

SERVICE DESIGN & HEALTHCARE INNOVATION: from consumption to co-production and co-creation

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Abstract

In the last decades the economy saw two significant changes in the way value has been conceived and created: the introduction of the value-constellation model and the advent of the open innovation movement. This paper will report on how these paradigmatic changes are mirrored in public services reform, with a focus on healthcare services, and on how Design practice and research are contributing to this shift. The authors will use four case studies of healthcare design-driven service innovation as a way to reflect on which models and approaches designers have been using and to evaluate the actual results and impacts that have been achieved so far.

KEYWORDS: service design, healthcare, service innovation

Background

In the last decades the economy saw two significant changes in the way value has been conceived and created: a shift from the value-chain model of Michael Porter to the constellation model as proposed by Normann and Ramirez (1993); a movement from the Fordist industrial model of mass production, to the market driven strategy of mass-customisation and recently to the advent of the open innovation movement of mass collaboration.

- *From Value-chain to Value-Constellation Model:* in the chain model, value is added by different suppliers in a sequential process, whilst in the constellation model value is co-produced by different actors in a non-linear set of activities and interactions. Users are involved in the value creation system in the way they use 'offerings'¹.

¹ This term is used by Normann and Ramirez (1993) to indicate both products and services, as, in this new model of value creation, it is difficult to distinguish among them.

Services that are by definition co-produced are good examples of the new value co-creation model. As Ramirez and Mannervik (2008) pointed out, to succeed in the Service Economy organisations need to learn how to mobilise users and various partner organisations to create their own value by co-producing offerings. In this context Design has the great opportunity to bring value and meaning generation at the heart of its activity. Both authors also suggest that whilst the users' role has evolved from "*destroyer of value, to source of value, and finally to co-creator of value*", the competences that Design brings to value creation systems have been evolving as well from "*interface design, interaction design to navigation and enclave design*" (p.36). Designers are called to create platforms that support value creation processes, helping users and organisations to make sense of how to use the system and build their own value.

- *From Mass-production to Mass-collaboration*: Henry Ford ideated the industrial model of mass production, where value was created in R&D teams and where designers played the role of 'creators', while consumers acted as 'destroyers' of value when 'consuming' the products. In Ford's model, only specialised knowledge was capable to produce value, and experts created innovations in a special space, free from market pressure. Leadbeater² describes this model as 'closed innovation', while he considers the value constellation paradigm as 'open innovation'. 'Open innovation' represents the end of knowledge monopolies, and it works with multiple sources of ideas, combined through networks (communities of practices), with users being part of that. In this new paradigm designers' role becomes the one to facilitate the connections among actors by providing tools for co-creation (Cottam & Leadbeater, 2004).

Paradigm shift in healthcare

The evolution of healthcare services could actually be described, simplifying it, following the same paradigm changes, from centralised and sequential models of value creation to more distributed and open paradigms, where citizens are looked at as co-creators of their own wellbeing:

- *Mass-production: a Fordist model of healthcare delivery*. The current model of healthcare service delivery in United Kingdom has been developed as an answer to the needs of a post-war world that had to deal with acute diseases and infections. The National Health Service (NHS) was born on a Fordist paradigm of value creation, where patients entered the health system with a disease, and doctors, with their specialised knowledge, would treat and cure them. The focuses were here on the application of expert knowledge to treat illnesses and on service efficiency;

- *Mass-customisation: a personalised model of healthcare delivery*. When the citizens' notion of value changed from costs to quality, the Fordist industrial model changed from mass production to mass customisation; organisations started to adapt service offerings to the diverse needs of citizens, while keeping the sequential approach to value creation. Public service organisations started then to apply market research techniques to better understand their users. In the healthcare sector this focus on citizens as 'clients' started with the advent of the 'internal market' concept during the Thatcher's government (Parliament, 1989). It then developed, during the Labour government, with the introduction of the NHS reform programme "The NHS plan" (DH, 2000) that claimed the need to re-design the system around patients' needs, and to deliver a more personalised service. The focuses are here on developing effective 'clinical pathways' and on patients' experiences;

