7th Estonian Digital Humanities Conference

Use of Digital Cultural Heritage in Research and Education

4-6 December 2019

National Library of Estonia,
Tallinn, Estonia

Abstracts

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ABSTRACTS

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FOREWORD

USE OF DIGITAL CULTURAL HERITAGE IN RESEARCH AND EDUCATION

Digital humanities is transforming the usage of data analytics from a technological tool to a new field of human knowledge. With the series of conferences on digital humanities we intend to contribute to the awareness of developments how computational power can be used to access the hidden knowledge of human expression, how humans integrate digital into their creative and communicative practices. We also aim to offer a common forum for the researchers in various edges of the field of digital humanities in Estonia, and with organizing open event to support the integration of the community, the change of ideas and experiences with our colleagues abroad.

We are witnessing the innovative approaches of researchers from various disciplines as well as the new habits of contemporary internet users in consuming the wide variety of digitised cultural heritage data. In this perspective, the efforts of memory institutions to increase the available volume of digitised sources of cultural heritage deserves special attention.

The conference aims to examine the designing and usage of digitised cultural heritage collections through a variety of disciplines ranging from art to technology, from history to geography, from museum studies to media studies, from archival studies to cultural data analytics. Our special focus is on the methodological and educational value of digital humanities.

Our themes include:

- digital collections of cultural heritage and their innovative usage;
- perspectives of cultural analytics as a source of transdisciplinary knowledge;
- transforming handwritten documents to machine-readable text;
- the usage of digitised collections of GLAM institutions (galleries, libraries, archives, museums);
- methodologies for analysis of digital memory documents and data;
- digital memory data modelling, visualisation, and presentation;
- usage of digital heritage sources in creating digital tools for education;
- use of crowdsourcing in creating museum collections;
- user in the archives and his/her expectations;
- personal digital storytelling and heritage collections;
- questioning the borders of literature;
- digital narration and cultural heritage resources.

We wish to share and exchange innovative ideas and experiences, welcome!

The organizers of the conference

SISSEJUHATUS

DIGITAALSE KULTUURIPÄRANDI KASUTAMINE TEADUSES JA HARIDUSES

Digitaalhumanitaaria on muutumas andmeanalüüsi tehnoloogilisest vahendist inimteadvuse valdkondade üleseks uurimisväljaks. Digitaalhumanitaaria alase konverentsiseeria eesmärgiks on avardada meie teadmisi selle kohta, kuidas arvuteid kasutada inimese kultuuriliste väljenduste sisse peidetud mõttemallide ja seaduspärade avastamiseks, samuti kuidas inimesed oma loomingus ja suhtluses üha enam tuginevad digitaalmaailma pakutavatele võimalustelel. Konverentside eesmärgiks on ka pakkuda ühist kohtumispaika Eesti teadlastele, kes digitaalhumanitaaria eri äärtes tegutsevad ning avatud konverentsi korraldamisega toetada Eesti kogukonna integreerimist, mõtete ja kogemuste vahetust rahvusvahelise teadlaskonnaga. Oleme tunnistajateks paljude eri valdkondade teadlaste uuenduslikele lähenemistele digitaalajastu mõtestamisel, samal ajal ka interneti kasutusharjumuste kujunemisele.

Arvestades mäluasutustes ka enam kui 20 aastaga loodud digitaalse kultuuripärandi ressursse, eriti aga alanud kultuuripärandi massdigiteerimist Eesti mäluasutustes, on konverentsi keskmes digitaalse kultuuripärandi kasutajad, eriti teadus- ja haridusvaldkonnas.

Konverentsi teema sõnastamisega seadsime eesmärgiks uurida digitaalse kultuuripärandi kogude kujundamist ja kasutamist läbi paljude erinevate valdkondade kunstidest tehnoloogiani, ajaloost geograafiani, muuseumi-uuringutest meediauuringuteni, arhiivide uurimisest kultuuripärandi (suur) andmete analüüsini.

Konverentsi eriline rõhuasetus on digitaalhumanitaaria metodoloogilise ja haridusliku väärtuse selgitamisel.

Ettekandeid on järgmistel teemadel:

- kultuuripärandi digitaalsed kollektsioonid ja nende uuenduslik kasutamine;
- kultuuriandmete analüüsi perspektiivid valdkondade vaheliste teadmiste allikana;
- käsikirjaliste dokumentide muutmine masinloetavaks tekstiks;
- digikollektsioonide kasutamine GLAM-asutustes (galeriides, muuseumides, arhiivides, raamatukogudes);
- digitaalsete mäludokumentide ja andmete analüüsimeetodid;
- kultuurimälu andmete modelleerimine, visualiseerimine ja esitamine;
- digitaalse õppevara loomine kultuuripärandi kasutamiseks hariduses;
- kogukonna kaasamine muuseumikollektsioonide loomisse;
- kasutaja arhiivis ja tema ootused;
- isiklikud „loojutustamised“ ja kultuuripärandi kasutamine;
- digitaalajastu kaasa toodud muudatussed kirjandus ja a kunstides.

Jagagem uuenduslikke ideid!
Head konverentsi soovides

korraldajad

ANDRA SIIBAK
(University of Tartu)

SCREENING INTO THE MINDSET OF THE "SOCIAL MEDIA GENERATION"

It has been argued (Colombo, 2011) that each generation grows up with a specific style of media usage and culture, all of which helps to differentiate between the media use and habits of different generations. Especially the experience with media and technologies during the formative years, which helps to shape long-term media habits, is noted to be relevant in defining generations and their media consumption cultures (Aroldi, 2011). Although some authors (e.g. Lumby, 2001) have argued against the whole idea of generationalism, the idea that there are common experiences that define an age cohort, empirical studies indicate (Murumaa-Mengel & Siibak, 2019) that media technologies and media use have become an important cultural glue within generations. Younger generations, in particular, have been noted (Siibak, 2009) to build their generational identity around the technology and platforms that they use.

For example, although, humans do not rely on digital technology in order to survive, digital technologies and social media have become almost inseparably tied to Maslow's hierarchy of needs (Cao *et al.,* 2013), especially for the younger generations. Considering that social media provides distinctive "communicative affordances" (Hutchby, 2001), a number of different gratifications that drive individual social media consumption, research (Alutaybi *et al.*, 2019; Throuvala *et al.*, 2019) indicates that one may suffer from nomophobia, i.e. feel psychological discomfort when they are unable to access their mobile phone (King *et al.*, 2013) or experience FoMO (Fear of Missing Out) when unable to use digital devices or access social media.

The talk with draw upon the findings of different empirical studies which provide an overview not only of the main practices and digital competencies of the present day young, but also offer a look into the mindset and dominant thought-patterns of the current young generation.

Relying on the social media detox diaries of 19-25 year olds students (n=67) I will provide an overview of the main affordances young people associate with digital technologies, and social media in particular (Murumaa-Mengel & Siibak, 2019). Furthermore, findings from an EU Kids Online survey (n=1020) will be used to map out the main online practices, digital competences and media diets of the present day youth (9-17 year olds) (Sukk & Soo, 2018). I will make use of the findings (Murumaa-Mengel & Siibak, forthcoming 2020) gathered through different focus-group interviews with the followers of micro-celebrities to illustrate what kind of online content do the young perceive to be interesting, and worthy of their time and attention.

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Andra Siibak is a Professor of Media Studies and program director of the Media and Communication doctoral program at the Institute of Social Studies, University of Tartu, Estonia. She is also Head of the Board of the Center for the Digital Humanities and Information Society in the University of Tartu. Her main field of research has to do with the opportunities and risks surrounding internet use, social media usage practices, datafication of childhood, intergenerational relationships on social media, algorithmic workplace, new media audiences and privacy. She has published more than 70 peer reviewed papers in international journalsand edited collections on the topics surrounding young people's practices online; e.g. self-presentation on social media; teacher/parental/sibling mediation of young people's internet use; privacy strategies and imagined audiences on social media, touch-screen usage of toddlers, digital literacies, datafication of childhood, etc. In her most recent projects she has been working on analyzing young people's reflections from social media detox, different digital parenting practices (e.g. tracking, sharenting), and topics related to the future of work (e.g. micro-chipped employees). She has been a member of various international research projects and networks (e.g. EU Kids Online) and acted as expert consultant on Estonia for different projects initiated by the European Parliament, European Commission, European Council and OECD. She was awarded the Young Scientist Award by the President of Estonia (2015) and the Outstanding Young Person of Estonia (TOYP) award (2017).

MAHENDRA MAHEY
(The British Library Labs)

FINDING YOUR INNER LABBER: BUILDING BETTER GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS' (GLAM) LABS

Lessons learned from the British Library and around the world engaging with staff, researchers, artists, educators and entrepreneurs who have used digitised cultural heritage collections and data

The British Library is one of the largest national libraries in the world and is creating and storing millions of digital items every year such as digitised books, newspapers, maps, sheet music, manuscripts, audio / TV recordings as well as born digital archived websites, personal digital archives, electronic books, radio, performances, and artworks. This incredible range of digital material is having a profound effect on the way our libraries are supporting those who want to use digital content and methods in their work. What new facts will scholars discover when they analyse thousands of digitised books computationally using data-mining techniques? What are the challenges and solutions for libraries to build systems and services that provide seamless access to its digital material from a radio recording to newspaper story? What are the practical experiences of working on digital crowdsourcing projects, and how is machine learning really helping libraries to unlock new information hidden in its digital archives? Can we use digital technologies to visualise and shine light on a library's holdings, and unearth unusual and surprising findings artistically?

Mahendra will give a brief overview of digital collections and data being made available through British Library Labs (BL Labs) and examine how some of them have been re-used by making connections and collaborating with digital researchers, artists, entrepreneurs, educators, curators and librarians around the world through a range of innovative projects, research questions and engagement activities. He will highlight the myths and assumptions many make about libraries and address the significant issues and challenges they face when working with digital collections and data (e.g. legal, technical, human etc.). He will reflect on lessons he has learned over nearly two decades of working in Further and Higher Education, suggesting the types of digital research that could bring significant benefit and impact to the way libraries in particular may work into the future.

To conclude, Mahendra will report back on an exciting international support network that is being developed with colleagues around the world. This community is bringing national, state, university and public libraries together that either had, are planning or already have experimental digital 'Library Labs' which encourage their users to re-use their digital collections and data. The group are already providing support to each other, sharing expertise, knowledge and experience and are pooling resources together in order to build better innovative digital 'GLAM Labs' that bring value to their organisations and users well into the future. They published a practical open access book in October 2019 entitled

'Open a GLAM Lab' which provides advice and guidance for GLAMs who are in process of setting up or currently running digital innovation 'GLAM Labs'.

Mahendra tweets at @BL_Labs and @mahendra_mahey

Mahendra Mahey is the manager of British Library Labs (BL Labs) (https://www.bl.uk/projects/british-library-labs), which was an Andrew W. Mellon foundation and now solely British Library funded initiative supporting and inspiring the use of the its data in innovative ways (https://data.bl.uk). BL Labs encourages and helps scholars, artists, entrepreneurs, educators and innovators to work with the BL's digital collections through competitions, awards and other engagement activities. Mahendra is working with colleagues on developing an international support network with colleagues to bring Galleries, Libraries (national, state, university and public) Archives, Museum (GLAM) digital Labs together that either had, are planning and already have digital experimental 'Labs' to share expertise, knowledge and experience in order to build better 'GLAM Labs' for their organisations and users (http://glamlabs.io). He recently worked with colleagues to write a handbook to help GLAMs ensure that digital innovation Labs thrive in their organisations.

MIKKO TOLONEN
(University of Helsinki)

EDUCATIONAL PRINCIPLES OF DIGITAL HUMANITIES

Digital Humanities is entering the teaching curriculum of most Western Universities. But what is DH in fact? And how should it be taught? Quite often Digital Humanities is offered as a light, generic introduction to tools, data and methods for humanities students of any background. In this setting, DH is something extra, something novel and something that is often identical in the design of courses in different disciplines and departments. This is both understandable and a let-down because no two humanities faculties or even departments are the same, so how can the solution with respect to teaching digital humanities be generalized? Another typical way of organising the teaching of digital humanities is through the idea of instructing humanists how to code and give them an opportunity to renew their methodological approach to data and tools. But, also this programming approach is surprisingly similar in different disciplines and departments compared to the vast differences between core humanities subjects. Are all the disciplines actually unified with respect to methodological needs or is it that we have identified and started to meet these needs in only some of the subjects while borrowing most of the methods from other fields of science? All of this goes to show how difficult it is to ground a new methodological approach, such as digital humanities, to "traditional" disciplines. At the same time, changing the way core humanities subjects, such as history and area and cultural studies, are taught and practiced is a difficult task. There is a genuine worry that Digital Humanities is not integrated in the traditional disciplines and it becomes increasingly difficult to make a real impact on what a degree in humanities actually has to offer a student entering the ever changing job market.

The gap between digital humanities and traditional disciplines and the struggle for digital humanities to establish its own identity raises a number of different questions and challenges. Many scholars have opted for the "big tent" approach to digital humanities that can cover more or less anything. How can one cope teaching something like this? What is the added value? There seems to be a clear difference in the maturity of linguistics and cultural heritage with respect to use of digital methods. How can the methods be developed from the perspective of digital cultural heritage as well? One aspect of digital humanities is different learning environments. How can an effective multimodal aspect integrated in all humanities teaching? The knowledge base of students in the humanities varies a great deal. How can we set realistic and desirable learning objectives in this environment? It is easy to say that understanding the digital world will make humanists strong in the job market. But how do we actually implement this? The generalist nature of humanities can be both strength and a weakness. But how do we package digital humanities and the ability to adapt and engage in critical thinking so that it meets the requirements of the modern world?

The idea of this talk is to discuss many of these open ended (and rather difficult) questions and offer some further thoughts on them by explaining how these challenges are tried to be met by developing teaching

in digital humanities at the University of Helsinki. The main learning objective that we have identified is to help students find a common language within the humanities, the social sciences, and data science. In the long term, this will enable the
renewal of a scholarly culture and also prepare students to work as professionals outside academia. Core of Helsinki Digital Humanities educational philosophy is to promote cross-disciplinary collaboration. What is unique about digital humanities teaching at the University of Helsinki is that all the offered courses have a specific aim: students are able to put their skills and abstract knowledge into practice at the end of each academic year in a multidisciplinary research project entitled Helsinki Digital Humanities Hackathon. Thus, they are acquiring skills that will be useful to them regardless of whether they are thinking about an academic career or aiming to find a job outside academia. We try to offer a select group of MA students the opportunity to integrate into relevant research groups at the University. MA track in digital humanities serves two general objectives: 1) renewing the scholarly culture in particular areas of the humanities through the co-creation of innovative methods; 2) meeting the challenge of digitization in the training of humanities professionals to maintain their core ability for critical reflection in the digital world, and at the same time to participate in multidisciplinary collaboration with professionals of different backgrounds.

