

This is the authors manuscript of the article that was published in *Theory, Culture & Society*. See the final version of the article here:
<https://journals.sagepub.com/doi/abs/10.1177/0263276419871646>

The Creativity of Digital (Audiovisual) Archives: A Dialogue Between Media Archaeology and Cultural Semiotics

Indrek Ibrus, Tallinn University

Maarja Ojamaa, Tallinn University, University of Tartu

Keywords: digital archives, Juri Lotman, Wolfgang Ernst, media archaeology, cultural semiotics, creativity, semantic web, metadata, film archives, video archives

Abstract

Much writing on, first, analogue and, later, digital archives has focused on related power-dynamics and the structuring effects of archives and their technologies on discursive freedom and cultural dynamics. In recent years, however, work within the media archaeology domain, especially by Wolfgang Ernst, has addressed how the specific materialities of digital archives, and the nature of their algorithms and particular functions, could be seen to facilitate dynamics in cultures. This article sets this work in dialogue with the cultural semiotics of Juri Lotman, whose late work focused on how communicative processes between and within different subsystems of culture facilitate their dynamic change and the production of new forms and cultural systems. The article suggests further interdisciplinary dialogue between media archaeology and cultural semiotics in order to understand the role of archives in facilitating communicative processes and interlinking in culture and the emergence of novelties – that is, for understanding the ‘creativity’ of archives.

Introduction

This article investigates the cultural function of digital and networked archives. More specifically, it examines the role of digital archives in facilitating the emergence of new meanings – that is, it seeks to answer the question, ‘What is the “creativity” of archives?’ To discuss this potential – archives as engines of new information – the article establishes a dialogue between approaches that until now have not been the most usual bedfellows. On the one hand we build on the media archaeology approach of Wolfgang Ernst, whose materialist approach to archives has sought to move beyond textual analysis and address how the specific physicality and the mechanics of archives shape contemporary culture. On the other hand we build on the cultural semiotics of Juri Lotman and his students, who, in their own way, also moved beyond the structuralist text-centeredness of semiotics and turned to the entireties of cultures, their inherent complex communication processes and their resulting evolutionary dynamics as seminal objects of study. In other words, in one corner we have an approach that attempts to understand the role of machines in the evolution of the digitised culture, while in the other we have an approach known for its systemic/holistic take on how the various communication, translation and mediation processes, including those facilitated by digital archives and other digital apparatus, facilitate the emergence of novelties and shape the evolution of culture.

We establish a dialogue between these two approaches not only because of their differences (that makes the dialogue potentially productive), but also because of their shared interest in cultural dynamics – while Lotman’s cultural semiotics has always been interested in how entire cultural systems change, then Ernst’s take on media

archeology and media archives has similarly focused on the dynamics and broader changes in cultures inflicted by the material architectures of archives.

Nonetheless, we establish this dialogue also due to their methodological complementarities. Media archaeology has developed methodologies to work across the diachronic axis – to examine the differences in repertoires of media technologies of different eras and how the material natures of these technologies have conditioned specific kinds of discursive constellations and (novel) forms of culture. Cultural semiotics has since mid-80s developed a comprehensive set of tools to study the communicative dynamics on the synchronic axes – the dialogues and translations between different cultural sub-systems (including their memory systems) that may lead to the emergence of new meanings, forms and formations. Lotmanian semiotic theory of cultural dynamics has so far been applied to very different human cultural systems, ranging from the obvious Russian cultural history (Lotman, Ginsburg, Uspenskii 1985), to the Buddhist thought (Piatigorsky 1984), Australian television (Hartley 1999), different subspheres of Latin American culture (see Haidar and Chávez Herrera 2018) as well as global digital cultural systems (Ibrus, Torop 2015). In addition, Lotman's semiotic theories have been found useful also for explaining the principles of functioning and evolution of living systems more generally (Kull 2015).

When it comes to contemporary digital culture the pace of synchronic exchanges has accelerated and the new cultural forms and formations are increasingly complex in their technological forms and mediation processes. Cultural semiotics, therefore, would need the methodological help from media archaeology to interpret the technical mediation in the contemporary cultural dynamics and, vice versa, media archaeology could use the contextualised and systemic perspective of cultural semiotics to interpret the dynamic meaning making processes at different levels of the

global cultural entirety that emerge from technical mediation. As both approaches are effectively interested in explaining the dynamic change in media and cultures there is a potential for their useful complementarity.

However, before exploring the possibilities of interdisciplinary dialogue let us ask, 'What is the specific nature of digital and networked archives, the core motivator for that dialogue? With traditional institutionalised archives, everything collected and represented has been selected by 'experts' according to some disciplined knowledge system. These experts have thus managed the scope of society's dialogues with its memory. This model was disrupted by the internet, which facilitates the self-organisation of consumers and their co-creation of archives and heritage content. 'Archives' where the majority of population seek for as well as store 'old content' can now be also (privately owned) self-organising platforms such as YouTube, Vimeo, etc. As such, network era archives are not object-based, but user-based (Uricchio, 2009), an experience of reception rather than an indication of official sanction or storage location (Hartley, 2012; Baron, 2014). Users can search, access, use, share, often modify or remix heritage content, the relationship of which with the real is therefore questionable. It is for this reason that Hartley (2012) calls the network archives 'probability archives', referring to uncertainty with regard to what users expect to glean from such archives. 'Archives' such as YouTube are organised around 'found objects' – that is, there is a probability of finding a specimen of a certain class rather than the certainty aspired by expert systems. The uses, similarly, tend to be only probable – objects may not retain the integrity or functions planned by their original creators.

But when it comes to where, in the internet, the contents of archives are found, we recognise a dispersion phenomenon – not only are contents found in the bounded

web-portals of archives, but these can be embedded and reused elsewhere in the web. Archiving function becomes decentralized and as has been pointed out by Featherstone (2006), increasingly the boundaries between what has been known as ‘archive’ and everyday practices of creative media management with internet technologies have become blurred. In terms of reuse practice, this means that contents are increasingly recombined or recontextualised. This is further enabled by the evolving framework of the ‘semantic web’, driven by the World Wide Web Consortium (W3C). Enabled by the Resource Description Framework¹ (RDF), elements in contemporary audiovisual archives², as well as in the general web, are increasingly organised into networks of semantic triples consisting of unique and always identifiable ‘resources’ and their descriptions (i.e. forms of metadata). Effectively, much of the web would start to gradually function as a kind of archive since there are increasingly more metadata collected about each of its elements. This means not only that everything in the web becomes increasingly better searchable and findable, but also that the semantic context of content items in the web will start to influence the reception and use of such elements. What then, however, also matters is that data about the usage of all contents can be linked to these contents, once again influencing the semantic context of all elements – information about usage and users, their social networks can be used to reorganise the RDF ‘triples’³ – that is, the ‘meaning’ of everything in the web could be in dynamic change. If people interpret, and therefore use, texts differently, this would also re-contextualise such texts within textual networks. This further contributes to the uncertainties of web platforms as ‘archives’ in terms of their cultural effects: what kinds of cultural practices – uses and reuses of cultural resources – do they enable?

