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Can Collective Intelligence Produce Social Innovation?

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Introduction

The development of modern information and communication technologies (ICTs) has led to a renewed interest in the phenomenon of ‘collective intelligence’ (also described as the ‘wisdom of the crowds’, Surowiecki, 2005). Collective intelligence refers to the capacity to mobilise and coordinate the expertise and creativity possessed by large groups of individuals in order to solve problems and create new knowledge. Although this can be done offline, ICTs make it far easier for large groups of individuals to work collectively on common tasks, for example by removing the need for physical proximity, allowing for asynchronous communication and making it possible for single individuals to transmit information to very large groups (Wellman, 1997). These advantages have allowed online networks to solve iconic mathematics problems (Polymath, 2009; Gowers and Nielsen, 2009), create the world’s largest reference work, Wikipedia (Almeida, 2007), and even challenge grandmaster Garry Kasparov to a game of chess (Nielsen, 2011).

In the light of these developments, scholars have suggested that by harnessing collective intelligence, it may be possible dramatically to improve society’s ability to tackle seemingly intractable social problems (e.g., Rushkoff, 2003; Howe, 2006; Tapscott and Williams, 2006; 2010). Theoretically, it is clear that there are certain types of tasks that groups perform better than individuals. For example, large groups are good at predicting the outcomes of elections or guessing the number of beans in a jar (Sunstein, 2006). However, these types of problems have concrete ‘right’ answers, whereas the answers to social problems are rarely so clear cut (Funtowicz, 1993; Head, 2008).

As Homer-Dixon (2001) and Westley *et al.* (2007) have argued, it may be possible to address some of the most pressing social problems by producing social innovations – new approaches to tackling familiar problems when established answers and responses have proven ineffective. But are collective intelligence tools valuable to the production of social innovation? On the one hand, there are some promising indicators. Online networks are typically made up of diverse nodes that are weakly tied, exactly the sort of networks that should be effective at mobilising knowledge and resources (Granovetter, 1973). Furthermore, they tend to have relatively flat hierarchies and high degrees of autonomy for individual nodes, which is characteristic of innovative organisations (Mintzberg, 1991). Finally, because online networks are potentially open to anyone who has access to the internet, they encourage a sharing of diverse knowledge sets that has been identified as critical to innovation, both technical (Arthur, 2009) and social (Mumford and Moertl, 2003; Mumford and Licuanan, 2004). On the other hand, it is becoming increasingly clear that online collective intelligence has serious limitations. For example, online groups tend to become polarised between opposing opinions when it comes to dealing with complex problems that are politically contested (Sunstein, 2006). Moreover, online groups struggle with tasks that require careful coordination (Nielsen, 2012; Kittur, Lee, and Kraut, 2009). These factors suggest limitations in terms of how far collective intelligence may be able to drive social innovation, which typically aims to address problems that are the consequence of complex systems and that require changes in the flow of resources, authority and beliefs if they are to be addressed (Westley *et al.*, 2007).

This chapter draws on the work of Arthur (2009) and a number of social innovation scholars (Mulgan *et al.*, 2007; Westley *et al.*, 2007; Mumford, 2002), to provide a framework for examining how collective intelligence can support social innovation. It divides social innovation into phases and mechanisms. It then explores how three existing collective intelligence platforms have promoted social innovation. These three cases illustrate the different models that exist for tapping into collective intelligence online, with each one having different strengths and weaknesses in terms of generating social innovation. This analysis suggests that using collective intelligence to produce social innovation is possible, but that no single collective intelligence platform is likely to be useful throughout the whole social innovation process.