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A

SHARED ON YOUR (HI)STORY: INSTAGRAM AS A TOOL FOR INFORMAL EDUCATION IN MUSEUMS

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International Council of Museums defines the museum as a permanent institution in the service of society which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment (ICOM, 2007). Although museums are traditionally known as formal places for connecting us to the history by preserving heritage (Iversen & Smith, 2012: 126), museums today become places of knowledge where learning is expected and offer countless learning opportunities for self-directed adult learners (Kelly, 2013; Banz, 2008: 51).

The technological, demographic, and cultural environment is constantly changing, and hence, audiences of museums are transforming. Among these changes, social media has become a natural hub for people. Kelly (2013) states that museums maintain their existence in three different environments as their physical site, the online space, and the mobile space via websites and social media. The high penetration rates in social media offer museums new ways of interactive communication in creating and maintaining long-term relationships with their audiences and in connecting potential audiences and reaching specific communities. Social media empowered people by providing user-led and two-way communication (Drotner & Schrøder, 2013: 3-9). Social media offer numerous opportunities for museums by creating interactive communication processes through which connecting cultural heritage to the daily lives' of actual and potential visitors and thus increases the brand awareness (Drotner & Schrøder, 2013; Iversen & Smith, 2012; Marselis & Schütz, 2013; Chung *et al.*, 2014). Social media is a part of the digitization of museum collections, which is crucial in the sustainability of cultural heritage for future generations.

Besides all these benefits of social media, museums can utilize social media as a tool for informal learning. Visitor learning is a key concern to museums and recently, social media takes a central role in the creation of informal learning environments like museums and art galleries for audiences and visitors (Russo *et al.*, 2006; Russo *et al.*, 2009; Witworth & Garnett, 2011; Charitonos *et al.*, 2012; Shaw & Krug, 2013). Kelly (2013) reviewed social media as an educational tool. Social media have broadened learning by focusing on forming a participatory structure instead of individual or institutional ownership (Russo *et al.*, 2009: 156). It is argued that museums can prepare their visitors for their physical visits by informing and educating them via social media in advance (Padilla-Meléndez & Águila-Obra, 2013).

Instagram, as a visual-based application, fits very well with the context of museums. Instagram, as a visual social media, is a popular platform for visitors to share their experiences (Budge, 2017: 70). Today, Instagram is the third most popular social media network following Facebook and YouTube, with one billion monthly active users worldwide. 72% of the 13-17 age group, 64% of the 18-29 age group and

40% of the 30-49 age group use Instagram. 80% of Instagram users follow companies on Instagram. Instagram is now the preferred advertising media. Especially Millennials watch or record Stories and Live videos on Instagram (West, 2019). Millennials are generally different from the older generations; they are more likely to search about artworks online, mind online peer reviews, and find ways to learn more about an artwork or a museum after going an event or visiting a museum (Axiell, 2016). Today learners participate, contribute, and collaborate anywhere and anytime (Charitonos *et al.*, 2012: 817). Therefore, the role of education needs to shift toward a more self-directed and collaborative approach (Adams Becker *et al.*, 2017).

There are studies on Instagram in the context of museums such as Weilenmann (2013) and Budge (2017). Enhancing the knowledge on Instagram uses of museums, the primary purpose of this study is to explore and interpret Instagram accounts of museums as a tool for informal learning. By analyzing the content of Instagram accounts of the world's most physically visited and virtually most liked museums, the study will investigate how museums use Instagram for educational purposes. To understand the educational potential of Instagram in informal learning for museums, social media accounts of these organizations will be analyzed by using content analysis. To the authors' best knowledge, this paper is one of the first to study social media as a tool for informal learning in museums. Findings of the study will assist museums and other cultural institutions to manage their online strategies better and to contribute their life-long learning efforts.

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AN OVERVIEW OF SYRIAN MEMES IN THE DIGITAL MEDIA

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Keywords: *memes, radical digital humanities, social media, satire, digital, culture*

This paper tries to answer how memes have played an essential role in Syrians' social lives. The research was based on a qualitative methodology by using different types of Syrian memes from different social media pages on Facebook and Instagram. The usage of memes has been popular among Internet users. They are enabled to use digital means to transfer their ideas on social networking sites. By doing so, they can express themselves and deliver specific messages.

According to Shifman (2014) in her book *Memes in Digital Culture* which defines the concept memes as "the propagation of items such as jokes, rumours, videos, and websites from person to person via the Internet". There are different types of Syrian memes such as political, social, racist and sexist. They are used for different purposes. Firstly, the political meme which is used as a means of radical digital humanities to interrogate power. Secondly, the social memes which have two groups; Syrian TV- series and crisis memes. The Syrian TV memes use its actor or actress sayings as a quotation, and then they might develop them further. For the crisis memes, there are a variety of memes which symbolizes the concept of using satire content in liberating oneself. Finally, the sexist memes in which this paper covers a critical idea of using sexist language in memes. They have become popular on social media platforms since 2012 onwards. However, Facebook considers a starting point for meme's spread in Syria.

PRESERVING OUR HERITAGE FOR GENERATIONS TO COME: AN OVERVIEW OF LONG-TERM DIGITAL PRESERVATION

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The essence of digital preservation is not just keeping the digital material on a disc or in a server. The digital preservation Maturity model (by PWC Estonia, 2019) suggests five levels to reach an Active digital preservation. When the organization has fulfilled all the lower levels and reached to a point when digital material is preserved longer than the device which has created it, one can say that the material is digitally preserved. It contains also a lossless migration between the different preservation formats of the same object. The lower levels of the maturity model contain back-uping and restoring the material, tools for automatizing the business processes, administering the digital objects, integrations with ingest and dissemination applications, taking account of the intellectual property and access rights.
The classical model for long-term digital preservation is OAIS (Open Archival Information System). It consists of ingest (submission of the material), preservation and access (dissemination). There are also various processes (preservation planning, administration, data management) to keep the material safe.
The main problems in the Baltic states in the field of digital preservation are the lack of staff with necessary training and expertise. From the technology side the obstacles are the lack of funding, lack of accessible technology tools and problems with integrations. The material of libraries is highly variable – including 'traditional' material as books, newspapers and pictures in the digital format but also music, videos, dynamic materials – apps, web objects, computer games, books with sound, etc.

KNOWLEDGE DISSEMINATION: COMMUNITY REUSABLE HUMAN AND MACHINE UNDERSTANDABLE CONTENT MODELS FOR SMALL MUSEUMS AND NON TECHNICAL SCHOLARS

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The paper addresses the fundamental gap and challenges observed in knowledge dissemination in the cultural heritage domain. The presentation focused on proposing more innovative ideas to contribute to the solution of the distribution of cultural heritage knowledge over the Web found in small museums.

It showcases a solution based on **C**ommunity **R**eusable **H**uman and **M**achine **U**nderstandable **C**ontent **M**odels available for download from our community website and Github code repository. Installing the CRHMUCM will extend the functionality of the state of the art Content Management Framework towards museum collections. Furthermore, encapsulates machine-understandable data using the Resource Description Framework in Attributes (RDFa), and the Schema.org vocabulary or ontology.Establishing a community around Community Reusable Human and Machine Understandable Content Models will help the development, upgrading and sharing of models for the benefit of the Cultural Heritage community. A distributed model for Community Reusable Human and Machine Understandable Content Models will allow the community to grow and improve, serving the needs and enabling the infrastructure to scale for the next generation of humanities scholars.

Introduction: With the advent of the internet, the digital age has influenced almost every aspect of human activity and has transformed it into a revolutionary way unseen before. In particular, over the last decade

the domain of digital cultural heritage has gained a lot of popularity. The scientific community has shown new possibilities for integrated access to collections of cultural heritage, while memory institutions are increasingly eager to cooperate and provide the best possible access to their collections through the Web.

Access to cultural heritage assets will provide users with a wide range of opportunities to gain new knowledge. Memory institutions were probably the first to digitize information, creating online databases whose access was granted only locally through on-site servers.

Since then, the internet has allowed people to access knowledge from their home computers and thus increasing the number of users drastically (Stainforth, 2016).

Nowadays, the digitization process is undoubtedly essential in the cultural heritage domain and its accessibility is improved continuously due to the open-source communities and technological advancements (Cimadomo *et al.*, 2013).

Problem Statement: Smaller museums and their collections are equally crucial for the knowledge dissemination in the cultural heritage domain. As Barbara Lejeune (2007) points out, small museums could only have a small portion of objects online, it could be much more critical than a large museum online collection.

Unfortunately, the potential of new methodologies and tools to have a transformative impact on smaller projects is higher than the grant funding available to support extensive, expensive and extravagant technical undertakings, usually beneficial only to large and well known museums (Lejeune, 2007; Dombrowski, 2016).

Although there are plenty of ideas for creating online digital collections, there are also numerous limitations. Currently, the majority of small museums are unable to follow the large cultural heritage institutions' digitization steps, and having their collections online.

Additionally, a lot of times smaller museums do not usually hire experts to plan, develop, create, deploy and maintain a digital collection for them, but rather, they delegate them to museum scholars who are often characterized by limited technological skills (Avgousti, Papaioannou & Gouveia, 2019).

Further, even if they do manage to digitize their collections these are often stored in isolated data silos which are incompatible with automatic processing and incompetent when searching for related information (Avgousti, Papaioannou & Gouveia, 2019; Sikos, 2016).

On the other hand, this limitation can be addressed by organizing and publishing data using dominant formats and by adding machine-understandable data (Sikos, 2016).

However, this is not a trivial task, and many humanities scholars with non-technical background usually do not have the technical support to undertake such intricate work. On the contrary, this extra step often requires complex setups and in many cases the use of sophisticated and unfamiliar tools (Avgousti, Papaioannou, & Gouveia, 2019 ; Velios & Martin, 2016).

Nowadays, the majority of small museums are unable to publish their collections online on their own. It is difficult for small museums and individual researchers to even attempt or follow the larger museums' digital steps since they will not always be able to host their collections online. The majority of small museums certainly lack the resources and the technical skills or the knowledge needed to develop digital collections of their own. Further, small museums must be empowered to carry out their own projects under the direction of a broader community.

Methodology: This presentation focused on Community Reusable Human and Machine Understandable Content Models that are: a domain-centric approach modular functional structure components. A collection of reusable elements that are taken to satisfy a specific domain that is: small museums and individual scholar's projects. The result is a shared understanding of both human and machine-understandable content. Moreover, Community Reusable Human and Machine Understandable Content Models are installation components that can extend the functionality of the Drupal Content Management System by automatically populate context, content types, taxonomy vocabulary, content, content collections, design, and semantics. Those installation components can be created ones and reuse across various online museum collections. Through the development of Community Reusable Human and Machine Understandable Content Models, we are focusing on solving a significant problem related to knowledge dissemination by small museums.

Conclusion: The development of an online community for Community Reusable Human and Machine Understandable Content Models will allow digital humanities scholars, site builders, computer scientists, digital humanists, site administrators, web developers and others, to create, develop, collaborate, improve, upgrade and share their models and package to impact cultural heritage community in a very beneficial way.

A distributed model for Community Reusable Human and Machine Understandable Content Models will allow our methodology to grow and be more flexible, serve more varied and diverse needs to develop the infrastructure accordingly so as to cater for the next generation of small museums and humanities scholars.

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C

VISITOR MUSEUM EXPERIENCE – TO BE OR NOT TO BE DIGITAL?

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As digitization became mainstream, many museums develop websites, applications, digital interactions, and social media accounts. Undoubtedly, digitization provides vast affordances for the facilitation of long-lasting relationship with their audiences and enhances visitor experiences. However, many cultural institutions adopt a rather ambivalent position towards the ubiquitous digital intensification, since there is a possibility that physical visits to museums would be inexorably abandoned to the benefit of virtual visitations. In this paper, I will address the issue of complementarity and the complexity of the visitor experience. The main research questions are: What is the relationship between physical and digital attributes of museum experience? Do they complement or substitute each other? What is the role of VR/ AR realms in the production of the visitor experience in the digital age?

Through the analysis of student experiences from Gamla Uppsala Museum (Uppsala, Sweden), communicated in the form of academic essay (n= 16), as well as the participatory observations during the study visit, the paper is designed to generate insights into the ecosystem of visitor experience addressing the VR and AR components of student's engagements with and within the archeological site. The study will critically reflect the symbiotic digital/analog blend of the museum visit, and also provide a holistic view of the museum communication strategies in the era of digitization.

I

THE DEMES OF ESTONIAN FILM HISTORY: ANALYSING THE NETWORKS OF FILMS AND THEIR MAKERS

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Maarja Ojamaa
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Jaagup Kippar
(Tallinn University)

This paper discusses the results of of a study that used the relational databases of the Estonian Film Information System (EFIS, www.efis.ee) for interpreting the networks of films and their makers in Estonian post-war film history. For making sense of the 'creative units' in film history we used the 'deme' concept of Hartley and Potts (2014). A 'deme', originally coined in Ancient Attica, is for Hartley and Potts a population group that does storytelling together and in that creates a shared understanding of identity

- 'us-ness'. That is, it is a group that works auto-communicatively, at least to an extent, in terms of of Juri Lotman (1990). In this broad conceptual context a 'deme' for us was a group of filmmakers that perhaps shared an interest in similar forms of storytelling, or in represented objects or themes. These groups evolved together, by learning and motivating each other and they may have even articulated their shared position - i.e. they worked autocommunicatively in order to codify their group.

We hypothesised that the relatively rich dataset in EFIS would enable to study the evolution of such demes in Estonian film history. EFIS includes rich descriptions of each film ever produced in Estonia - on their makers, their contents, their screenings, their awards and their reception. As such they also constitute 'nodes' of networks - descriptions of 'meetings' of different filmmakers and other artists and what topics did they work on and what did they choose to represent in their films. In our study we, thus, used these descriptions to analyse the films exactly as such nodes of networks of people and the topics these people chose to do their storytelling about.

In terms of a more concrete analytic method we carried out what is conventionally known as 'link analysis' - we studied the links between makers and themes/representations. We focused on links where one counterpart was always a leading member of the creative team - either a director, producer or scriptwriter of the film. We also left out all animations and many other subtypes (educational films, newsreels, etc) as their inclusion would have undermined the analysis in various ways. We created also a clear division between documentaries and fiction films as their maker communities are quite differentiated. In our paper presentation we focus on the networks between documentary makers and themes/representations of the films. We demonstrate how the method can, indeed, reveal significant changes in maker demes and in their artistic choices. Yet, we discuss also how data quality may undermine such analytic endeavours.

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J

MAKING HISTORY: CRITICAL MAKING, 3D PRINTING, AND DIGITAL CULTURAL HERITAGE IN THE HISTORY CLASSROOM

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In recent years, 3D printers have become commonplace in libraries, in museums, in science centers, and in schools. Such additive manufacturing technologies, though they have a long history, are only now becoming sufficiently affordable and user friendly to put them within reach of mainstream education. In this process, they have also become subject of many visions about the production methods and knowledge systems of the future. Through the democratization of 3D printing, anyone can make more or less anything. 3D printers break down the boundaries between material and virtual, between digital and analogue, in ways that can seem revolutionary and liberating (Jordan, 2019). The potential for using these

technologies in teaching history in school classrooms is large. But we cannot take such applications for granted.

