

How do Community Organisations Innovate? The Case of Community Broadband Organisations

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Centre for Rural Economy Discussion Paper Series No. 32

April 2013

Summary

Community organisations are regularly exhorted to provide innovative means of servicing their communities when the private and public sectors fail to deliver. But what do we know about how community organisations innovate? This paper uses the case of community broadband organisations to cast their activities as innovations. It draws on a number of theories of innovation to provide a lens through which to explore their innovatory methods. Many resonances between individual theories and the innovations in community broadband organisations were found. However, the theories did not fully capture the 'innovative nature' of these organisations, and the people who ran them. For example, they not only 'think different', they 'act different'; they improvise and 'just do it'; and they are passionate and optimistic people who believe their unorthodox approaches will make a difference.

Introduction

Community organisations are often argued to be innovative. Although the nomenclature used to try to corral these small, disparate and often misunderstood groups into a distinct category frequently changes – community sector organisations, grassroots organisations, third sector organisations, civil society, and so on – such fundamental principles as associationalism (e.g., Hirst. 1994), mutuality (e.g., Kendall and Knapp. 1995; Marshall. 1996) and collective action (e.g., Community Sector Coalition. undated, c2010; Mann, et al. 2011) endure. Community organisations are typically tiny and highly reliant on voluntary effort. Their ways of working blur distinctions between the “people who benefit from the work of these organisations, the people who ‘own’ them and the people who undertake the work – indeed they may well be one and the same” (Rochester. 1998, p.6). However, these ‘alternative’ ways of doing things often mean that they are able to go where the private and public sector don’t (or won’t) go and/or to provide the types of services that local people want.

Community organisations occupy some of the sectoral space beyond the public and private sectors, as part of the ‘third sector’ in New Labour discourses, or as part of ‘civil society’ in Coalition government discourse (e.g., Big Society), but often feel the need to stress their distinctions within these broad categories of ‘others’. In the 1990s, the Community Sector Coalition came into being, in order to promote the needs of these organisations as distinct from the larger, more professionalised organisations that dominate the ‘voluntary sector’ (as the sector beyond the private and public sectors was then termed) and people’s perception of it. Highlighting this ‘neglected majority’ in accounts of the voluntary sector (see, for example, Rochester. 1998) was thought necessary 20 years ago; in slightly different language we find that there are still many such organisations ‘below the radar’ now (e.g., McCabe. 2010).

‘Community’ in the literature on community organisations stresses that these could be communities of place or communities of interest (e.g., Rochester. 1998). More recent commentators have also stressed how community can be built virtually (e.g., Hagar. 2005; Hampton and Wellman. 2002). In order to stress that in this paper the organisations discussed are formed around communities of place, I am using the terminology ‘local community organisations’. There is no precise scale to my use of the term ‘local’, but it is used to convey the idea of a neighbourhood, rather than the area served, say, by a local authority.

According to Osborne, Chew and McLaughlin “the innovative capacity of voluntary and community organizations (VCOs) as public service providers has long been a key assertion of the public policy debate in the UK, stretching back for almost one hundred years” (2007, p.3). In more recent history, the Labour government emphasised the role of local community organisations, in

particular through a range of 'active communities' reports and initiatives (HM Treasury. 2002; Home Office. 1999) and invested in building the capacity of local communities to become active (Home Office. 2004). The Conservative Party made great play of co-operation and mutualism in the 2010 general election (Jordan. 2010) which became part of the bedrock of the Coalition Government's 'Big Society' approach. In his Speech on the Big Society (14.2.2011), the Prime Minister made clear that the approach was about encouraging more of what already existed: "the idea of communities taking more control, of more volunteerism, of social enterprises taking on a bigger role, or people establishing public services themselves – all of these things are happening in our country" (p.3). While the Big Society agenda has received criticism in terms of what it might mean for local community organisations (e.g., Macmillan. 2011; McCabe. 2010) there is clearly still an acceptance by government of the important role local community organisations can play.

This paper uses a specific type of local community organisation – community broadband organisations (CBOs) – to enlarge our understanding of how such organisations innovate to provide services. It uses case studies of five active CBOs undertaken in 2010/11 to describe briefly how they innovatively built broadband telecommunications networks in places which the private sector, and/or private/public sector partnerships failed to serve. It goes on to explore the extent to which a range of models of innovation help us to understand their innovative approaches.