The challenge of using collective intelligence to drive social innovation

Social innovation has been defined as ‘an initiative, product, process or program that profoundly changes the basic routines, resource and authority flows or beliefs of any social system’.¹ Although this is just one definition, it shares much in common with those used by other authors working in this field (Mumford, 2002; Wheatley and Frieze, 2006). What is particular about this perspective on social innovation is that it is ‘systemic’, meaning that it is concerned with the impact an innovation has on a whole social system, not just in the context of a particular organisation or industry. This kind of systemic change inevitably involves conflicts of interests, different perspectives on the system and the nature of the social problem, and unanticipated consequences due to unpredictable relations of cause and effect. In short, and using the language of systems perspectives, social innovation is ‘complex’ (Westley *et al.*, 2007; Duit and Galaz, 2008; Pierre and Peters, 2005).

So, from this viewpoint, complexity is inevitable when dealing with social innovation. This is a problem for collective intelligence (Nielsen, 2011; Sunstein, 2006; Sunstein, 2007). In order to mobilise collective intelligence, participants must be able to share and communicate information in such a way that the specialised knowledge that each individual possesses can be combined into a coherent whole or ‘answer’. There are two characteristics that a problem can have that make this easier.

Collective intelligence is easier to apply when the amount of coordination between participants required to solve a problem is minimal (Kittur, 2008; Kittur *et al.*, 2009). In some applications of collective intelligence, each individual only needs to supply their best answer to a problem, with the collective answer being determined by the average of all the responses. This is called a ‘low coordination’ problem. Collective intelligence is more difficult to apply when new contributions only make sense in relation to what has gone before. A famous example of such a ‘high coordination’ project was the publishing house Penguin’s attempt to write a book using an online collaboration platform, which largely failed (Kittur *et al.*, 2009; Pulinger, 2007).

Collective intelligence is also easier to apply when a problem has a definite answer, one that is clearly recognisable when it is found, and where the method for finding it is known and agreed on by the group (Nielsen, 2011). This is also called an ‘intellective’, as opposed to a

'judgmental', task (see Laughlin and Adamopoulos, 1982). Typically, the former condition holds in fields like mathematics where it is possible to distinguish clearly between a correct and a wrong answer, and there is a common praxis shared by those working in the field for arriving at problem solutions. However, this may not be the case when dealing with social problems where the difference between right and wrong may be based on value judgements not shared by all involved, and where there is a lot of uncertainty surrounding what is known about a problem (Funtowicz, 1993). Collective intelligence becomes increasingly difficult to employ when incorporating knowledge from different academic disciplines or non-scientific knowledge based in traditional cultures (Berkes, 2008) or unarticulated lay practices. It is almost impossible when the knowledge that one party professes to possess is dismissed as worthless by other parties, such as is common in highly politicised or value-laden debates (Head, 2008).

Social innovation meets neither of these conditions. It is complex, with high coordination requirements, and requires judgmental evaluations. As such, it is tempting to say that social innovation is simply not a good arena to use collective intelligence. However, a deeper look at how social innovation happens makes this conclusion appear less certain.

The process of social innovation

Social innovation is still an emerging field of study and, thus, there are still relatively few papers dealing with how social innovation happens from a systemic perspective (Mumford and Moertl, 2003). However, there are other disciplines that look at innovation in complex systems – especially research into socio-technical systems – that can offer useful conceptual frameworks for understanding this phenomenon. This chapter describes the process of social innovation with reference to social innovation theory (Wheatley and Frieze, 2006; Westley *et al.*, 2007; Westley and Antadze, 2010; Mumford, 2002), as well as work on socio-technical systems (e.g., Geels and Schot, 2007; Geels, 2005; Smith, Stirling and Berkhout, 2005), and especially the work of Arthur (2009).

Scholars of innovation in complex systems tend to break the process into three (Mumford, 2002; Arthur, 2009) or four phases (Westley *et al.*, 2013). Table 9.1 presents three phases of social innovation. At each phase there are crucial mechanisms for making the innovation successful. These mechanisms are described in greater detail in the paragraphs below.

