Open data and co-production of public value of BBC Backstage

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Abstract

Openly accessible data sets (open data) have been recognized as valuable assets for creating business opportunities, revitalizing innovation and transparentizing organizational conducts. Public Service Broadcasters (PSB) such as the British Broadcasting Corporation (BBC) have been motivated to experiment with open data and new forms of innovation in content making, delivery and audience engagement. Through a case study of the BBC Backstage project, this article examines how such open innovation processes of engaging the public in the reuse and remix of open data were conceived, supported, managed and maintained. The research found that BBC Backstage had played an important role in encouraging and motivating people to reuse and repurpose the open data released by the BBC. New forms of outputs have emerged, as seen in the Data Arts visualization project and the R&DTV clips mashups. The article argues that PSB public value can be *co-produced* through opening up data sets, encouraging reuse and remix, and building up a network of enthusiastic and capable active audiences, the techno-elites, whose status has been encouraged the open data culture and alike. Lessons learned can help understand the meanings of open data from the PSB perspective, and the implications in media industry thereby foster innovation in future media and creative industries.

Keywords

open data

public value

techno-elite

BBC

co-production

audience participation

Introduction

With the proliferation of computers, data are being generated and processed at an unprecedented pace and volume (Kitchin and Lauriault 2014). Data-mining techniques have been developed to process different types of data, including transactional data automatically generated by machines, content generated by users on the Internet and digitized old (historical) records. These data are available in different formats, platforms and un/available under different intellectual property rights. Industries, governments and the third sector all have shown keen interests in exploiting the 'big data', referred to 'extremely large data sets that may be analysed computationally to reveal patterns, trends and associations, particularly in relation to human behaviour and interactions' (see the House of Lords 2014: 21; see also *Oxford English Dictionary* 2013).

Common data practices in computing and the web industry, such as data visualization, mashups of archival content, data mining and machine learning, have become popular practices and adopted in the media industry to engage audiences and to generate, represent and deliver content on different platforms. For example, in data journalism, visual methods such as infographics, videos and interactive web interfaces have been adopted to reveal and represent data, to transparentize the data sources that make news stories more reliable and trustful. Many commercial activities are data driven and algorithmically directed. Tesco Clubcard, Amazon Cloud and Facebook and Google marketing and advertising are well-known examples. In the TV industry, programme making can follow such data-centric methods.

The concept of 'open data' shares a similar philosophy seen in free/libre open-source software (FLOSS) (Stallman 1985), open content and free culture (Lessig 2004). The value of open data has been favourably mentioned in public policy documents and linked with the concept of 'open government'. For example, in the open letter that the UK prime minister David Cameron wrote on 1 June 2010, a timetable for opening up governmental data sets and greater transparency across the UK government was set out so as to

> enable the public to hold politicians and public bodies to account; to reduce the deficit and deliver better value for money in public spending; and to realise significant economic benefits by enabling businesses and non-profit organisations to build innovative applications and websites using public data. (Prime Minister's Office 2010)

This statement entails a range of values of open data: democratic and political values of open data to promote participation, support active and informed citizenship (transparency, accountability to citizens), cultural value, educational value, social and community value, global value and economic value.

Parallel to the growing interest in the public sector, a number of initiatives have been launched by PSB around the world to explore opportunities offered by open data. For example, in terms of user-generated content, the Australian Broadcasting Corporation (ABC) initiated the ABC Pool, a user-created content space developed and resourced by the ABC, to enable users to publish their audio, video, photography and writing on a platform and to engage audiences in remixing (Hutchinson 2013). The kind of open data that the BBC set off to explore, however, is rather different. BBC Backstage, a pioneering project launched by the BBC Research and Development (R&D)

department in 2005, was to experiment with how to engage 'the public' in the reuse, remix and

repurpose of open data.

This article investigates the impacts of open data on programme making and content production in

the convergent media industry, and how it is shaping the concept of 'public value' of public service

broadcasting (PSB). I argue that the availability of open data mobilizes co-production and thereby

motivates open innovation. PSB public value therefore is not delivered solely by the broadcasters,

but *co-produced* by the PSB and the public. I also argue that a new group of elite audience, the

'techno-elites', has emerged in an age of convergent media because of their ability to manipulate

data and software. I use a BBC R&D project, BBC Backstage, as an example, to illustrate the

potential of open data and the opportunities that these techno-elites envision for revolutionizing

media content production, provision and distribution. I also discuss the challenges encountered

during the operation period of BBC Backstage. I conclude by discussing data-intensive and data-

driven content making, programming, commissioning and delivery. Several theoretical concepts

such as 'media power', 'active audience', 'elite class' and 'participatory media' are helpful for

conceptualizing the sociocultural and socio-technical changes in industry and in a society

influenced by open data.

