Public value of Public Service Media archives and data: The case of Estonian Public Service Media

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Working Paper 1/2021

MEDIT

TALLINN UNIVERSITY
CENTRE OF EXCELLENCE IN MEDIA
INNOVATION AND DIGITAL CULTURE

Abstract

Public service media (PSM) institutions such as Estonia's *Eesti Rahvusringhääling* (ERR) are established to provide public service. The understandings of what kinds of public services these should be and how to provide them have changed over time. Over the course of the last two decades, the makers of media and cultural policies have often used the concept of "public value" to both give new purpose to PSM as well as assess their operational effectiveness and commitment to their purpose. In such contexts, however, the concept of public value has been defined in a limited way—as direct value to taxpayers. Yet, as proposed by Mark H. Moore, the original motivation for the "public value" concept was to outline a process in which what is valuable to the members of society is sorted out in the well-functioning public sphere, and then government offices and public institutions collaborate with other institutions, both public and private, to provide these services to the public. Mariana Mazzucato has complemented this idea with an argument that as public institutions work towards public value and collaborate with other institutions, they become market shapers, often driving the innovation ecosystems. In this way they provide "dynamic public value" by shaping the industry and broader markets and society. Several commentators have argued previously that PSM institutions perform this role in shaping the "media innovation systems" in terms of developing novel forms of content, talent, and industry relationships. Yet, in the era of datafication of media and culture, PSM institutions are increasingly realizing that their archives and databases constitute an important source of value to society. Their archives can be seen as assets that can be valorized by further development and analytics and then potentially published as open data to the general public. In this working paper, we discuss various ways in which PSM institutions in general, and Estonian public broadcaster ERR specifically, could produce public value in new ways—by driving cultural data related to innovation systems and by publishing open data. The latter could be seen as a new kind of publishing activity increasing the transparency of PSM operations.

Introduction

The aim of this paper is to explore new ways in which public service media can generate public value. Public value is a concept that has been discussed since Aristotle. And while the objective of this paper is to study some of the most novel ways to create public value, still,

and perhaps paradoxically, it may be useful to start again with Aristotle and his distinction of "use value" and "exchange value." Public service is typically aimed at generating "use value" for all societal agents. In contrast, private enterprises that operate in markets aim to generate exchange value. Yet, the paradox of media markets is that in order to generate exchange value and resulting private assets, media companies need to generate public value first. They need to appear as useful in, and for, the public sphere. Thus, in various ways, all media, especially journalistic media outlets, are expected to generate public value. Further, media markets and information goods are characterized by the complex ways in which surplus value (Marx, 1951) is generated out of the use value or "symbolic value" (Bolin, 2011) to the owners of content or to media service providers. The emergence of "freemium" or other kinds of hybrid business models indicates the evolution of further interdependencies between the generation of publicly available use value and methods of obtaining private assets ("private value"). This does not only apply to private media, but also public service media institutions that often face the need to earn more market revenue, while still being expected to contribute usefully to national media innovation systems; i.e. contributing to the growth of the private sector, especially content production companies (Bechmann, 2012; Bennett et al., 2012; Ibrus, 2019).

In the era of broader platformization (van Dijck et al., 2018) and datafication (van Dijck, 2014) of media and culture, however, new ways in which public service media could generate public value are about to emerge. Let us discuss these in more detail below. For this we first need to discuss contemporary ways of conceptualizing public value.

In recent years, public value has been theorized and studied mainly within the public administration and innovation economics scholarly domains. Within the public administration domain, the renewed work on "public value" started with Mark H. Moore's work on public value as an alternative to the "new public management" approach to public governance. In his and his colleagues' articulation (Benington & Moore, 2011; Moore, 1995), public value is something that the public values most and that adds certain quality to the public sphere (Benington & Moore, 2011: 14–31). These two dimensions should be seen as interdependent—what is most valuable can be sorted out in a well-functioning public sphere. What needs to be realized, however, is that the contemporary public sphere comprises multiple parties and different kinds of institutions, including private media and digital communications services platforms that are very often international. In this context, Moore and Benington have suggested that public value thinking is about the analysis of the interconnections, interdependencies, and interactions between complex issues and complex sets of parties operating across multiple boundaries (ibid.: 15). What is valuable to the public is then co-created in these networks/public sphere created by multiple parties. The role of the government therein is not only just rule-setter, service provider, and social safety net, but a creator of value and pro-active shaper of the public sphere.