Table 9.1 Phases and mechanisms of social innovation

Phase of social innovation	Associated mechanisms
Invention	(Re-)combination; exchange of information and ideas between different domains
Development	Matching problems and solutions; clustering; niches; shadow networks
Implementation	Cross-scale networks; institutional entrepreneurship

Source: Author's compilation.

The 'invention' stage is when a new innovation is first born. Most theorists propose that innovations are born out of new combinations or recombinations of existing ideas, practices, technologies and other elements, to produce new and surprising outcomes. Mumford notes that social innovation seems to emerge most often when modes of reasoning that are common in one domain are applied to surprising effect in another domain (Mumford and Moertl, 2003). The invention phase can be encouraged by fostering the exchange of ideas and information between individuals working in different domains. Arthur (2009) argues that the greater the number of existing technologies, the more potential re-combinations there are – so the faster innovation happens.

Invention is followed by 'development', in which the initial idea is adapted to its purpose. In some cases this involves finding a previously unexplored application for an existing technology or idea (Cohen *et al.*, 1972; Arthur, 2009). Often this stage of development involves linking the invention to other ideas that help to refine it. As both Westley *et al.* (2007) and Arthur (2009) have noted, successful innovations often consist of clusters of products, programmes and processes that come together to allow the invention to fulfil its purpose.

Developing an innovation requires an investment of time and, usually, both human and financial capital. Finding resources for fledgling ideas is difficult. Innovation scholars have noted the importance of 'niches' in protecting innovations during this growth period (Schot and Geels, 2007; Smith, 2006; Kemp *et al.*, 1998). Such niches may be housed within larger organisations and institutions, as spaces reserved for radical innovation, or they can be small markets where the innovation has a limited application that does not reflect its systems changing potential. Related to the concept of a niche is the concept of a 'shadow network' (Olsson *et al.*, 2006). Shadow networks are groups of individuals who work together to develop an innovation, often without

compensation, in order to create an alternative to the existing way of doing things. Sometimes shadow networks can exist for a long time, developing and utilising an idea before it ever enters the mainstream. For example, in Chile, artisanal fishers had to wait sixteen years before the collapse of the dictatorial regime allowed them to replace existing fisheries policy with their own ideas (Gelcich *et al.*, 2010).

The third stage is institutionalisation and 'regime shift'. As Westley *et al.* noted (Westley *et al.*, 2007; Westley and Antadze, 2010), in order to establish themselves, innovations often need to access resources and opportunities that are located outside the system in which they are operating. While resistance to change within a system may be high, there may be opportunities at other levels to build support for the innovation. This means that an actor trying to achieve change within a local context may find it necessary to look outside the system they are trying to change in order to find support. Just as within the legal system a ruling may be appealed and overturned in a higher court, a social innovator may be able to approach national or international organisations for help. In the example of the Great Bear Rainforest in Western Canada, environmental organisations were able to put pressure on logging companies acting in the region by targeting the international buyers of their timber products (Tjornbo *et al.*, 2010). The ability to reach outside the system in this way is greatly facilitated by the creation of networks that span administrative and geographic boundaries. These can be created by both formal partnerships and informal connections (Moore and Westley, 2011; Slaughter, 2004).

An innovation may have to wait before it has an opportunity to establish itself, but agents can work actively to look for opportunities to find resources at other scales. Throughout the innovation process, but particularly at the institutionalisation phase, the success of the innovation is heavily dependent on the support and skills of agents, often called institutional entrepreneurs, who are skilled at finding these kinds of opportunities (Dorado, 2005; Levy and Scully, 2007; Child *et al.*, 2007). Institutional entrepreneurs help innovations to secure resources to grow and are adept at finding opportunities to establish them in systems (Westley *et al.*, 2013, Mumford, 2002).