PSB and public value

The 'public value test' has been introduced as a method to measure the impact of PSB and justify

their funding. But what is 'public value'? Some have referred to it as a principle shaping and

informing 'institutional governance'. An institution following public value ensues a form of

network governance that is self-organizing, collaborative governance or what Mark Moore calls

'co-production' (1995: 117–18), in which users and providers collaborate cooperatively to make

public institutions work. Because they co-produce, users play an active, productive and constitutive role as citizens in public service production and delivery.

Kelly and Muers (2002) emphasize two properties of public value: co-production (involvement of users) and contestation (competition) as the means through which public value can be realized. The concept of 'co-production' is particularly relevant in the context of open data, and highlights the role of audience. As Collins (2007) argues, by extending Moore (1995)'s research in New Public Management (NPM) to the context of PSB,

> Public value, with its ethos of co-production – that is partnership between users and providers, potentially combines downward accountability to users, but to users as citizens rather than as subjects or consumers. … Instead of ratings, public value informed broadcasting would foster cultured and knowledgeable viewers and listeners. Instead of using market mechanisms and price, it would redress market failures and focus on providing the goods and services which either cannot satisfactorily be priced or which should not be provided through price and market regimes. (Collins 2007: 7)

The BBC's answer to the question 'What is public value?' is embodied in the BBC's adoption of five outward looking public purposes (serving citizenship and civil society, promoting education and learning, stimulating creativity and cultural excellence, reflecting the United Kingdom, its Nations, regions and communities and bringing the world to the United Kingdom and the United Kingdom to the world), and the embedding of four 'drivers' (reach, quality, impact and value for money in BBC's operating procedures) (BBC 2004).

In this article, I draw on Moore's articulation of public value (1995), which foregrounds the values

of 'co-production and contestation' to understand the public value of open data. The concepts of

'co-production' and 'contestation' are linked with the three advantages that open data are known

for: promoting transparency, releasing social and commercial value and engaging users and

audience (Open Knowledge Foundation [OKF] 2012), as discussed below.

Open data

In the Open Data Handbook Documentation published by the Open Knowledge Foundation (OKF)

in 2012, 'openness' can be characterized by three features:

1. Availability and access: the data must be available as a whole and at no more than a
   reasonable reproduction cost, preferably by downloading over the Internet. The data
   must also be available in a convenient and modifiable form.
2. Reuse and redistribution: the data must be provided under terms that permit reuse and
   redistribution including intermixing with other data sets. The data must be machine-
   readable.
3. Universal participation: everyone must be able to use, reuse and redistribute – there
   should be no discrimination against fields of endeavour or against persons or groups. For
   example, 'non-commercial' restrictions that would prevent 'commercial' use, or
   restrictions of use for certain purposes (e.g. only in education), are not allowed.

In a nutshell, 'open data' refer to any content, information or data that people are free to use, reuse

and redistribute – without any legal, technological or social restriction. Whilst some consider

anything available, scrubable, aggregatable on the Internet as 'open data', this article adopts a less

dubious definition referring to 'open data' as those released under an 'open data licence' or alike,

which can be freely used, reused and redistributed by anyone.

Open data are praised for the following three reasons (OKF 2012): promoting transparency, releasing social and commercial value, and engaging users and audience. Each of these three advantages is closely linked to the concept of 'public value' both in terms of co-production and contestation, as mentioned in the previous section. Transparency is not only about access; it is also about sharing and reusing. Often, to understand material it needs to be analysed and visualized and this requires the material to be open so that it can be freely used and reused (cf. co-production and contestation). Making data sets openly accessible can help organizations drive the creation of innovative business and services that deliver social and commercial value. Opening up data sets also encourages participatory governance that is essential in a democratic society, or for business and organizations to engage users and audience. In the context of open governments, citizens are enabled to be much more directly informed and involved in decision-making. According to OKF (2012), 'this is more than transparency: it's about making a full "read/write" society, not just about knowing what is happening in the process of governance but being able to contribute to it'. This idea of participation is parallel to the discussion of 'participatory audience' (Carpentier 2003, 2011) or 'active audience' (Morley 1993; Livingstone and Lunt 1994). But, as we will see in the case of BBC Backstage, the level of participation in reusing open data has been intensified because the audience is involved in the actual making of media products, which requires a level of engagement deeper than *call-in*, *voting* or *second-screen*.