Within contemporary innovation economics, the concept of public value has been worked on most systematically by Mariana Mazzucato (2018b; 2018a). Her suggestion is that

to understand value creation contemporary neoclassical economics should not be enough—within neoclassical economics, the value of products or services is created by the utility of these to buyers and by the relative scarcity of these in the economy. Value is subjective; supply and demand regulate price, and the latter is a direct measure of value (Mazzucato, 2018b: 65). According to Mazzucato, the neoclassical approach leads to the economy of rent seekers dominated by non-productive value extraction and not creation.

Mazzucato's related thesis has been that the understanding that private industries are wealth creators and the state and public institutions, especially cultural institutions, are only wealth extractors is not acceptable (Mazzucato, 2018a: 4). She has demonstrated systematically how private venture capital is not leading in the early and most risky stages of innovation and why, therefore, the "entrepreneurial state" needs to step in (Ibid.:30). Such investments should not be understood narrowly as just provision of "public goods" that have "use value" (in Aristotelian terms), but as active creation of public value. Public institutions "think big" (Mazzucato, 2018b: 266), address what is of value in the public sphere, and invest in the creation of relevant new markets (much in the vein of Polanyi, 2001 [1944]). It can do so by supplying new services (such as open data) or commissioning other services (that deploy data). What this means is that government should not be seen as crowding out private investment; instead, it has the potential to crowd it in. By creating new markets and shaping existing ones, government stimulates further investments that otherwise would not have happened. This phenomenon was also evidenced by Ibrus, Rohn and Nani (Ibrus et al., 2019) as they studied the value creation by the Eesti Laul music competition by the Estonian Public Broadcasting. Public investments in music production and promotion translated not only into musical diversity in Estonia, but also benefited the music industry and private media sector; that is, the whole of the "music innovation system" of Estonia. Yet, in this context, Mazzucato would point out that it is typical to knowledge economy that risks in innovation are socialized while the rewards are privatized (Mazzucato, 2018b: 191). Still, the suggestions by Mazzucato and the work of Moore and colleagues make a case for figuring out also how to provide public value with regard to providing open data as a service, based on their existing content archives and other data collection activities.

PSM archives as the source for public value and open data initiatives

When it comes to how PSM institutions could generate public value with their data collection and management practices and open data provision, there seems to exist a relative gap in research (hypothetically due to the lack of relevant cases and practices in PSM institutions). Evidently, PSM strategies in relation to open data typically do not emerge on their own; related innovations by PSM are conditioned and motivated by broader (open) data ecosystems designed by governments or other public authorities. The open government data

(OGD) initiatives have become a worldwide trend, including in the European Union and Estonia (Estonian Government 2014, Directive (EU) 2019/1024; Huyer & Knippenberg, 2020). Yet, in their recent study on open data and knowledge society, Wessels et al. (2017) point out that innovation at PSM can have a sponsoring effect on innovation in the other related spheres of knowledge economy (Wessels et al., 2017). In this context, with regard to PSM open data strategies, (at least) three interrelated discussions have emerged:

1. An earlier discussion on PSM as a creator of public value by promoting diversity and innovation in society via content provision (e.g. Martin & Lowe 2014)
2. More recent propositions on how to facilitate public value by promoting OGD provision, usage and co-creation across a wide range of domains, problems, and environments (e.g. McBride et al., 2019a: 27)
3. An analysis of the creation and measuring of public value at the BBC by Mazzucato et al. (2020), which proposes a new dynamic model of public value that could open up new ways of understanding public value creation by PSM institutions.