According to the definition of social innovation provided above, a social innovation can only be described as such if it moves through all of these three stages (although not necessarily consecutively – since they can occur simultaneously or even out of order on occasion). Thus, all of the mechanisms described above are important to a social innovation's progress. However, no single organisation or institution

has to carry out all of these activities. Westley *et al.* (2013) argued that agency in social innovation processes is best understood as a distributed quality, where many different actors are involved in making a social innovation happen, contributing different skills at different times. Collective intelligence platforms are not agents in themselves, rather they are mechanisms that can help to mobilise and coordinate agency. Moreover, different types of platform might provide support to social innovation at one phase, without being useful throughout the whole process.

The role of collective intelligence platforms in social innovation: Three case studies

Collective intelligence platforms are virtual spaces, usually websites – though they can also take the form of mobile applications – that are set up in order to allow people to come together to work on common problems in ways that require the mobilisation of knowledge and creativity. A recent study identified three main types of collective intelligence platform (Tjornbo, 2013): challenge grants, innovation communities and open innovation platforms. This chapter explores, qualitatively, what role each of these different kinds of platform might play in promoting social innovation and to what extent they have been successful in doing so. This chapter examines one leading example of each of these types of collective intelligence platform. Platforms were selected on the basis that they had large memberships, had attracted financial resources and had achieved recognition in the media (measured by the number of hits generated by a Google ‘news’ search). The aim of looking at these sites was to answer two questions:

1. To what extent are these innovation platforms already producing social innovations?
2. How well are these three different types of online innovation platforms adapted to the task of stimulating social innovation and to what extent do they represent mechanisms of social innovation in action?

Each case is now considered in turn.

Challenge grants: Innocentive

Challenge grants are perhaps the most established model for regularly accessing the innovative capacity of virtual social networks. A challenge

grant allows those facing a problem to put out an open call for potential solutions. Anyone who thinks they have a solution to the challenge can submit a proposal and they typically compete with other 'solvers' to win a cash prize for the best solution, either determined by the 'challenger' or by an independent jury. Challenge grants require some coordination since 'solvers' have to meet the expectations of the 'challengers'. This becomes more difficult depending on the nature of the challenge issued. However, as the example of Innocentive illustrates, while the challenge grant approach is most easily applicable to simpler, technical challenges, it does still have some application for complex social challenges.

Operational since 2001, Innocentive is undoubtedly one of the largest open innovation platforms. Over 1,650 challenges, worth over \$40,000,000 in total, have been posted on the site, and Innocentive can boast some notable successes. For example, it has produced breakthroughs in oil spill clean-up and in treating Amyotrophic Lateral Sclerosis (ALS).² Like most challenge grants, the principal aim of Innocentive is to connect people with a problem to those who think they might have an answer.

The majority of challenges posted on Innocentive are purely technical in nature. However, some of the challenges concern social problems and could potentially produce social innovation. To identify such challenges, three criteria were set out based on the definition of social innovation above: challenges could be defined as potentially producing social innovation if they concerned a social problem; took a holistic/systemic view of the problem; and invited solutions with a potentially radical impact on the way that problem was tackled, that is, they did not constrain problem solvers to work within an existing mode of practice. Challenges listed on Innocentive were then evaluated to identify those that met the criteria. As well as the author, a second researcher performed the same evaluation in order to reduce the subjectivity of the judgement. Based on these criteria, four Innocentive challenges out of the 138 challenges active at the time of the research were identified as supporting social innovation.

These 138 challenges only present a snapshot of the activities of Innocentive. However, using the same criteria to look at the most successful problem solvers involved in Innocentive over the last five years also gives an indication of the primary activities of the site. Between 2007 and 2011 not one 'top solver' was involved in challenges that could be described as socially innovative.³

While Innocentive indulges in some social innovation, the data does not tell us how successful the platform is in this arena. Innocentive's

general measure of success is that 85% of challenges find winning solutions, but there is no such figure that focuses solely on social innovations. Nevertheless, two of Innocentive's high-profile success stories involve social innovation. The first was a challenge to find new ways of providing education to populations in poor and developing countries⁴ and the second was a challenge to find a means of measuring 'human potential'.⁵ Thus, although social innovation is just a small part of Innocentive's activities, it is possible to use the Innocentive model to stimulate social innovation.