Regarding these practices, what we are interested in are the emergent methods for representing and narrating history, and their technological shaping. The context for such focus constitutes the current momentum as governments around the world are investing significant resources into digitising audiovisual records (film and TV heritage). While very costly (Niggemann et al., 2011), the various cost–benefit analyses (Oomen et al., 2009) signify that the investment is not only worthwhile in terms of securing and preserving heritage, but also with regard to facilitating the emergence of new value propositions. Especially for the EU, it has been important to ensure that digitised cultural material is available as a resource for the European creative industries (Council of the European Union, 2012) as its reuse is expected to contribute to economic growth and job creation. Furthermore, the argument used by policy makers is that the improved access to heritage content by both the creative industries and by creative users will also contribute towards further democratisation as it facilitates the pluralisation of historical narratives, facilitating cultural dynamics and dialogue. As Ellis (2012) posits, this has been the optimistic view, often expressed by those developing various digitisation projects.

Yet, there are also concerns. While this article places special emphasis on the audiovisual archives, it has been suggested (Derrida, 1995; Bell, 2004: 153; Baron, 2014) that the unique semiotic nature of audiovisual records may undermine their use for controlled historical storytelling. Compared to written documents, audiovisual documentary content offers more interpretative freedom. Owing to their semi-automated production and indexical nature, their form and messages are less easily designable by various kinds of power-holders, so they are paradoxically, relatively more ‘open works’ in terms of Eco (1989), they are more open for serving alternative interpretative frameworks (Bruzzi, 2000: 12). Audiovisual archives have therefore

always presented a challenge to dominant historical narratives. At this point in time, when audiovisual archives are also about to become easily accessible by the general public, this may indeed contribute to the democratisation of historiography. At the same time such ‘freedom of use’, as suggested above, may affect contents such that they lose the contact with their original context and references. Baron (2014: 143) posits that amid the excess of accessible documents and many unintended or “inappropriate” uses to which the audiovisual documents may be put, historical awareness may just fall by the wayside. Baron suggests that such risk is effectively a ‘natural effect’ of digital archives.

This article further discusses the conditions for such effects to emerge by putting into dialogue media archaeology and cultural semiotics, as they are both effectively focused on the history/evolution of culture and/or media technology. But why adopt these approaches?

Media archaeology

Media archaeology has been grounded on Foucault’s critique against the ‘old’ historicism. With his ‘Archaeology of knowledge’ (2002: [1969]), Foucault’s agenda, rather than seeking objectivist smooth genealogies in historical narratives, focused on the dichotomy of continuities and discontinuities, identifying discursive dispersions within existing diachronic continuities. Foucault himself implied that as such an archaeology is, in the first place, a rationale for a methodology: it offers a catalogue of analytical-strategic questions for studying ‘documents’ and invoking historically situated discourses (Foucault, 2002: 7; Andersen, 2003: 8). Relatedly, Erkki Huhtamo (1995) has defined ‘media archaeology’ as having two main goals: first, the study of

the cyclically recurring elements and motives underlying and guiding the development of media culture, and secondly, the unearthing of the ways in which these discursive traditions and formulations have been ‘imprinted’ in specific media machines and systems within different historical contexts. In this paper we discuss the latter line of thinking, and therefore it should be pointed out that the focus on historical singularity was, in the first place, developed in the works of Friedrich Kittler (1990; 1999; 2009). According to Kittler, media-specific discourse analysis begins by registering a corpus of texts of different modalities as material communicative events in historically contingent, interdiscursive networks which link their producers, archivists, addressees and interpreters (Winthrop-Young and Wutz, 1999: xxii). Kittler set out to look for inscriptions that tell us how the materiality, the technology ‘underneath’, limits the medium uniquely – how it predisposes a move towards certain forms at the expense of other possibilities (Wellberry, 1990: xii). It is this focus on the unique contingencies that change historically according to the material and technical resources at their disposal that led Kittler to a radical historicism which seeks to dissolve the universality of concepts such as ‘media’ or other cultural institutions of meaning making and communication (Ibrus, 2010). Following this line, Ernst has focused on the material form of archives in order to understand the media behind the contemporary mediations of cultural memory. Ernst’s choice of research object – to study as a media archeologist contemporary ‘media archives’ is not only important for addressing some of the most seminal questions for media archeology, but also, with the archiving of all culture in the digital era (Featherstone 2006), it becomes justified to link this approach to the holistic approaches to cultural dynamics such as the cultural semiotics.

What, however, needs to be emphasised, in contrast to cultural semiotics, is that media archaeology is not a theory of evolution, although occasionally it encompasses a certain set of presumptions about the dynamics that led to the formation of the ‘discourse networks’ (Kittler, 1990: 369) of certain eras. In its modern form, media archaeology is, instead, mainly a rationale for a rather loose set of methodologies that could be gathered under the general title of ‘materialist discourse analyses’. As such, it has not had an ambition to make claims about the evolutionary dynamics of media and society. Instead, Kittler, in line with general Foucauldian thinking (Atterton, 1994), has opposed connections with theories of social evolution and has developed strong criticisms, for instance, of the theories of Niklas Luhmann (Kittler, 1994; Winthrop-Young, 2000: 411).