The bottom line is the observation that PSM is an institution designed to create public value (Martin & Lowe, 2014). Yet, the paradox has been that once European governments and the EU Commission started to apply the public value concept in media policy and for assessing the role of PSM institutions, the outcomes have been more in line with the New Public Management approach, against which the public value theory was originally created by Moore (Moe & van den Bulck, 2013: 60). The issues facing national authorities have been most clearly reflected in the emergence of the "public service value test" concept—originally in the UK, but later copied by several European countries. These tests were aimed at weighing public value against market impact; i.e. if there is enough "value for public money" and if there's no harm to private actors in the markets. Eventually, Moore's concept was turned almost upside down—public value tests became a tool for stifling innovations in and by PSMs (see Cunningham 2014: 89–118, Moe & van den Bulck, 2013: 60; Lowe and Martin, 2013: 26). It has undermined investments in web-based digital services, but relatedly also in data management solutions, which, in turn, has limited the readiness of PSM institutions to provide novel open data services.

Academic conceptualizations of open data provision, however, point to new ways of creating public value. As pointed out in a series of publications by TalTech researchers (McBride et al., 2019a, McBride et al., 2019b; McBride et al., 2018), one of the main ways of turning data into value for citizens and society is facilitating their co-creation of public services. "If OGD is made available at a broad scale, any stakeholder that has the interest, ideas and skills can take the lead in building OGD-driven services that address some sort of societal need or add value to citizens' lives in different ways" (McBride et al., 2019: 25–26). Although the PSM are not part of the government sector and the contents of their data archives are typically not understood as OGD, they are still public service institutions, and the

question that is emerging is, What are the public services that the public could co-create when using PSM archive data?

This potential relates to the concept "dynamic public value", recently proposed by Mazzucato and colleagues (2020:10). Their model has been created as an alternative to the view that value to the public relates to the cost-effectiveness of the public service media. They have proposed a search for "wider public value." Their framework, built on a wider narrative of public value, presumes a more complex interpretation of the success metrics used in organizations such as the BBC (e.g. reach, time spent, value to society as measured by willingness to pay/accept, investment in companies in the supply chain, etc.) (ibid, 43). As they state, indicators of market shaping cannot be linear, but rather require system thinking, which considers how the BBC's actions impact its ecosystem (ibid, 45). This relates also to previous discussions on the roles of public service media in "media innovation systems" (Bennet et al., 2012; Cunningham 2014: 89–118; Ibrus, 2016). Examples of such market shaping indicators include behavior change, community cohesion, increased feelings of individual connectedness to society, official standard setting for industry, de-risking industry innovation, etc. In order to apply the concept of public value to PSM institutions, Mazzucato et al. (2020) have proposed a framework that describes three types of value: for individuals, for society, and for industry. In addition, they argue that all of these have three layers: "the direct layer", "the dynamic layer," and "the market shaping layer".

The direct layer contains variables that can be easily defined as value for money (such as metrics that track success against targets, statistics and industry standard metrics such as "reach", etc.). The other end of this scale is the market shaping layer, characterized by wider value creation (i.e. shaping industry relationships, public attitudes and societal trust). The indicators of market shaping cannot be linear, but rather require systemic focus which considers how BBC's actions impact the broader media and cultural services ecosystem (Mazzucato et al 2020, 45).

The dynamic layer between the other two is the key to understanding how data analytics and open data publishing could possibly contribute to the creation of public value based on the data (including metadata) in PSM archives. This layer means indirect spillover-effects on the rest of the industry (for instance, by codifying or standardizing some of the data analytics, visualization or publishing for the rest of the media industry or cultural institutions) or educational effects on the audience (for instance, bringing examples of how to study societal history using media archives and simple data visualization tools).

Building on the three approaches to public value creation, we can conclude that data analytics and open data publishing have the potential to become a new way for PSM institutions to generate public value. They could publish the data they own as open data in order to engage with the society in new ways and co-create public value with citizens and other institutions. They could also become a driving innovator in the area of cultural data analytics, providing benchmarking examples and standards for other media and cultural institutions. Below, we will look in more detail at the possible practical steps towards these

possibilities. But first let us address the specific circumstances of the ERR and its archive and data management practices.