Innocentive's success seems to hinge on its ability to leverage two of the core mechanisms of social innovation: matching problems and solutions and exchanging information across domains. The challenge grant structure is also suited to innovation in that it opens problems up to a wide audience of potential solvers. A typical way for an organisation or individual to attempt to find a solution to a problem might be to hire a consultant or other experts in the particular field it is operating in, but these people are often too committed to existing ways of operating or established best practices to generate truly innovative ideas (Nielsen, 2011). As the literature on social innovation suggests, innovation is usually the product of the novel combination of adjacent fields of knowledge (Arthur, 2009). This certainly holds true for Innocentive, where many winning solutions have come from experts in fields different from that of the challenger (Nielsen, 2011).

However, while Innocentive might be good at stimulating new inventions, it seems to be poor at supporting innovations through to implementation (Tjornbo and Westley, 2012). Once a solution has been matched to a problem, there is not much more support available from Innocentive in terms of developing the idea. The section of the site entitled 'Solver Resources' mostly contains a few brief articles on the basics of how to answer challenges. There are built-in supports for people hoping to partner with others in designing their solution and an online forum where members of Innocentive can chat about a broad range of topics, but these tools seem to have limited impact. The global forum, for example, sees a new topic opened at most once or twice a month and most of these receive two or fewer replies. At the time of writing, the first three posts in this forum were all observations about how difficult it is to form a team.⁶ Based on a sample of twenty randomly selected challenges, the average number of public comments in the public project rooms is less than three. This suggests that Innocentive is not effective in building shadow networks.

In addition, Innocentive does not have built-in tools to help innovations establish themselves in broader systems. Once a solution is

accepted by a challenger, then the role of the site, and possibly of the innovator, may be over. There is no systematic attempt to encourage the involvement of institutional entrepreneurs, to develop such skills, or to look for cross-scale opportunities. All of this is left up to the challenger or innovator. Thus innovations may fail because of a lack of resources or because the innovator is not able to help tailor the innovation to its particular application. The two successful social innovations profiled on the site were achieved in partnership with *The Economist* magazine, which may have helped to raise the profile of the competitions.

Innovation communities: Open Source Ecology

Innovation communities do not promote innovation generally; rather, they focus on a single problem and attempt to find solutions to it. The emphasis in these groups is not on generating ideas but on fine-tuning them and seeing them successfully implemented. Unlike the other types of innovation platform, therefore, innovation communities rely heavily on their ability to coordinate action. This can be accomplished in a number of different ways. For example, although it is not an innovation community *per se*, Wikipedia has been very successful at coordinating large numbers of individuals in accomplishing a shared project by developing an elaborate set of rules and guidelines for evaluating articles, with a dedicated group of volunteer moderators who do most of the work of editing articles (Butler *et al.*, 2008). In order to succeed, it needs to keep volunteers motivated and prevent fragmentation of the project (Hertel *et al.*, 2003; Mustonen, 2003).

Open Source Ecology (OSE) was born from the frustration experienced by one man: farmer, technologist and physicist Marcin Jakubowski. When he was unable to repair his brand tractor that broke down frequently, he designed a cheap, robust and easily repairable alternative that could be built entirely using locally available materials. He then made the blueprint for this new tractor available to the public. His work attracted outside attention and supporters and soon expanded into the vision of the Global Village Construction Set (GVCS), a set of blueprints for 50 machines that could be built and maintained locally on a small scale. Jakubowski's farm became the site of a community dedicated to producing blueprints and prototypes of these machines, and their work attracted the interest of others, like TED, who gave Jakubowski a platform to share his idea. Jakubowski's TED talk describing Open Source Ecology has had over a million views at the time of writing⁷ and helped launch a community on the global stage.