So, how can PSB (re)generate public value in an age of media convergence, where broadcasting goes hand in hand with the Internet, and new content and formats across multiple platforms arise? In the following, I use BBC Backstage as an example to delineate how public value of open data are being realized collectively, specifically how innovation in digital content is being encouraged and

motivated through opening up data sets.

Case study on BBC Backstage

Research methods

Backstage was initiated by the BBC R&D department in 2005. It was firstly introduced at the Open

Tech 2005 event (2005), a genre of low-cost, one-day conferences where people experience

technologies from 'open source'-style ways of working to repurposing everyday electronics

hardware. The intention was to 'radically open up the BBC, publishing information and data feeds,

connecting people both inside and outside the organisation, and building a developer community'

(BBC Backstage 2010: 2). Backstage, heralded by the mantra 'use our stuff to make your stuff', had

made content and data feeds available for people to build upon under a non-commercial basis.

Types of open data vary, including subtitles, news, statistical data, traffic updates and data collected

in different fields (cultural, scientific, financial, statistical, weather, environmental, transport) that

have potential uses and applications.

To understand why a significant PSB like the BBC started to experiment on open data, and how

they went about freeing and exploring the (expected and unexpected) value of BBC data sets, a

number of qualitative methods were adopted to study the project BBC Backstage. The methods

used include document analysis of BBC Backstage's publications, participatory observations at

Backstage events for twelve months, narrative analysis on the mailing list and five formal and

informal interviews with Backstage's producer and participants located in the United Kingdom and

outside the United Kingdom. One of the two formal interviews, lasting for two hours, was carried

out face-to-face with the producer, and the other, lasting for 40 minutes, via Skype with an overseas

community member. Both interviews were recorded. The document analysis allows the researcher

to historicize the advent and evolution of the project, while the narrative analysis and participatory

observation (both online and offline) enable the mapping of the network of stakeholders

(participants, decision-makers), their interests and the common practices and activities.

The end-of-project e-book (BBC Backstage 2010, commissioned by the BBC R&D department to

document the project), the Backstage website (BBC Backstage Website), was treated as BBC's

official position. The book offers 'a snapshot of some of the projects and events that Backstage was

involved with, and of the legacy that it leaves behind' (BBC Backstage 2010). The website and

blog, maintained by the BBC producers, contained views from BBC insiders. Communications on

the mailing list, open for the general public to subscribe to, are still documenting and facilitating the

conversation between participants of Backstage or interested parties, provide narratives about how

members from different parts of the world exchange their views, offer mutual help and negotiate

meanings. Together with other blogs and tweets by the participants, these data offer insights into the

attitudes and practices of the participants (*the kind of* public/audience the BBC wished to engage

with) towards open data.

Data analysis

According to the slides presented at Google Developer Day 2007 by Ian Forrester, Senior Producer

at BBC Backstage from 2006 until its closure, the establishment of Backstage was motivated by the

Governors' response to the Review of the BBC's Online services by Philip Graf, who committed the

BBC to using open standards to allow users to find and repurpose BBC content in more flexible

ways (Graf 2004). It is said that within the BBC there are two views: 'One is the traditional view of

centralised websites, and the other is more open, de-centralised and a mess. That is Backstage and

in there, somewhere, is the future of the BBC' (Forrester 2007).

The data collected for this case study suggest that a substantial part of Backstage's remit was to encourage data reuse, knowledge exchange, social networking, community engagement and outreach. As declared on Backstage's blog, this new venture was to encourage remix, reuse, reappropriation, reorientation of BBC content and data. It was positioned as 'BBC's early adopter network to encourage participation and support creativity through open innovation'. In addition to identifying what data sets to release, considerable efforts were also invested in getting people to reuse and repurpose the openly available data sets. To do so, Backstage organized a series of events (*hack days*, *unconferences*, regular meet-ups with the locals) in several UK cities to engage a community of software and web developers, web designers, digital media professionals, and to encourage knowledge sharing and reuse of BBC content. Online communication tools such as mailing lists and *Ideas Store*, a webpage that collated ideas submitted by the public, were also launched to establish a sense of community and a network of mutual support.