Figure 1: Lewis Chessmen, copy and original

A basic approach to many 3D printer projects is making – the act of doing as a way of learning (Gauntlett, 2013). 3D printers are often placed in so-called makerspaces, workshops that combine technological infrastructure with openness and knowledge transfer between users. The makerspace idea has been primarily oriented towards the STEM tradition, in other words natural sciences and engineering, but we can see how "critical making" has gained traction within the humanities in recent years (Ratto, 2011). Many humanities scholars point to material creation processes as a way to think (Ingold, 2013; Bogost, 2012), and they we are definitely in the domain of the humanities. Makerspaces also have a political subtext, given that it is often framed as taking control over the production mechanisms of the future.

This paper presents results and lessons from a pedagogical development project that explores the use of 3D printers in history education. This project uses a concrete makerspace, the Didactic Digital Workshop (DDV) at University of Stavanger, as its basis. The purpose of DDV is to bring together all the new technologies that the teachers of the future will encounter in their classrooms, so that they can learn to master them. But what does it mean to master such technologies in an educational context? How can we develop the digital competency in our teacher students and enable them to teach this to their own students? How can 3D printers serve as pedagogical tools in history? How can we make use of cultural heritage sources in creating digital tools for education? What kind of infrastructure is necessary to support teaching with 3D printers?

In order to answer these questions, we used the famous Lewis Chessmen (see figure 1) as an entry point into the world of digital cultural heritage. Dating from the 12th century, the walrus ivory chess pieces were discovered in the Outer Hebrides in 1831 (Brown, 2016). Today, 82 pieces are held by the British Museum and 11 pieces are at the National Museum of Scotland. Current theories hold that the chessmen were most likely made in Trondheim, Norway. The chessmen have achieved an iconic cultural status, appearing in films such as Harry Potter and Brave. In teaching terms, they represent a form of cultural heritage that is easy to represent in visual form. While the originals are only accessible in two European museums, copies are easy to purchase online or in museum stores.

The project involved the students in seminar-based teaching that emphasized their learning through making. In the first part of the seminar, we divided the students into groups who would go from station to station in DDV to explore different ways of exploring and encountering digital cultural heritage. At the stations, students encountered many different versions of the Lewis Chessmen, with different material and digital affordances:

- as high-quality resin replicas, purchased in a museum store
- as digitized 3D models available at Sketchfab on a regular monitor
- as digitized 3D models available at Sketchfab on a large touchscreen for direct manipulation
- as a VR model of the digitized 3D models available at Sketchfab, using HTC Vive
- as represented in text through one of the many history books of the Lewis Chessmen
- as a 3D-printed model, based on the Sketchfab digitization
- as a 3D-printed model, based on my own photogrammetry digitization
- as a standard photograph of the original Lewis Chessmen set

Through these different representations of the same "original" cultural heritage object, we discussed themes such as materiality, authenticity, "aura", and digitization. Following this exploration, the students spent the next two weeks developing their own 3D printing project, in groups. Here, they were to locate a digitized cultural heritage object model and print it, with support from the DDV student assistants. The students developed skills with using 3D printers, learning to find digital models and prepare them for printing. The project enabled students to use the digitized collections of GLAM institutions.

Figure 2: Students rotating between stations in DDV

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CHARACTER NETWORKS IN TWO ESTONIAN BOOKS ABOUT REYNARD THE FOX

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The presentation discusses the sets of characters emerging in two literary collections of folk tales that contain stories about the fox against the background of animal tales in Estonian folklore. The analysis draws on a comparison of the characters in the collection of stories for children titled *Old Tales about Reynard the Fox* (1911) by Ernst Peterson-Särgava with the animal characters appearing in the first Estonian-language collection of tales about the fox, *Reynard the Fox* (1850) by Friedrich Reinhold Kreutzwald, as well as manuscript recordings of animal tales stored at the Estonian Folklore Archives of the Estonian Literary Museum. Both books are based on the cycle of Reynard the Fox in medieval and later literature. Kreutzwald's collection is the first Estonian-language collection of the animal epic, while Peterson-Särgava's work holds an important place in the canon of children's literature. Both works contain elements from Estonian folklore and are widely known due to their position in general literary history, the history of children's literature, and among texts used in school education.

Visual representation of the interaction of character networks is a good way of obtaining a survey both of a work's characters as well as the relationships between them. Narratives such as literary stories about animals and animal tales serve as a good basis for analysing character pairs as in animal tales characters usually appear in twos with much dialogue between them. I analyse characters who appear in the same episode, while consolidating the synonyms denoting the same character (especially Kreutzwald uses both names as well as synonyms such as Wolf and the Master of Forest; Badger and Fearbeard, while both works contain Fox as well as Reynard). Main character pairs in both works are visualised using

network analysis. It appears that unfriendly networks dominate over friendly ones both in *Old Tales about Reynard the Fox* as well as *Reynard the Fox*. Some characters often act as a group, particularly in Kreutzwald's book.

A comparison of the frequency tables of each work with Pille Kippar's survey of the most popular characters in Estonian animal tales (1989) demonstrates that the lists of characters in both books are dominated by the same animals as Estonian animal tales demonstrate that the lists of characters contain the same animals, with a few notable exceptions. However, depending on the emphases of the works, the positions of the animals in the order of importance have changed. If the appearances of the fox are relatively comparable both in the books as well as the folklore corpus, characters such as the bear and the wolf who are popular in animal tales as well, turn up rather less frequently in the books about the fox.

K

FROM MUSEUMS TO STUDENTS – CONCEPTUALISING AND MEDIATING DIGITIZED IMAGES OF HISTORY: 20 + 1 EDUCATIONAL FILMS AND WORKSHEETS ABOUT VISUAL SOURCES OF HISTORICAL MEMORY

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Tiina-Mall Kreem
(Art Museum of Estonia)

This paper departs from the main theme of the conference, which the use of digital cultural heritage, especially in the field of education; relying on its authors experience in working with images of history. The production of educational films about 19th–21st centuries visual representations of history from Estonian museum and other collections started in 2012, along with the initiation of research projects on Estonian images of history, the preparation of research-based exhibitions at Kadriorg Art Museum (2013) and Kumu Art Museum (2018) and related publications.

The production of educational films was closely related to our aim to link academic research and curating with teaching (in parallel, this also involved university level teaching). For research, digital databases were of fundamental importance, as they enabled to map Estonian images of history much more extensively than it had been done ever before. In turn, educational films and materials enabled to introduce the digital databases and the materials they contain into wider public use.

10–12 minutes long films analyse, also with the help of concrete case studies, the functioning of images of history in the making and remaking of historical memory. The films involved a number of well-known Estonian historians as experts (David Vseviov, Toomas Hiio, Marju Kõivupuu, Inna Jürjo, Juhan Kreem). The director of all the films is the documentary film maker Raimo Jõerand. The peer-reviewed educational materials accompanying the films (200 pages in total) were designed in co-operation with the teacher of history, art history and civics, Liis Reier.
The topic of 20 educational films corresponds to the national curriculum of history, analysing significant historical events and sites of memory: Livonian and Estonian crusades, the so-called St. George's Night Uprising (a revolt in medieval Estonia from 1343–1345), the Napoleonic Wars, the Mahtra War

(a peasant uprising from 1858), the Revolution of 1905, etc. The purpose of the 21st film, *Englightenment. Freemansonry. Estonia* was to compensate the lack of Baltic German topics in the national history curriculum.

All these films have been introduced through various seminars, conferences, and through the Estonian History and Civics Teachers Association. Statistics about the use of films and teaching materials shows that through them the images of history digitised by the Estonian museums, archives, libraries, etc. have found their way to schools and universities.

The paper stresses the importance of both academic research and popularisation of museum holdings. In a situation where the internet witnesses an increasing growth of digitised objects, documents and images, the challenge of digital humanities becomes not the quantity but the quality of knowledge production and distribution. As problems, the paper highlights the rapid ageing of digital materials and platforms, as well as the need to balance digital images with material objects in the learning process.

INTERNET FOLKLORE AND ONLINE MEDIATED IDENTITY: AN ETHNOGRAPHY STUDY IN NYISHI COMMUNITY, ARUNACHAL PRADESH

Deepika Kashyap
(University of Tartu)

Keywords: *Internet folklore, Nyishi community, social identity, online identity*

Modern technologies and innovations have transformed the culture and tradition of the Nyishi community. It has created a new identity for Nyishi people through the internet. The penetration of the internet or the WWW (world wide web) allowed the folk to express and represent their "lore"- culture, custom and tradition to a wider mass. The Internet also opened up for a new mode of communication where people can create and circulate the messages easily. With the advancement of technology and internet, a lot of cultures, traditions, and folklore around the world have revived and are reaching out to the people by crossing the geographical barrier as well as the time limit. Nowadays people from many communities are coming online and creating a space of their own and expressing their identity, culture, and agency. Nyishi folklore is also taking pace with the help of internet technology. Internet folklore is becoming a major source of information and entertainment for the people. Through the internet and online communication tools (Facebook, YouTube, Google App- Nyishi World App) Nyishi people are taking the initiative to save and spread their culture and identity in the society. It has been evident that the folk from Nyishi community are actively participating in online mode, through their Facebook page they are affirming their culture and identity. They are updating the Nyishi folktale, legend, story, custom, and tradition on their Facebook page, and attracting people from both inside and outside world. The online selves of Nyishi people are related to offline contexts where the individual or a group of people perform in real life. The online Nyishi community is just an extension of offline context, i.e., Nyder Namlo which is working toward the protection of Nyishi language and propagating Nyishi identity and culture offline. The concept of identity and culture is now closely associated with the interface between technology and society. The computerized society has changed the meaning of knowledge and truth. It is having a radical effect on identity and culture. The gender paradigm is also changing due to the widespread use and accessibility of the internet. This research is going to critically engage with the reception of internet and folklore in the Nyishi community, and the interface between the social paradigm and the internet. Through the text, context, and texture this research is going to validate the technique of internet in folklore. It is interesting to see the technique used by both online and offline community to create and circulate the culture and identity.

NETWORKS OF VIRTUAL EXHIBITIONS - CREATIVE AND INNOVATIVE WAYS OF INTERPRETING AND COMMUNICATING CULTURAL HERITAGE

Sofija Klarin Zadravec
Dragana Koljenik
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Keywords: *virtual exhibitions, collaborative tools, digital storytelling, cultural heritage, citizen science*

The creative reuse and interpretation of cultural heritage presents a challenge for heritage institutions that traditionally have been more focused on the organization of heritage information and less on its interpretation. Following the increased use of the virtual exhibition as a form of digital storytelling a gradual qualitative shift took place from one-off products to sustainable collaborative systems.

Such systems provide tools for a large number of users and uses, achieving cost and labour effectiveness of creating a virtual exhibition. The presentation will give a brief overview of the development of the collaborative virtual exhibition systems with an emphasis on the National and University Library in Zagreb (NSK)'s Virtual Exhibitions Network System which stems from the Creative Content Reuse Digital Content Project (2018).

Through developing new collaborative tools and carrying out education activities a cooperation of librarians was achieved and resulted in the creation of several new virtual exhibitions. Next step will be the creation of Greetings from Croatia virtual network sub system (2019) that will offer new opportunities for the heritage sector in the context of cultural tourism and education.

THE FATE OF ABANDONED RELIGIOUS HERITAGE: THE CASE OF CYPRUS

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Keywords: *Cyprus, contemporary history, religion, religious heritage, religion and politics, religious heritage in conflict zones, local storytelling, citizen science*

The island of Cyprus, located in the Eastern Mediterranean Sea, gained its independence from Great Britain in 1960. The constitution of the Republic of Cyprus was characterised by a consensual approach and cooperation between the governmental representatives of the majority (Greek Cypriots, 80%) and the minority (Turkish Cypriots, 18%). But just a few years later the joint government failed and the island experienced politically unstable times. The political conflict between Greek and Turkish Cypriots was transferred to the civil society and led in the further course to a civil war-like situation in Cyprus. The violent conflict between both sides reached its peak in summer 1974, when Turkey intervened militarily. The results of the intercommunal fights and the Turkish intervention were catastrophic: in August 1974, the island was divided into two parts, both sides suffered tragic losses of life and there was an internal displacement of thousands of Cypriots. The division also led to the persistent spatial separation of Greek and Turkish Cypriots on the island – with the Greek Cypriots in the southern part of the island and the Turkish Cypriots in the northern part.

In most cases the internal refugees not only left most of their properties and belongings behind, but also their religious and sacred spaces such as churches / mosques and cemeteries as well. A large number of these important religious places and sites are now abandoned for more than 45 years, and as a consequence, many of them were exposed to deterioration or destruction by natural or other forces. Some of these places have already disappeared, others are on the threshold of vanishing or complete destruction. Unfortunately, there has never been a comprehensive and publicly accessible documentation on the fate of the religious heritage of both, the Muslim and the Christian communities on the island.

Against this background in 2018 a project was initiated by the author, a research associate of the Institute for Interdisciplinary Cypriot Studies (University of Münster) in cooperation with the Foreign Ministry of the Kingdom of the Netherlands which aims at stocktaking these important places and sites as part of the cultural / religious heritage of Cyprus. The project's first part with the title "The religious heritage of Cyprus: a survey in the districts of Kyrenia and Larnaca" was started in September 2018 and will be finished by the beginning of October 2019.

The overall objective is to provide a comprehensive database of the major religious sites in the towns and villages in the southern and northern part of Cyprus – sites which were left behind by their original owners due to the tragic events of 1974.

The paper to be presented at the conference will start with an overview of the results of the project's first part: the stocktaking of 38 villages with former Christian or mixed population in the northern part of the island and of 27 villages in the southern part which had an exclusively Muslim or a mixed population before the events of 1974.

The paper's second part will focus on the project's objectives in the area of digital cultural (and religious) heritage.

The project aims at:

a) providing a platform for people of both sides of the divide to get information on the fate of their religious heritage, even if they are not able or willing to visit the so-called other side (due to health issues, political reasons etc.); this includes of course the possibility to locate these sites;

b) creating a basis for new initiatives to bring both sides together (e.g. restoring religious places, which are massively affected by deterioration, decay, vandalism etc.);

c) presenting an interactive platform and thus allowing the users to contribute themselves (e.g. by adding historic photographs of the religious places and sites etc.);

d) trying to protect the religious sites against further destruction via detailed documentation;

e) informing interested tourists about the religious sites which are located in the areas they are planning to visit (e.g. implementing this information in special holiday or local apps etc.).

Although the topic of digital cultural (and religious) heritage is of prime importance for Cyprus, it is often difficult to implement this topic in the island's society. One has to consider that the cooperation with official bodies of both sides is difficult due to the fact that the so-called Turkish Republic of Northern Cyprus (TRNC), proclaimed in 1983, is a *de facto* state recognised by Turkey solely. International bodies (like UN etc.) are still considering the northern part of Cyprus as an integral part of the internationally recognised Republic of Cyprus, whose access area in turn is limited only to the southern part of the island.