The OSE project is a social innovation in itself as it is a radical reconceptualisation of manufacturing that turns its back on the centralisation and global supply chains of the mainstream economy and is a direct response to concerns about the social and environmental impacts of globalisation and the consumer economy. In order to make this possible it relies on many different types of community support. Some of this is financial, as provided by the hundreds of 'True Fans' who contribute ten dollars a month to the project,⁸ but much of it relies on collective intelligence. The blueprints for the GVCS machines are open source and have been developed by a virtual network of contributors as well as those working on the farm. A few early adopters have also created these machines and provided feedback on how they need to be improved.⁹ Although it is still in its infancy, OSE has been developing a coherent alternative to a society based on centralised industrial production and demonstrates that innovation communities can play a role in social innovation.

The idea for OSE was generated by Marcin Jakubowski and, as such, people who become involved in the OSE project are attracted by the idea of the Global Village Construction Set and share at least some of Jakubowski's values. This reduces a lot of the complexity inherent in using collective intelligence for social innovation and is, perhaps, what allows OSE to work as a social innovation platform.

Web platforms like OSE make use of collective intelligence during the 'development' phase of social innovation. The farm became a 'niche' that attracted resources, both financial and in the shape of talented volunteers, who came to work at the farm, as well as those who contributed to development online. These resources soon saw the production of a cluster of innovations (different prototypes of Global Village Construction Set machines). OSE became the focus of one of the early crowdfunding campaigns (online platforms that allow members of the public to support projects with small donations), with 500 supporters creating a small monthly revenue for Jakubowski (Thomson and Jakubowski, 2012). One of the volunteers at the farm won a Thiel '20 Under 20' Fellowship of \$100,000 to allow him to continue his work on the farm. By using crowdfunding, OSE explored ideas that would not be supported by mainstream funding organisations, whether private or philanthropic (Thomson and Jakubowski, 2012). However, its success depended entirely upon its ability to build a committed 'shadow network' of supporters.

The lesson from other similar online projects is that these initiatives must attract both casual volunteers and a core group of very

committed enthusiasts (Howe, 2006). In the case of Wikipedia, while casual volunteers create the bulk of new material, it is a small group of 'moderators' who ensure that articles abide by Wikipedia's standards and maintain a consistent style (Kittur *et al.*, 2007).

In the case of OSE, the project received a big boost after Jakubowski was invited to make a presentation at TED. This brought a significant amount of interest to the project and an infusion of extra investment and resources (Thomson and Jakubowski, 2012). The central premise of the OSE project caught on and led to an expansion of the idea into new locations, a process social innovation scholars sometimes refer to as 'scaling out' (Westley and Antadze, 2010). A shadow network grew up around the OSE project, through the OSE forums and wiki. Most significantly, this included a German OSE node with its own OSE Wiki and active forums.¹⁰

However, the core OSE community has not been consistently strong. Recently, the OSE fora have not been particularly active.¹¹ Even more significantly, the OSE farm has gone through periods of inactivity, with the last of the initial volunteers having departed in February 2013. The reasons for this collapse appear to be partly related to the leadership of Jakubowski.¹² The problems associated with a charismatic leader who is at first instrumental to the growth of a new initiative, but later comes to limit it, are well known and documented in the management literature (Westley *et al.*, 2007). Such leaders are often able to attract support because of the strength of their vision but may be reluctant to adapt their ideas to specific contexts, tend to stifle creativity in their followers and can ultimately strangle the innovation they championed. From other open source projects it is clear that a horizontal and non-hierarchical leadership style is essential to maintaining such communities.

Despite a lack of more recent activity, the OSE project is not a failure. The central idea has been considerably developed since Jakubowski first invented it, and a network has grown up around it so that work is now being continued in other locations. However, there may be a tension between maintaining the kind of intense community needed to sustain a project like the OSE and the activities associated with institutionalising an innovation, such as identifying opportunities for cross-scale interactions.

