovations.harvard.edu/awards.html?id=39701

Big Green Challenge

Another example of collaborative innovation is the "Big Green Challenge"[11] sponsored by NESTA (National Endowment for Sciences, Technology and the Arts[12]), a government funded agency to support innovation in Britain. The "Big Green Challenge" is a competition "designed to stimulate and support community-led responses to climate change", launched in 2007. The challenge has an online open call format addressed to not-for-profit organizations and groups. The winners receive a £1m challenge prize to implement their ideas.

The challenge is an example of collaborative innovation where the innovation cycle is divided based on the availability of innovation resources. Building on the assumption that local not-for-profit organizations and groups have better ideas how to "tackle big issues" NESTA opens its organizational borders and sources the "crowd wisdom". The winning proposal is selected internally. NESTA selects the proposal based on the assumption that it is impartial and has the best resources to assess the value of the proposal according to five criteria: CO2 emissions reduction; innovation; long-term impact; potential for growth, replication and transferability; and community engagement. The proposal is implemented and diffused by the winning organization or group. This might have two reasons. First, the community group or organization might have better innovation assets in form of knowledge, creativity and networks to implement and diffuse the idea. Second, NESTA as a government funded organization reduces risk taking by "outsourcing" it for a controllable amount of £1m. Thus collaborative innovation also allows NESTA to overcome cultural restrictions such as risk aversion. One might also conclude that this collaborative innovation has the potential to positively influence the socio-political environment towards innovation and risk taking. By including a wide variety of actors across society the "Big Green Challenge" raises awareness and understanding and might enhance trust and support for innovation and risk taking.

This case of collaborative innovation shows how organizational and cultural restrictions can be overcome and how the division of the innovation cycle can strengthens idea generation, selection, implementation and diffusion and thus yield a greater quantity and quality of responses to the climate challenge.

RESULTS FROM CASE ANALYSIS

One can raise many reservations which make inferences or generalizations from these cases difficult. The number of cases is small and selection criteria are not explicit. Moreover, not all possible ways how collaborative innovation improves the elements of the innovation cycle are mapped out. These reservations are justified and there are probably more, yet they do not undermine the principal power of these examples to show how collaborative innovation offers an alternative to bureaucratic forms of innovation, improves the elements of the innovation cycle, and produces a quantity and quality of innovations, which would have been highly unlikely under the bureaucratic way of innovating. After having analyzed that collaborative innovation fulfills the

[11] For more information on the "Big Green Challenge" see http://www.biggreenchallenge.org.uk/

[12] For more information about NESTA see http://www.nesta.org.uk/

criteria derived in the previous sections and having emphasized these benefits with examples, I can conclude that collaborative innovation seems to be a suitable form of public sector innovation to meet emergent and persistent challenges.

However, it would be shortsighted to focus only on the benefits if there were significant risks or issues, which might undermine the value of collaborative innovation. In the next part I will investigate in how far risks or other issues might jeopardize the overall value of collaborative innovation.

RISKS AND ISSUES OF COLLABORATIVE INNOVATION

There is no or hardly any research on the risks of collaborative innovation in the public sector. However, this does not mean that one cannot make inferences about risks and issues from related theories. In this part I attempt to derive risks from networked governance. With regard to networked governance I have shown in part 1 that there is a relationship between networked governance and collaborative innovation in the sense that both draw on a variety of internal and external actors. In this aspect collaborative innovation faces similar problems like networked governance. One risk in networked governance is the "problem of public ends" (Fung, 2008: 67). According to Fung (2008) interest groups participating in the collaboration project can "hijack" the decision making process, impose their interest and undermine the pursuit of public value. The same problem exists for collaborative innovation. In principle actors have the possibility to manipulate the elements of the innovation cycle to exert their particular interests over the goal of innovating public value (Sifry, 2009).

Where Fung (2008) and Sifry (2009) describe this problem as a result of deliberate manipulation or hidden agenda, Moore and Hartley (2008) underline that collaboration with various actors entails a transfer of "decision rights". They point out that if external or internal actors invest their resources into the networked production they claim to have a say in the production of public value. Even though Moore and Hartley (2008) make no explicit reference to collaborative innovation one can translate that implication to collaborative innovation. Accordingly, actors contributing with their innovation resources to the innovation cycle will demand a right to determine at least to an extent what idea of public value is generated, selected, implemented and diffused. Especially, if one considers the case that government plays only a minor or no role in collaborative innovation it gives up partly or entirely its authority of defining public value. This is an important issue because of the large impact, which collaborative innovation can potentially have on public value innovation.

Another issue connected to the division of roles within networked governance is the distribution of accountability (Sirianni, 2009). Sirianni raises the issue of who is accountable for the production of public value if the production is collaborative and the "accountability environment not so neatly divided" (2009: 63). Since collaborative innovation also entails a division of roles based on the match between innovation assets and problems the same issues surface. In this context one can imagine questions like: is government accountable for elements of the innovation cycle, which it does not manage? The transfer of authority and accountability provokes a chain of constitutional issues in a representative democracy where commonly elected officials have the authority and are held accountable for their actions under that authority. However, these important issues need to be shelved in this article and are subject to further research.