Community Broadband Organisations

Community Broadband Organisations (CBOs) are community organisations that have come together in some, mainly rural, areas to provide a better broadband service than that available locally from commercial telecommunications providers. 'Broadband' here implies a data carrying telecommunications capacity that is always on (ie, not dependent on a dial up connection over the telephone line) and at an adequate speed. This speed varies over time, but the government's current investment in ensuring at least 24 mbps to 90% of premises by 2015, and at least 2 mbps to the remaining 10%, mainly in rural areas, provides an indication of what is currently deemed adequate. CBOs vary in their ambitions over speed, some looking to achieve a basic broadband speed through their improvements; at the other end of the spectrum, some aim to provide superfast speeds.

The paper draws on case studies of five active CBOs which I undertook in 2010/11, and reported more fully in Rural Broadband (Talbot. 2011). The working definition of CBOs used for this study was:

- Community organisations (as described above)
- Mainly working for the benefit of a specific geographic locality, their 'local community'
- Involved directly in supplying broadband
- Intending to provide a long-term service (ie, not time-limited projects).

In simple terms, the technological components of the broadband provision was

- A Local Area Network (LAN) connecting the premises within the community; one or more of the premises in the LAN serves as the primary connection point (PCP).
- A connection from the PCP to an external 'core' broadband network to link the community to the global reach of the internet (commonly known as 'backhaul').

At the time of my research, the CBOs were all using wireless systems for their LANs. These used unobtrusive equipment on buildings to bounce line of sight signals around the locality. Two had begun to install some fibre connections within their LANs. The PCPs in the LANs included a local school, a resident's house, and a village community building. The PCPs connected to the wider internet via BT exchanges, a university, or local authority networks.

The perceived problem in many rural areas in 2010/11 was that speeds of less than 2 mbps were common. At the same time, the government's national concern was that the market was only likely to provide Next Generation Access (NGA) – with a speed they now define as 24 mbps - to about two thirds of the population (Department for culture Media and Sport and Department for Business Innovation & Skills. 2009). Such speeds generally need a fibre network. In order to address the problem of the 'final third', the government had set up BDUK in 2010 with a budget of £530m to provide, in partnership with local authorities, "connectivity in rural and hard to reach areas" (BIS/DCMS. 2010 p.21). Details were still being determined about this at the time of my interviews. (BDUK's remit is now to provide NGA to 90% of the population, with the 'final 10%' (almost exclusively in rural areas) being assured of 2 mbps (DCMS website). More recently, DEFRA has set up the Rural Community Broadband Fund (£20m budget) to assist CBOs which propose to install systems to deliver speeds of more than 2 mbps in 'final 10%' areas (DEFRA website).

The five CBOs I studied had started functioning at different times: the oldest was 10 years old, the newest was 3 years old. All had completed a setting up phase (described below) and moved into what the business literature would describe as the 'maturation' phase. As the descriptions below explain, this phase was anything but a time of consolidation, with three CBOs undertaking significant developments and the other two exploring radical changes for their organisations. The final developmental stage that was apparent to an extent in all the CBOs was to do with the provision of NGA: the CBOs were well aware that the market would soon be making this available to parts of the UK and of the government's intention to address the 'final third'. At the time of my research, the importance they placed on developing NGA varied significantly.

The key personnel in the five CBOs are referred to as 'broadband champions' throughout this paper. In four cases there was a key individual who had initiated and led the developments; in the

other the leadership was provided by two people. No broadband champion was working in isolation. In four of the CBOs there was internal support from other people in the CBO; in the other case the broadband champion gained support by being employed by another local CBO.

The Setting Up Phase

Early in the new millennium, BT upgraded many telephone exchanges with technology that allowed them to provide basic broadband¹ over the existing telecommunications infrastructure. They also made it clear that there were a number of exchanges which would not be upgraded unless higher than forecast levels of demand could be evidenced. These were almost exclusively in rural areas. In the middle of the decade, public-private partnerships ensured that all exchanges were upgraded. However, it also became apparent that premises at a distance² from the upgraded local exchanges could not be provided with basic broadband either. The lack of provision (either because the exchange was not initially upgraded or because of distance to the exchange) was the trigger for all the case study organisations to take on the specific role of broadband provider (the oldest CBO had previously been an organisation which provided internet access and helped people get online).

In all cases the broadband champions acted because they recognised a local need that was not being met. They were well aware of the technological developments that were enabling the effective use of the internet by many residents and businesses in other parts of the UK, and saw the people and businesses in their localities (themselves included in four CBOs) as significantly disadvantaged. All were, and still are, firm advocates of the positive and transformational effects of the internet. They acted initially, not because they had any specialist knowledge of broadband provision, but because they recognised a local need which they were prepared to commit time and effort to meeting. There was a strong personal agenda in meeting this need, but also an evangelical mission about spreading the benefits more widely within the community.