Furthermore, one has to deal with problems occurring due to this issue (e.g. the current status and the structures regarding the ownership of religious sites; the dispute over the names of some of the affected places and villages; the considerable impact by different laws as well as different cultural and political obligations and prohibitions).

THE CULTURAL HERITAGE OF OUR 'DIGITAL DARK AGE' THROWN INTO THE 'INFORMATION BLACK HOLE': WHAT CAN IT TEACH US AND OUR STUDENTS IN THE NEAR FUTURE AND 'IN THE LONG RUN'?

Bernd Kulawik
(independent researcher and developer)

The Digital Humanities — and they are not alone — do not only document their research data and results in the form of texts and — recently — databases using digital tools and formats, they also create new forms of cultural heritage in genuine digital formats. While the advantages of these tools and formats are obvious and help researchers to communicate faster, access more sources and research results and any kind of information faster than ever before, their future usability and availability are far from certain: During the last c. 30 years, and especially with the advancement of the World Wide Web, hundreds of research projects have been started using digital means — and many of those have disappeared in the meantime, destroying the results of scholarly work and, by doing so, working and life time in unimaginable magnitudes. Now, for the last 5 years or so, funding institutions are demanding more and more that researchers present 'data management plans' describing how their data will be created, stored and 'securely' safed for the future. And by 'future', they mean 15–20 years. This demand does not only come some 25 years (too) late, it is also ridiculous in several aspects: First, while research in the humanities usually deals with artifacts dozens, hundreds or even thousands of years old, the results of the new digitally enriched research shall be lost after 20, at least 50 years? Because there is NO data format, let alone: software, that can be guaranteed to work for more than 50 years. (And this is only expected to be true for simple text formats like TXT, i. e. without any enhancement in comparison to printed texts.) In addition, computer sciences themselves have no means and even no ideas what such means could be or look like to preserve data, software and the necessary hardware to use both for more than 20–30 years. Vint(on) Cerf, as the main developer of the TCP/IP in the early 1970s, one of the 'fathers of the internet', has warned since 2015 that our times will be seen as the «digital dark age» in the future. But his suggestion for a solution, a sort of a meta-emulation for hard- and software called the «digital vellum» is not working yet and will encounter grave problems once it would be working and available for everyone. Alan Kay, one of the fathers of object-oriented programming and the graphical user interfaces developed in the late 1960s and early 1970s, proposed another medium to preserve at least 'snapshots' of data on discs containing self-explaining descriptions decipherable and readable by rational beings even in thousands of years. He calls them the digital «cuneiform tablets». But these do not address our immediate problem, and they may also not overcome the same problems with proprietary software, licences, 'activation keys' that have to be exchanged over the internet and, finally, data and software heavily (and more and more) relying on other data accessible via networks.

Before we introduce more and more new, shiny digital products, tools and formats into research, documentation and usages like education, we should step back for a moment and try to answer the question: How long will these be available? Is it really worth to invest time and (lots of) money into projects whose results we ourselves may not be able to use in 20 years anymore? Based on this situation, the paper will sketch a proposal for another solution that may look ridiculously expansive at first sight, but — as far as I can see — cannot be avoided in the long run. It will only get more and more expansive the longer we wait, and more and more research data will be lost in the meantime. We should teach (and learn ourselves) that digital tools and formats bear this immense problem, and that without any solution we are throwing our data into a big «information black hole» (Cerf).

FOLKLORISTIC OPEN ACCESS DATA SET AND COMMUNITY ART

Mare Kõiva
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Henry Jenkins (2019) wrote: „[i]t was the cultural operating system behind the development of our languages, religions, music, stories and more. But like undergrowth in a forest, it was overshadowed by the trees of single-authorship, which prospered in the West during the Enlightenment and emerged as a privileged form with the institutionalization of intellectual property".

Co-creation practices, even if described by industrial-era cultural critics as 'folkish' or 'amateurish' or 'craft' (ibid.), have continued to offer alternatives to projects sparked by single-authored visions.

As summarized in one of the new projects of the Estonian Literary Museum (ELM), today digital data management and the use of digital methods in research are elementary and inevitable. It is of utmost importance to have discussions concerning the intangible tradition because advances in technology increase the chances of obtaining new data, and the archival data are expanding exponentially through recordings, video examples, photographs, and manuscripts from various local communities and regions, and diaspora communities. This means making new existing archives available, but also using the possibility of computer analysis in new research corpuses and databases.

The activities carried out from 1993 to 2019 means that ELM has remarkable data set of vernacular culture. Ca 200,000 pages of materials at the Estonian Folklore Archives have been digitized as repository pictures (Järv & Sarv, 2014), about 600,000 units have been digitized as texts and form a diverse set of databases, or thematic collections of intangible culture (Kõiva, 2020). Folklorists have more than 800 analytical maps of certain expressions, phenomena, genres, etc. (Loorits, 19232; Krikmann, 1999).

The text form doubtlessly offers great advantages to the researcher because it is easy to process. By combining digital data from different archives, we can track data streams, various topics, and ontologies from the sixteenth up to the twenty-first century. Even more – the merging of publications (early folklore publications, data from calendars from the years 1739–2013, chronicles) prolongs the timeline of the data and motifs observable from the thirteenth century up to today.

Currently the ELM has appr. 60 databases, and thematic collections of intangible cultural heritage, most of them are organized by genres, or as thematic research collections, or present materials from a particular area. Genre still plays a central role in folkloristics (Baumann, 1975: 292), but some of the databases also include materials from outside of genres, as the aim is to obtain cohesive material on a particular phenomenon.

The indexes have been designed to assist scholars who are interested in the comparison of motives or text types, to explore transcultural and transmedia phenomena, adaptations of cultural phenomena – to name a few aspects. During the last 50 years the indices became canonical, even iconic part of base studies. There are certain international indices (ATU and SUS for fairy tales, Broadwell *et al.*, 2017), the motif index of folk literature (Thompson, 1955-58), and national level indices of legends, proverbs, riddles and related forms, sayings, alliterative songs, etc. We can be proud of having completed national level indices in almost all genres, and some important indices (fairy tales, incantations, legends) are in progress.

During recent years the scholars of ELM have created environments for the newest phenomena (memes, etc.), also community art, community gifts, private memorials, and other long-marginalized sides of placemaking, folklore, and vernacular religion. Community art exists next to a multi-faceted approach to

the planning, design, and management of public places as an institutionalized industry, often supported by remarkable budgets (Sofield *et al.,* 2017). This phenomenon is one of the most vulnerable and most rapidly disappearing cultural activities; therefore, it is especially important to turn attention to and capture it. It is again the meeting point of charity work, but also closely connected with memories and remembrance, very often also with ritual activities.

The possibilities of digital humanities or computer analyses for art and the humanities has special tools. (Un)fortunately in the RDA Alliance folkloristics in broader sense locates between history and ethnography, linguistics, and empirical humanities. Starting with digitization in early 1990ies and with databases in 1997 the folklorists were forced to use homemade tools for proper analyses (like mapping tool by Krikmann and Krikmann 2012. editing tool Skriptoorium by Kuperjanov, etc.).

Intangible cultural heritage is the best way to get an idea of the changes that have taken place in the society, culture, and people's mindsets. It is important to connect literary culture and folk culture, both from the written and oral sources, manuscripts and printed items, soundscapes and visual space, which, in turn, must be and are linked to the basic and applied research, as well as the activities of interdisciplinary and international collaborative networks.

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L

CONTENT-BASED ENVIRONMENTS OF LITERARY HISTORY AS THE BASIS OF COMPUTATIONAL LITERARY STUDIES

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Keywords: *digital heritage collections, literary history, hypertext, computational literary studies, corpus linguistics*

The aim of my paper is to discuss the usage of cultural heritage collections in the context of the explosive growth of digital cultural heritage and text resources. What kind of experiences and challenges do we have from the literary studies perspective? The primary question is how to bridge the gap between the research possibilities offered by the contemporary LT&TDM and the increasing resources of texts and other digital data, produced by memory institutions. This has proved to be a complicated task and international practice has shown that literary scholars are slower to embrace new practices than linguists for whom corpus-based research is already a professional standard. In general, literary scholars are more used to working with traditional methods, analysing them as undivided poetical and semantic entities (Schriebman *et al.,* 2015).

The Estonian Literary Museum has since the 1990s been one of the pioneering institutions in the field of literary studies and folkloristics in our country. We were applying DH tools in creating of the content based interactive information systems and scientific databases. The aim of my paper is to argue the research challenges of literature based on cultural heritage sources using DH methods and computing technology.

The most general question we have asked is whether Digital Humanities can essentially be considered as a tool or a method for literary research, or is it an entirely new approach in literary studies, having a potential to change literary theory significantly. (Viires & Laak, 2018) This question is particularly relevant when we talk about electronic literature, multimedia poetry and other interactive literary forms that cannot be considered as "traditional humanities research objects" any more and can exist only in the digital environment. Although the field of Digital Humanities is broad, the meaning of DH is often reduced to methods of computational language-centered analyses, mainly based on using different tools and software languages (R, Phyton, network analyses, topic modelling etc.).

During the past twenty years, my research has mainly been focussed on developing large-scale implementation projects for digital representation of Estonian literary history. The objective of these experimental projects has been to develop principally new non-linear models of literary history for the digital environment (similar to the pioneering "Women Writers Project" at the Brown university).

We started with the first content-based project of literary history titled "ERNI. Estonian Literary History in Texts 1924-1925" at the Estonian Literary Museum in 1997 (www2.kirmus.ee/erni). Its objective was to use a relatively limited amount of well-studied source texts focussing on the intertextual relations of literary reviews and works of literature in the 1920s. A new digital model of literary history was presented in the form of an interactive hypertextual network of texts, based on literary source texts, reviews and

discussions. The challenge was to remediate the printed book format of literary history into digital text models. (Bolter & Grusin 1999) We re-conceptualised literary history as a system, and the non-linear narrative as a gallery with many entrances. ERNI was one of the first successful Tiger Leap projects in Estonia. Our main task was to ensure its usability in the field of education. We cooperated with school teachers in developing this project and added a significant number of study materials and a questionnaire.

In 2004, we initiated our long-term and still running project "Kreutzwald's Century: the Estonian Cultural History Web" (http://kreutzwald.kirmus.ee/) at the Estonian Literary Museum. The objective of the project is to make all literary sources of the period accessible as the dynamic, interactive information environment and by doing this, to develop a full model of Estonian literary history. This was a hybrid project which synthesised the classical study of literary history, the needs of the digital media user, and the expanding digital resources from different memory institutions; its underlying idea was to link together all the works of fiction of an author, as well as their biography, manuscripts and photos and to make them visible for the user on five interactive time axes. The project uses special software.

However, these two content-based models of literary heritage will need some further conceptualisation: how can such kind of modelling projects be fitted into the context of Digital Humanities?

The provocative question remains: can we talk about "digital literary studies", encompassing all the previously mentioned research areas, including the modelling of content-based environments, or can we take such research activities as a new discipline in the realm of Digital Humanities? (Viires & Laak, 2018) This question is better understood while comparing the previous modelling practices with our current experimental project in the corpus query system KORP, developed in cooperation with the Centre of Language Resources at the University of Tartu. Our interdisciplinary project "Literary Studies Meet Corpus Linguistics" focussed on studying literary history sources with linguistic methods (Laak *et al.*, 2019).

KORP allows us to organise the statistics by all the categories used in the corpus, for example, to learn who of the authors mentioned André Gide and when in the texts held in the corpus. From the statistics drawn from the corpus we can see that it was mainly J. Semper who talked about Gide in 1926 to 1930, discussing him with his friend during writing his master's thesis "The structure of the literary style of André Gide" at the University of Tartu, and later, when studying Gide in relation with his work as the university lecturer of aesthetics and stylistics.

Our latest and still continuing project is the morphologically annotated "text corps of the history of literary criticism", carried out in cooperation with the computational linguists of the University of Tartu. This corpus contains texts of literary reviews and criticism in different genres, drawn from the projects ERNI and "Kreutzwald's Century". We launched the project only this spring, but the first results in studying the dynamics of literary values can already be seen.

Conclusion

Cultural heritage sources in libraries and archives have a great scientific value for literary scholars, but promise a linguistic importance as well.

Applying the corpus linguistic methods in literary studies has a rich potential only if we convert the digitised sources into machine-readable format.
Analysing the characteristics of computational literature, N. Katherine Hayles concludes her article with a statement regarding literary theory: "The urgent challenge digital textuality presents for criticism is to reenvision and rearticulate legacy concepts in terms appropriate to the dynamics of networked and programmable media." (Hayles, 2007) The question – is Digital Humanities a method and a tool or a new theory – is still waiting for an answer.

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HOW TO BUILD A ZOONIVERSE-PROJECT: CITIZEN SCIENCE FOR HISTORIC BALTIC-GERMAN MATERIALS IN ESTONIA

Larissa Leiminger
(University of Tartu)

Citizen Science, better known in the Humanities as *Crowdsourcing*, is a great tool to involve the broader public into scientific research. It opens possibilities to have a playful interaction with research materials and facilitates easy access for users through the online environment. But some researchers in cultural institutions might become discouraged at first thinking of the technical components, programming skills and financial means that building such a project seems to involve. I, therefore, want to introduce the Citizen Science website Zooniverse and their featured module "Build a Project" as a low-resource alternative. I explain the different features and options the website provides on the example of my own project. During my research, I faced the difficult task of transcribing the manuscript acquisition-catalogue of the Learned Estonian Society. This index was conducted by the many secretaries of this literate Baltic-German society between 1843 to 1910. It therefore includes different handwritings in German *Kurrentscript* as well as entries in Estonian and Russian. Because of the variety in the material, the long timespan and the volume of this index, I only managed to transcribe half of it on my own. For the analysis and transcription of the rest of the materials I established an online Citizen Science project on the Zooniverse website consisting of three different workflows to involve others in my research and distribute the workload.

DIGITAL HUMANITIES WORKING GROUPS – PERSPECTIVES AND APPROACHES FROM EUROPE AND THE UK

Kirsty Lingstadt
(University of Edinburgh)

Since its establishment in 2017, the LIBER DH Working Group has achieved a range of outputs, most notably a survey resulting in a report on Europe's Digital Humanities Landscape. This covered: awareness of DH in European Libraries; cooperation with DH scholars and research projects; skill building and DH education; and organisation and policies of DH services.

The presentation will touch on the key findings of the survey and how the group worked together in order to achieve its goals. It will then focus on, "Where next?" Based on the survey results and the outcome of a workshop at the LIBER Conference, the Group has identified four key areas of focus to be developed over the next two years to help Libraries take forward Digital Humanities.

As well as looking at the work of LIBER, the paper will also touch on some of the similarities and differences with the RLUK Digital Scholarship working group, which has also recently completed a survey of work in the UK.