² Website <http://www.charlesleadbeater.net/cms/site/docs/Open%20Innovation.ppt> [accessed 30/04/2010]

- *Mass-collaboration: toward a participatory model of healthcare.* The challenges of healthcare have changed becoming more complex: we have less acute diseases and more chronic ones that significantly depend on demographics and lifestyles. As complex problems, are caused by multiple factors that interact in complex ways (Horne & Shirley, 2009), linear approaches to service delivery can be partially effective. As Burns *et al.* (2006) indicated:

“Traditionally, organisations have been designed for a complicated rather than a complex world. Hierarchical and silo structures are perfectly designed to break problems down into more manageable fragments. They are not, however, so effective handling high levels of complexity. For this reason, many of our most long standing institutions are now struggling to adapt to a more complex world.” (ibid: 8)

At the same time the original focus on treatment is not sufficient, as people need an ongoing support to live well with their chronic conditions. As a consequence the Department of Health launched a new reform programme called “Creating a Patient-Led NHS” (DH, 2005) aiming at changing the whole system so that ‘there is more choice, more personalised care, real empowerment of people to improve their health’, moving from ‘*a service that does things to and for its patients to one which is patient-led, where the service works with patients to support them with their health needs*’ (p 3). The new focuses in the policies are today then on co-production and patients’ engagement.

These three paradigms (mass-production, mass-customisation and mass-collaboration) actually co-exist in the NHS as they answer to different needs and the system is anyway difficult to change radically. A transformation process is though undergoing moving from treatment-centred and centralised models of care toward more health-centred, community-based and co-produced service models. Design is contributing to this transformation bringing its own methodologies as the authors will illustrate in the following sections.

Design and Healthcare innovation

Designers have been adopting two different approaches to innovation: working within organisations to introduce design methods and suggest new service configurations; or acting outside the system to generate radically new solutions.

These two main innovation strategies have also been accompanied by design methodologies moving from an emphasis on co-design and co-production, toward the emergence of the co-creation philosophy. **Co-design** in healthcare services implies a partnership between patients, professionals and community working together in the design development process (Sanders & Stappers, 2008). The final solution is then implemented and led by professionals. Otherwise, **co-production** asks people’s help, using their capacities to **deliver** public services in an equal and reciprocal relationship between professionals and the *core economy* (family, neighbourhood and community), shifting the balance of power, responsibility and resources from professionals to individuals (Boyle & Harris, 2009). Finally, **co-creation** happens when users are central not only to the **design** of services, but also to their **production** and continuous **development**. It is based on ordinary people generating the content of services and shaping their nature (Cottam & Leadbeater, 2004; Murray *et.al.*, 2006).

The work of NHS Institute for Innovation and Improvement (NHSi)³ with service designers can be seen as an effort to change the system from within engaging users in the re-design of their services. NHSi in 2005, with the support of IDEO consultancy, developed a model of work based on the design innovation process. To test that process, they developed a pilot

³NHSi is an organization that sits between Department of Health and NHS to supports the NHS to transform healthcare for patients and the public by rapidly developing and spreading new ways of working, new technology and world class leadership.

project applying design methods focusing of patients' experiences (Experience-Based Design), and since then they have organised a series of training workshops and pilot projects to support the adoption of EDB approach on a wider scale.

The work of the RED team⁴ of the Design Council pioneered instead experimental research into new radical service models for healthcare operating outside the NHS system. Cottam & Leadbeater proposed a new welfare state model, introducing the notion of 'open welfare' (2004); they recognised that the most of public sector innovations from the past *"have been designed to make the traditional, closed model of service delivery more efficient"* and argue *"that many of the biggest improvements in public services will come from mass, participatory models, in which many of the "users" of a service become its designers and producers, working in new partnerships with professionals"* (p. 1). The RED team co-designed and experimented with people new service prototypes aiming at providing tools to people to take care of their own health, becoming in this way co-creator of their services.