Cultural semiotics

In contrast, the core objective of cultural semiotics lies in explaining the exact dynamics of change in culture. Therein, the focus is on the function of dialogues, translations, systemic auto-communication (Lotman 1990: 143-150) and other communicative mechanisms behind the cultural ‘explosions’ (Lotman 2009) and other ‘unpredictable workings of culture’ (Lotman, 2013). This is not to deny the validity of relating the semiotic study of media to structuralist interpretations of signification practices in media (Ernst, 2011: 242; 2013: 60-61). The structuralist version of semiotics has, indeed, been the prevailing one in western academia. Holding the works of Roland Barthes and Umberto Eco as major sources of inspiration, semiotic approaches have been used since the 1960s in discussions about the various media that humans use for communication as sign systems at the level of both content and

form. However, this is not all there is. The novelty and value of the version of cultural semiotics initiated by Lotman and the Tartu-Moscow School lie more broadly, as already indicated, in the explanations of cultural dynamics. Change is conditioned by dialogic contacts between cultural subsystems that are immersed in the ‘semiosphere’. The subsystems appear as bounded wholes that self-replicate by reproducing their specific combinations of sign systems or discourses. But semiotic systems are always intertwined, and therefore are forced into contact (i.e. dialogue) with others. At such instances the content and/or the operating principles of one system eventually become translated into the language of another system, and thereby introduce change. Dialogues and translations across existing boundaries facilitate not only occasional system convergence, but also the emergence of new meanings and their systems. It is the focus on systemic change and the analytic tools that enable to discern the dynamics on the different ‘levels’ of the cultural space that sets cultural semiotics apart from other approaches to the study of culture and has driven our motivation to establish its dialogue with media archaeology. Furthermore, as Lotman’s cultural semiotics has been sometimes called a theory of cultural innovation it has motivated the focus of this article on the ‘creativity’ of archives. Let us quote Lotman here:

The main question of semiotics of culture is the problem of meaning generation. What we shall call meaning generation is the ability both of culture as a whole and of its parts to put out, in the ‘output’, nontrivial new texts. New texts are the texts that emerge as results of irreversible processes (in Ilya Prigogine’s sense), i.e. texts that are unpredictable to a certain degree. (Lotman 2000: 640)

Creativity, therefore, is an ability to generate new, unpredictable texts that are read as communicating new meanings. This is achieved by translations between incongruent semiotic systems or by unpredictable recontextualising of texts. The purpose of this article is to investigate what are the material affordances of digital networked archives to generate such texts or situations of translation or recontextualisation.

Differences

As implied above, some significant differences exist between cultural semiotics and media archaeology. Let us quote Ernst (2011: 242) on the rationale of media archaeology:

The term media archaeology describes modes of writing that are not human textual products but rather expressions of the machines themselves, functions of their very mediatic logic ... Technological media that operate on the symbolic level (i.e., computing) differ from traditional symbolic tools of cultural engineering (like writing in the alphabet) by their registering and processing not just semiotic signs but physical real signals. The focus shifts to digital signal processing (DSP) as cultural technology instead of cultural semiotics.

While Ernst probably does not refer here to ‘cultural semiotics’ as an academic approach, the message is clear – the archaeological approach has been set to move beyond textual approaches, including semiotics. Further, despite the occasional

accusations that media archaeology favours technological determinism (due to their building on the medium theory of Marshall McLuhan) and their fixation on the materialism of technologies, still, most of them have in fact been critics of technological determinism (Huhtamo and Parikka, 2011: 8-9; Parikka, 2012: 69). This is explained by their roots in Foucault's 'Archaeology of knowledge' (Foucault, 2002: [1969]) and the deriving view that media technologies, while framing culture, are shaped by the societal power-apparatus and by broader social and cultural dynamics. Therefore, the difference between media archaeology and cultural semiotics is not principled in terms of who/what is the creator of meanings/culture – humans or machines. Both approaches concur that humans need to be part of the formula. The difference is instead methodological: they focus on different phases of meaning processing and creation in technologically mediated culture. Media archaeology is designed to glean the process of technical mediation – to think through the algorithmic calculation (Parikka, 2013: 9) – while cultural semiotics is used to look at the systemic processes before and after that mediation/calculation. Their combination may be a useful approach to interpreting the complexities of contemporary cultural dynamics.

Further, in terms of interpreting the dynamics in cultures, media archaeology aims to describe the structural essence of being based on media technologies and the discourses and texts these technologies have conditioned in a given period, and examines the differences between different periods on a diachronic axis. In comparison, the strength of cultural semiotics lies in the analysis of the contingent dynamics on a synchronic axis, the dialogic communication between, and auto-communication within, different domains and systems (including their memory systems, i.e. preserved texts from different preceding eras that may be actualised for

various communicative purposes), the accumulation of knowledge, and the emergence of new relationships, identities and systems across different periods – effecting, as a result, the examination of dependencies on diachronic axes.

It is partly for these reasons that there has been scarcely any dialogue between media archaeology and cultural semiotics. The other reasons include, on the one hand, the core rationale of media archaeology to move beyond text and ‘semantics’ centeredness in cultural analysis, and on the other hand, the often simplified analysis of the roles of media technologies within the semiotic domain. Another reason for the lack of dialogue has been the relative unawareness of cultural semiotics within the domain of English language media and cultural studies, especially regarding its post-structuralist/system-theoretic version, which has been in development since the mid-1980s (for reasons, see Ibrus and Torop, 2015). In other words, cultural semiotics has not been part of the fixed toolset in English language media studies and there has, therefore, been a lack of dialogues with all its subdomains, including media archaeology. Yet, our starting point is that the dialogue is necessary as there is a potential for useful complementarity. On the one hand, media archaeology could teach cultural semiotics the nature and role of technologies in contemporary media culture, and cultural semiotics, in turn, could help the archaeological approach to better address the cultural and communicative dynamics that shapes media technologies, media texts and their networks. As Parikka has suggested, post-Kittler media archaeology needs to start investigating the historical contexts for media technologies and needs to do it in interdisciplinary ways (Parikka, 2013: 20).

Text and modelling systems

To understand the ‘creativity of archives’ from the perspective of cultural semiotics, we need to begin by stating how Lotman defined ‘text’. The cultural semiotic concept of text is founded on the following characteristics: 1) being expressed in sign systems (e.g. verbal, visual), 2) being bounded (e.g. by a compositional frame, beginning and end), and 3) being structured (i.e. hierarchical) (Lotman, 1977). Despite this seemingly immanent and static framework, the functions of text bring dynamics to the concept. The three main cultural purposes of texts are: 1) the transmission of messages, 2) the generation of new messages, and 3) the preservation of memory (of its previous contexts) (Lotman, 1990: 11-18).