All case study organisations deployed a wireless system locally. Various means were found to connect the local networks to core networks with global reach. One broadband champion already had a personal satellite link which was extended to link other properties as a LAN. Three others all found that their local authority was providing external broadband connectivity into their community, which they were allowed to link their networks to. In two cases this was to the local school; in the third case it was associated with provision for the police. In the fifth case, the external

¹ An 'always on' service with an anticipated speed of at least 2 mbps in 2011.

² This is necessarily left vague, as over time technologies are developed that allow transmission over greater distances. However, the distance from an exchange at which basic broadband services become poor or non-existence is in the order of 2 to 5 kilometres.

linkage initially utilised connectivity via satellite but this was quickly replaced with a connection to a telephone exchange at a distance, with the signal relayed on to the locality wirelessly over a system of masts.

Rather than developing 'business' relationships with the 'users' of their services, there was an emphasis on involving these people in the organisation and/or its mission. This was achieved by a variety of means: an emphasis on the use of voluntary help, and/or on local employees; running the organisations along 'co-operative' lines with all users being voting members; hosting local community websites (and in one case an intermittent local TV service); providing informal, and sometimes hands on, internet advice and support; and in one case running social events for members. Through such activities, the staff and volunteers were well-known to their communities and thereby developed a good understanding of the needs of local people and were able to hone the services accordingly.

Compared with the average telecommunications speeds claimed by private sector companies at this time, the CBOs generally did not appear very competitive. However, much of their provision was to premises that could not receive adequate broadband from the private sector and they therefore compared very favourably with this. They were also unable to compete with the types of repair time guarantees from private sector providers, but their 'users' seemed content that they would make all possible effort to resume the service as soon as possible – the CBO had, after all, made dramatic improvements to their internet connections, and the 'users' were often on friendly terms with the staff/volunteers.

The social networking of the CBOs went well beyond the very local activities described above. All received some form of public support or grant in their setting up phase. Many had looked to other CBOs locally for advice, with the earlier ones being members of the national Community Broadband Network. By the time of my research, the oldest was seen locally as a leading CBO, and advice was directly sought from them by two of the others. In order to give support and advice to other CBOs, they had started running courses for emergent CBOs.

Recurrent Cycles of Innovation

Having set up their organisations, their telecommunications networks and their services, the CBOs might have wished for a period of marginal improvements and consolidation. However, within a year or so of setting up, four of the case study organisations were facing major change again, with the fifth expecting a significant step change after a few years with only a handful of clients. A number of external forces drove this change. First, technologies were developing fast, which

provided opportunities for a better service – in particular, a faster service and/or a service with a greater geographic reach.

Second, there were changes in private sector telecommunications provision. In 2004/5 the remaining BT exchanges were all enabled to carry basic broadband over the existing telecommunications infrastructure. The areas of benefit of all the extant case study CBOs were affected by this change. Having started their enterprises in the context of no alternative supply, and a rationale of addressing unmet need, the CBOs were suddenly faced with potential competition from a large multinational company.

Third, all had started with some public sector support and most continued to link with the public sector where possible. This took various forms. All had had some public funding and most had at times had their backhaul provided by local authorities. One acted as an experimental site for a series of university projects and therefore used their backhaul. The problem with this approach was that the public sector was often not a consistent and continuous supporter. There were many examples from the CBOs of time-limited 'project' funding being provided which was beneficial while it lasted, but problematic when it ceased. There were instances of local authorities changing their procedures: at one point providing access to their backhaul to schools **and** community organisations, but later excluding community organisations. The public sector had also entered into a public/private partnership with BT to upgrade the remaining telephone exchanges in 2004/5 which as explained above provided the challenge of local competition to most of the CBOs.

This turbulent context triggered changes in four of the case study organisations. LANs were extended and new systems researched and/or installed. One of the case study CBOs had installed three new systems between 2004 and 2011. All four CBOs reviewed their backhaul provision in the light of both opportunities and constraints. Three had already switched provider: from local authority to university; from local authority to a distant local authority (necessitating the installation of masts to convey a microwave signal to their locality); from satellite provider to whichever telecommunications provider offered them the best service via the (now upgraded) BT exchange to premises within range, from which their service was relayed wirelessly. At the time of my research, the fifth was investigating the possibility of a new backhaul supplier.

The potential competition triggered by the upgrade of the BT exchanges was not viewed by the CBOs as a critical challenge. Some users did switch to BT's service, but many were loyal to the CBOs, preferred the more user-friendly services, and/or were unable to receive a BT service, being at too great a distance from the exchange. Some of the CBOs were able to use the technological advances to extend the geographic reach of their LAN, so accessing new customers.