Even if these projects are well-known in the design community, little effort has been done to evaluate their work and actual results in transforming healthcare. The authors have selected four completed design projects that applied design thinking to innovate healthcare services: 1) "Living well with diabetes cases" (RED team Design Council) exploring how it is possible to help people to self-manage their conditions 2) "Activmobs" (RED team Design Council) exploring how to motivate people to conduct healthier lives 3) "Open Door" (Martin Bontoft) exploring how to engage people that don't generally use primary care services 4) "ENable Team" (Live | work) exploring how to improve care to people with Multiple Sclerosis. Interviews to main designers and project partners were then conducted⁵ to map the design process and evaluate the implementation and actual impact. Comparing their approaches and results some overall considerations have been then developed.

Case 01: Living well with diabetes

This service design project was developed with the Bolton Diabetes Network (BDN) in order to create a new service for helping people live well with diabetes. The main aim of the project was to create a service integrated with individuals' everyday lives, not focused solely on their disease.

METHODOLOGY: RED team applied user-centred research methods (i.e. interviews, observation and generative tools) and co-design methods (i.e. workshops and prototyping techniques). They engaged in the process BDN, Bolton residents, and Bolton Primary Care Trust (PCT) staff. They used the Design Council double diamond method articulated in two main phases: 'shallow dive' (discovery) and 'deep dive' (define, develop and deliver). Both stakeholders and users were involved mainly in the Discovery and Develop phases, sharing their knowledge and prototyping with the design team.

SERVICE OUTCOMES: The RED team created Agenda Cards, self-diagnosis cards to support the collaborative process of care planning between the patient and the doctor. Combined with Agenda Cards, the team also developed the concept of a new role to this service (ME² coach): a personal trainer for people with diabetes. Of the various solutions suggested, The Bolton Diabetes Network decided to pilot just the BoND Agenda cards. They launched the BoND programme (Bolton's New Deal for Diabetes) to health

⁴ RED is a 'do tank' established in 2004 by the Design Council to tackle social and economic issues through design led innovation.

⁵ We interviewed: Martin Bontoft (designer consultant), Colin Burns (designer and innovation consultant), Jennie Winhall (design strategist at Participle), Julia Schaeper, Jamies Nel, and also Helen Bevan (from NHS), Krzysztof Walecki (from Ealing PCT), Mark Lemon (from Kent Council), Lynda Helsby (from Bolton PCT) and also secondary data provided by interviewees.

professionals in May 2006, along with a range of other patient education initiatives. They also made “Agenda Cards” available on the Internet with links to other information resources. Although the Bolton PCT were very proud of the work that they have done with RED and expected that it would be used extensively in Bolton to support diabetics patients, the project did not go beyond the pilot phase; the Programme Manager of Bolton PCT said that *“unfortunately the clinicians were very reluctant to use the cards and found them too time consuming in consultations”*. When asked why the project didn’t go ahead, a RED team member mentioned how *“there was a fundamental error that both groups made [...] we didn’t involve, early enough in the project, the people who might be able to carry the work on afterwards”*.

Case 02: Activmobs

Kent County Council (KCC) worked with the RED team to promote more active lifestyles and potentially reduce chronic disease among their population. KCC proposed to work in a deprived area of Maidstone in and around the Park Wood estate.

METHODOLOGY: RED worked with Kent residents in two main phases called by the team “shallow dive” and “deep dive”. The shallow dive involved two days of contextual research, including visits in six homes of potential participants. The information and ideas from this phase informed a workshop in Kent with local stakeholders such as the community support officer, youth club leaders, a local vicar and an Age Concern worker, asking them to complete the portraits with profiles that were missing and to brainstorm ideas for motivating individuals to increase activity. The initial ideas were clustered in two groups: Park Wood Olympics and “individual and small group activity like flash mobs”. These were quickly prototyped trying ideas out and adjusting as they went along, using feedback immediately rather than at the end.