The case of *Eesti Rahvusringhääling* (ERR)

ERR is Estonia's PSM. It operates across three TV channels, five radio channels, and several mobile applications and websites, including a VOD platform. As typical of media and broadcast institutions, the purpose of its archive is generally to support production processes, but perhaps somewhat atypically in Europe, the archive also has a web presence where most of the digitized content is freely available. Yet, further development of its archive services to the wider public is currently not envisioned. ERR development plans from 2020 to 2025 (ERR 2019, 2020, 2021)[1] do not highlight related strategic developments, and there are no clear plans for developing the archive as a public memory institution. There are also no plans with regard to using internal data resources for innovation, and no mention of developing novel data architectures (e.g. linked data or blockchain architectures) potentially supporting innovative analytic capacities. The most recent development plan (ERR 2021), which outlines institutional goals until 2025, discusses the convergence of all information systems, the development of a VOD platform and related services, and also some activities related to heritage preservation. But all these are aimed at supporting either content production or improving access to content for audiences. The understanding of the PSM as an organization that creates public value by means other than creating or disseminating content has no place in this vision.

The history of Estonian Public Service Media (ERR) dates back to 1924, when Estonian Radio was established. Relatedly, also the history of archiving of Public Media Service (PSM) recordings started around the same time. The archiving of the recordings from the pre-war period has been inconsistent. The history of the more or less structured database dates back to the postwar period beginning with the 1950s. Today what we call the ERR's archive consists of seven archives:

1) sound recordings
2) video recordings
3) film archive
4) photo archive
5) sport recordings archive
6) news archive
7) documentary archive

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[1] https://info.err.ee/1060584/eesti-rahvusringhaalingu-arengukavad

The process of mass digitization at ERR is ongoing. The most successful has been the digitization of sound recordings; i.e. radio content (news, current affairs, talk shows, radio theatre, etc.), music recordings, concerts, etc. Back in 1996, this process was the first to start, and it is likely to be finished in the next few years. The video archive has been digitized at about 75 percent of its total volume and the (separate) TV news archive is almost complete. The digitization of the film archive is also ongoing and should be finished in a few years. Preparations are underway for digitizing the archive of sports recordings.

The first challenge that ERR faces in relation to storing this archive is the quantity of data. The digitized archives today contain together around five petabytes of data, which, for a small PSM organization, is challenging in terms of optimal system management. Discussions have started regarding whether various heritage institutions should collaborate when it comes to storing digital data. While such collaboration would be mainly about preservation of content, it could also be seen as facilitating the development of new, integrative data and metadata frameworks enabling cross-use and interlinking of data.

When it comes to data structuration and metadata standards in use, ERR's internal challenge has been that the adoption of contemporary archiving standards has been subject to change according to the needs and opportunities of the organization. Hence, many standards are in use in parallel; many are in-house standards and quite a lot of the metadata has been manually created and hence varies in quality. Some databases are unsystematic to the point that they are usable only by ERR employees familiar with their intricate and often confusing structures.

Evolving policy environment for cultural data management and publishing

Interoperability of cultural data. When it comes to the evolving policy environment in Estonia, one of the main ongoing discussions among policymakers has been focusing on linking the archives of Estonian memory institutions with a unifying metadata layer. This, in turn, would enable the creation of cultural data ontologies that may have many different functions for both private and public sectors. One of the more significant government strategy documents pertaining to this is the new (still not adopted) digital society development plan until 2030[2]. With regard to media and culture, the plan emphasizes cross-use of data from different memory institutions and the promotion of open data output and usage.

The perspective of cross-use of data by different memory institutions has been discussed for two decades. In 2009, the National Audit Office of Estonia published an analysis titled "Digitization of cultural heritage, ensuring digital accessibility and preservation"[3]. Its

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[2] https://www.mkm.ee/et/eesmargid-tegevused/infouhiskond/digiuhiskonna-arengukava-2030
[3] https://www.nlib.ee/sites/default/files/04_Kultuuriparandi_digiteerimine.pdf

statement that fulfilling the objectives of the development plan "Digital Cultural Heritage 2007–2010" would significantly benefit consumers was not realistic. Another goal of the 2013 development plan was to digitize the majority of Estonia's cultural heritage and to make it available to all members of society. Today, 11 years later, only one-third of the goals set out in the 2013 information society development strategy have been met (Kõnno, 2021: 48).

In 2016, the National Archives of Estonia commissioned a study from PwC, "The complete analysis of digital archiving"[4]. One of the results of this analysis is that the most challenging task is archiving data in a way that the end-users of these archives would gain the most convenient access to different databases without the loss of the semantic context of the data. The use of cross-referencing of data in the National Archives tends to be undermined by the fact that the meanings of variables with identical labels may not be related. This is because there is no general agreement between the stakeholders (ibid, 22).