Text as a concept matters since archives consist of texts. And they also constitute texts. This potentiality relates to the understanding that from the perspective of cultural semiotics, ‘text’ is effectively an analytical unit. Parts of texts can be read separately as distinctive units and several texts can be seen to constitute larger texts with, again, distinctive boundaries and inherent hierarchies – as long as there are ‘readers’ for such texts. Digital archives could be understood to frame and re-frame, connect and re-connect, their various composite texts, in this way creating new textual wholes at a ‘higher’ level, or simply in terms of actual ‘reading’ sequences. The specifics of digital archives is that while in previous eras texts could be linked either in physical terms (ordering them in sequences or juxtaposing them spatially) or by way of intertextual relations (using semantic inter-referencing), in digital archives texts are connected by the hybrid apparatus of physical (electric) signals, the semantics associated with these signals (various forms of metadata) and the algorithms processing both the signals and the semantics. To interpret the functions of such apparatus, one needs the tools of both materialist and semiotic approaches – to again justify the current attempt at an interdisciplinary dialogue. Ernst

(2015: 14) suggests, however, that the described affordances of digital archives enable them to become generative spaces – not as ‘authors’ of texts, but in terms of their power to restructure and prefigure – by creating new links, and likewise, new texts. In relation to link-making, he suggests (Ernst, 2013: 134) that with the emergence of image and pattern recognition algorithms, links can be created based on the more or less abstract similarity between images. This in turn proposes a question on the ‘creativity’ of such algorithms – how and when could such algorithmic link-making be considered as a form of diagrammatic reasoning or even abductive inferencing, which in terms of Peirce, constitutes the core mechanism of creativity (Merrell, 2006). Diagrammatic reasoning refers to reasoning by addressing similarities between diagrams, which in turn represent their object via an iconic relationship, i.e. via similarity of their relational properties. And abductive inferencing hereby denotes creative explanatory reasoning in response to a fact/text for which no explanation exists yet, but hypotheses about probabilities can be formulated based on abstract similarities between facts/texts. That is, creativity is in the realization of abstract similarities (and therefore links) between different, often incongruent facts/texts. That is, if such links emerge they are often non-trivial, unpredictable and as such creative.

Ernst (2013:27) suggests further that the logic of diagrammatic reasoning is at play at the higher level of digital archives. In fact he proposes that a media archaeological approach is about deciphering the ‘operative diagrams’ of archives. These diagrams are, in Ernst’s terms, ‘processual’, referring to their dynamically changing nature. Their study means synchronic investigations of the textual maps/networks created by archives. Ernst suggests that diagrams might eventually replace traditional historiography. This has been a potentiality in the era of relational databases, but the presumption is that at the time of the emergence of linked (and

often more) open data protocols such as the RDF the rationale of an archaeological approach is to investigate the resulting archive diagrams in order to discover the ways in which culture and its histories are mediated and re-mediated. This is very close to the rationale of cultural semiotics. In cultural semiotics the closely related concept is ‘modelling systems’. This is how Lotman explained the concept (2011 [1967]: 250):

Modelling activity is human activity in creating models. In order that the results of this activity could be taken as analogues of an object, they have to obey certain (intuitively or consciously established) rules of analogy and, therefore, be related to one modelling system or another.

/-/ A modelling system is a structure of elements and rules of their combination, existing in a state of fixed analogy to the whole sphere of the object of perception, cognition, or organization.

We suggest that the way in which Ernst sees the rationale for the media archaeological study of digital archives is close to the rationale of cultural semiotics to study the workings of ‘secondary modelling systems’ (systems that use the elements of existing languages or forms of culture; Lotman 2011:250). Peirce’s diagram is effectively Lotman’s ‘model’: abstract rules are used to combine elements to represent an object based on an analogy. Digital archives are secondary modelling systems as they are organising, first, metadata to model the object texts, and second, they link and organise those texts to model the circumstances of their production and the positions of these texts in culture – that is, they could be understood to aim to represent the world according to abstract analogies. According to Sebeok and Danesi (2000: 143), the complex algorithms and workings of digital archives could be

understood as forms of tertiary cohesive modelling, therein functioning as ‘intellective codes’ – those designed to organise knowledge about some field. We see that while the concept of cohesive modelling is useful for interpreting the workings of digital archives, we proceed here based on the relational dualism of the modelling systems suggested by Nöth (2006: 259): the secondary modelling system is simply the one with more semiotic dimensions in relation to the space of its lower levels. Yet, building again on Ernst, it should be emphasised that the difference of digital archives from the ‘cohesive modelling’ of Sebeok and Danesi is that while the latter discussed, in the first place, ‘mental models’, digital archives constitute actual material ways to organise textual elements and do not only represent relations. This continues to be the specific affordance of digital archives, which demands, therefore, in addition, updating of modelling systems theory, presumably in dialogue with media archaeology.

The question remaining is, ‘What do audiovisual archives model?’ Our own ongoing research project focuses on how the Estonian Film Database (www.efis.ee) and, more specifically, its metadata system model, firstly, Estonian film culture and then, secondly, via this mediation process also Estonian culture and society more broadly (see Ibrus, Ojamaa, 2018). In other words, from a cultural semiotic perspective we are exploring how modelling of a specific cultural domain comes about, how analogies between different modalities are created, and how is new information emerging in the process. Yet, the question remains, what is the specific materially conditioned modality of archives – how do they model? Here, we need to start with the nature of audiovisual content metadata and indexing. Metadata effectively comprises a series of statements about audiovisual content entity as a ‘resource’ (Pomerantz, 2015). Different metadata standards allow a variety of data to

be included, but usually these include basic information about authorship and production aspects (modelling of the cultural context of a film's production), access management (modelling and regulating potential uses), technical formatting (modelling the artefact), and what is represented or what the story is about (modelling the audiovisual representations). Network-based end-user services may increasingly include information about how the particular film or video has been used – by whom, how much, and in what circumstances (modelling the real uses).