The demography of the participants in the project, active on the mailing list and present at the local events, featured mainly workers in the ICT and creative industries (e.g. web designers or developers, people working for or with the BBC). The reason for this is likely to be that to reuse and remix data, a certain level of IT competency is needed. As discussed below, despite commonly framed as 'resources that everybody can have access to', to reuse and remix open data does require a certain level of digital media literacy that is higher than usual standards. While 'there's no restriction – open data are open to anyone', the level of data literacy, experiences and skills of manipulating tools for mashups and reuse are still essential. It may be true that the best hacks tend to come from teams that combine different talents and perspectives, but it would not be possible without facilitation and a clear understanding of basic data skills. As a result, the participants in this

project were 'early adopters' of BBC's innovative idea of engaging audiences in 'open innovation'.

They were a 'techno-elite' audience who were able to take part in the co-production of convergent

media content. This highlights one of the barriers identified for the general public to participate in

Backstage activities and for managing, maintaining and sustaining such a collaborative platform.

The concept 'techno-elite' has been coined (Lin 2012; Beyl and Lin 2014) particularly to politicize

and discuss the implications of such elite-centric phenomena, which is distinct from other

participatory audience cultures.

BBC Backstage's innovative outputs

The open data that the BBC released included the materials from the BBC Archive, clips or born

digital transactional data or metadata generated by the broadcaster. It was said that over 500

prototypes were envisioned and produced during the project (BBC Backstage 2010: 2). To engage a

community of digital artists, web developers and software engineers, Backstage (co-)organized a

series of social gatherings (including the highlight 'BBC Hack Day' in 2007) across the country.

The format of these events was innovatively organic, usually in an informal, improvisational, open

manner (which is unusual), allowing participants to collaborate, interact, exchange knowledge,

skills and information, as seen in many Linux User Groups meet-ups (Huysman and Lin 2005). For

example, conference programmes are not created beforehand by a programme committee but

usually created on the first day with the contributions of all the participants against what they would

like to share and learn. Such less prescribed structure invites open innovation. The conception of

fancy terms such as 'hack days', 'hackathons' (Leckart 2012), 'unconferences', 'barcamps',

'GeekUp', 'Social Media Cafe', 'Open Cafe' also suggests an innovation in outreach language, and

denotes a desire of engaging a social group who is familiar with the workplace culture commonly

observed at IT companies such as Google or Yahoo (Stewart 2013). On some occasions, BBC

Backstage's Hack Day also coincided with other industry events, such as Yahoo's Open Hack, so as

to engage with the Yahoo! Developer network. In addition, the key project members also

participated in local gatherings of digital media workers, such as the regular *Manchester Social

Media Cafes*, which were sometimes held at the ex- BBC Manchester's building on Oxford Road.

Such kind of events and indeed physical milieus were important for Backstage to expand its

audience base. IAfter all, the project itself was first launched at OpenTech 2005, which bore much

resemblance to these events. In addition to encouraging collaboration, hosting or sponsoring these

events also gave the project publicity and helped 'getting the data out there'.

As mentioned earlier, the majority of the participants at these hack events were young males

working in ICT or media industries, who have access to the latest technical knowledge and trends

on the Internet, and were heavily engaged with Internet cultures. They were equipped with abilities

of programming/coding, laptops, smart phones or high-end digital devices – as evidenced by a

photo by Darra on Flickr (Darra 2007), the blog by participants Premasagar (Premasagar 2007) and

M@ (M@ 2007), and an article in *The Guardian* about the Hack Day 2007 (Kiss 2011). The Hack

Day, as the participant M@ put it, 'is a 36-hour marathon of coding, pizza, beer and music

sponsored by Yahoo! and the BBC'.

The types of open data used varied including traffic data, weather data, subtitle data, other cultural

data (e.g. data about cultural works and artefacts – for example titles and authors). These data could

potentially be linked with other open data (e.g. scientific data, financial data (e.g., government

accounts (expenditure and revenue) and information on financial markets (stocks, shares, bonds

etc.), national or international statistics (such as the census and key socio-economic indicators),

environmental data (e.g., data related to the natural environment such as presence and level of

pollutants, the quality and rivers and seas) and transport data (such as timetables, routes, on-time

statistics). Through data visualization and montage methods, these data were mashed up, and

represented to reveal different meanings or reused for different purposes (e.g., visualizing news

content on a map, comparing what the audience was reading on BBC's news website and what the

BBC would like the audience to read, creating a search engine to locate or identify traffic

information).

The kinds of data that BBC Backstage published were not completely open either. Some of them

were licensed under restricted access and reuse due to the provenance or source of the data. Another

barrier identified was this legal restriction; the aspiration of building up an open culture and

ecosystem was hindered by IPRs and copyrights. Some of the prominent prototypes that had been

developed at these 'hack days' were steered into two funded projects and continued after the closure

of the Backstage project: the DataArt (2009-11) and the Channelography (2010-11).