Open publishing of cultural data. A parallel recent process has been the development of a new national "Cultural Policy Development Plan 2021–2030"[5]. The document, currently going through its final confirmation rounds between government offices, includes, for the first time, a section on digital culture. Among other things, it declares that cultural content created with public funding needs to become, as much as possible, available as open data. It also argues the following:

> "Free access to data, which contributes to the development of the sector's analytical capacity, encourages new content creation, creates the conditions for the development of new services and promotes the information society, must not at the same time restrict business opportunities. The public sector will make a consistent contribution to improving data quality, ensuring data interoperability and compliance with standards." (translated by authors)

In addition to the broad cultural policy development plan, Estonia has also an action plan for the digitization of cultural heritage[6]. The current plan was completed in 2018 and will remain in force until 2023. It promises to make one-third of the cultural heritage stored in our memory institutions digitally accessible by 2023 and to upgrade the information storage infrastructure of memory institutions. The Digital Heritage Council[7], which is coordinating the action plan, will soon discuss the creation of its new iteration. The next action plan is expected to focus

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[4] https://www.ra.ee/wp-content/uploads/2016/12/digianalyys_pwc2016.pdf

[5] https://eelnoud.valitsus.ee/main#eFSTpsPg

[6] In English: https://www.kul.ee/en/node/41, https://www.kul.ee/media/190/download also https://www.kul.ee/kultuurivaartused-ja-digitaalne-kultuuriparand/digitaalne-kultuuriparand/kultuuriparandi;

[7] https://www.kul.ee/kultuurivaartused-ja-digitaalne-kultuuriparand/digitaalne-kultuuriparand/digitaalse-kultuuriparandi

not so much on digitization, but on developing heritage access solutions and services for users/citizens.

The question that emerges is what new activities and services are needed to increase accessibility and usability and what technologies should be developed for this purpose? Importantly, much heritage has been already digitized, and a great deal is already born digital; yet memory institutions do not really know what users use it for or what they would like to do with it. To clarify the situation, the Ministry of Culture has recently made efforts to assess the necessity of a unified digital cultural heritage information system or a shared portal to libraries, museums and archives. Currently, there is no numerical overview of the digital heritage usage in Estonia. When it comes to the development of the new service, one of the examples the Estonian Ministry of Culture is considering is Europeana[8]. This perspective suggests the adaptation of open data standards for Estonian memory institutions including the ERR archive (with regard to how Europeana's open data platform improves access to cultural heritage, see Raemy 2020).

Why to publish ERR data as open data?

As we saw in the sections above, ERR has digitized much of its archive content, but has not been aiming to significantly update its digital online archive offering or provide any data-based services. Yet, the latest publicly available study on the popularity and usability of ERR's archive dates back to 2014, when Estonia's Ministry of Economic Affairs and Communications and its Information System Authority commissioned a study on the citizens' contentment with the e-services provided by the state[9]. It turned out that approximately 30 percent of Estonians are aware of the existence of ERR's online archive. All the other online archives of other heritage institutions (muis.ee, e-kultuur.ee, muinas.ee, etc.) are known by approximately only 3–7 percent of Estonians. This could be interpreted as an indication that Estonian people perceive ERR archive contents as valuable—that archives are seen as providing public value.

Yet, as policymakers expect that heritage archives are used mainly by educators and educational services developers, it needs to be pointed out that the satisfaction of the educators with the ERR's archive is rather low (Laadoga, 2018). Teachers have reported that the desired content is hard to find. This is directly related to the metadata structure in the archive. As we learned above, its databases are fragmented, utilizing very different standards, which limits data integration, analytic, and other collection activities.

These difficulties could be overcome with the implementation of new, systematized linked data (RDF) standards. The implementation of linked data standards, however, could

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[8] https://www.europeana.eu/
[9] Kodanike rahulolu riigi poolt pakutavate e-teenustega 2014, TNS Emor: https://www.mkm.ee/sites/default/files/avalikud_e-teenused_2014_lopparuanne_tns_emor_korrigeeritud05022015.pdf

be predicted to encourage the publication of data as open data. In this context, it is paramount that the Estonian Ministry of Culture has acknowledged the importance of the adoption of open data standards as a way for the archives to produce more of public value (Kõnno 2021, 10). Also, as we saw above, the broader policy frameworks are also moving towards making public cultural institutions publish their data openly, based on established standards and in ways enabling interoperability between archives.