Plans for Next Generation Access

At the time of my research (late 2010/early 2011), it was widely understood by the CBOs that within the next few years 'Next Generation Access' (NGA) would be provided by the market to all of Britain but the 'final third' (Department for Culture Media and Sport and Department for Business Innovation & Skills. 2009) and that optical fibre would be the best telecommunications medium to achieve the sorts of speeds associated with NGA. The government had announced that £530m of government investment would be rolled out by BDUK to minimise the 'final third' digital divide, and were developing policies and mechanisms in association with this (BIS/DCMS. 2010). My case study CBOs were all aware of the increased speeds associated with NGA and of the likely need for fibre connections to obtain such speeds. They all also knew something of the BDUK initiative.

Three CBOs were fairly passionate about acquiring NGA/fibre. Two of them were in the vanguard of UK organisations (commercial, public sector or community enterprises) developing fibre to the home. This was in part about providing an improved service to some of their members, but also about demonstrating that fibre to the home was feasible in remoter areas. In particular, they were challenging the prohibitive prices quoted by commercial providers for laying fibre to distant premises. One of the CBOs had managed the laying of fibre to some of their premises for a fifth of the price quoted by a commercial provider, while still meeting all the regulatory requirements. The second CBO laid fibre to two farms using a slightly inferior fibre laying technique for about 5% of the commercial provider price; one farm registered impressive connection speeds of 70 mbps. They were able to build the infrastructure at significantly lower costs by using volunteers for the trench digging, negotiating with local landowners for wayleaves³ to be waived. The CBOs were also under no obligation to make profits for their shareholders.

Both of these 'vanguard' CBOs were keen to publicise their successes as examples of the sort of provision that could be made in rural areas and of what could be achieved by community organisations, with the message from one being that 'if we can do it, so can you'. This might appear a bit disingenuous as the broadband champion who said this was actually quite knowledgeable about fibre, fibre-laying and the relevant regulations; however, at the outset of the CBO she had had no specialist technical knowledge. The other CBO at the forefront of NGA was supporting other CBOs in fibre-laying ventures by providing training days where participants heard from specialists and saw practical demonstrations. The third CBO enthusiastic about fibre was hoping to act in conjunction with the County Council to provide fibre to the cabinet in his valley. The plan was that the County Council would provide funding (including from BDUK) for fibre-laying from the school, where fibre was already provided, to a number of cabinets in villages in the valley.

³ Landowners can charge for pipes etc to cross their land.

The CBO would manage the dig – the broadband champion had expertise in this as he also worked for the CBO that had laid fibre for a fifth of commercial prices - so achieving significant cost-saving.

Such activities find the personnel in these three CBOs becoming quite ambitious with their innovation. They challenge the notion that rural areas are a poor commercial prospect for NGA, and also the business case upon which the public sector is basing its calculations. Their practical demonstrations of fibre-laying are more than simply experiments: they provide proof that it can be done in a straightforward way and much more cheaply than was previously understood. They not only freely reveal their findings to other CBOs, but go further and actively promote their approach.

The other two CBOs were less exercised about NGA. In one, the broadband champions were content that their incremental installation of new systems provided most of their users with good speeds (download speeds of between 2 and 5 mbps); they were watching and monitoring the development of the BDUK initiative nationally and locally, but not diverting too much time from their core business: running the CBO and providing services. They were also clear that their focus should be on improving the speed of broadband rather than on providing the triple play and choice available via fibre. The second CBO not actively engaging with NGA was the newest. Having started out two years previously with a three year grant from the Regional Development Agency, they were primarily concerned with finding an alternative source of funding and/or telecommunications supplier in the short term so that they could continue to receive 'broadband'. Their activity to date provided download speeds of 1.1 to 1.5 mbps which although slow were much better than previously, and their first priority was to sustain this by finding further funding/support. In exploring possibilities fibre was not excluded, but neither was it prioritised.

Conceptualisations of Innovation

Broadly speaking, innovation refers to the use of a novel idea, technique or process, with the emphasis on the application rather than on the invention *per se*. The descriptions in the last section demonstrated the innovative nature of CBO activity, which allowed broadband to be provided to people and places that the private sector and/or public/private partnerships had not managed to serve. This section investigates the extent to which various theories of innovation manage to capture and explain this innovative nature. This is not provided as an analysis to find which theory is the best suited to CBO activity – that would be difficult anyway because the four conceptualisations discussed are not mutually exclusive – but rather to question whether existing conceptualisations convey adequately the innovative nature of CBOs.

For many years analysis of innovation was dominated by economic approaches that viewed it as the first successful application of an invention in a commercial environment (Clark, et al. 2008, p.4). Within this conceptualisation, emphasis is placed on a “linear scientific and technical process driven by experts” (Atterton, et al. 2010, p.8). This commonly held view of innovation has been reinforced by the focus of innovation policy in Britain and Europe where it is conceptualised as a scientific and technical process associated with economic growth (NESTA. 2008, p.1).