The fact that metadata schemas may model such a range of different cultural domains/contexts/functions suggests that they serve as translatory boundaries (in terms of Lotman, 1990) between these domains/contexts/functions. Pomerantz (2015) has suggested that metadata schemas could be understood as 'very simple languages'. Such languages as 'modelling systems' (in Lotman's terms) as they try to model multiple realities are effectively also part of different cultural subsystems, and are being shaped by, as well as shaping, all of those, and as such are becoming a translatory language connecting these domains. This is one of the reasons why digital archives are unavoidably 'creative' – because their core instrument – the metadata schemas – are themselves non-trivial combinatory outcomes of these complex modelling processes. Moreover, it should be noted that metadata schemas, while being 'very simple languages', are in effect verbal languages. Therefore, especially regarding the modelling process of audiovisual representations, these constitute effectively rough, and as such non-trivial, translation processes – from visual to verbal. In other words, as there are no exact equivalents between the meaningful elements of the languages, but only a 'conventional system of equivalences' (Lotman, 1990: 15), this process is both inexact and unpredictable, and as such, creative.

Furthermore, as already suggested above, at the time of the emergence of semantic web technologies and increasingly more databases utilising linked data protocols (RDF, SPARQL⁴, OWL⁵ and others) it is worthy of note that the schemas use not only verbal language for modelling, but also links/vectorial connections between different data elements. Consequently, the model turns into a combinatory mode combining both verbal and diagrammatic (a form of iconic signs according to Peirce) means. This relates again to Lotman's core premise that any text (and as such also a model) is, at minimum, bilingual (Lotman, 1994: 377). These constitutive languages effect a rhetoric tension: their respective meaning systems interfere with each other, creating potentially new and semantically expansive, but also unpredictable, combinations. As demonstrated by Lakoff and Johnson (1980), texts in verbal languages include metaphors that work visually as the paradigmatic replacements in metaphors are based on visual similarity. In terms of digital archives, the complexity is notably higher as these combine not only the multimodal object-texts, but also verbal metatexts/-data as well as diagrammatic structuring. What, however, also needs to be acknowledged is how such models are subject to increasingly dynamic change in the era of usage-centric digital networks. The linked metadata protocols for audiovisual databases work so that each distinctive metadata statement/index that is being shared by different films/resources also becomes a link between them. In this way archives effectively constitute complex networks of resources, which may be either stronger or weaker and which tend to be perpetually changing as new resources are added to the archives (as, currently, newly digitised films are being added) or new metadata is added (especially usage-related data).

The interlinking as a whole means, however, that although metadata indexes are primarily search oriented, unlike traditional archive repertoires, they are not

passive, but themselves constitute a logistical document – archives as a whole become effectively self-referential (Ernst, 2013: 84). This means that if an archive’s collection aims to represent a certain culture or its subdomain, then its function in terms of cultural semiotics is to work auto-communicatively (Lotman, 1990: 20; more about this later) for this culture or its subdomains – that is, the different networks forming in archives could be understood to model the inner structures of culture and its subsystems - where their bounds and interlinkages are, and what are their hierarchies like. Further, as Ernst (2013: 83) emphasises, the world of digital archives has less to do with concrete numbers than with relations, whereas the vectorially operating hyperlinks between documents are no longer external to these documents, but are literally embedded in them; the reference becomes effectively a metonymic pointer, a trope that both rhetorically (via Eco’s overcoding mechanism; Eco, 1977: 133) as well as materially redefines the document. Therefore, as Ernst (2013: 82) also explains, algorithmic objects are objects that come into being anew and processually; they do not exist as fixed data blocks. If we return to the argument suggested in the introduction, that via the evolution of the semantic web all of the world wide web obtains archive-like qualities, what also becomes relevant is Ernst’s analysis that the internet is then no longer primarily about memory as cultural record, but rather about a performative form of memory as communication.

Within this economy of permanent recycling of information, there is less need for emphatic but short-term, updatable memory /-/ Repositories are no longer final destinations but turn into frequently accessed sites. Archives become cybernetic systems. The aesthetics of fixed order is being replaced by permanent reconfigurability. (Ernst, 2013: 99)

Ernst (2013: 82) suggests a term to refer to such dynamically changing internet archives: 'dynarchive'. From the perspective of cultural semiotics the question that emerges is, 'What happens to the reception of texts after their material and rhetoric/intertextual context changes?' The suggestion that derives from this tradition is that altered context also changes the codes that are likely to be used to interpret texts. And when, then, new/altered codes are used for interpreting old texts, a shift occurs within the meaningful and meaningless structural layers of the text as information within text is accessible to certain languages and codes and inaccessible to others. Such texts are described in cultural semiotics as 'elliptical constructions' (Lotman, 1990: 64) that, being deprived of old and entered into new cultural contexts, need to be filled in or replenished either by commentaries or other (meta)textual material in order to be comprehensible or communicative again. In practice, these commentaries and metatextual materials are constituted either by the structure of interlinks (as already suggested above), the linked texts or metadata. The interpretation of such elliptical texts in terms of their original function depends on the quality of the metadata and appropriateness of the links. The question that remains, though, is whether an individual archival object thereby acquires a more dynamic ontological status, or does the digital environment only render some of the characteristics of archivalia more visible (see also Noordegraaf, 2011: 118).

Database histories

From the perspective of cultural semiotics, however, such kind of influx of 'elliptical texts' could be understood as productive. Lotman's theory (1985) suggests that

cultures whose memory is satiated by texts created by oneself could be described by a slowing development, whereas cultures whose memory is periodically flooded with texts from alien tradition tend to develop faster. Alien tradition here could be also texts from other chronological layers of culture as well as texts that are transferred from one medium to another. What matters is the difference between the codes according to which the texts were originally organised and the codes and languages that govern and define the current cultural situation. If the transfer and the translation from one code-system to another takes place, then a potential exists for a small ‘explosion’ in Lotman’s terms (2009) – potentially a new code-combination and the resulting new, and alternative, perspective to what the archive represents: an alternative historical narrative. Such changes can be described in terms of democratisation as the inherent easiness of creating variations could be a basis for creating multi-perspective histories.

It should be emphasised, however, that the choice of texts in databases – algorithms that govern the ways we can retrieve these materials, their visibility and hence their perceived authority – as well as established metadata structures are all factors that render Foucault’s (2002: [1969]) and Derrida’s (1995) statements about the power of archives (to not only record, but rather create, the past) continually relevant. Nevertheless, with the help of digital technology, several social platforms have been developed (van den Akker et al., 2010) for establishing dialogic spaces for people with different backgrounds (incl. experts and general public) to co-explore multiple perspectives on history and contribute via their own texts, data or metadata (e.g. by developing a relevant thesaurus). In other words, the potential in digital historiography represents a shift away from the dominance of a (single) narrative: what the digital archives offer us is, rather, a diversity of representational logics for

the past, while the narrative logic is only one of them (besides diagrammatic, as already suggested above).