Against this backdrop it is now time to inquire what concrete steps could ERR take to start publishing its data openly and how to do it in ways that create different kinds and broad public value?

In this working paper, we are focusing on the publication and use of existing metadata in ERR archives. Publishing content files as open data is problematic due to copyright legislation and existing contracts; hence this is typically not under consideration—at least, not at scale. Yet, open publishing of metadata and viewing/usage data could be a feasible option. Our proposition is that there is significant value in publishing both content-related descriptive metadata, usage metadata, technical metadata on aired programs, and metadata on production processes. In the following we will describe some steps that need to be taken for publishing such data openly; we also propose some uses for such data and the potential public value created in the process.

Linked open data. Linked data is a concept that builds on and utilizes a set of W3C Semantic Web standards such as Resource Description Framework (RDF), Web Ontology Language (OWL) and SPARQL Protocol and RDF Query Language (SPARQL). These standards enable the structuring of data so that any data unit is linked to other units in meaningful, computer-readable ways. The implementation of such standards could empower researchers within the cultural data analytics domain: the linked structuring could provide new ways to study relationships between different data units (for instance, evolving links between makers of programs, their genres and topics, etc.) Such studies could reveal important social dynamics behind the evolution of themes and discourses in the public sphere. If opened up to the wider public, then similar studies, from different angles, could be carried out by all citizens and other institutions. New ways to investigate, represent, and report socio-cultural histories and the evolution of the public sphere, reputations, and relationships could emerge.

Ontology development. Currently, all ERR databases are structured in a relational format and, hence, transferring to a linked database format would be a major undertaking. Yet, this is recommended, as this will enable the ERR as an organization to merge its different archiving and media asset management modules and thus to offer better, integrated services to its own employees as well as external stakeholders. This is achievable, given that several European public broadcasters have already opted to implement the new EBUCore metadata

standard built on RDF logic[10]. For supporting internal operations transferring to EBUCore as the main integrating data structure it would certainly be a good option, but for open publishing of data, more universal standards and ontologies are recommended. ERR could learn from, for instance, Royal Belgian Filmarchive CINEMATEK that is set to publish its descriptive metadata in the Wikidata format[11]. This could also be considered by ERR as the most widely accessible and interoperable standard. The Wikidata standard format would enable the integration of ERR data into global knowledge networks, and this could be the most direct way for ERR to produce dynamic public value.

For this purpose, however, one of the main challenges would be the creation of a relevant descriptive ontology for the new database that would enable both the unification of ERR's various sub-archives, but also the retention of their meaningful differences and descriptive legacies. There is recent work out that could be used to achieve these goals (Brown & Simpson, 2013; Dragoni et al., 2016; Liu et al., 2017; Noor, Jamil, et al., 2019; Noor, et al., 2019). It is also important to link ERR databases to other both national and international databases. This means that the ontology would have to be built on the existing Estonian culture ontologies in use in the National Archives National Library, Estonian History Museum, and the Museums Information System[12] (to begin with). On the other hand, compatibility with international standards and ontologies such as EBUCore, Wikidata, and Europeana schemas would also be relevant. Developing compatibilities in this way would not only make the data in different archives compatible, and make it possible to interlink data units in different archives, but also make the ontologies more comprehensible, to include different discursive systems into the ontologies. This kind of integration work is challenging; its quality would determine the nature of descriptive affordances in the merged archives this kind of work needs prioritized both in terms of urgency as well as quality.