INTERACTIVE READING OF THE SPANISH SILVER AGE LITERATURE: TEACHING AND RESEARCH PROMOTED BY THE NATIONAL LIBRARY OF SPAIN AND MNEMOSINE DIGITAL LIBRARY

Dolores Romero López
Alicia Reina Navarro
Patricia Barrera Velasco
(Universidad Complutense de Madrid)

Project Elite-Loep

The National Library of Spain (BNE) and the research group on Spanish Silver Age Literature (LOEP) at the Complutense University of Madrid present "La Edad de Plata interactiva" ("The interactive Spanish Silver Age"), a collaborative project to enrich the Library's digital collections and their use in teaching and research, exploring the resources that new digital technologies offer to the edition of texts in the field of cultural dissemination. The results of this research are inserted within the framework of eLITE-CM's Project (H2015/HUM-3426).

Theoretical Framework

This Project started with the question of whether today's philology, supported by new digital technologies, could propose rereadings of certain authors and works that, for reasons which are not often strictly literary (such as gender, ideology, aesthetic rarity...), have fallen into oblivion or are not currently occupying the space that would correspond to them within literary historiography if the quality of their writings is taken into account. After the official canon of the Silver Age there is, indeed, another dimension of Spanish literature that must be discovered or rediscovered (Romero, 2014: 16).

In the context of this debate, lines of research have emerged precisely around the concept of rereading to propose innovative interpretations of the literary past. Among them, we want to highlight those referring to the critical review wich has been developed by Digital Humanities. The application of new

technologies to humanistic analysis has undoubtedly revolutionized the way in which we read, interpret and interact with literary works. Over the last years, the concept of rereading has served to designate a process of critical textual revision that could eventually influence the formation of a new extended canon. Nevertheless, nowadays it serves to provide today's readers and researchers a brand new form of access to authors and texts which were no longer read and now have been recovered.

Complutense's research group *La Otra Edad de Plata* (LOEP) has witnessed all these methodological changes that are taking place in the humanities sphere as a result of the technological revolution. Furthermore, the aforementioned group intends to participate in the digital rereading of the Silver Age through the project eLITE-CM, with the aim of constructing textualities that can satisfy the digital natives. In addition, it allows to recover the voices of forgotten authors of this literary period. With this project we want to demonstrate our commitment to Research, Development and Innovation (R + D + i), including the Information and Communication Technologies for Development as one of the most significant challenges of our working group.

Objective

In response to these new reading habits that the Digital Revolution has brought to the current panorama, the LOEP group of research has had as objective within the project eLITE-CM the development of three collections of forgotten texts of the Silver Age, rescued through digitization and enriched by computer programs, with the intention of exploring new resources that hypertext offers to philologycal studies in the Digital Age (Sanz and Romero, 2007).

To achieve our goals, it has been taken into account that dematerialization of cultural heritage linked to digitization leads, necessarily, to new representations of cultural objects (Vinck, 2018: 73), which now overcome their physical limitations to become universally accessible through the Internet. This transformation, within the scope of text editing, implies a reconsideration of the book as a knowledge disseminator (Lucía Megías, 2012: 18) that now assumes characteristics such as transmediality or interactivity, which should be reinterpreted from an hermeneutic and phenomenological point of view, as part of a new perspective on the Reception theory linked to the field of Digital Humanities. Indeed, in terms of cultural dissemination, the enrichment of texts with images, sounds, concept maps, geolocators, hyperlinks, thematic transversality with other arts, etc. modifies the traditional concept of personal reading (understood as a unidirectional, silent and intimate situation), which now becomes interactive. If Bajtin (1975) considered that the literary work already constitutes a polyphony of voices, now the text enters into dialogue with the voices of the world that speak to us from the network.

With this regard, it has also been an objective of the project to expose and evaluate the research results of our interactive collections. Therefore, this new dialogue established between the readers and the literary work has been analyzed as well. For this, data has been collected, not only from the users of the National Library of Spain's website, but also from a wide number of students that have used our editions within a context of meaningful teaching in the classroom. As a result of this practical experience, some theoretical reflections will be offered. The main one is that the benefits that digital reading brings to the user on a cognitive level follow the five principles of what can be called a *smart* reading: Simplicity, Motivation, Accessibility, Recycling and Transference to the global community. In this sense the *smart* reading entails an innovative way of learning within a close-knit community that reaches high levels of thinking and emotional engagement to access knowledge, according to Edward D. Hess and Katherine Ludwig (2017).

Our Collections

Taking this into consideration, "La Edad de Plata interactiva" has carried out three collections of interactive books from the Silver Age linked to different topics, which will allow readers to access knowledge about this period through points of view not so widely considered by canonical historiography: 1) The Modern

Woman in the Silver Age Literature; 2) Children's Literature in the Silver Age; 3) Madrid in the Silver Age Literature.

1) The "Modern Woman in the Silver Age" collection offers interactive editions of short stories, novels and essays written by modern Spanish women authors that, in most cases, were no longer read (except in the context of a very specialized criticism) and has been rescued and critically annotated for the general public thanks to technological resources. This collection is complemented with two monographs related to the topic of modern women, which allows users to access relevant information for the interpretation of the literary works and the historical period itself, carried out by specialists.

2) The "Children's Literature" collection presents two stories that have been updated for today's readers –most of them digital natives– in an interactive way. Both tales were originally published in Spain anonymously in 1923 by the publisher Calleja: *Plague of dragons* and *Spoiled Summer*. As a result of this research, our project discovered that the real author of these stories was the writer Edith Nesbit, one of the best English-language authors, considered a precursor of fantasy literature. In this collection we have implemented an audiobook system so that users can listen to the stories in a dramatized way. Readers will also be able to consult two magazines of additional information in which the historical context of the works have been studied and the evolution of dragon's myth in the fantastic literature has been traced (Reina, 2018).

3) In "Madrid in the Silver Age Literature" collection, we have selected several works from this period in which the city of Madrid presents itself as a space of modernity. For this purpose we propound a new approach to the works of the novelist and journalist Andrés Carranque de Ríos (1902-1936), who represented through his writings the complexities of a world in transformation towards modernity. This collection is complemented with a geolocator through which readers can access several maps where the itineraries of the characters that appear in the texts have been traced, so that the different corners of Madrid during this historical period can be explored in a virtual way.

Institutions And Financing

This work has been funded by the National Library of Spain and by the project itself, within the Program of Research and Development Activities among research groups of the Community of Madrid in Social Sciences and Humanities, co-financed at 50% with the European Social Fund. The result of the research has resulted in an interactive kiosk of the Silver Age of Spanish Literature hosted on the website of the National Library of Spain.

Links Of Interest

– BNE interactive colections
http://www.bne.es/es/Colecciones/LibrosInteractivos/index.html

– Silver Age Literature kiosk:
http://cloud.madgazine.com/46f185c3185976675/?quiosco=46f185c3185976675&t=1542576418

– Press release:
http://www.bne.es/es/AreaPrensa/noticias2018/1118-edad-plata-interactiva.html

CULTURAL HERITAGE GOES TO SCHOOL

Inés Matres
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Digital technologies have brought about a change in the relationship between cultural heritage institutions and their audiences (Cameron & Kenderdine, 2007: 4). Museums, libraries and archives have put high efforts and hopes on digitisation as the next best way for audiences, especially youth, to engage with the past. Digital practices, such as taking selfies and sharing memes show that the encounters with historical artefacts, once considered for reverence and observation, have turned more playful. However, little is known of other forms of engagement with the past that emerge in the digital age, especially when these can happen outside institutions. In my ongoing dissertation, I investigate such engagements and seek to define digital cultural heritage (DCH) as a medium to learn about the past and how memory-work works.

To build my theoretical stance, I rely upon media theory, particularly David Buckingham's approach to popular media in education (Buckingham & Sefton-Green, 1994). My thesis is to suggest that if digitisation facilitates that cultural heritage goes to school, this could mean for school practices what the introduction of popular media had two decades ago. As Buckingham would formulate it, an opportunity to teach and learn not "with" but "about" media. His main contribution to what media education is today, was to acknowledge pupils' own media practices, as a way to reflect upon media at large. The resonance between discussions today around digital media, and that of the 1990s about popular media (TV, comics…) in education, allows us to advance the question of how by means of digital engagement with historical artefacts, young people can reflect about the work memory institutions do and cultural heritage at large.

To illustrate this media theoretical approach to teaching and learning about the past in the digital age, I have so far conducted ethnographic fieldwork in schools. Between 2016 and 2019 I have visited three secondary schools, interviewed teachers and students (aged 14 to 18), and conducted participant observation in three classes where cultural heritage is handled (explicitly, using digitised historical collections and less so, making use of both digital and other resources in history class). Doing fieldwork, the short assignments in which students engage every day in class, soon caught my attention. Focusing on these short assignments (how they are designed, carried out and evaluated) I follow a line of research among media and ethnography scholars that focus on the situatedness and everyday embeddedness of digital artefacts emphasising its significance in terms of use, which not necessarily meets the purpose they were designed for (Lievrouw & Livingstone, 2012; Pink & Leder Mackley, 2013).

As a preliminary overview of what has been analysed so far [1], I here present three ideas that illustrate how digital cultural heritage is meaningful in terms of the learning communities that engage, or may engage, with it.

– Familiarising the unfamiliar. Paul Levinson's concept of remediation originally referred to the improvements each new media technology meant to existing media (1997). This is today understood as a more complex reformative relationship that acknowledges both positive and negative effects of each new media, and considers that reformation works both ways between old and new media

(Bolter & Grusin, 1999). This concept allows to illustrate the instant familiarity that students felt with historical newspapers, more often considered for scholarly use. Students' knowledge of print newspapers, search engines and news sites allowed them to instantly work with digitised historical newspapers, while generated expectations that where partly not fulfilled by historical materials that though imbued with digital appearance, often lack descriptive metadata or content tagging typical of digital-born content.

– The digital/historical (mis)connection. Gaver's concept of technological affordances (1991) serves to illustrate this point. Students using digitised historical collections or digital libraries, are facilitated and constrained certain activities. A few observations from the field allowed me to contrast common conceptions about young people: that they are drawn by visual content, are more interested in contemporary than historical phenomena, and use intuitive methods that often allow them to superficially skim collections. These attitudes were challenged by the affordances of digitised historical materials (accessible through textual query, unaware of their contemporary implications and built with less intuitive interfaces), however this was not perceived as constraint by students.

– Grassroot curatorship. The curatorial process that museum professionals share in many aspects of their labour —identifying collections worth acquiring, sampling them for digitisation, or selecting objects for exhibitions — has commonalities with the process a student undergoes when using digital sources to explore and present historical periods. However, when students visit museums with the class, unveiling the curatorial process behind the exhibition is never the purpose of the guide. Hence, their curatorial process is intuitive and often guided by personal choice or digital habits acquired in class.

As way of conclusion, I would like to suggest that the formation of a DCH culture in education should not only rely on digitisation of collections and making them accessible, which undoubtedly facilitates this aspect of "learning with". Also, making visible to younger audiences the work that memory institutions do, would facilitate the "learning about".

Notes:

[1] These ideas have been partly dealt with in depth in my first dissertation article: Matres, I. (2018). A long way? Introducing digitised historical newspapers in school, a case study from Finland. — *Seminar. Net*, 14(1), 43–61.

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USING LARGE-SCALE DIGITAL LIBRARIES FOR TEACHING AND LEARNING IN HIGHER EDUCATION

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Keywords: *digital collections, large-scale digital libraries, the Digital Public Library of America, use and reuse of digital objects, copyright*

Large-scale digital libraries, such as the Digital Public Library of America (DPLA), Europeana, or HathiTrust provide access to a wealth of resources that can potentially be used for educational purposes. They offer a single access point to curated digital resources and the ability to search across a multitude of scientific and cultural heritage collections. Large-scale distributed systems gather metadata from individual digital libraries or other metadata aggregators and offer a central portal for searching and linking to digital objects. Europeana assists users by organizing resources into collections or topics and offering exhibits on a variety of educational subjects. The DPLA features exhibits as well but also provides sets of primary source materials on topics in history, literature, and culture. The primary source collections are developed by educators and supplemented by teaching guides. However, very little is known about user interaction with large-scale digital libraries, especially in the context of academic work.

Using the Digital Public Library of America as case, this paper explores the use of large-scale digital libraries for teaching and learning in an academic environment. It reports the findings of a user study conducted with university students and faculty. The purpose of the study was to examine user navigation and the potential of using the DPLA in the context of teaching and learning activities in higher education. Twenty one participants were recruited from a variety of social sciences and humanities programs and included two faculty members, six undergraduates, and 13 graduate students. The study was exploratory in nature and adopted a qualitative research strategy with direct observations and interviews. During observation sessions, the participants were presented with two pre-defined scenarios and were asked to search for images, maps, and sound recordings that they could potentially use in class projects and papers. The participants also had an option of conducting two additional searches on the topics related to their academic interests. The observation sessions were video recorded with software capturing user navigation pathways. Interviews were conducted after observation sessions to record participants' reactions about the nature of their experience with the DPLA and to explore the potential of using the DPLA for teaching and learning activities.

Most study participants were new users of the DPLA. Four participants had heard about the site, but only two had actually used it prior to the study. The majority of participants had a very positive experience searching the DPLA and found the site relevant to their academic needs. Most study participants were able to search the DPLA system effectively and took advantage of the format and subject refinements as well as the map visualization tool. A few students experienced difficulties navigating through the layers to locate digital objects provided by service hubs. The participants were impressed with the amount of aggregated resources and ability to search for a variety of objects from one portal. They liked the fact that resources were not only curated by libraries with readily available citation information, but also publicly available. There were some differences in the ways faculty, graduate students, and undergraduate students would use the DPLA for their academic work. Faculty highlighted the abundance of images and other primary source that they could use in teaching. Graduate students commented on the potential of the DPLA for interdisciplinary research and ability to discover a wide range of digital libraries they were not aware of and would not think about searching. Undergraduate students viewed the DPLA as a good starting point for research and liked the exhibits as means of learning about the topic quickly and finding additional resources.

This paper also discusses some challenges of using large-scale digital libraries for teaching and learning. Although the participants like the exhibits in the DPLA, they also commented about the lack of diverse topics and limited bibliographic documentation. The lack of advanced search function in the DPLA was found as a limiting factor by graduate students and faculty used to constructing more complex queries for their academic research. In addition, inconsistent or unclear copyright statements were identified as a barrier to reuse of digital objects for publications and conference presentations.

PLAN OF ACTION FOR THE DIGITISATION OF CULTURAL HERITAGE 2018-2023 IN ESTONIA

Kristiin Meos
(Ministry of Culture, Republic of Estonia)

Estonian memory institutions have been digitising cultural heritage for more than 20 years. There are over 900 million objects that are significant for Estonian culture and deserve digitisation. However, only about 10% were digitised by 2018 and the percentage of digitised heritage differs by type. Independent resources of each institution and the interest related to its collection determines the level of digitisation, rather than the state's overall priorities or usage statistics as a whole. Therefore, on the one hand, duplication of digitisation exists in the memory institutions, and on the other hand, an integrated digital collection cannot be created without effective cooperation.