The DataArt project, a 22-month collaboration between BBC Learning Innovation and the Centre

for Research in Education, Art and Media (CREAM) at the University of Westminster, funded by

the UK Arts and Humanities Research Council (AHRC) and starting from 1 November 2009,

collected many of the infographic prototypes that visualized BBC-sourced data or content. It echoed

a trend in the convergent media world where data and information are processed and (re)presented

in various forms such as diagrams, graphs and maps to facilitate and mediate understanding of (a

usually massive amount of) data and information. A classic BBC infographic visualized BBC news

data feeds on a rotating globe. As declared on the DataArt's webpage:

> BBC Learning recognises that the interpretation of this data is an increasingly important
>
> skill for us all and in this spirit the BBC DataArt project provides public access to

> interactive data visualizations of the BBC's online resources be they news information from around the world, web articles, music data or video. We will focus principally on BBC web sources but we will also be cross-referencing with other publicly available data. (n.d., para. 2)

To engage the interested parties (the general public as the team assumed), the project offers

- access to visualizations of BBC information resources and provides commentary text and video material that show (webpage) visitors how to use, interpret and explore them

- learning resources for visitors to find out more about the discipline of visualization, its history and other useful research resources

- a collection of toolkits (tools, tutorials, computer code and access to copyright free data sources people can download and modify) for 'more experienced practitioners' (usually developers or digital artists) to exploit.

Apart from their project webpage and blog, the team also used Facebook to publicize their work and materials (see https://www.facebook.com/pages/DataArt-BBC-Backstage/108238225894676).

The Channelography project, or BBC Dashboard as it was later known, was also a spin-off from the Backstage prototypes. The BBC Dashboard was a daily view of television data collected via the Channelography project. It revealed a few key pieces of data, making them readable 'at a glance', in the manner of a car dashboard or office notice board. Data points included the daily level of repeated programming by channel, the number of films being broadcast and some of the frequently

used terms currently being mentioned in the news and in documentaries. The project was a

commission from BBC R&D, and was designed to explore how detailed data could be aggregated

upwards into a consumable, single-screen front end. The project has now been retired as the idea

has been integrated into BBC's running architecture.

The Backstage's shot-for-web R&DTV – http://ftp.kw.bbc.co.uk/backstage/index.whtml – also

inspired an award-winning BBC documentary *Virtual Revolution* (2010). On its website, it is said

that

> R&DTV is a monthly technology programme made up of interviews from knowledgeable
>
> BBC developers, BBC project experts and experts from around the world. The show came in
>
> 3 forms: 1) A brief 5-minute video, containing all the very best bits 2) A longer 30-minute
>
> video, containing deeper conversations 3) The Asset Bundle, containing everything we used
>
> and didn't use to make the videos above. The clips in the asset bundle were raw straight
>
> from the team's cameras and although this may be too much for most people, they were
>
> great footage for those who want to remix and mashup our footage with their own or others.

Indeed, the entire R&DTV project was a strategic move of Backstage, specifically created to

address the copyright issues emerged from the participants' needs for remixing and repurposing

BBC content. R&DTV's clips were released under a Creative Commons non-commercial attribution

version 2 licence (CC BY-NC-ND 2.0) so that users can 'watch, rip, redistribute and remix' all the

contents of Asset Bundle. The Backstage team also hoped the users could contribute back: 'We're

pretty excited and ask you to please tell us what you do end up doing with the asset bundle, so we

can learn what works and what does not work and fix it next time we release another asset bundle'.

This quote echoes the ethics and practices as observed in the free/libre open source software world

(see Feller et al. 2005; Benkler 2006; Amant et al. 2007). Ensued by the BBC R&DTV, the *Virtual*

Revolution documentary also released some unedited professionally filmed footage from the series

for audience to use and make their own documentary. These clips included interviews, aerial shots,

graphics and music. Audience can download and reuse / remix them for free under BBC's Digital

Revolution Licence (terms and conditions similar to CC BY-NC-ND 2.0) specifically drawn to

reflect BBC's non-commercial nature.

Co-producing public value, but by whom?