Use value and innovation systems. When it comes, more concretely, to public value generation by open data provision, then one way for this is, indeed, interconnecting with other databases and enabling in this way more comprehensive and multimodal searches and analytic work on cultural and social dynamics. This would mean that ERR would contribute to the improvement of the comprehensiveness and diversity of public cultural data ecologies, and this could be considered as generating dynamic public value. Yet, a more direct way to generate public value in terms of Aristotle's classic concept of use value is to publish the data in order for it to be used for value generation by external parties. The expected users of such data would be other memory institutions, academic researchers, and the broader media industry, but also educational publishers and the EdTech sector, where audiovisual content and related data on various topics could be included in innovative digital and interactive learning applications. Further, linked data on all topics that have constituted the public

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[10] https://tech.ebu.ch/docs/tech/tech3293.pdf

[11] https://www.wikidata.org/

[12] Museums Public Portal: https://www.muis.ee/

sphere in Estonia would be useful for journalists searching this database, could ease journalists' work in contextualizing news events, and would provide novel opportunities for data journalism.

This means that with its open data provision, ERR could emerge as important facilitators of a cross-innovation system combining media and education sectors (see Ibrus, 2019; Ibrus & Rajahonka, 2019). This suggests that data provision could become a new form of market shaping potential of public service media (see Mazzucato et al., 2020; Ibrus, 2015; Ibrus, Rohn Nani, 2019; Bennet et al., 2012). It would shape the markets by providing useful data that could then be used by other parties, both public and private, for creating exchange value (private assets) or other forms of public value.

Longitudinal cultural studies. Open (meta)data in the ERR's terms is also "cultural data," as it is about the representations that have circulated in the nation's public sphere, the representations that have been produced by media and cultural industries professionals. The meanings of such cultural data, however, are context sensitive and change over time. Access to ERR data for researchers would enable them to study this change longitudinally. Typically, a reasonable comparative framework for such studies should consist of at least two decades, which, in turn, can be divided (if necessary) into smaller sequences of meaningful units (i.e. events, topics, etc.). The challenge, however, is that not only are meanings of ERR contents context sensitive, but so is the metadata. These too reflect the times during which they were produced (Ibrus & Ojamaa, 2018). Hence, any such longitudinal study would need to start from the critical reflection on such data relationships. In this context, the importance of the linked data format is that it enables researchers to carry out such longitudinal studies in possibly more complex ways as it allows them to explore the varying relationships between multitudes of data units. By publishing such complex data, in effect, on the evolution of the public sphere in Estonia, the ERR could provide public benefit by enabling the studies of the socio-cultural and political histories using new methods with a potential of revealing yet unobserved dynamics.

Media market and value creation studies. Semantic Web technologies establish a machine-readable semantic context for every element in the web. That is, they are designed to identify the meanings of everything online in their cultural and social contexts. The problem with such linked data that connect users and producers to each other and to content and services is that they have been monopolized by the largest platforms. The network effects that the platforms enjoy have consequences for how the created value is shared and measured. The privatization of social data to serve private profits only produces a new form of inequality: skewed access to the generated data and profits (Mazzucato, 2018a:221). In this context the public provision of open data linking cultural producers, cultural practices and content constitutes an alternative strategy with regard to public value generation. In our recent project on cultural metadata, we experimented with such linking (Ibrus & Ojamaa, 2020; also

Schich et al., 2014; Schich & Meirelles, 2016) and predict that such data tools could enable researchers not only to analyze how in public sphere/cultural innovation system novelties are arrived at, but also who has interacted and labored to make them happen.

It can, therefore, be hypothesized that with network analysis we can identify networks of people and institutions that have cooperated in producing novel cultural formats, concepts, and discourses, and we can infer what has been considered as valuable in these networks. The way to address this methodologically would be to carry out multidimensional network analysis linking makers of content to other units such content units, topics, represented objects/people, places, periods; and higher-order concepts. Metadata dimensions could further include budgets, viewership numbers, related social media activity, etc. Value-analysis can be also achieved by analyzing the spread of discourses resulting from programs. Multilayer and temporal network science could provide a deeper understanding of the underlying network structure and dynamics. Large-scale network visualization could guide novel forms of inquiry.

The purpose of this research relates to Locke's (1690) concept of 'just deserts'; that is, it is possible to identify an economic system in which individual labor is important, is possible to identify and understand by everybody and conditions just rewards. In the digital economy where incremental innovations accumulate, individual labor contributions have been impossible to identify. This has enabled what Simon (2000) has pointed out: any inventor or investor builds on a vast store of collectively produced intellectual capital, yet they feel justified in earning a much higher proportion of rewards than their own contribution warrants. Hence, the question is, can digital creative labor be made visible by analyzing data on production and collaboration networks in PSM databases? Our hypothesis is that such laboring networks could be, indeed, revealed. The next question is, could it be possible to change the related perceptions in the industry by publishing these networks as open data? If labor networks are made more explicit and visible, could it change how digital and creative labor is perceived and valued? By facilitating related public discussions, recognizing and improving the value and conditions of creative work in the economy could, hypothetically, be one way to produce public value by PSM data.