Open innovation platforms: TED

Open innovation platforms are platforms that publicise people's good ideas. At their simplest, they are open message boards where anyone is free to submit their proposals for public scrutiny. More typically

however, they also encourage visitors to comment on ideas and to vote for those they like, thus giving the 'best' ideas greatest prominence. Open innovation platforms do not draw much use from collective intelligence directly, since most ideas are the product of a single mind or a small team rather than a large group. However, in allowing for comments on ideas, they create opportunities for collaboration. More importantly, by spreading ideas effectively, they may open people up to a greater diversity of ideas, invigorating recombination processes.

TED is the largest open innovation platform in terms of visitors. It started in 1984 as an organisation that put on conferences bringing together speakers from the worlds of technology, entertainment and design. Today, it is mostly famous for the videos of its talks available online through its website. It currently hosts over 19,000 talks, and some of the most popular have over 20 million views.¹³ TED differs from standard open innovation platforms in that only specially selected invitees are able to share their ideas, which are carefully curated to fit the TED format. It also has an unusually sophisticated multimedia distribution platform.

TED works well as a social innovation platform. Several of the talks on the site promote ideas that are intended to tackle social problems, take a holistic, systemic approach and have potentially radical implications, such as Ken Robinson's¹⁴ proposal to reform education systems in the West to put more emphasis on creativity or George Papandreou's proposal for a Europe without political borders.¹⁵ This is not to say that TED is exclusively or even mainly a social innovation platform. The most common talk topics on TED are those related to its core areas – technology (558 talks), entertainment (272) and design (326), with the only exceptions being science (421) and business (278). Topics like politics (146), health (124) and poverty (44) lag far behind.¹⁶

The greatest strength of TED is its ability to communicate ideas. The most popular TED talks garner huge audiences, while talks with hundreds of thousands of viewers are fairly commonplace. At the most fundamental level, simply exposing people to a variety of ideas makes them more likely to come up with innovative recombinations (Arthur, 2009). Moreover, exposure often brings additional resources, as shown in the OSE example.

Although originally, TED's design was not directed at harnessing collective intelligence to spur social innovation, over time, it has evolved and added tools to develop ideas beyond the talks. One such tool is the forum, which allows for commentary on the talks. Of the three case studies here, TED has the most active forum, with the number of

comments on a talk often numbering tens or hundreds (as opposed to OSE and Innocentive, which often only had a few comments). There is scope through these discussions to develop ideas further and to create clusters. However, so far, this activity has not been typically systematic, nor carried out with a particular end goal in mind.

Another development has been the TED Prize. The Prize is essentially a form of challenge grant where one individual is awarded \$1 million for a plan that proposes a solution to a problem that will 'change the world' for the better. To date there have been nineteen TED Prize Winners, tackling topics such as nutrition in schools and marine protected areas.¹⁷ Yet another innovation promoting development is the TED Fellows Programme, which is focused on supporting the work of young innovators.¹⁸

Largely, the impetus for these kinds of developments has come from the TED community. At the time of writing this online network had 149,441 members and its own forum. Moreover, TED receives feedback from the participants at its physical conferences. Much of this feedback concerns a desire to see the ideas at TED put into action with the support of the talented people in the room and the resources they have access to. A striking example of this potential came in the form of the *Mission Blue* project. This began with a TED talk from Sylvia Earle, who argued for the creation of a series of marine-protected areas to help build the resilience of ocean ecosystems around the globe. The speech garnered a huge amount of support, including a \$1,000,000 pledge from philanthropist Addison Fischer. It also led to a voyage, with passengers made up of scientists, philanthropists and celebrities, which raised over \$15 million.¹⁹

These examples show that TED has a potentially powerful ability to build cross-scale networks able to advocate strongly for social innovation. Another example of this came in the form of the TED Challenge (part of TED 2013), where small interdisciplinary groups worked together, with notable successes, to create action on a range of issues from vaccination to sex trafficking.