From the DataArt project that showed how BBC data could be visualized in a creative and

informative way, to the BBC R&DTV that produced and made a series of raw video and audio

footage available for remix, BBC Backstage illustrated some of the best scenarios where the

audience is proactively *participating* in the production, value-adding, innovation process. As

recognized in the end-of-project book, Backstage has

> changed the way people think, the way the BBC interacted with external designers and
>
> developers, and the way that they worked together... It isn't just a few data feeds and some
>
> blog posts. Backstage brought about permanent change, for the people who worked there,
>
> for its community of external developers and for the BBC. (2010: 2)

Backstage arrived at a time when BBC was drawing up its new agenda around public value (BBC

2004; Anon. 2004; BBC Press Office 2004; Thompson 2004). The publication Building Public

Value: renewing the BBC for a digital world (BBC 2004) was considered as the BBC's contribution

to the DCMS consultation and debate on Charter Renewal in 2006. In this document, it set out an

agenda of empowering modern audience who is more in control of how, when and where they access the content they like and value. 'While building platforms and better access to more affordable digital technologies is a first step to a fully digital Britain, the second is about opening up the creative potential and public, as well as private, value' (Anon. 2004). The then Director-General Mark Thompson affirmed:

> We look forward to a future where the public have access to a treasure house of digital content; a store of value which spans media and platforms, develops and grows over time, which the public own and can freely use in perpetuity. When the traditional one-way traffic from broadcaster to consumer evolves into a true creative dialogue in which the public are not passive audiences but active, inspired participants. (2004)

Creating public value is at the heart of this BBC document as two of the nine points in the manifesto are about public value: 'Programmes and services that build public value through: active and informed citizenship; British culture and creativity; a revolution in learning; connected communities and building the UK's voice in the world, and "a new test of public value"'. It was announced that a public value test would be applied to all new services, and changes to existing services, before approval. A set of measures, both quantitative and qualitative, would be used by the Governors including reach, quality, impact and value for money, and the economic value and potential market impact for the test. The BBC would also commission an independent Public Value Survey of 10,000 people every three to five years.

The creation of Backstage in this context symbolizes BBC's willingness and commitment to experimenting how to engage with audience in digital/technical communities by transparentizing and opening up BBC's data feeds and content archives. Allowing audience to reinterpret, play,

reappropriate and remake BBC's data seemed to empower the audience and enlarge BBC's public value. Public value could be diversified, measured and approached from different angles in different ways to include a wide range of innovative, technical, artistic, cultural and economic value through creating added value services by remixing and repurposing data and content.

Other documents also suggested that Backstage was significant in terms of the BBC's online strategy. Documented in the end-of-project e-book, the producer Ian Forrester said that

> Backstage marked the point when the BBC started to take online seriously. Although it had an extensive web presence in 2005, especially around news, there was no real sense of any radical agenda behind the corporation's online presence. (BBC Backstage 2010: 6)

As noted in the closing-down statement by the head of BBC R&D, who oversaw the BBC Backstage project,

> BBC Backstage has been a great success.... [T]he BBC recognises that the success of Backstage is down to the whole community of developers, designers, contributors (and even critics) built around the project - a community who pushed it far beyond its original concept. (Woolard 2010)

These statements highlighted that the public value of open data and can therefore be seen as *co-produced* and *co-realized* through audience participation. This echoes the kind of open innovation that von Hippel depicts (2005).With open data, the process of content-making was democratized – people who have the capabilities can produce content based on the open data.

However, the case study has also shown that those who were involved in data reuse and knowledge sharing were a capable, technically savvy 'audience' who were also keen on exploring the power of open data. The initial idea of Backstage was to 'get the BBC's data out'. But later on, under different leaderships, it has been developed into a (cross-industry / cross-community) developer/designer network from the BBC, an opportunity for the BBC to offer some of the content and services, a way to share with third party, non-commercial developers, and BBC's way of stimulating creativity and innovation in the market. Some participated for fun and others for commercial purposes.

As seen from the DataArt and the Channelography projects, data (in different forms and formats) are considered the key to future media production. As one can see from BBC's job vacancies, data analysts, people with abilities to manipulate and analyse and present data, are much sought after these days. Audience engagement or audience analysis is now done behind the scene based on data, whether these are transactional data, such as the number of views on iPlayer or traditional TV show ratings, or audience-generated data, such as Facebook messages, tweets or posts on the BBC's Points of View's message boards.