Policymaking. The above described ways to produce public value call for publishing ERR data openly. This would be the most immediate way policy makers could address the potentials of ERR data. Yet, as we have shown above, this data also enables researchers to analyze how ERR generates public value, and how it shapes the cultural content and labor markets. Such analyses could condition novel ways of policy intervention. If such analyses could be streamlined (by cleaning the databases and creating clearer and compatible ontologies and standards for ERR and its partners), this could on its own condition new, evidence-based and agile forms of policy making focusing on the role of ERR in public value creation and enabling targeted investments into activities where such public value creation appears to be most

effective—or vice versa, where the potentiality becomes apparent, but value creation effectiveness is still low.

Conclusion

The studies of datafication of media and culture are advancing well. We are gradually learning more how the globally leading platforms are utilizing user data and what the related risks and challenges for society are. There is, however, much less work on how to use the data held by public media and cultural institutions for public benefit. For creating public value. An exception to this trend is the work conducted within the European Broadcasting Union on public service approach to data analytics and recommender systems[13]. But there is more to public value creation than enlightening content recommender systems. Other alternatives need to be investigated as this is about to become a practical question. Most European countries and PSM institutions have been working on digitizing their archive contents and production processes. The question that follows is how to generate new (public) value with their data assets?

In this working paper, we showed that for the ERR these questions are emerging due to external pressure. While ERR itself has not prioritized data analytics and data publishing, the evolving policy environment has started to emphasize open publishing of publicly owned cultural data and the development of new public value propositions based on data resources. It is generally understood that PSM institutions as owners of attractive and vast data repositories should actively contribute to the new public cultural data ecosystems, if not take a leading role in developing them.

In this working paper, we discussed a few ways in which ERR could take up such a role and provide public value with their data holdings. These relate to three ways of conceptualizing "public value," laid out in the first half of the working paper. Firstly, as Mariana Mazzucato together with colleagues have suggested, public value could be about market shaping—where a public institution invests, innovates, and leads the early development of a field; or where it contributes to the coordination of an existing "innovation system" (Freeman, 1995; Lundvall, 1992). In this regard we showed how data analytics and open data publishing by the ERR could contribute to the evolution of a "cross-innovation" system involving media content developers and the EdTech sector. Furthermore, we argued that undertaking data standardization efforts and transferring their existing databases to a linked-data format would not only enable them to overcome the fragmentation and incompatibilities between their own different archives but could lead the national endeavor of interlinking archives enabling cross-referencing and analytic work

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[13] https://www.ebu.ch/aidi

across all archives. This could bring about a paradigmatic change in how all national memory institutions operate, what services they provide, and how cultural heritage is accessed and used by everybody. This potential could be understood as market-shaping in terms of Mazzucato.

The publishing of open data would also serve as public value creation in terms of TalTech open data researchers, as open publishing of archive metadata, possibly together with some visualization tools for the general audiences, would enable participatory co-creation of value. PSM institutions own, in effect, a lot of data about everything that has been going on in the public sphere and on cultural production. Crowdsourcing the analysis of such data is not only cost-effective, but is also democratic, as then different interest groups could focus on their areas of interest, study, and reveal these specific phenomena and processes. This could lead to a co-creation of public value that would also bring about a new kind of participatory reporting on socio-cultural histories.

Lastly, as originally proposed by Mark H. Moore, what is valuable to the public is resolved in the public sphere and in networks linking different kinds of public stakeholders. Data analytics on ERR's own operations, on collaborative dynamics between its own employees and between ERR and external institutions, as well as on resulting contributions to the public sphere, could help ERR better understand what kinds of public value it produces and how it produces it, through which kinds of human and institutional networks. Improving our understanding of public value creation is paramount for learning how to do it better and for improving it with the help of adapted policy means.

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