Thus far though, the kinds of deliberate activities described here are the exception rather than the rule. At its core, TED remains an idea promoter, not an advocacy organisation. Most of the attendees at TED conferences are scientists and business people rather than politicians, and TED remains committed to a politically neutral perspective. In fact, perhaps, there is a tension between TED's role as a promoter of ideas and as a place of community building and its potential role as an agent of institutional entrepreneurship and advocacy.

Conclusion

Despite the complex nature of social innovation processes and the limited theoretical literature exploring the phenomenon, it is clear from the case studies presented here that collective intelligence has a role to play in promoting social innovation, both directly and indirectly. All three of the web platforms examined here promoted social innovation to some extent. Innocentive – the challenge grant example – featured a small sample of social innovation challenges and at least two examples of successfully launched social innovations. OSE – the innovation community example – took a radically alternative model of production and self-sustainability and not only considerably developed the idea with several prototypes, but also created a global shadow network dedicated to taking it further. Finally, TED – the open innovation platform example – publicised several social innovations and helped them to gain greater prominence and resources. TED also created an online community dedicated to seeing some of these socially innovative ideas realised in practice. It has occasionally helped to build cross-scale networks to support the realisation process.

At the same time, no single platform seems to be able to support a social innovation from invention through to implementation. In fact, each of these different types of platform seems particularly strong in one particular phase: invention in the case of TED and Innocentive, and development in the case of OSE. Moreover, none of these platforms utilised all of the mechanisms associated with any one phase and none were particularly active in the implementation phase, although TED seems to have the greatest potential in this area.

In many ways this reflects the strengths and limitations suggested by the theoretical literature in the introduction to this chapter. Collective intelligence platforms are indeed good at mobilising resources and sharing knowledge and creativity (e.g., TED and OSE); they can help realise the benefits of applying diverse knowledge sets to a single problem (Innocentive); and they are places where truly radical innovation can thrive (OSE). However, they have yet to demonstrate a capacity to be effective in the implementation phase where the ability to navigate complex political environments and form cross-scale networks composed of diverse interest groups becomes crucial. It is interesting to note how successful OSE was at attracting a truly committed group of volunteers willing to invest a significant amount of time and resources into a shared vision. This is contrary to the expectation that online models are best at forming loose networks and this may be linked to the

hybrid nature of this platform which includes both online and offline components.

All of the networks have weaknesses that could be addressed to help them become more successful engines of social innovation. Innocentive could become better at building the kind of community observed in OSE, which might lead to a greater degree of collaboration in developing innovations past the initial idea. OSE might benefit from becoming less reliant on the leadership of Marcin Jakubowski and the relatively insular OSE community, perhaps by promoting its ability to share ideas as widely as TED has done (and indeed its success is in part due to TED) and by finding new ways to attract resources (as Innocentive did). Finally, TED could, perhaps, benefit from finding concrete applications for ideas and forming a community willing to help make ideas a reality (there are signs that this is happening). However, in each of these cases the platform in question risks losing something by expanding its remit. Innocentive might become less diverse by building a stronger and more committed community; OSE might become fragmented by turning away from the vision that drives it; and a more action-oriented TED might come to be seen as a political actor rather than a neutral repository of knowledge, reducing the breadth of its appeal.

Ultimately, perhaps it is very difficult for any single platform to be effective in all stages of the development of a social innovation. As might be expected, based on network theory, there are trade-offs involved in choosing to support either the formation of a strongly bonded community or shadow network or the formation of more loosely coupled cross-scale communities. Equally though, there are opportunities to draw on mechanisms that the platforms themselves were not doing enough to exploit, such as Innocentive's failure to promote greater use of its forums or TED's hesitation around mobilising its potential as a network organisation. Ultimately, this study suggests that those interested in promoting social innovation should make greater use of the full range of collective intelligence platforms in order best to use the strengths of each. However, it is acknowledged here that more work is needed to investigate further the patterns suggested by this exploratory study.

Notes

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