When innovation is framed in this way it would appear to have little association with local community activity, a point made in a study of social entrepreneurs: “they are not widely involved in research and development activities and spending” (Peattie and Morley. No date (c2008), p.25). Nor would the CBOs claim to be the technical ‘experts’ in the linear process or to be focused on the commercialisation of an invention. However, if we focus towards the use end of this linear process for a moment, then CBOs could be conceptualised as playing a part. In underserved places, they are the ones who are bringing broadband to new (geographic) markets. In doing this, they were both the diffusers of the innovation further up the linear process, and innovators in their own rights. In order to reach the underserved places, they had to build a number of products into a local system/network, in innovative ways that the private sector had not wished to pursue. Some of the CBOs were more ambitious than others about harnessing the latest technological innovations, but all had made significant technical contributions.

While the argument can be made that CBOs were part of the linear process of economic innovation, as I have done here, mainstream analysis would be unlikely to recognise these small-scale players at the end of the process. Nor would the broadband champions I interviewed identify themselves and their activities with such discourses as commercialisation. A number of academics and policymakers have come to recognise that traditional economic definitions of innovation exclude the innovative capacity of organisations and people who are not scientific or technical experts, and/or are not in the private sector, and have developed other theories of innovation. Such new conceptualisations strive to add to traditional economic definitions rather than replace them: they extend the situations in which innovation might be expected to take place. In thinking about local community innovation, three other conceptualisations of innovation appear particularly pertinent: social innovation; disruptive innovation; and democratic innovation which are each discussed in turn below.

The Social Innovation Agenda has recently become central to European policy and according to the Commission is a newly recognised field “to be nurtured” (European Commission. 2010, p.21). This is a normative agenda rather than a tightly defined theory and is described by some as an umbrella concept because of its breadth of usage. For some commentators, social innovation is something that happens within the (market) production process – it is a social process which occurs

within the linear relationship between scientific and technical innovation and the private enterprise (e.g., Linton. 2009). Many, though, see it as innovation that takes place outside the traditional model of private sector innovation or everywhere that social activity takes place, including in the public sector, non-profit enterprises, social movements, informal associations and even in the household (Murray, et al. 2010), and much of the 'social' side of the innovation is the development of new relationships between groups of actors (Gerometta, et al. 2005). A central thrust of many definitions is that innovation is needed to address pressing societal challenges which traditional forms of innovation are failing to resolve: social exclusion or climate change, for example. For some, 'pure' social innovation occurs where the market fails, or is not interested (Pol and Ville. 2009). An additional criterion appears in some definitions, such as that by BEPA:

"They are innovations that are not only good for society but also enhance society's capacity to act. The process of social interactions between individuals undertaken to reach certain outcomes is participative, involves a number of actors and stakeholders who have a vested interest in solving a social problem, and empowers the beneficiaries." (BEPA. 2010, p.9-10, italics in original).

The definitions that saw social innovation as something that could happen anywhere, and in particular, outwith the private sector, are particularly pertinent to the CBOs' activity. More specifically, although at a local scale, the CBOs were addressing societal challenges that traditional innovation was unable to address, and market failure was also a key factor in the setting up phase for them all. The social process criterion that some definitions included was also evident: users were encouraged to participate in the organisation, as members, as volunteers, etc. The social networks of the organisations were extending and consolidating throughout the process: relationships one with another, with local authorities and so on. The key actors and active members became increasingly empowered (for example, the ambitious nature of the later NGA activities in some CBOs), and even the passive beneficiaries were individually empowered by the opportunities afforded by the internet.

The third conceptualisation - 'disruptive innovation' - was developed by Clayton Christensen initially to explain how a small proportion of fast growing start up enterprises change and continue to flourish while many soon only make, at best, average returns. Disruptive innovators actively desire to change the status quo, and take smart risks to make this happen (Dyer, et al. 2011). This often involves providing new products or services that are "typically simpler, more convenient, and less expensive, so they appeal to new or less-demanding customers" (Christensen, et al. 2006, p.96). The authors developed the theory of disruptive innovation from empirical studies of private sector organisations; as a sub-set of this, they applied a theory of catalytic innovation to the 'social sector' (in USA) where they argue that too much public funding is spent on maintaining the status quo – on organisations "wedded to their current solutions, delivery models, and recipients" rather than on those "approaching social-sector problems in a fundamentally new way and creating scalable,

sustainable, systems-changing solutions" (ibid). Disruptive innovators draw upon five "discovery skills – the cognitive skill of associating and the behavioural skills of questioning, observing, networking, and experimenting" (Dyer, et al. 2011, p.25). The emphasis on behavioural skills suggests that these can be learned rather than being innate personality traits.