Concluding this part of this analysis it may be observed that collaborative innovation raises risks and issues for the innovation of public value. Arguably, one can imagine more risks and issues contingent upon the degree and scope of collaborative innovation. One might argue that the cost not only in terms of monetized risks but also coordination cost might outweigh the benefits. However, there is little empirical research on the benefits and costs of collaborative innovation and therefore it is premature to reject collaborative innovation on the grounds of a cost-benefit analysis. A more reasonable approach in the face of lacking empirical research is to investigate whether there are alternatives to collaborative innovation, which promise to meet the need for a new form of public sector innovation.

ARE THERE SUITABLE ALTERNATIVES TO COLLABORATIVE INNOVATION?

Alternatives to collaborative innovation need to fulfill the same criteria in order to be a suitable new form of public sector innovation. However, in order to be a preferred alternative to collaborative innovation they need to fulfill the criteria more convincingly or entail less risks and issues.

Based on these criteria, closed forms of public sector innovation, do not constitute an alternative. They do not meet the first criteria to open the innovation process, tap into dispersed innovation resources and thus do not create the quantity and quality of innovations to respond to unmet needs. Even with regard to the other two criteria (increasing risk taking and influencing the socio-political environment) closed forms of public sector innovation are the reason why these criteria are not met and therefore cannot be an alternative. Consequently, closed forms of public sector innovations will not constitute a suitable alternative with regard to meeting the innovation needs. Certainly, one can argue that these forms entail less risks and issues regarding authority and accountability. One might even argue that they have lower cost (monetized risks and coordination costs). But even if closed forms of public sector innovation reduce these risks, they pose risks and issues regarding transparency, legitimacy, trust and responsiveness (OECD, 2009).

Proponents of collaborative governance advance another reservation towards alternatives. They argue that once citizens are allowed to participate in the innovation process, invest their resources and receive decision rights, it would harm democracy if citizens were excluded (Rizvi, 2008: Sirianni, 2009). Concluding this line of reasoning, Sirianni (2009) claims that there is no way back to closed and less participatory forms of governance. One can extend that thought to collaborative innovation in the sense that once the innovation process is opened up to external actors it is problematic to return to closed forms of innovation since a return might reduce transparency, trust and legitimacy.

Consequently, it is not the question whether closed or collaborative public sector innovation is the suitable alternative form of public sector innovation. Considering that only collaborative innovation can meet the innovation need as defined in the article, the question is rather, which degree of collaborative innovation produces the innovations required and controls risks. But how can government assess, which degree of collaborative innovation is suitable and manage collaborative innovation in a way that maximizes innovations and minimizes risks? In the next part I will outline some of the

key capabilities, which government needs to develop in order to successfully manage collaborative innovation.

KEY CAPACITIES TO IMPLEMENT COLLABORATIVE INNOVATION, CONTROL RISKS AND SOLVE ISSUES

To make collaborative innovation work government needs to develop capacities to adapt to this form of innovation (Behn, 2008). The extent to which these adaptations are necessary depends on the degree of collaborative innovation and the organizational, cultural and institutional set up of government. The proposals by Namibsan (2008), Eggers and Kumar Singh (2009), Harris and Albury (2009) to adopt collaborative innovation entail concrete recommendations of how government can build the capacities (organizational, cultural, funding and leadership) necessary for collaborative innovation in defined circumstances. One can also translate various recommendations on the introduction of networked governance to collaborative innovation (Moore, 2009; Sirianni, 2009; Borins, 2008; Hartley, 2005). On the background of these vast recommendations a replication of that list would be superfluous in this article.

Instead I focus on a shortcoming of the above recommendations. These recommendations neglect abstract and generic capacities, which government needs to develop regardless of the concrete form of collaborative innovation. First, government needs to develop the capacity to explore its innovation needs. These needs might be detected inside or outside of government and top-down or bottom-up. Second, in order to identify innovation resources government needs to build the capability to look across and outside of the organization. Third, having identified the innovation resources government needs to be able to motivate and enable actors to apply their resources. Finally, government needs to coordinate the application of resources for the innovation of public value.

Collaborative innovation requires another capacity, which relates to the transfer of authority or "decision rights" to determine public value in innovation. Moore and Hartley (2008) argue that external actors will claim decision rights to determine, which ideas for public value are generated, selected, implemented and diffused in exchange for their innovation resources. As shown in part four the same reasoning can be applied to collaborative innovation. One can argue that this is no problem and government can control collaborative actors by means of contracts and thus overcome principal-agent conflicts. However, contracts can never be fully complete and it is difficult and costly to design contracts the greater the number and diversity of actors participating in the collaborative innovation effort (Schelling, 1956). Therefore, government cannot completely control the innovation of public value in collaborative innovation and needs to develop norms and methods to decide on the tradeoff between authority and external innovation assets.