SERVICE OUTCOMES: the design outcome was the Activmobs concept, an informal self-organising group between 2 and 15 people (a mob), formed around a shared activity that could benefit health and well-being (for example, dog walking). Activmobs provided an on-line platform that would support the creation, registration and validation of each mob, and tools to motivate people to sustain their group activities such as: “health miles” cards, which would give discounts from public facilities, shops and services for active participants; self-rated qualitative improvement measures like ‘well-being chart’, where people could indicate tangible changes in their well-being; and a “statement” to be delivered every three months to participants, showing their well-being improvements. The platform was implemented in KCC and is still running today. The most important impact of this project had been the understanding of the role of Design for Social Innovation and the creation of the Social Innovation Lab: a place providing a creative environment to Kent Council’s staff to work together on the challenges that the county faces, having people and citizens at the centre of solutions. Now, Activmobs is helping other communities (like Betteshanger Community) to set up their own active projects.

Case 03: Open Door

Martin Bontoft⁶ and his design team were asked by North East Lincolnshire PCT to solve an old problem of health inequalities in Grimsby. The main goal of this project was to reach the ‘hard to reach’ groups (for example, drug and alcohol abusers, sex workers, and offenders) who do little about their health and get progressively worse until they present to A&E, when

⁶ A researcher and design strategist who employs emphatic design research methods. Website: www.bontoft.com

it is more difficult and expensive to treat them. Their aim was to motivate people to register with a General Practitioner, and take better care of their health conditions.

METHODOLOGY: The design team used a co-design approach articulated in four main phases: discovery, define, develop, implement. In the discovery phase the team conducted ethnographic studies using techniques such as feedback probes, interviews, observation, conversation cards and disposable cameras. In the Define phase, the team facilitated a workshop with the stakeholder group (NHS Staff, Drug Agencies, third sector, Citizens Advice Bureau, a Bank) to visualise the data and define the problem. In the Develop phase, they started to develop some potential solutions (between the design team and stakeholders) that were shown to the users group to get their feedback. In the Deliver phase the team prepared a document to communicate the service process and values and a rough prototype of the service, to encourage funding and other stakeholders to participate.

SERVICE OUTCOMES: the project outcome was the Open Door new service model. Open Door is an health and social care enterprise, defined as an “activity centre – somewhere you go to engage, be challenged and supported, meet like-minded people, feel part of something, and do something useful” - whose purpose is to deliver better access to health and social care for people who normally do not attend traditional services. Six months after completion of the project, NHS team identified the right location to implement Open Door, as a social enterprise, partially funded by NHS and affiliated to the Big Life Group (social businesses and charities). They also invited people from the community to participate and co-produce Open Door, giving them roles and responsibilities. For example, Antony, well known in Grimbsy for his misbehaviour, but being a good decorator, was asked to contribute to the centre by painting the whole place and the Open Door team helped him to become a painter/decorator and start his own business. After two years, the benefits that Open Door brought to East Marsh (its neighbourhood) went beyond the original expectations. It increased by four times the number of people attending the health centre (721 patients registered), while re-introducing 187 people to mainstream health services. Simultaneously they have seen a concomitant reduction of 12% in reported crime each year since Open Door was introduced. Open Door was twice profiled in Society Guardian, and was awarded with a “pathfinder” status by Department of Health’s Social Enterprise Unit.

Case 04: Ealing PCT Multiple Sclerosis team

In 2007 in the London Borough of Ealing there were about 300 Multiple Sclerosis (MS) patients accessing NHS Services. People who live with MS may have their mobility, vision and co-ordination affected, and the disease can cause pain, fatigue and depression. As their conditions vary along the years getting alternatively worse and better, they have to constantly access a range of diverse specialists. The Ealing PCT staff recognised the difficulties MS patients had in accessing those different professionals, but did not know what the ideal solution could be. They asked NHSi to help them to design a new service model for MS sufferers.

METHODOLOGY: NHS Institute set up a team to support Ealing PCT which comprised representatives from NHS Institute’s Service Transformation team and service design consultancy Live | work, with the intention that this project might help the NHS understand how the design method could help medical professionals and managers to innovate services. The team aimed to understand the problem and the service experience from the point of view of the patient, their family or carers, as well as frontline staff and other stakeholders. They followed four main phases: discovery, define, develop and deliver. Live | work led the

discovery phase, conducting interviews, observation, shadowing, service mapping and timelines of events. In the Define phase, the team synthesised their understanding of people's experiences in *user profiles*, with photos and quotes, and developed *ideas sketches*. In the Develop phase, the team designed a *blueprint* for the kind of patient experience they were seeking to create. In the Delivery phase, the Live | work team detailed the *touch points* indicated in the blueprint, to deliver the service experience, such as websites, and various communication tools.