Disruptive innovators actively desire to change the status quo. The broadband champions all wanted to change the broadband status quo: that their communities did not have it. However, their insistence that the received wisdom about broadband deployment (not possible at such a distance) was wrong, and their David versus Goliath-type belief that they could provide where BT would not, seemed to challenge a doctrinal status quo of neo-liberalism. The two CBOs that were experimenting with fibre to the home provided a direct challenge to the business model of BT, and to the cost assumptions on which the government was predicating its policy ambitions. The continuous nature of the CBOs' innovations is also suggestive of disruptive innovation inasmuch as it is designed to counter the tendency of many organisations to become complacent after the initial setting up phase. All of the CBOs were looking for lower cost solutions than those that were hampering development by commercial providers, and were attracting new customers who were content to accept a 'good enough' service. However, some had aspirations to compete more directly with commercial providers in the future rather than provide a lower standard of service.

A key aspect of disruptive innovation is that the actors who undertake it draw on key 'discovery skills'. In the case studies, it was apparent that the broadband champions were questioning, observing and networking to develop and improve their services. Experimentation was also cited as a key behavioural skill in the theory of disruptive innovation. There were clear examples of the CBOs doing this, such as the way in which two of them went about laying their early fibre. However, experimentation seems too formal a term for much of the mundane improvisation that was underway in the CBOs. An example of this would be the way in which key actors in one CBO would reinstate cabling between premises when the infrastructure provider took too long to make repairs. Perhaps what was key was the 'just do it' attitude that encouraged improvisation/experimentation rather than formal experiments.

Conceptualisations of democratic innovation, the final theory discussed in this section, have been developed by von Hippel (2005). Here the focus is on user-centric innovation as opposed to manufacturer-centric innovation. Users in this context might be individuals or firms that use the products of other enterprises. User-innovators tend to be 'lead users' in that "they are ahead of the majority of users in their populations with respect to an important market trend, and they expect to gain relatively high benefits from a solution to the needs they have encountered there. ... Since lead users are at the leading edge of the market with respect to important market trends, one can guess that many of the novel products they develop for their

own use will appeal to other users. ... A number of studies have shown that many of the innovations reported by lead users are judged to be commercially attractive and/or have actually been commercialized by manufacturers" (ibid, p. 4).

Users generally have better information about needs than manufacturers, and "tend to develop innovations that are functionally novel, requiring a great deal of user-need information and use-context information, for their development" (ibid, p.8). They also typically freely reveal their innovations to others, and engage in many forms of co-operation such as networks.

Aspects of democratic innovation were prominent in the CBO case studies. The key actors were readily identifiable as lead users who themselves needed a product that was not available. They therefore set about procuring this for themselves (as well as for others). Within their communities these people were the 'early adopters' who were always interested in the next technologies that could deliver them a better service. The network developments they introduced, and the type of service on offer, demonstrated a good understanding of other 'users', but much of this was achieved by forming 'clubs' of interested (and often involved) people, rather than a clear distinction being drawn between providers and users. The idea that innovation should be freely revealed and that a cooperative style should prevail was fundamental to the style of operation of all the CBOs. The two that had already laid some fibre seemed to go further than simply sharing: they were promoting their findings very actively.

Discussion

This paper set out to understand how community organisations innovate, and used a number of theories of innovation and research on CBOs to shed light on this. Evidence was provided that demonstrated that aspects of CBO activity were reflected in each of these theories. For example, the fact that the CBOs were providing services where the private sector was absent, and that social networking and sharing knowledge were important to their activities, was well documented. In some respects, though, the theories failed to capture the essence of the innovative activities of CBOs, which this section goes on to explore.

The first area of interest is the CBOs' relationships with technology and technological change. As explained above, some of the technological adaptations made by the CBOs could be conceptualised as innovative diffusion of more commercial and large-scale innovations: building systems that extended the reach of commercial providers. The theory of economic innovation, though, is skewed towards the 'manufacturer-centric innovation development systems' (von Hippel, 2005) and tends to show little recognition of the contribution of diffusers, and how they

might have to add their own innovative ideas to apply mainstream economic innovations on the ground.