However, it is not sufficient that government develops the capacity to carefully transfer authority. The transfer of authority in collaborative innovation raises the issue of who is accountable for the innovation of public value if government gives up its authority and control over public value innovation. Sirianni (2009) proposes a system of "reciprocal accountability" (63) for collaborative governance. Sirianni argues for the case of citizen participation that citizens should "agree to be accountable for the quality of their work" (Sirianni, 2009: 63) in exchange for receiving decision rights. Considering the

influence, which external actors can generally have in collaborative innovation, the system of reciprocal accountability seems to be a reasonable way of connecting decision rights with accountability. As a consequence government needs to build the capacity to design a system of reciprocal accountability in relation to the distribution of decision rights.

However, accountability needs to be based on a set of criteria for which the actors are accountable relative to their role in collaborative innovation. Moore and Hartley (2008) propose a framework to assess the outcomes of networked governance against justice, fairness, and community-building as well as efficiency and effectiveness. These values are relevant regardless of whether public value is produced through a network or innovated collaboratively. Therefore, it can serve as a suitable framework to evaluate collaborative public sector innovations and measure accountability.

Summarizing this section I can say that government needs to develop a number of capacities to implement collaborative innovation. One can criticize that these recommendations are not exhaustive and too abstract to be practical. The recommendations are tentative and based on the assumption and results within the scope of this article and therefore they are limited. Moreover, they are abstract. However, this level of abstractness allows a generic applicability regardless of the special form of collaborative innovation adopted.

CONCLUSIONS

The purpose of this article is to find an answer to the research question whether collaborative innovation is a suitable new form of public sector innovation. Within the limits of this article I have shown that collaborative innovation is a suitable new form of public sector innovation. It is suitable because it offers possibilities to solve unmet challenges, which bureaucratic (closed) forms of public sector innovation cannot offer. The principal reason why collaborative innovation is more suitable to solve persistent and emergent problems is because it opens the innovation cycle to a variety of actors and taps into innovation resources across borders, overcomes cultural restrictions and creates broad socio-political support for public innovation. As a consequence of these effects collaborative innovation has the potential to improve idea generation, selection, implementation and diffusion. The theoretical discussion and two examples have underlined that collaborative innovation strengthens the elements of the innovation cycle and achieves to produce innovations, which are more responsive to needs and more likely to solve persistent and emergent challenges.

However, collaborative innovation is not free from challenges. The opening of the innovation cycle requires government to give up or share its authority to define the public value of innovations. This transfer of authority raises issues of accountability in a constitutional system where those who have the authority are also held accountable. In order to solve these issues government needs to develop the capacity to make the trade off between authority and innovation assets and establish a system of reciprocal accountability. I made abstract recommendations in the form of "what needs to be accounted for" instead of giving precise guidelines for concrete situations or normative advice.

Despite the fact that this article shows that collaborative innovation is a suitable form of public sector innovation and points out capacities, which need to be developed to

implement this form of innovation, it has some shortcomings. These shortcomings serve as an outline for a future research agenda for topics, concepts and empirical evidence.

I decided to shelve topics which are not essential for the conclusions of this article but remain important issues to be investigated. Since the introduction of collaborative innovation entails a transfer of authority and possibly of accountability it concerns fundamental decisions about the distribution of power, accountability and control in society. These might need to be addressed in a more fundamental and normative way and not as a subject to a rather practical trade off with innovation assets. Another issue related to the transfer of authority is resistance towards the introduction of collaborative innovation by the organizations and its employees who need to exchange authority for innovation assets. A related question would be how government could overcome such resistance.

One can think of more topics for further research but based on the shortcomings of this article two more pressing issues surface. Regarding conceptual shortcomings one has to be aware of the fact that assumptions and conclusions about many risks, issues and capacities of collaborative innovation are primarily based on theories of networked governance but the benefits on theories of open innovation. This provokes the question whether collaborative innovation is simply a composition of the two, an advanced "function" of networked governance or whether it needs to be conceptualized in other terms?

Apart from this need for conceptual research there is a need for empirical research to substantiate claims about collaborative innovation. More case studies need to be performed to evaluate the benefits but also costs of collaborative innovation versus bureaucratic innovation. This is a difficult task and relates to the question of how to evaluate public sector innovations. A more general issue for empirical research would be to investigate whether one can define conditions in which collaborative innovation is reliably superior to bureaucratic innovation. In this regard the analysis of this article has made a modest start to show theoretically and with two cases that collaborative innovation is more suitable than bureaucratic innovation to tackle complex social, environmental and economic challenges in a responsive way. Yet, more empirical research is necessary to test the robustness of these findings.

This paper represents Ben Bommert's personal views and is not a statement of the Cabinet Office or the UK Government more generally.

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APPENDIX A

Cases:

"Blackfoot Challenge**"**

www.blackfootchallenge.org

www.innovations.harvard.edu/awards.htmlid=39701

"Big Green Challenge**"**

www.biggreenchallenge.org.uk

www.nesta.org.uk

Selected examples of collaborative innovation:

www.showusabetterway.co.uk

www.data.gov

www.opennasa.com

www.whitehouse.gov/OpenForQuestions/