Due to these circumstances, Estonia lacks a critical mass of digital cultural heritage content, which includes user-friendly and integrated digitised material that would cover all types of cultural heritage and would therefore be a prerequisite for the development of more business services that could make use of digitised cultural heritage.

The Plan of Action for the Digitisation of Cultural Heritage 2018-2023 was initiated by the Minister of Culture's advisory council the Digital Heritage Council, who determined the project's priority heritage fields. The action plan itself was created in the cooperation of the Ministry of Culture, Ministry of Education and Research and Ministry of Economic Affairs and Communications. Specialists from each cultural heritage field proposed the sectoral priorities, objectives and project implementers.

The main objective of the action plan is the resource-efficient digitisation of a critical mass of the cultural heritage, as well as preserving it and making it publicly available. The sub-objectives of the action plan are:

1. To make up to a third of the cultural heritage of Estonia's memory institutions available digitally.
2. To develop a consolidated architecture and service for the archiving of digital cultural heritage, its long-term storage and backup.
3. To make the information on 1.2 million cultural heritage objects available as open data.
4. To increase knowledge related to the digitised cultural heritage in memory institutions, partner organisations and among young people.
5. In cooperation with partners, to create opportunities for the active reuse and processing in the private sector.
6. To increase the awareness of the public and increase satisfaction with online services in the cultural field.

Within this action plan we are digitising heritage-based documents, printed materials, photos, artefacts, art and films from the same time period (1900-1940) and depending on the type of heritage, also earlier (in the case of documental and artistic heritage) and later periods (in the case of film and printed heritage) so that it would be possible to organise the joint utilisation of various types of cultural heritage.

As a result of the project, combined with the materials previously digitised by memory institutions, the following percentages of the material in memory institutions will be digitised by 2023: documental heritage 3%; object heritage 32%; film heritage 60%; photo heritage 60%; art heritage 55%; and printed heritage 28%. This will ensure the necessary digitised content for the effective use of heritage and operation of memory institutions' e-services.
The total cost of realising the action plan is €9.13 million in 5.5 years, of which the amount to come from the national budget is €0.88 million and the need for EU Structural Fund investment is €8.25 million

THE LABYRINTH AND THE LIBRARY

Helga Merits
(independent researcher and filmmaker)

Keywords: *history, religion, local storytelling; religious heritage, citizen science, crowdsourcing*

The paper will be about the search of non-digitised material, trying to trace it, walking roads and facing dead ends, as well as the study of digitised material.

The search for and the tracing of documents, pictures and footage is always a long one, as still so much material and information is not digitised. I am going to give an idea of two researches I have done to show how I, as a filmmaker, work to find material. One is the tracing and finding of the Baltic University archive (not yet digitised, but I try to find funds for this). Second is information concerning the Geislingen archive – not found (only traces). This will make clear the importance of making lists of what is to be found in archives, digitise what is there and even publish the missing parts, so the archive might perhaps be completed again.

But I'll also give examples of some of the archives I worked with which have their collections digitised and how this made extensive research possible without leaving my study, whether it is Bad Arolsen archive, the Herder Institute archive and Minnesota archive. When something is digitised, I can send it through to people I work with and see if it brings back any memories. I work with elderly people and therefore it is very important they can see the material on their home computer.

It will make clear how important the digitisation is, though at the same time it is important for filmmakers and others to keep an eye open for the non-digitised material.

The presentation is followed by my film ***The story of the Baltic University*** (52 minutes).

In the autumn of 1945, in the almost totally devastated city of Hamburg a group of refugees, university professors from the Baltic nations, began to talk about creating a new university. They had just lost everything, but without a penny to their name they worked out an incredible plan and by March 1946 the Baltic University opened its doors. It was a success: but not one appreciated by everyone. Soon their problems began.

HYPERTEXTUALITY AND INTERTEXTUALITY IN DIGITAL AGE: HYPERTEXTUAL POEMS AS THE CHALLENGE AND GAME OF THE READER'S COMPETENCE

Anneli Mihkelev
(Tallinn University)

Concerning digital age the terms intertextuality, transtextuality and hypertextuality are very significant. Gerard Ginette used all these concepts in his book "Palimpsests". According to Graham Allen, "Digitized computing systems such as the World Wide Web, electronic books and hypertexts present a form of intertextuality which seems to many to have finally made manifests the theoretical arguments we have analysed in this study.[- - -] Intertextual theory . . . has much to offer and perhaps to teach the new information technologies and their users " (G. Allen, "Intertextuality", 2000: 201–208)

The term 'intertextuality' was coined by Julia Kristeva in the second half of the 20th century. At the same time there are also various definitions of intertextuality and some of them overlap, so the resultant confusion necessitates defining the term again every time it is used. To resolve the confusion created by Kristeva's term, the border term 'intersemioticity 'substitutes for the term 'intertextuality'. The narrower term 'intertextuality' would refer only to relationships between "texts" in other sign systems. The relationships and interactions between the latter two can be treated as intersemiotic relationships. It is the literary dialogue in Mikhail Bakhtin's sense which connects the author, the text and the reader. All three components exist also in the different levels of the texts: the surface and the deep structure. Dialogue is the reason why intertextuality is a dynamic phenomenon. The reference signal or marker exists on the surface level of the text. At the same time intertextuality or intersemioticity may connect different sign systems: verbal, material and visual. And those markers on the surface level of the text function as deictic in the text: the markers connect the alluding text with the referent-text and the context(s). Markers can be explicit, implicit, marked or unmarked in the texts, and they can be also exist in quotations, and onomastic, toponymic and titular allusions as a signal which starts the allusion at the macro level, all the signs and association which arise in the reader's mind.

In digital literature there can be hypertextual links which connect the referent-text and the context(s) or hypertextual links can connect also different sign systems, e.g. architectural objects, pictures, films, even music etc. In other words, the hypertextual links in the digital literary text can connect cultural heritage. It is also significant that the author has different intentions when s/he use the referent texts, and which kind of referent-texts has s/he used. The main idea concerning the author's functions in the text is that the author is definitely not dead, as some interpretations of Roland Barthes' famous essay "The Death of the Author" (1968) would seem to indicate, but the author's intentions live in his/her text. Consequently it is possible that the author manipulates the reader's memory or the collective memory of the nation, as we can see in different periods in Estonian literature. At the same time realizations of the author's intentions depend on the reader's competence and how s/he is able to understand the author's intentions. The most important function of the reader is recognition. That is the reason why the reader is the crucial component in the function of literary text. The reader constitutes meaning according to the text created by the author.

The paper analyses different hypertextual literary works from Estonian literature from 1990s. Poetry by Hasso Krull and Aare Pilv demonstrates how hypertextual links connect the older literary texts and old mythical texts in one poem and how the reader has the possibility to interpret the poem and cultural heritage.

USING DIGITAL CULTURAL HERITAGE SOURCES FOR EDUCATION ON SCREEN

Alexandra Milyakina
(University of Tartu)

Whereas digitization of cultural heritage is in itself a difficult mission, building an effective framework for using digital resources is even a more challenging task. Lack of awareness is an important issue, since a lot of potential users simply do not know about available materials or do not understand how to use them. Moreover, given options do not always meet the demands of the audience. This problem is essentially relevant in the field of education: while thousands of new digital resources appear every year, educators still struggle to find quality materials for their needs. *Education on Screen* developed by a team of semioticians of the University of Tartu aims to offer a step towards a solution by building a connection between digital humanities and school. The paper describes the experience of the team in using digital cultural heritage sources for education on the example of three platforms – *Literature on Screen, History on Screen, Identity on Screen*.

During the last decades Estonia has made a huge step in digitizing the resources and services. Despite a lot of effort that has been put into this field, many quality resources do not make their way to schools. Another problem is that the digital resources are not united in a coherent system. Disintegration can be seen as a general problem of culture, which is characterized by the abundance of fragmented, heterogenous and random texts. The ability to build coherent narratives on the basis of numerous pieces has become a crucial 21st-century skill (Jewitt 2005: 329). *Education on Screen* provides a framework that helps to build connections between different cultural texts and integrate different types of content. At the same time, it aims to promote digital literacy among teachers and students, as well as to introduce quality digital resources to schools.

Methodology

From the perspective of the Tartu-Moscow Semiotic School, a capability of self-description, or autocommunication, is seen as the most universal feature of any culture (Лотман, 2000: 172). The capability of culture for autocommunication depends on the diversity of cultural languages. The more a text has been interpreted and mediated, the more strongly is it tied to the culture. For instance, films, illustrations, reviews, advertisements, annotations, interviews and other meta-texts based on a literary work can be regarded as autonomous pieces, but also they constitute a textual system. Repeating a story across different sign systems is culture's way of remembering and increasing the meaningfulness of a given text; it is "a central technique of acquisition and preservation of knowledge" (Ojamaa & Torop, 2015: 62). Thus, even the most profane retellings help to bring attention back to the prototext, enrich the cultural heritage and maintain its status.

The overarching goal of *Education on Screen* is to support cultural coherence and autocommunication by cultivating literacies necessary for holding meaningful dialogues with cultural heritage. Digital platforms developed by the team serve the purpose to integrate the cultural space on several levels. On the one hand, they bring together different versions of the same text: excerpts from the original novel, film adaptation, storyboard, script, examples of reader's reception and advertisement. Since the resulting whole is greater than the sum of its parts, the platform can itself be seen as a vast heterogeneous text that generates new meanings. On the other hand, the platforms are built on the principles of transdisciplinary pedagogy, which helps to connect different subjects and reach different types of learners.

Overview

All three platforms make use of digital cultural resources and provide links to archives, libraries and databases. These can be either international resources, or national Estonian ones. The platforms feature

digital cultural resources in different media forms, including texts, video, or audio. Apart from using the existing materials, the team of *Education on Screen* also helps to make public previously unavailable content – for instance, persuades the film crew to share film script or storyboard for educational purpose. Also, the team collaborates with different cultural institutions in order to create shared digital spaces – thus, one task on *Identity on Screen* was developed in collaboration with Estonian National Museum. The following section gives an overview of the platforms and provides examples of the digital cultural heritage use.

Literature on Screen (kirjandus.haridusekraanil.ee) (LoS) is based on Estonian best-selling novel *Old Barney or November* by Andrus Kivirähk (2000) and its foreign-Oscar-running cinematic adaptation *November* by Rainer Sarnet (2017). Being deeply rooted in Finno-Ugric folklore, the novel is characterized by a peculiar style and multiple references to the cultural context. Students are encouraged not only to compare the source text to its adaptation, but also to embrace the whole lifecycle of an adaptation and contribute their own interpretations: write a script, choose a soundtrack, make a mood board, etc. At least two tasks on the platform are connected with digital cultural heritage. For instance, students are invited to look at the photos of Estonian photographer Johannes Pääsuke and establish connections to the style of *November*. Also, they are offered a selection of representations of *kratt* – a mythological treasure-bearer – in various forms of art. On the basis of the selections, students are asked to create their own version of kratt.

History on Screen (ajalugu.haridusekraanil.ee) (HoS) is based on an autobiographical trilogy (*Comrade Child and grownups 2008, Velvet and sawdust 2009, The touch of a woman's hand 2018*) by an Estonian literary classic Leelo Tungal and its adaptation by Moonika Siimets. The novels describe a tragic time of Stalinist repressions through the eyes of a small girl, whose mother has been deported to Siberia. The platform combines tools for understanding the cultural heritage and developing the literacies. The second platform uses digital cultural resources more extensively. To complete the tasks, students are expected to search for specific objects in digital archives and create their own multimodal works on their basis. For instance, students are asked to visualize a scene from the script by using the resources of Estonian Museums Public Portal, Estonian film database, articles archive DIGAR, website of Vabamu museum and others. In a different task, students need to create a trailer for Leelo Tungal trilogy by using international open source resources: collections of sounds, videos and images.

Identity on Screen (identiteet.haridusekraanil.ee) (IoS) is designed for secondary school students and is focused on the problem of identity and the general question on knowing oneself. The project is based on the 1st part of the novel *Truth and Justice* (1926) by a major Estonian writer Anton Hansen Tammsaare and its screen adaptation by Tanel Toom (2019). The topic offers ways for integrating different subjects from the fields of humanities as well as social and natural sciences. Being a key text of Estonian culture, *Truth and Justice* covers many issues related to the problem of identity: interpersonal relations, national belonging and living environment. The digital environment integrates the affordances of words, sounds, still and moving images, interactive games and curated links to other websites for immersing the class into the topic. Several tasks on the platform imply the use of digital cultural resources. For instance, students are asked to make a story about the oldest thing in their household and upload it to Estonian National Museum digital collection *Pildiait*. For a different task, the need to compare old and contemporary pictures of the same place by using *Ajapaik*, ERR photo archive, National archive FOTIS, Vanapildid.net and others. Also, the platform makes use of very specialized digital resources, such a database *Bogs in Estonian Culture*.

Results

The testing of platforms has shown that selected resources can be effectively used in classroom settings. Digital sources of cultural heritage offered by Estonian and international institutions help to enrich the lessons and provide the necessary context. The use of digital sources in education promotes the renewal of cultural heritage: digital materials inspire students to create their own new works in different media forms.

The work on the project has also reviewed some problems related to the use of digital cultural heritage in education. First one is a poor usability of some systems: the interfaces of digital archives and databases are not always intuitive, which makes it difficult to use them. Whether the team *Education on Screen* tries to solve this problem by offering step-by-step guidelines, this issue could be also addressed by the providers of the resources. Another problem is related to the localization, since all three platforms are also translated to Russian and English languages. It is hardly possible to find alternatives for some interesting Estonian resources – such as, for instance, a bog database. As a result, the team is challenged to find other solutions.

CULTURAL HERITAGE AND DIGITAL READING: BETWEEN BOOK AND PLATFORM

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Keywords: *literature, educational platforms, semiotics of culture, cultural literacies, digital reading, transmediality.*

Traditionally, books have been considered as one of the most valuable elements of culture (see also Kroó 2019, Torop 2019). Mediating unique literary/artistic texts, they also appear as models of culture. The book as a model of culture represents the readiness to understand culture as a whole and the same attitude is echoed within the digital book. The digital environment allows to overcome spatial limitations of the pre-digital media and highlight the heterogeneity and fluidity of literary experience. Providing almost unlimited storage capacities, it also brings into question the principles of selection and organization of the material, raising new theoretical problems for textual analysis, from the unit for textual analysis to the boundary between text and context, etc (see Bolin 2010: 74). We suggest that digital reading is reading, watching and listening a conceptualized whole on a platform, where primary and secondary texts (and/or their fragments), interpretations, intersemiotic translations and instructions for users exist together. This conceptual whole has a transmedial nature.