The prototypes and ideas shared on Backstage's webpage reveal that the most used data are those in XML formats: such as travel, news and weather data. In a developer-led environment these data can be (semi-)automatically scraped, aggregated, processed, presented/visualized at speed at large scale. Unlike the kind of user-generated content seen on the ABC Pool, the kind of open data BBC Backstage released and the kind of prototypes it focused on developing were tailored for the developers' community (e.g., computer programmers and others involved in software and hardware development, including graphic designers, game developers, web developers), who did not represent the ordinary mass audience. This can be observed by the outreach language employed and

the channels used to engage and publicize the events (e.g., 'unconferences', 'hackathons'). Many

prototypes applied machine-learning or data-mining techniques on BBC's textual data, seeking

patterns in the data through clustering, text categorization, topic recognition,

demographic/gender/age identification, trend identification and tracking, time series forecasting,

measuring predictability of phenomena. Again, these creations and the adoption of AI techniques

could be linked with this specific group of audience's everyday practices in software development.

BBC Backstage has brought the notion of 'participatory audiences' (Jenkins 2006) to another

dimension through *meaningful participation* that Carpentier (2011) notes. Audience, in this case,

does not just *call-in* (Munson 1993; Livingstone and Lunt 1994; Shen 1999) or *second-screen*,

waiting for their messages to be selected by media professionals; instead, they take initiative to

utilize new technologies, choose useful and/or usable BBC content and data, create extra value out

of them and republish and redistribute them on other media platforms. Through reusing,

repurposing and reappropriating media content or data, the techno-elite generates new products and

value that potentially contribute towards a greater creative economy. The kinds of participatory

activities, driven by data associated with Backstage therefore, are not the same as others observed

on the social media: redistributing, recirculating, commenting on current affairs. It would seem that

these data-embedded participatory activities are more sophisticated, more elitist and less populist.

Because of the participants' active participation, many challenges (such as the limitations of

copyrights, needs for Application Programming Interfaces [APIs] and good-quality data, and BBC's

relatively bureaucratic institutional policies) were identified and addressed to a certain extent. The

kind of data available and strategies adopted have limited the variety of innovation. Certain types of

prototypes were favoured (e.g., the Data Arts visualization). The intervention of the BBC has

directed the BBC Backstage project to enter a more linear path in relation to open data. As a result,

even if certain innovations have emerged from publicizing open data sets, it is difficult to suggest to what extent socio-economic value can be generated.

Media power and techno-elites

Media power, in light of Bourdieu (1991) and Couldry (2000), is normally seen as 'concentrated in media institutions of the symbolic power of "constructing reality" (both factual representations and credible fictions)' (Couldry 2000: 4). It is in a transitional process to be divided, shared, negotiated between audiences and producers. Freedman paraphrases Couldry's idea well:

> media power is not a tangible object, possessed by institutions and circulated to beguiled audiences but a social process organized on the basis of a constantly renewed distinction between a manufactured (and rather dazzling) 'media world' and the 'ordinary world' of non-media people. (Freedman 2014: 14)

How media power is fractured and decentralized by the development and the adoption of digital technologies has been discussed extensively in scholarly publications. For example, Jeff Jarvis describes this as a 'power shift' (2009: 11) in which 'the shift from mass [to niche] is really a shift of power from top to bottom, center to edge, them to us' (2009: 67). In their description of 'Wikinomics', Tapscott and Williams suggest that digital 'weapons of mass collaboration' are 'ushering us toward a world where knowledge, power, and productive capability will be more dispersed than at any time in our history' (2008: 12). For Henry Jenkins, the process of convergence makes it much harder for elites to impose their authority. He contrasts 'old media's 'power to marginalize' with today's bottom-up 'power to negate' (2006: 278) that is facilitated by new peer-to-peer networks, characterized by 'prosumption' and underpinned by a collapse of deference.

'Democracy has always been a messy business' he argues, but today's 'politics of parody', in which

citizens use digital tools in creative and autonomous ways to express their cynicism towards

'official politics', is a perfectly logical response to the changing dynamics of authority (2006: 293).

For Freedman, 'the most dramatic illustration of this view of dispersed media power – and of the

interconnections between political, economic and technological contexts – is to be found in claims

made about the 'revolutionary' role of social media in the Arab Spring of 2011 and the possibilities

for networked protest (Castells 2011; Mason 2012)' (Freedman 2014: 21).

While such a populist perspective has been celebrated in recent literature, the findings of the study

of BBC Backstage suggest that the audience group is not homogeneously capable of nor interested

in manipulating open data. The kind of traditional elites whom Jenkins (2006) refers to may be

starting to fall out of the media power picture, a new class of elite, the techno-elite, whose position

is more versatile and more dynamic is emerging. The population of these early adopters

participating in the BBC Backstage's events was those 'techno elites', who *potentially* have power

to challenge, recreate or reclaim authoritative identity. Their *prosumptive actions* and activities

shape the authoritative nature of content author–reader/producer–consumer relationships (Lin 2012;

Beyl and Lin 2014).