Within cultural semiotics, such emergence of variations – plurality of narratives that can be realised within certain limits of plausible variation – has been studied in relation to contemporary practices of transmedia storytelling (Saldre and Torop, 2012; Ojamaa and Torop, 2015). From this perspective, alternative narratives retain an invariant core in relation to the perception of the past, while the gaps in the single story can be filled by stories told from alternative viewpoints (e.g. of minorities) and at the same time the space is left open for future additions. Such variability is a characteristic so far associated with oral cultures, and was lost in the era of the printing press. The creation of a ‘mental text’ (Honko 2000, Sütiste and Torop 2007), with multiple performative versions characteristic of oral folklore as opposed to one single materially fixed version of a text (e.g. a printed book), has parallels with archiving versions instead of a singular version. In other words, while in the introduction we quoted Baron (2014) – that the emergence of variations is the ‘effect’ of digital archives that may result in eliding historical awareness – then we suggest that the combined methodological gaze of media archaeology and cultural semiotics may help us to investigate how the archival architectures and material interconnectedness of texts may achieve both a strengthening of the invariant core of historical narratives as well as an enriching of the associated ‘mental texts’ with possible alternatives and minority views.

This potential is important, as it has been predicted that 60 percent of AV-heritage-based commercial activities will be associated with the education sector (Oomen et al., 2009). In educational contexts it is crucial to be familiar with the texts themselves in order to create meaningful and pedagogically relevant interlinks

between them and their fragments. That is why the narrative logic and curated constructions (see *Photomediations: An Open Book*⁶) might still be viewed as important for educating younger learners about the past. This also underlines the need for, and role of, the curator who systematises fragments and through this renders them meaningful. To what extent such contextualisation could be realised by algorithmic curation is a question still left open, but is expected to depend on the developments already discussed above: the quality of metadata, the evolution of semantic web and linked data protocols, and algorithms interpreting both metadata and linked contexts for positioning texts in relation to others. Again: the design of such assemblages may utilise the combined insights of cultural semiotics and media archaeology.

Auto-communication

Lotman's understanding of the mechanisms of culture are largely built upon his model and notion of communication, but perhaps even more importantly on his concept of auto-communication. Thereby, what can be described as communicative operations between separate agents (i.e. sender and receiver) at a habitual level can be regarded as auto-communicative acts at the level of culture as a whole (Lotman, 1990: 20-35). In other words, any communicative act in culture can methodologically be treated as culture's communication with oneself about oneself in order for a better understanding of oneself. As such, auto-communication is about creating self-descriptions that provide not only ground for identity formation, but also generally have a fixing effect on cultures. Lotman has claimed that the quest for self-description is the most universal characteristic of all cultures.

Archives and other cultural databases belong among the institutions that explicitly serve an auto-communicative function: they are modelling either entireties of cultures or their specific subsystems, and as such are instruments for their self-description and self-understanding. The affordances of digital archives have conditioned the blurring of boundaries between archives, libraries and museums, even though the acquisition policies, cataloguing, preservation and representation of materials linked to these institutions have so far been quite different. In effect, we see the reconciliation of the static aspect of preserving the past as the past and the dynamic aspect of preserving the past as the present. The latter refers to the frequent recursion of archival materials in contemporary discourses through different practices of re-appropriation. As digital archives are creating new links between texts, this leads to new codes/meanings potentially emerging from their combinations. In other words, digital networked archives emerge as reservoirs for the growth of meaning. This happens both at the level of creative practices facilitated by digital archives as well as at the ‘machine level’, through the permanent transfer and self-reorganisation by algorithms in terms of Ernst. Therein, both levels are dependent on the other: the creative reuse practices rely on algorithmic interlinking and recombinations of texts, while the algorithms depend on data linked to the uses and other creative practices by all users. In this context, when Ernst emphasised (2013: 98) that the emergent forms of digital culture depend more on permanent transfer than storage [reflected in a shift from archival space to archival time (Ernst, 2004)], this concurs with Lotman’s view of cultural memory comprising, by definition, both preservative and creative functions, irrespective of cultural context (i.e. in both digital and non-digital culture). The idea is that meanings in culture cannot be stored or preserved (because they depend on interpretation and contextualisation) and therefore the meaning of text

appears to grow over time, accumulating interpretations at different times and within different contexts by different readers and/or users.

This transfer is manifested at the level both of technology and of meaning. On the one hand we see the loss of permanent materiality (which used to be the soil for the testimonial function of archives, but now yields to the necessity for permanent rewriting that is inherent to digital archives). On the other hand, the addition of each new interlink between two given archival objects reconfigures also the current (=past) structure of meaning. There is the materiality of archives in terms of Ernst facilitating new connections, i.e. dialogues and shared codes in terms of Lotman between textual domains. It has been suggested by one of us previously (Ibrus, 2015: 48) that every new dialogue is a necessary first step of auto-communication either for an emergent subsystem or, at a higher level, for a particular culture. If archives are becoming processual and dynamic while also emerging out of their former material as well as institutional frames and dispersing across the internet, their specific auto-communicative function in respect to society and culture is about to change as well. Building on the views of both Ernst and Lotman, it can be suggested that while the archives of the modern era (in Hartley's terms) were about fixing cultures and their memory systems, then the networked archives are not only producing probability (in Hartley's terms), but more so sheer unpredictability (in Lotman's terms) – they become the hotspots of cultural dialogue and of the resulting growth of meaning. The new core function of digital networked archives is their creativity, and the new challenge for societies is to understand the mechanisms of that creativity and to manage it.

Conclusion

The recognition that ‘archive is the first law that can be said’ has been part of cultural critique since Michel Foucault’s ‘Archaeology of knowledge’. Foucault’s archaeological approach effectively suggested that archives are key nodes in relaying and storing data and are therefore connected to the bureaucratic modes of control alongside registering and manipulating data primarily through various office technologies (Vismann, 2008; Parikka, 2012). Foucault’s work was complemented by Derrida (1995), who emphasised that the ‘logic of power’ is played out via the technologies of archiving: the technical structure of the archive also determines the structure of what can be archived in its very appearing and in its relation to the future (Derrida, 1995: 34). Digital media archaeologists such as Parikka and Ernst have, in recent years, explored how ‘power still resides in the archive’ – that is, how it is now embedded in architectures of software and in the political economy of social media platforms. Parikka (2012: 123), for instance, elaborates on how the algorithmic searchability of archives transforms them into an instance of real-time computing, which underlines that, instead of being collections of objects in the traditional sense, net archives are a function of their software and transmission protocols rather than of content (also Chun, 2011; 2013: 137-174).