The case studies provide insights into the technologically innovative processes used by the CBOs in their diffusion role (they also had a lead user role, but that is covered by the theory of democratic innovation). Interestingly, none of the broadband champions had any expert knowledge of telecommunications when they began to act as diffusers. They were driven to innovate by their personal need and/or by their wish to serve the local community rather than by technological know-how. They certainly gained technological knowledge, and to an extent learned from other CBOs, but appeared more guided by a philosophy of 'just do it' to create something that worked. To an extent, this experimental approach is highlighted in the theory of disruptive innovation; however, the innovators described by that theory appear to be experimenting within the manufacturing process and within commercial organisations. This seems in contrast to the type of applied experimentation undertaken by the CBOs as they find a means of making the system work. In much of this, improvisation appears to be central. By using this term, I am focusing attention on "bringing together diverse materials and combining or redirecting their flow in anticipation of what might emerge" (Ingold. 2010, p.9). This is not trial and error experimentation, but action with a clear eye on finding a way to overcome obstacles.

The CBOs were repeatedly buffeted by, and triggered to respond to, technological change. Disruptive innovation casts the innovators as people who 'think different', as if the urge to keep innovating comes solely from the self. In the case of the broadband champions, the trigger for innovation was also driven by exogenous technological change. Telecommunications was at a very fast stage of its development life cycle, and new technologies providing both opportunities and challenges to the CBOs were repeatedly appearing. However, this was also the case for the private sector (and to an extent for the public sector) which meant that business decisions taken a year or so ago might no longer pertain. This then had an effect on the CBOs who found that even long established telecommunications companies could not be depended upon to act in a constant manner. They, too, were working in a very dynamic and sometimes unstable domain, and were constantly having to adjust and, from the CBOs' perspective, 'change their minds'.

The second aspect of CBO innovative activity worthy of note is how the participative processes of social interaction, described in the theory of social innovation, were played out and how they were important in empowering the broadband champions. Within the local community, the 'users' of the service were encouraged to be engaged with the organisation – they acted more like clubs than marketplaces. Boundaries were blurred, with many clients helping to provide the service – as volunteers, having wireless transmission equipment installed on their properties, waiving their rights to wayleaves, etc. They tended to be loyal to the CBO - many did not switch provider once BT

arrived locally – and accepted the ‘best efforts’ standards in terms of quality of service and speed of repair (as outlined in the theory of disruptive innovation) rather than demanding what might be expected of a commercial provider. The CBOs, though, earned this support: they were mainly run by local volunteers; many were involved (or had been involved) in other activities for the benefit of the community; and many of the CBOs provided more than just broadband to the local community, with social events, community websites, and so on.

A number of the case study CBOs also worked in a participative way with the public sector locally. In particular, local authorities partnered the CBOs by providing the backhaul for the LANs built by the CBOs. There were also discussions between some local authorities and CBOs about future possibilities from the BDUK programme and the roll out of fibre. In one locality, the local university worked in partnership with the CBO, with the former providing the backhaul, and the CBO providing the LAN and a ‘living lab’ for research projects.

A participative approach was also apparent between the CBOs. Some were/had been members of national networks of CBOs, and most networked on a one-to-one basis with other CBOs. The largest and most professionalised of the CBOs I interviewed provided something of a mentoring role to other CBOs and potential CBOs. Some of their fibre-laying techniques were to be replicated by another, once funding was in place. Key personnel in the two CBOs involved in fibre laying knew each other well, and there was healthy rivalry about the costs and techniques involved. All the CBOs were keen to exchange knowledge and innovations.

The overall effect of the participative approach was that the broadband champions were embedded within two ‘communities’: a community of interest as well as a community of place. This seemed to bolster their belief that they really could make a difference by their actions and that they were supported in what they wanted to do. This then empowered them to address each challenge that confronted them. Some definitions of social innovation refer to innovations that improve society’s capacity to act: through developing their broadband services, the broadband champions and the other beneficiaries who participate in the provision do seem empowered and energised in this way.

However, this leads into a third point of interest: these empowered and energised people and their activities are at the opposite end of the spectrum from the theories on matters of scalability and replicability.

In the literature, emphasis is placed on the scalability of innovations. The CBOs, though, draw geographic boundaries around their local area and only wanted to benefit the people living there (the largest does service some other areas, but this was done in order to keep the organisation

viable, so it could continue to service its community). Within these boundaries they did scale up by finding ways of serving ever-harder-to-reach premises. They also encourage the wider provision of community broadband through participative processes without scaling up their own CBO activities. But essentially the CBOs had no intentions to scale up in the ways such theories as social innovation foresee. Personnel in one of the CBOs even suggested that if they got to a point where they no longer needed to provide a broadband service, they would together find some other **local** issue to resolve.