'Techno-elites' enter the field and negotiate media power. Unlike traditional elite groups who are

defined in terms of income or occupation or some other clearly indicative index (e.g., lawyers,

bankers, politicians, aristocrats), 'techno-elites' are powerful because of their abilities to make,

translate or distribute messages across digital devices and platforms. Being able to operate cross-

platform has significant implications in an age of convergent media. Data, information and

knowledge can be consumed by more people and in different ways. The focus on abilities and

knowledge liberates the definition of 'elite', and places an emphasis on producing an elite class

through education, inclusiveness, possibility of broadening access to resources and socio-economic

and socio-technical changes.

Freeing up the data sets would invite more local practices (Couldry 2000: 155) and situated

interpretations as they mobilize

> the interaction of institutional structures, modes of representation, access to media
>
> technologies and broader issues of political authority and civic engagement, framed by an
>
> interest, in relation to an earlier point, with the location rather than the allocation, of media
>
> power. (Freedman 2014: 14)

Techno-elite audience plays a key role in this dynamic power relationship, occupying different

social worlds (commercial media industry or IT industry, civic community). Since the class is not

defined by fixed labels or properties, but a set of skills, knowledge and practices, the emergence of

the techno-elite audience mirrors the changing society structure and hierarchy, and the expansion of

IT companies in an age of media convergence. The concept of 'techno-elite' not only politicizes the

participatory media landscape but also provokes thoughts on how to increase the 'capitals' that

people need to *become* a techno-elite. Would improved media or digital literacy help with the

recruitment of techno-elite? Would the growth of techno-elite lead to an increase of public value of

open data?

In terms of elite recruitment, it is sensible to think that increasingly more audiences will be moving

to the category of 'techno-elite' and many traditional middle class can also occupy this position so

long as they have access to technologies and possess capabilities of engaging in a repertoire of

shared practices (and it is likely that the already powerful elite will be given even more power when

they occupy an overlapping category of techno-elite). Potentially, 'the public' should be trained to be 'techno-elites', to be able to creatively and critically engage in the open data movement. The public value of open data should therefore be considered to be co-produced by the BBC with the techno-elite, the audience and the public.

Conclusions

The article argues that PSB public value can be *co-produced* through such open innovation methods, freeing data sets, encouraging reuse and remix, and building up a network of enthusiastic and capable 'techno-elite' audiences. Through the case study of BBC Backstage, it has explained how releasing PSB data as open data can (re)generate public value, and how public value of open data can be *co-produced* by the BBC, the participants who manipulate the open data and other businesses or organizations who are all key stakeholders in the open-data ecosystem. In other words, PSB is not the only actor responsible of the delivery of its own public value once the data are released; the value of open data is fluid and requires currency to facilitate the exchange.

However, this article problematizes the open innovation introduced by BBC Backstage by arguing that a specific group of elite audience – the techno-elites – have been targeted for involvement in this open data movement. This co-production perspective requires a rethink by questioning how media power is being (re)distributed in the exercise of reuse and reappropriation of open data. Taking the usual political question 'values created by whom and for whom' to a different level, enquiring 'values co-produced by whom and for whom' would highlight the civic responsibility and accountability. It also allows us to rethink what kind of media and information literacies contemporary audiences and users should develop in an age of convergent media.

This case study of BBC Backstage has revealed that public value cannot be considered as a fixed property, nor can it be evaluated by ticking boxes. It would be difficult to measure the five categories that BBC defines for public value – democratic and civic value, cultural value, educational value, social value and global value – if one does not bring in fluidity of different capitals (in Bourdieu's term) into account. As 'media power', which is symbolic and dynamic, public value should be treated as a continuous process with struggles, interplay and negotiation between different stakeholders in a media ecosystem. Public value, in the case of BBC Backstage, is embodied through mundane practices, reusing, remixing and repurposing open data. Without a pre-defined set of categories, the concepts of 'co-production' and 'contestation' embedded in public value are not evaluated by indicators but by observing who were participating, and how they were participating. The discussion of 'techno-elite' class in this article is therefore particularly beneficial. This practice-based perspective opens up discussion about diverse meanings and perceptions of 'public value' of public service media in different contexts, and the levels of participation of different audiences (elite or non-elite).

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