SERVICE OUTCOMES: ENable is the service outcome of this process, a new community neurological rehabilitation and enablement team, which integrates the Ealing Primary Care Trust and the London Borough of Ealing Social services, with a multidisciplinary team (Physiotherapist, Occupational Therapist, Speech & Language Therapist, Counsellor, MS Nurse Specialist, Clinical Psychologist) accessed by a single point of referral and contact. The service was successfully implemented, and although it has been difficult to measure the real impact of the service in terms of reduction of A&E admissions, the ENable team manager confirmed that the project has achieved good results and the service has a good reputation in the local area. As a result, the patients recognised that the Ealing PCT services have changed and improved: *"I do not have to keep ringing everyone, I just phone Emily (her social worker) [...] you feel as you were protected [...] I'm much happier now than I was two years ago [...] it has improved my quality of life because I do not have to worry about my health"*. They also have satisfaction research results that show 81% of patients have their needs met by the service.

Analysis

Innovation focus and strategy

The table 1 summarises the relationship between the three production and value models with the innovation practices in healthcare. The four case studies we have been studying represent efforts to move beyond a mass production model toward more personalised and effective service solutions, effectively designing services around patients' needs. They though differ (as showed in fig. 1) in terms of the level of patients' engagement in both the design and delivery of services (co-creation) and in terms of NHS transformational change (Chapman, 2002).

The Bond Agenda Cards, even if part of a suggested wider strategy, in their application aimed at improving the interaction between patients and carers without changing the overall service system. The design team applied co-design approaches, but in the end they didn't manage to affect the existing power relationship between the professionals and the patients.

The ENable project implemented a new integrated service model and interface that better answer to patients' individual needs. The final solution, though, didn't affect the participation level of patients in the service delivery; the integration of functions improved the patient experience, but not necessarily its role in the service.

Finally the Open Door and the Activmob projects both aimed at a significant transformation in people's behaviour and service delivery models. The Open Door, introduced new service actors in the existing system, helping reframing the original model into something completely different (a social enterprise); while Activmob generated a service platform to provide the right support for people to change their lifestyle. Open Door created an open space to health care, reducing perceived barriers to access, allowing for a degree of patients' engagement in

the use of its facilities and services. Activmob applied a co-creation approach as people participating in the design of the services (even if mainly to test initial ideas) then took on board the implementation and development of the solution. In this way they actually became the co-creators of their services.

<i>Production & Value Model</i>	<i>Service philosophy</i>	<i>Design Focus</i>	<i>Design Method</i>	<i>Examples</i>
Mass production	Disease-centred	Service efficiency	Process analysis	The productives ⁷
Mass customisation	Patient-centred	Interaction & Service Relationship	Co-design & Experience-based methods	Agenda Cards ENable
Mass collaboration	Patient-led	Behavioural Change & New services models	Co-creation	Open Door Activmobs

Table 1: Healthcare service innovation ladder

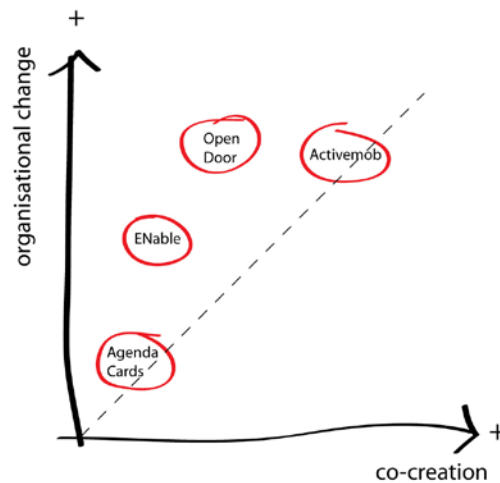


Figure 1: Innovation approach and impact

Long-term impacts

If we look at the long-term impacts of the projects some considerations emerge about the drivers and barriers for healthcare innovation. All projects apart from the Bond Agenda Cards developed beyond the prototype, being adopted and adapted by the relevant community of practice. The Open Door service has been particularly successful, not only re-connecting with the ‘hard to reach’ populations, but also indirectly contributing to an improvement of the security in the community.