The theory of disruptive innovation proposes that anyone could be a disruptive innovator by learning the necessary behaviour skills, in other words that disruptive innovators are replicable. The broadband champions demonstrated that they had the behavioural skills identified, but also appeared to possess more personal attributes, in particular that they were passionate and optimistic. They believed that the applications enabled by broadband were positive and important, and were evangelical about convincing other local people about the benefits; and they believed that they, themselves, and the types of approaches used regularly by local community organisations would enable the provision of broadband in their locality. While at odds with the theory of disruptive innovation, there is a close correspondence here with what Paul Farmer (2009) says are the “classic symptoms of the disease [social entrepreneurship]: refusal to accept the world the way it is and the direction in which we're going. An unwillingness to say, no, this can't be done. Persistence. A certain amount of righteous anger ... And also hope” (p.21-22). Such ‘symptoms’ – identifiable in the broadband champions - would appear to run counter to notions of replicability.

My final point of discussion is that describing the broadband champions as people who ‘think different’ as in disruptive innovation seems to underplay their innovative contribution. What ultimately distinguishes these people is what they **do** rather than what they think (although they are also thinkers). They **applied** their ‘different thoughts’ to real life problems such that they made a significant difference to local broadband provision.

Concluding Comments

The CBOs I studied were acting in ways that were innovative according to a number of theories of innovation; there were also other aspects of their approach which were not well-represented in the literature, or at odds with it. What became apparent was that all the theories studied, with the exception of social innovation, even when purporting to be alternatives to traditional commercial theory, were still focusing on **economic** processes. They shifted attention to different parts of the linear innovation process: to the types of people within the organisation who drove innovation, and to the role the users can play. So although CBOs are not from the private sector and contrast with

commercial organisations quite fundamentally in certain points, our understanding of some of their innovative activities is enhanced by the economic theories. But this study also demonstrates how our conceptualisation of innovation needs to be expanded to explain how local community organisations are innovative. The social innovation agenda makes a significant contribution to this; however, it appears to be a broad, high level and normative umbrella agenda at present which needs to develop its foci and its evidence base in order to be a useful theory.

To what extent does this analysis of innovation in CBOs provide us with greater understanding of how local community organisations innovate? In order to generalise beyond CBOs, we need to acknowledge the range of organisations that might be covered by 'local community organisations'. The Plunkett Foundation report (2011) helps us to situate CBOs with their three-fold categorisation: Community Service Businesses; Rural Economic Collaborations; and Community Development Enterprises. The first of these seems the most appropriate to CBOs – a grouping that includes community-owned village shops or pubs and community transport operators. It would seem likely that in a number of respects what has been raised in this paper as innovative approaches by CBOs would be equally applicable to this grouping which provide services to their local community:

- That they would concur with existing theories of innovation (except democratic innovation) to a similar extent.
- That they act in innovative ways to provide a local service if the private and/or public sector fails to do so
- That they focus on serving solely their local area, and do not scale up their activities
- That they form participative networks locally and further afield
- That the people centrally involved are 'hands on' doers (rather than just thinkers)
- That these people are passionate about providing a service, optimistic about their ability to make a difference, and serve as an 'inspiration' (Plunkett Foundation and CarnegieUK Trust, 2012) to others.

There are two ways, though, in which other local community organisations providing services might differ substantially from the CBOs. The first of these is that the CBOs innovate alongside and in response to fast-developing technologies, and provide a service that did not formerly exist. It would appear that in many examples of community service businesses the environment is diametrically opposed to this: they would act where a service was in decline, and might innovatively build on the legacy infrastructure. For example, organisations which save the local shop when commercial operators decide to withdraw might take over the existing premises, serve the existing customers, and so on. The second area that might need examination before over-generalising, is the extent to which in other community service businesses the key actors are

motivated by personal need, and whether they would act as lead users as in the spirit of democratic innovation. Many of the people who save village shops from closure might do so for symbolic reasons coupled with a desire to serve others rather than because of the personal need (coupled with serving others) identified in the CBO case studies.

Another constraint to generalisation might be whether this analysis of innovative behaviour in CBOs might reflect the pioneering nature of the activity of these CBOs. Work by the Plunkett Foundation and Carnegie UK Trust suggests an 'enterprise development curve' which starts with a pioneer phase which "is characterised by highly resourceful and entrepreneurial individuals who will do whatever it takes to make their community enterprise a success" (Plunkett Foundation and CarnegieUK Trust. 2012, p.18). In later phases community enterprises test out different approaches until a model is developed that can become the accepted means of addressing the issue.

A final thought in exploring 'community innovation' is about who decides what is novel, and therefore innovative. Much that is done by local community organisations is recognised as innovative by people like politicians, who claim that the ways in which they can act when the private and public sector cannot are novel. However, local community organisations have a long history of providing services through local self-organising, and in my experience shrug off any idea that it is not normal to do so, with comments such as 'it's just the way we have to do things round here'.

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