All this work has been informative. Yet, the aim of this article has been to highlight alternative ways of interpreting the technical affordances of digital archives, to focus on the ‘creativity of archives’. This meant combining Ernst’s focus on the dynamic and processual nature of digital archives with Lotman’s focus on the ‘creativity of texts’ and on how cultural dynamics are facilitated by recombinations of texts and by forms of dialogic communication as well as auto-communication. We suggested that contemporary ‘dynarchives’ (in Ernst’s terms) facilitate such

recombinations and communicative processes and the resulting emergence of new meanings, including changes in what is remembered and in how cultural memory is constructed and is evolving. We argue, therefore, also that to understand such ‘creativity of archives’ the methodological approaches of media archaeology and cultural semiotics need to be combined. We have shown in this article how the apparatus of archives consist not only of their materiality, software, algorithms or signals, but also of the complex semantics (for example forms of metadata or diagrammatic modelling) these algorithms operate with. Such semantics would be the research object of all sub-traditions of semiotics, but our argument is that the specific strength of Lotmanian cultural semiotics is to understand how archives are facilitating or are being used for ‘permanent transfer’ (in Ernst’s terms) – for translations, for dialogues and for recurrent auto-communications (in Lotman’s terms). In other words, there is a rationale for studying how ‘dynarchives’ are facilitating cultural dynamics.

References

- Andersen, Niels Åkerstrøm (2003) *Discursive analytical strategies. Understanding Foucault, Koselleck, Laclau, Luhmann*, Bristol: Policy Press.
- Atterton, Peter (1994) Power's blind struggle for existence: Foucault, genealogy and Darwinism. *History of the Human Sciences* 7: 1-20.
- Baron, Jamie (2014) *The Archive Effect: Found footage and the audiovisual experience history*, Oxon: Routledge.
- Bell, David F. (2004) Infinite Archives. *SubStance* 33: 148-161.
- Bruzzi, Stella (2000) *New Documentary: A Critical Introduction*, London: Routledge.

Chun, Wendy Hui K (2011) The Enduring Ephemeral or The Future is a Memory. In: Huhtamo, Erkki and Parikka, Jussi (eds) *Media Archaeology. Approaches, Applications, Implications*. Berkeley, CA: University of California Press, 184-203.

Chun, Wendy Hui K (2013) *Programmed Visions: Software and Memory*, Cambridge, MA: MIT Press.

Council of the European Union (2012) Council conclusions on the digitisation and online accessibility of cultural material and digital preservation. In: *Education, Culture and Sport Council* (ed). Brussels.

Derrida, Jacques (1995) *Mal d'archive: une impression freudienne*, Paris: Gallimard.

Eco, Umberto (1977) *A Theory of Semiotics*, Bloomington: Indiana University Press.

Eco, Umberto (1989) *The Open Work*, Harvard: Harvard University Press.

Ernst, Wolfgang (2004) *The Archive as Metaphor: From Archival Space to Archival Time*. Available at: <https://http://www.onlineopen.org/the-archive-as-metaphor>.

Ernst, Wolfgang (2011) Media Archaeography: Method and Machine versus History and Narrative of Media. In: Huhtamo, Erkki and Parikka, Jussi (eds) *Media Archaeology: Approaches, Applications, and Implications*. Berkeley and Los Angeles: University of California Press.

Ernst, Wolfgang (2013) *Digital Memory and the Archive*, Minneapolis: University of Minnesota Press.

Ernst, Wolfgang (2015) *Stirrings in the Archives: Order from Disorder*, Lanham: Rowman & Littlefield Publishers.

Featherstone, Mike (2006) Archive. *Theory, Culture & Society* 23: 591-596.

Foucault, Michel (2002) *The Archaeology of Knowledge*, London and New York: Routledge.

Haidar, Julieta and Chávez Herrera, Eduardo (2018) Narcoculture? Narco-trafficking as a semiosphere of anticulture. *Semiotica* 222: 133-162.

Hartley, John 1999. Uses of television. London, New York: Routledge.

Hartley, John (2008) *Television Truths*, Oxford: Blackwell Publishing.

Hartley, John (2012) *Digital Futures for Cultural and Media Studies*, United Kingdom: John Wiley & Sons.

Honko, Lauri (2000) Thick Corpus and Organic Variation: an Introduction. In: Honko, Lauri (ed) *Thick Corpus, Organic Variation and Textuality in Oral Tradition*. Helsinki: Finnish Literature Society, 3-28.

Huhtamo, Erkki (1995) Resurrecting the Technological Past: An Introduction to the Archeology of Media Art. *InterCommunication* 14.

Huhtamo, Erkki and Parikka, Jussi (2011) *Media Archeology: Approaches, Applications, and Implications*. Berkeley and Los Angeles: University of California Press.

Ibrus Indrek (2010) Evolutionary Dynamics of New Media Forms: The Case of the Open Mobile Web. Unpublished PhD Thesis. London: London School of Economics and Political Science.

Ibrus, Indrek (2015) Dialogic control: Power in media evolution. *International Journal of Cultural Studies* 18: 43-59.

Ibrus, Indrek and Ojamaa, Maarja (2018) Newsreels versus Newspapers versus Metadata - A Comparative Study of Metadata Modelling the 1930s in Estonia. *VIEW Journal of European Television History and Culture*, 7(14):123–137.

DOI:<http://doi.org/10.18146/2213-0969.2018.jethc157>

Ibrus, Indrek and Torop, Peeter (2015) Remembering and reinventing Juri Lotman for

the digital age. *International Journal of Cultural Studies* 18: 3-9.

Kittler, Friedrich A. (1990) *Discourse Networks 1800/1900*, Stanford: Stanford University Press.

Kittler, Friedrich A. (1994) Wenn die Freiheit wirklich existiert, dann soll sie doch ausbrechen. Discussion with Rudolf Maresch. In: Maresch, Rudolf (ed) *Am Ende vorbei*. Wien: Gespräche, 95 - 129.

Kittler, Friedrich A. (1999) *Gramophone, Film, Typewriter*, Stanford: Stanford University Press.