The agenda cards were designed through iterative prototyping sessions with patients and healthcare professionals to help patients identifying their barriers to behavioural change. The central idea was that both patients and doctors could use the cards in consultations to build, in a collaborative way, a self-care programme. The design team though didn’t involve the doctors in the idea generation, missing then to deeply understand doctors’ practice and

⁷ “The productives” is a program from NHSi that aim to give to NHS staff principles and techniques that could help them to identify unproductive uses of their times and improve the process of service delivery in order to spend more time with patients and improving standards of care.

beliefs and to engage them in the change process. As some quotes suggest, doctors showed resistance to accept their roles to support people in changing their behaviour and to loose control of the process by using the cards: 'healthcare professionals don't like the idea of not being in control' or 'we are health professionals not social workers'. Activmob on the opposite took a life of its own having people adapting the service concept to their realities (for example, they don't use the 'health miles and qualitative measures) and using design methods to help others to create their own groups of activities.

Being services co-produced, a user-centred approach is not enough. Service Design practice needs to be *centred on the community of co-creation*, understanding the problem from the different perspectives of actors involved and uncovering eventual *fundamental assumptions* (Junginger, 2008) that shape their practices and lifestyles. The professional-patient relationship in particular is a deep-rooted model of social interaction that is now one of the main barriers to healthcare services radical transformation. Changing individual service interaction tools, without addressing deeper assumptions and social norms (Shove, 2003) that would shape their adoption, is destined to failure.

Vice versa the Open Door project started the process by engaging the overall community of co-creation, working with the PCT to re-design the core 'design principle' that would generate a significant change in the service delivery. Working to uncover assumptions of what a normal healthcare centre should be can provide solid foundations to achieve more sustainable and radical transformation.

A second consideration is related to the role of Designers in these processes. In the mass collaboration model Designers need to change the perceptions and understanding of their own profession and release power to the *community of co-creation*. They must design entities that leave space for adoption and adaptation (as Activmobs and Open Door project have shown). Pelle Ehn in his latest work on Participatory Design (2008) suggests a shift from considering 'Design before use' to 'Design for Design after Design':

Rather than focusing on involving users in the design process, focus shifts towards seeing every use situation as a potential design situation. So there is design during a project ('at project time'), but there is also design in use ('at use time'). There is design (in use) after design (in the design project)' (ibid: 5).

At project time then the object should be open to controversies that could support new products and practices to emerge. Using a Leigh Star's concept Ehn talks about 'infrastructuring': *'an infrastructure, like railroad tracks or the Internet is not reinvented every time, but is 'sunk into' other sociomaterial structures and only accessible by membership in a specific community-of-practice.'* (ibid: 5).

With this perspective, Designers are responsible to build these infrastructures or platforms (like maps) that show the connections (like roads and signs) between actors (like places) which enable people to create their own route to change. So design for behavioural change is about building the capability and the systems that allow change to occur. This is illustrated in Open Door and Activmobs examples where Designers co-designed a service platform made up of: **principles** (to guide the service), general **roles** and **rules** (that should be followed by those who would use the system). The traditional service specifications become a general 'infrastructure' that allows the community to 'design in use' accessing their own resources.

Conclusions

This paper has illustrated how designers are currently contributing to the paradigmatic change in the healthcare system. The overly used terms of co-design, co-production and co-creation require a deeper reflection on their real nature and impacts on service models, design processes and designers' roles. At the moment designers are working within and outside the NHS introducing human-centred design approaches to innovation, but the implementation of the co-creation model asks designers to develop new skills, sensitivity and attitudes. Generating lasting and transformative projects require participatory design inquiries that question the very assumptions and norms behind service practices and interactions; require engaging the right set of actors in the right moment; and actually release power to project participants, co-creating flexible platforms or 'infrastructures' that people can own, inhabit and transform.

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