The Lotmanian notion of the text with its characteristically dynamic concept of boundary renders this flood analysable. The multi-, inter-, cross-, transmedia framework enables us to note some pertinent, but hitherto often unacknowledged, aspects of contemporary literary texts (Ojamaa 2019). The crossmedia aspect hereby refers to the way the publishing of a literary text is increasingly accompanied by other (online) texts that together make up a relatively coordinated whole. In most cases these are compressed and fragmentary versions of the core text such as book trailers, book covers featuring a still frame from

a cinematic adaptation, social media profiles, etc. Thus, the crossmedia aspect consists in a pragmatic communicative strategy directed towards the receiver and the target text. The transmedia aspect concerns the spontaneous pulverisation of a text into a diversity of texts in different media. The spontaneity refers to the relative unpredictability of the artistic language of the authors of these new texts, which can appear over a very long period of time as we have seen in continuing adaptations of canonical texts. This is in contrast with the coordinated manner in which most crossmedia texts enter culture over a much more limited time frame. Another distinction between the two is that the transmedia process is dominated by the source text as the individual parts are not coordinated mutually.

A clearer understanding of how to reach balance in educational context implies a clarification of the terminological field. The core of the notion of cultural literacy is close to that of transliteracy as conceptualized by Sukovic (Sukovic, 2017), because both proceed from a symbiosis between new and old media, formal and informal education, analogue and digital culture. The notion of transliteracy can, but should not be confused with that of transmedia literacy, framed by Scolari and his colleagues (Scolari, 2017, Scolari *et al.,* 2018; Ciastellardi & Di Rosario, 2015) as: "a set of skills, practices, values, priorities, sensibilities, and learning/sharing strategies developed and applied in the context of the new participatory cultures" (Scolari, 2017: 126). The context of transmedia literacy has thus decidedly been digital environment of mediation, but the tools offered within this framework can clearly be put to use in order to cultivate also traditional literacies (for understanding and holding dialogues with analogue culture, too).

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LITERACY BASED ON CONCEPTUAL GRAPHS: AN ARGUMENT FOR A SEMIOTIC DIGITAL HUMANITIES

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This paper proposes Charles Peirce's system of existential graphs (EG) as a theoretical foundation for the digital humanities (DH), arguing that such an approach is particularly insightful for research on education and literacy. While acknowledging its relevance, we challenge the discursive, glottocentric (language-centered) modelling theory on which DH is founded (McCarty 2005), in favour of a semiotic non-glottocentric view. McCarty's seminal proposal for DH is based on the observation that any computing system depends on a model of the (empirical) world. This expanded the scope of humanities research, particularly as afforded by digital methods and the entailed capacity for computing. However, it still supposed a discursive and relativist notion of model, as inspired from poststructuralism. This obstructs newly found DH from taking the humanities out of the persisting crisis of the last decades (Bérubé & Nelson, 1995; Nussbaum, 2010; Jay, 2014; Martinelli, 2016; Cobley, 2017) because, we consider, by (infinitely) questioning the reliability of evidence as relative to language, glottocentrism, and implicit epistemological relativism, fails to acknowledge the relation between theoretical models and social progress/change.

More than questioning the borders of literature, this paper questions the limits of language-centered modelling theories based on a notion of meaning as verbalizable, circumscribed by notions of *text* and *discourse*. Uprooting the notion of literacy (competences required for surviving and thriving in society) from traditional conceptions of reading and writing as linear, monomodal and linguistic allows its expansion to fit more comprehensively the multimodal affordances of new media. Commonly the concern of the humanities, literacy has been thought to consist in competences of interacting with texts (reading, writing, arithmetic). This implied that education has the role of equipping citizens with a mastery of the established formal, symbolic codes of culture, art and research. It thus supposes that a fixed set of skills (mostly stemming from the liberal arts) both suffices and is mandatory in modern societies. Given the affordances of digital media, the new plethora of competences that gives access to sustainable and thriving lifestyles is inexhaustible by lists of fixed skills. Thus, instead of grounding the notion of literacy in the philological concept of text, we argue for grounding it on the more encompassing notion of model, as the specific scope of DH. For this, we bridge two recent areas of research: (1) the uptake of Peirce's semiotics in DH modelling (Ciula & Eide, 2017; Ciula & Marras, 2016, 2019) and (2) the vast semiotic research on multimodality (Kress & van Leeuwen, 2001; Kress, 2010), particularly vis-à-vis education (Kress, 2003; Lacković, 2018).

The recent uptake of Peirce's semiotics in DH has the rationale of developing a pragmatic modelling theory, tailored for digital methods by its reliance on schematic signs (icons, diagrams) as instrumental for modelling, in contrast to formal symbols, often understood as supposing verbalization. Schematic signs represent their object on account of similarity or, generally, structural resemblances, not requiring convention or higher-level formalization in their constitution. The proposal of such a DH modelling theory (Ciula & Eide, 2017) relies on two recent uses of Peirce's semiotics, namely Kralemann and Lattmann's (2013) semiotic model of iconic modelling and (2) Elleström's (2013) iconicity theory. These developments follow the recent iconic turn (Boehm & Mitchell, 2009; Moxey, 2008), which renewed interest for Peirce's semiotics, given the central role that schematic signs play in his logic (Pitarainen, 2006; Stjernfelt, 2007). The iconic turn consists in the idea that meaning is primarily evoked by schematic, non-linguistic signs. While the language turn (Rorty, 1967) considered language, instead of (Cartesian) ideas, as the vehicle of epistemology, the iconic turn moves away from both idealism and glottocentrism

by a notion of knowledge as primarily schematic and, thus, broader than strictly analytical. This supposes switching from language-based to phenomenological, embodied epistemology, whereby cognitive schemata are responsible for apprehension and for the development of complex, symbolic systems. A quintessential claim in Peirce's semiotics for the iconic turn and for its adoption in DH is that only icons (meaning stemming from shared qualities) can be used as predicates (CP 2.278). This explains why iconicity is central in modelling: an iconic relation between an object and its model warrants that the model preserves certain qualitative features of the object that render it pragmatically operational. If the iconic relation in modelling is ignored, the model can be so abstract in relation to its (presumed) object that it becomes a predicate of something else, of an abstract idea about the object, rather than of the object. Put simply, modelling that is not based on iconicity can result in *talking* about something else than what it is supposed to address.

Another highly salient but little discussed aspect of Peirce's semiotics is, in contemporary terminology, multimodality. Peirce disagreed with the mentalistic psychology of his time (Stjernfelt, 2014: 14-15, 44), arguing that similarities can be observed across representational modes (CP 7.21-7.48, Cristalli 2017: 38). The discovery of cross-modal icons (resources) can lead to useful predicates (competences) for modelling. Particularly, Peirce deemed the educational programme of modernity responsible for the rigid conception of knowledge and learning as proceeding in linear textuality (CP 1.312). His concept of iconicity affords multimodality in meaning-making, by acknowledging the non-conventionality of cross-modal translations. For example, once perceived, similarities between colours and music can be copulated into one organizing iconic sign such as a synaesthetic representation, which can increase efficiency in modelling. This is highly relevant for digitization, as digital media exponentially enhanced representation modalities.

The visual representation of data in technology extends from the front-end user interface, through different libraries of programmatic logic, to the machine code itself. The action of sending data over fibre optic cables as pulses of light, or the magnetizing of the hard drive as a simple "on" or "off" (1 or 0), leads to the question of how literate does someone need to be to coherently digitize their actions? Within social media networks and the broader network of the online connectivity of the cloud, users very rarely operate by typing out commands. Instead, such actions are visual and schematic, resulting in a process where users will present themselves – and curate/construct their identity (Georges, 2009) - as a collection of images, write using picture-like emoji, and issue instructions to computers using the visual pointer on a button that represents a line of code, which itself represents the dichotomous 1/0 operation of hardware. Based on Peirce's EGs, the logic and ontology by which a computer processes user queries have been developed as a visual workflow of conceptual graphs (CG) to symbolically represent the data exchange within semantic networks (Sowa, 2000). Thus, as digital literacy becomes increasingly pertinent, semiotics can provide an appropriate educational philosophy for contexts where modelling involves cross-modal translations between symbolic and diagrammatic representations.

Multimodality (Kress & van Leeuwen, 2001) began, as an area of research, with a criticism of the classic linguistics hypotheses of arbitrariness and double articulation. Traditionally, linguistics, language turn philosophy and discursive theory are based on the supposition that meaning is a conventional (arbitrary) articulation of form and content (Saussure, 1916). This view was sedimented by Martinet's phonological theory, which, in the context of the language turn, advanced a view of language as based on phoneme combinatorics that are arbitrary in relation to represented objects. As digitization implies that "design and principles of composition move into the foreground" (Bezemer & Kress, 2008: 166) in detriment of monomodal, linear text, traditional linguistics and semiotics based on the double articulation hypothesis fall short in comprehending new social dynamics and corresponding new literacies and emerging industries. The technology of natural-language-processing and voice synthesis opens the argument further, with programmes forming combinations of phonemes based on user-inputted visual

representation (e.g. the VOCALOID software synthesizer by YAMAHA), or statistical extrapolating the most common combination of such relations (Johnson 2009).

The multimodality concept marked a turn from linguistics to semiotics, as the latter affords a concept of meaning more comprehensive than merely verbalizable content. This framework led to extensive applications in communication (Kress 2010) and education (Kress 2003, Bezemer, Kress 2008). While Peirce's semiotics is compatible with the modelling affordances of digital media, only recently (Lacković 2018) has it been considered in the multimodality framework. The novelty of the present paper consists in bridging these two approaches in view of Peirce's rationale of EGs, namely that a semiotic system should afford "a method (1) as simple as possible ([…] with as small a number of arbitrary conventions as possible), for representing propositions (2) as iconically, or diagrammatically and (3) as analytically as possible." (CP 4.561) This idea is explicitly adopted in DH modelling via Elleström's proposal that "[a] model should be understood as a clearly outlined cognitive scheme that is both described with the aid of language, and depicted as a diagram." (2018: 270) This non-glottocentric semiotics, which we develop by bridging the frameworks of DH modelling and multimodality, acknowledges that interpretation is inherently multimodal. Thus, it frames meaning, the central concern of the humanities, as specifically fit for digital contexts, localizing the key to digital literacy in the capacity of discovering iconic relations (inherent in relations formulated symbolically).

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A SEMIOTIC ANALYSIS OF DIGITAL MODELS: SEMANTIC NETWORKS OF ENVIRONMENTAL RESEARCH

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We propose a semiotic framework for Earth system science, within the broader purpose of sketching the conceptual map of environmental research via semantic network analysis. Our argument is illustrated by a semiotic analysis of a broad dataset consisting in 32383 abstracts published between 1990 and 2018 in seven top-ranked journals belonging to the Web of Science 'global and planetary change' category. This dataset captures a broad range of Earth system research, as per the understanding of Rockström *et al.* (2009) and Steffen *et al.* (2015), spanning oceanography, atmospheric chemistry and geology. To illustrate our argument, we analyze some main aspects of this corpus, understood as a constituting diagram of the larger semantic network of environmental research, of which we gathered a dataset consisting of roughly 650.000 abstracts, published since 1990 until 2017.

We claim that, among other schematic modelling methods, semantic network analysis is intrinsically semiotic and illustrates how the semiotic conceptualization of the resulting model is particularly insightful for interpreting it. As such, the paper is a contribution to the twofold aim of: (1) developing semiotic modelling theory (e.g., Houser, 1991; Lotman, 1990; Nöth, 2018; Sebeok & Danesi 2000; Sebeok, 2001, Nöth, 2018) as particularly applicable in the epistemology of environmental research and (2) explaining the state of the art in environmental research as an evolving network of concepts, in light of the developed theory. This approach allows us to construe the corpus of environmental research not as a paradigm, in the Kuhnian sense (Kuhn, 1970 [1962]), nor, similarly, as a discourse, as much humanistic and social research aimed to understand scientific theories as language-based constructions (starting with, for instance, Foucault 2002 [1969] and Rorty 1967). Both of these concepts, paradigm and discourse, imply language-centered theories of knowledge in which a system can be understood as coherent in itself, but

rendered cross-disciplinary untranslatable and not necessarily providing evidence. Highly conventional (symbolic) sign systems might not depict clearly their represented object(s). Instead, we explain that the mereological understanding of a corpus of research as a network composed of sub-networks allows for operating on it as an evidence-providing sign or system of signs. Particularly, we explain how the semiotics of Charles S. Peirce serves as an appropriate framework for such research because: (1) it allows for a minute analysis of networks as icons, (2) it endorses a realist theory of knowledge, necessary for environmental awareness (as implied in bio- and eco-semiotics) and (3) it has recently shown new, fertile applications in digital modelling (Ciula & Marras, 2016, 2019; Ciula & Eide, 2016). Thus, the paper claims to contribute to the emerging area of environmental humanities, by bringing in its focus semiotic modelling and digital methods.

In this view, the semantic network structure of a corpus of research is understood to provide evidence because schematically structured models can be used as (logical) predicates. Such structures evidence the possible information contained in the corpus. Nodes of the network, connected by edges are understood as propositions that, by conveying information, make truth-claims (Stjernfelt, 2014: 72-75, see also Stjernfelt, 2007: 88) and join together in the formation of arguments. While environmental research is a specifically appropriate area of research for such a conceptualization, the framework we develop here is applicable to many disciplines and large corpora with complex conceptual content. As a semiotic methodology for environmental research, the framework we advance fits in the scope of ecosemiotics (semiotic theory of ecology), by its concern for how the representation (map) impacts on the represented (mapped), and thus drawing on biosemiotic theoretical resources for modelling. The network model is particularly relevant because, as Kull (2003: 590-592) explains, biology could open up to semiotic insights and methods once with the emergence of ecology, as a biological research area. Ecology shifted the focus in biological research from ladder and tree-like models to web (or network) models. Moreover, this methodology is harmonious with ecosemiotics also because this branch of semiotics developed in the context of the iconic (see Maran & Kull, 2014: 42) and, we argue, reflective (or reflexive) turns (i.e. Bourdieu, 1990; Archer, 1995).

As such an interdisciplinary first tempt, the paper is far from covering all the possibilities that semiotic modelling theory presents for the environmental humanities or for Earth system science. Nevertheless, a starting point for such a framework is claimed, which we will illustrate in the data analysis, which allows us to explain the epistemological advantages of such a method, as originating in the systems thinking common in both Earth system science and semiotics. The purpose of this methodological proposal is that of bringing the recent and critical planetary boundaries framework to the attention of ecosemiotics and of biosemiotic criticism, as well as vice versa. Ecosemiotics is a branch of the biosemiotic modelling theory, and thus mainly inspired from Peirce's schematic semiotics but also from Juri Lotman's systemic semiotics. Both of these foundations of ecosemiotics fit well the rationale of Earth system science, given the schematism of Peirce's semiotics and Lotman's notion of meaning as evoked by the biosphere. Far from exhausting the hermeneutic possibilities evoked by the discussed dataset, we argue that such semiotic analysis, made possible by the digital capacity of modelling large amounts of data, reveals new horizons for semiotic analysis, particularly regarding humans' modelling of the environment. Also, the collected and modelled data should serve for future investigations in this direction.