Kittler, Friedrich A. (2009) *Optical Media*, London: Polity Pres.

Lakoff, George and Johnson, Mark (1980) *Metaphors We Live By*, Chicago: The University of Chicago Press.

Kull, Kalevi (2015) A semiotic theory of life: Lotman's principles of the universe of the mind. *Green Letters: Studies in Ecocriticism* 19(3): 255-266.

Lotman, Juri (1985) Память в культурологическом освещении (Memory in the light of culturology). *Wiener Slawistischer Almanach* 16: 5–10.

Lotman, Juri (2000). Культура как субъект и сам себе объект. *О семиосфере. Культура и взрыв. Внутри мыслящих миров. Статьи. Исследования. Заметки*. Санкт-Петербург: Искусство-СПБ, 639-647.

Lotman, Juri (2009) *Culture and Explosion*, Berlin: Mouton de Gruyter.

Lotman, Juri (2011) The place of art among other modelling systems. *Sign Systems Studies* 39: 249-270.

Lotman, Juri (2013) *The Unpredictable Workings of Culture*, Tallinn: Tallinn University Press.

Lotman, Yuri (1977) *The Structure of the Artistic Text*, Ann Arbor: University of Michigan, Department of Slavic Languages and Literatures.

- Lotman, Yuri (1990) *Universe of the mind: a semiotic theory of culture*, Bloomington and Indianapolis: Indiana University Press.
- Lotman, Yuri (1994) The text within the text. *Publications of the Modern Language Association (PMLA)* 109: 377–384.
- Lotman, Juri; Ginsburg Lidia; Uspenskii, Boris (1985) *The semiotics of Russian cultural history: essays*. Ithaca, London: Cornell University Press.
- Merrell, Floyd (2006) Creation: Algorithmic, organicist, or emergent metaphorical process? *Semiotica* 161: 119-146.
- Niggemann, Elisabeth, de Decker, Jacques and Lévy, Maurice (2011) *The New Renaissance: Report of the 'Comité Des Sages' on bringing Europe's cultural heritage online*. Luxembourg: European Commission.
- Noordegraaf, Julia (2011) Crowdsourcing television's past: the state of knowledge in digital archives. *Tijdschrift voor Mediageschiedenis* 14: 108-120.
- Nöth, Winfried (2006) Yuri Lotman on metaphors and cultures as self-referential semiospheres. *Semiotica* 161: 249-263.
- Ojamaa, Maarja and Torop, Peeter (2015) Transmediality of cultural autocommunication. *International Journal of Cultural Studies* 18: 61-78.
- Oomen, Johan, Verwayen, Harri, Timmermans, Nikki, et al. (2009) Images for the future: unlocking value of audiovisual heritage. In: Trant, Jennifer and Bearman, David (eds) *Museums and the Web 2009: Proceedings*. Indianapolis, USA: Archives & Museum Informatics, 1-13.
- O'Regan, Tom (1996) *Australian National Cinema*, London: Routledge.
- Parikka, Jussi (2012) *What is Media Archaeology*, Cambridge: Polity.

Parikka, Jussi (2013) *Archival Media Theory: An Introduction to Wolfgang Ernst's Media Archaeology*. In: Parikka, Jussi (ed) *Digital Memory and the Archive*. Minneapolis and London: University of Minnesota Press, 1-22.

Piatigorsky, Alexander (1984) *The Buddhist philosophy of thought: Essays in interpretation*. London: Curzon Press.

Pomerantz, Jeffrey (2015) *Metadata*, Cambridge, Massachusetts: MIT Press.

Saldre, Maarja and Torop, Peeter (2012) *Transmedia Space*. In: Ibrus I and Scolari C (eds) *Crossmedia Innovations: Texts, Markets, Institutions*. Frankfurt: Peter Lang, 25-44.

Sebeok, Thomas A. and Danesi, Marcel (2000) *The Forms of Meaning: Modeling Systems Theory and Semiotic Analysis*, Berlin, New York: Mouton de Gruyter.

Sütiste, Elin and Torop, Peeter (2007) *Processual boundaries of translation: Semiotics and translation studies*. *Semiotica* 163(1/4), 187-207.

Torop, Peeter (2012) *Semiotics of mediation*. *Sign Systems Studies* 40: 547-556.

Uricchio, William (2009) *Moving beyond the artefact: Lessons from participatory culture*. In: van den Boomen, Marianne; Lammes, Sybille; Lehmann, Ann-Sophie, et al (eds) *Digital Material: Tracing New Media in Everyday Life and Technology*. Amsterdam: Amsterdam University Press.

van den Akker, Chiel; Aroyo, Lora M.; Cybulska, Agata K., et al. (2010) *Historical Event-based Access to Museum Collections*. In: Winkler, Thomas; Artikis, Alexander; Kompatsiaris, Yiannis, et al. (eds) *1st International Workshop "EVENTS 2010 - Recognising and tracking events on the Web and in real life"*. Athens: CEUR-WS, 1-9.

Vismann, Cornelia (2008) *Files: Law and Media Technology*, Stanford: Stanford University Press.

Wellberry, David E. (1990) Foreword. In: Kittler, Friedrich, *Discourse Networks 1800/1900*. Stanford: Stanford University Press, vii-xxxiii.

Winthrop-Young, Geoffrey (2000) Silicon Sociology, or, Two Kings on Hegel's Throne? Kittler, Luhmann, and Posthuman Merger of German Media Theory. *The Yale Journal of Criticism* 13: 391-420.

Winthrop-Young, Geoffrey and Wutz, Michael (1999) Friedrich Kittler and German Media Discourse Analysis. In: Kittler, Friedrich, *Gramophone, Film, Typewriter*. Stanford: Stanford University Press, xi-xii

¹ <https://www.w3.org/RDF/>

² Leading film and broadcasting archives and standard-makers such as the European Broadcasting Union (owner of the EBUCore metadata standard) have been recently adopting the RDF framework.

³ A semantic triple in a RDF framework is a set of three entities that codifies a statement about data in the form of subject–predicate–object expressions.

⁴ SPARQL is a query language able to retrieve and manipulate data stored in RDF format - <https://www.w3.org/TR/rdf-sparql-query/>

⁵ Web Ontology Language - <https://www.w3.org/2001/sw/wiki/OWL>

⁶ <http://photomediationsopenbook.net/>