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GULAG'S DIGITAL STORYTELLING PROJECT

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Keywords: *digital memory data modelling, visualization and presentation*

The repressive GULAG system existed for thirty years, during which time hundreds of thousands of the Soviet Union citizens became its victims. Many of them are still alive, but the memory of the GULAG is becoming a forgotten page of the past. In addition, today in the digital culture age, the consumption of information is moving to a different level — visual. Given this, the topic of the repressive system of the USSR remains barely covered in the digital space, due to its complexity and extremely sensitive data. The project aims at visualizing the repressive system of USSR, given the current trends in information consumption. After analyzing theories of perception of information, we discovered that the average attention span has decreased to 8 seconds and has dropped by 30 percent over the past 15 years. Moreover, if the data is submitted orally, the person remembers about 10% of it, in the case of images this figure rises to 65 %. 90% of the information a person perceives through vision. Thus, we figured out that to solve the problem we would need to create an interactive application with immersive design taking into account the tendencies of perception of information. We called this web application "GULAG Retrospective", which reflects the development of the system over time. One of the most accessible ways of presenting information is storytelling. From the dawn of time, people used stories to share common experiences, to teach, and to pass on traditions. Furthermore, interesting and immersive narrative makes the body release oxytocin, which in turn makes people feel better and helps to digest information faster. Stories capture attention. With the average human short attention span, stories are a way to break people free of distractions, draw them in, and get them to pay attention to submitted information. Using this approach, we show the user a complete picture of the repressive system by visualizing the micro and macro levels of history. The macro level demonstrates an impersonal system where the participants in the events are only its tools. Each topic at the macro level describes certain events, which help the user to come to a complete understanding of the whole picture, without overloading it with unnecessary information. The micro level demonstrates the fate of people in terms of how events at the macro level influenced them. This is done to make people aware of how decisions made at the very top affect the fate of millions of people. The main task during the presentation of the material was to create an emotional response through the use of modern design practices, game mechanics and representativeness of information. All this is for the sake of creating a sense of belonging with the user, so that human destinies do not remain just pixels on the screen. For example, in the process of disclosing a specific topic, the user can interact with carefully selected material in the required sequence — documents that have influenced the fates of millions of people, the leaders' conclusions which have led to serious policy changes. Thus, we built a logical sequence of events that demonstrate how a particular fact influenced an individual and the country as a whole, as well as our present. The basis of our study was 120 pages of statistical data obtained from the Museum of the history of the GULAG. These data have not been used in historical resources before, so one of the urgent tasks was also to visualize them in an accessible form to an unprepared reader. That is why our stories about the development of the GULAG system are made in the format of

interactive infographics with extensive visual content. To create micro- level stories, we used data from historical victim database ru.openlist.wiki . To ensure that these data are «talking» with the user, stories of the victims of the GULAG were composed in the format of a personal diary in the first person.
The results of the research can be used in the compilation of interactive content by cultural institutions, as well as in the teaching of 20th century history by teachers and professors of history.

EXPLORE 100 YEARS OF SCIENTIFIC FILMS: THE TIB AV-PORTAL

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In addition to the scientific core tasks, the dimension of transfer and scientific infrastructure services is becoming increasingly important. According to the German Wissenschaftsrat, transfer does not only include technological transfer [Wissenschaftsrat 2013]. Transfer also includes the communication of scientific findings into society, culture, business, and politics. In order to use research findings in other areas of society, results must be accessible, searchable, citable and brought together across disciplinary boundaries.

Scientific events such as conferences, symposia, summits, plenaries, workshops and tutorials play a crucial role for knowledge transfer. Research ideas and results are presented and discussed at such events and in some cases published in conference proceedings or journal articles. With the advent of digital media, information, communication and working behaviour in science and society has changed fundamentally. Today, a growing number of scientific events are recorded on video and subsequently published online. Video recordings of scientific events can bridge the gap between science and society by opening the internal scientific communication to the public, thereby increasing the transparency of the scientific world. Science journalists, decision makers and interested laypersons can thus inform themselves about the recent results and discussions in science. This fosters both transdisciplinary research activities and informed decision-making based on scientific facts and helps regaining trust in scientific work. Moreover, audiovisual media are particularly well suited to enhance the impact of scientific research [Körkel 2013, Whitesides 2011]. Video recordings of conference talks can be embedded in websites of researchers or institutes or in science blogs, they can be shared in social media and included in talks. Thus, they develop a visibility that reaches into social and economic areas.

Although videos are becoming increasingly common in science, conference recordings are mostly produced and published in an unsystematic and improvised way. Professional recordings are rare, publication platforms for audiovisual content that meet scientific standards hardly exist and digital preservation for those materials is practically non-existent [TIB 2017].

According to a recent qualitative study among science conference hosts and organisers, no common standards have yet been established for the production and publication process of conference recordings [Drees, 2018, TIB 2017]. This results in insufficient recognition of authors/speakers, inadequate metadata and licences, videos that are difficult to retrieve or not available. The videos are often published on YouTube, Vimeo or similar platforms or directly on the conference website. This frequently results in link rot, i.e. videos can no longer be found after a short time because the URL has changed and external links lead to nowhere. Moreover, conference organizers have found it difficult to surmount the significant organizational, technical, and financial barriers to production and distribution of conference recordings and fully satisfy accessibility demands [Drees, 2018; TIB, 2017]. All these obstacles mean redundant and additional work, suboptimal search results and even a burden on budgets.

In order to overcome these obstacles and to accelerate the transfer of scientific findings into practice TIB opererates *ConRec*, an innovative, highly reliable and sustainable conference recording service. The service aims at supporting conference hosts and organisers as well as the presenting scientists in managing the entire life cycle of conference recordings, including planning, rights clearance, recording, publication, exploitation and infrastructure service. Building on existing competences in the field of professional video production and using the unique publication platform for scientific videos, the TIB AV-Portal, *ConRec* opens up entirely new opportunities for science communication and knowledge transfer as it is suitable for intra- and interdisciplinary communication as well as for communication to business, industry and the interested public.

The above mentioned TIB AV-Portal offers a reliable, legally compliant and open infrastructure for the hosting and sharing of scientific videos, most of which are available under Creative Commons licenses. The portal was developed jointly by the TIB and the Hasso Plattner Institute and has been operated by TIB since 2014. At present, the stock amounts to nearly 20,000 videos, including conference and lecture recordings as well as computer visualizations, simulations or video abstracts. The open, bilingual (English/ German) platform provides automatic analyses, which improve the searchability of videos on the segment level. Using *Shot Boundary Detection*, the video is segmented by image characteristics to create a visual table of contents. *Text recognition* captures and indexes written language, for example texts on presentation slides. *Speech recognition* translates the spoken language in the video into a searchable transcript. *Visual Concept Detection* indexes the moving image with predefined visual concepts such as "landscape", "facade detail", "technical drawing" or "software code". All videos are allocated a *digital object identifier (DOI)*, so that they can be cited. Individual film segments are allocated a *media fragment identifier (MFID)*, which enables the video to be de-referenced and cited to the second. TIB publishes the authoritative and time-based, automatically generated metadata of videos as *linked open data* [Waitelonis 2016]. Based on the solid ground of the AV-Portal as well as TIB's *long-term digital archive* and its longstanding DOI registration service.

With the support of these analysis procedures and technologies, information and scientific content can be better explored. Using semantic and explorative search functions ("facet search"), videos can be searched by content and relevant video segments can be identified precisely. In order to enable third parties to re-use the extensive metadata stocks of the AV-Portal, all bibliographic metadata as well as the automatically generated time-based metadata of the AV-Portal from voice, text and image recognition, which are under Open Access License Creative Commons 1.0 (CC0), are made available for re-use as linked open data in standard RDF format (Resource Description Framework). In addition to DOI, the data stock is enriched with further identifiers such as ORCID (Open Researcher and Contributor ID), ISIL (International Standard Identifier for Libraries and Related Organisations) or GND-ID (Integrated Authority File) in order to increase the visibility and interoperability of the data stocks. The upload of additional material related to the videos complements the information enhancement. Causal associative metadata relationships, such as 'isSupplementBy', 'isSupplementTo', 'cites' or 'isCitedBy', allow the user to connect a video and other related materials. In order to cover the wide spectrum of these materials, different file formats (doc, .cdv, .odt, .pdf, .jpeg, etc.)are accepted in the portal [Plank 2016]. DOIs are used to link a video to a journal article and vice versa.

In addition, the AV-Portal ensures that the videos of different conferences from different years are united at one place. Those in search of a recording of a lecture who are unsure in which year and at which conference the presentation was given no longer have to painstakingly search through the individual pages of different conferences – everything can be found in the TIB AV-Portal at a glance. Examples include SIGMOD/PODS International Conference on Management of Data, Leibniz Mathematical Modeling and Simulation (MMS) Days, FOSS4G (Free and Open Source Software for Geospatial), Lindau Nobel Laureate Meetings or Heidelberg Laureate Forum.

Conclusion

Video recordings of conference talks are becoming more and more common in the scientific communities (although there are huge differences between subjects). While aspects such as long-term accessibility and sustainability are considered very important among organizers and scientists, persistent identifiers, like DOIs, are scarcely used and videos mainly uploaded on the conference website or YouTube. Libraries should start here and provide reliable, free and open infrastructures for audiovisual media. The TIB AV-Portal is such an infrastructure that guarantees the digital preservation of videos and uses persistent identifiers.

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FRICK DIGITAL COLLECTIONS IN THE CLASSROOM

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My paper outlines recent initiatives at the Frick Art Reference Library in New York, New York, U.S.A. to expand engagement among educators and young students with the institution's digital collections.
Helen Clay Frick (1888–1984) established the Frick Art Reference Library in 1920 to commemorate her father, the industrialist and art collector Henry Clay Frick (1849–1919), and to encourage research in the fine arts and related fields. The Library's founding collection was the Photoarchive, a study collection of reproductions of works of art in the Western tradition from the fourth to the mid-twentieth century, which Helen Clay Frick hoped would advance the study of art history in the United States.

Currently, the Library is digitizing this collection of 1.2 million reproductions and to date, approximately 190,000 images are freely available for consultation and download on the institution's digital archive, Frick Digital Collections (https://digitalcollections.frick.org). Before 1 January 2020, the Library plans

to upload an additional 500,000 reproductions. The next step for the Library is to think critically about how these images will be discovered and used. Providing increased access to these images is beneficial to the discipline, but by merely providing access, the Library is not supporting Helen Clay Frick's mandate to encourage and develop the study of the fine arts. Instead, it has fallen into the trap that has plagued the discipline of art history at large: while the Library's staff has fully embraced digitization, it has failed to promote the tools and methodologies that would allow researchers to maximize the benefits of these materials (Drucker, 2013: 7).

Therefore, to support the practice of *digital* art history (DAH), the Frick Art Reference Library established the Digital Art History Lab (DAHL) in September of 2014. The Lab provides students, artists, academics, art market professionals, museum staff, and independent scholars with information about the methods of DAH and recent digital projects through lectures and furnishes them with the tools and training they need to expand the potential of their research questions through workshops on topics ranging from networking platforms to digital mapping software. Additional functions of the DAHL include providing DAH practitioners with a platform for the dissemination of their projects and developing new computational tools for art-historical research such as ARIES (ARt Image Exploration Space), software that allows users to manipulate images in a virtual space as well as organize, group, and annotate them. The DAHL is also involved in a series of projects to expand audience engagement with the Library's digital resources, including an initiative that exploits computer vision technologies to allow for faster and more accurate searching across multiple multi-lingual databases, an invaluable tool for any future collaboration with foreign institutions. Finally, the Library has partnered with Stanford University's Department of Statistics to explore recent breakthroughs in Artificial Intelligence and machine learning to automate sorting and the classification of images. The Stanford team is focusing on a dataset of American portraits as a pilot project and is applying VGG—a popular deep neural network architecture—to develop automatic image classifiers, which have the potential to become powerful tools in metadata creation and image retrieval. Preliminary experiments show promising results and future work involves expansion of this model to the entirety of the Photoarchive's collection.

Currently, the DAHL is collaborating with local schools on a pilot project to broaden the audience for Frick Digital Collections. Although the Library has traditionally served adults focused on the study of fine arts, the institution's collections—both analog and digital—are valuable not only for art-historical research but also for the study of related subjects, from European and American history to the digital humanities (DH). Furthermore, the institution need not focus its attention on adults only: as cuts in elementary and middle school funding result in fewer fine arts classes, especially in low-income neighborhoods, programs that develop skills in understanding, negotiating, and interpreting images are needed. The DAHL is therefore in the unique position to offer a partial solution: the development of curriculum materials and supporting digital resources for required history, social studies, and environmental science courses that promote visual literacy through the integration of the images and archival materials available on Frick Digital Collections.

This pilot project partners the Library with educators active in elementary and middle schools (what would roughly correspond to Estonian põhikool, or "basic school") to create curriculum materials that utilize the Frick Digital Collection's freely available resources and ARIES, the software developed by the DAHL to manage images. These educational materials will comprise two sets of lesson plans with accompanying digital resources—one set for elementary school classes and one set for middle school classes—and will be made available as website content to consult and download. To ensure that these materials are regularly utilized, the Library proposes to train staff to implement them in the classroom as well as establish and maintain long-term relationships with local education professionals.

The paper will introduce Frick Digital Collections, the DAHL, and the results of the pilot project to integrate Library materials and software into the classroom. My hope is that this project will inspire other cultural institutions to explore the opportunities afforded by digital collections to enhance visual literacy among young students.

ESTONIAN SURNAME DATABASE: PROBLEMS AND SOLUTIONS

Fred Puss
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Databases have become a natural part of any research. Much of the work which was done with several limitations before the digital age can be done now within seconds. In Estonian humanities, large databases (digital or pre-digital) have been used for research for over 80 years. At first the most common usage was in historical demographics. The first digital public historical database was made by history professor Aadu Must in 1995 – database of Estonian surnames given in 1823-1835. It was followed five years later by his database of Estonianizing surnames in 1919-1940. Both of those still play an important role in research work of historians, onomasticians and hobby historians. However, they do not cover the whole range of Estonian surnames and lack some possibilities for proper research.

Estonian surnames are in a unique position in the world. Firstly, because in most cases they can be traced back to their beginning and secondly, most of the beginnings can be documented.

There are six main layers of surnames born in Estonia:

1. Before general name giving (until 1809/1822) – ca 5,000 unique names
2. General name giving (1807/1822-1835) – ca 31,000 unique names
3. Soldiers, name changes until 1919 – estimated 3,000 unique names
4. General name giving in Petseri county and territory behind Narva River (1921-1922) – ca 7,500 names
5. Estonianizing of surnames (1919-1942) – ca 16,300 names
6. Minor processes of giving surnames (Ruhnu island, surnameless people, etc.) – ca 500 names

In total ca 63,300 names. The complete lists of surnames from any time also include immigrant names (names born outside of Estonia).

This seems to be an excellent basis for a database. The solution seems to be to make a list of all the names born in each layer and refer to the layer. Notwithstanding this, the development of the Estonian language and surnames makes the assignment rather exhausting.

– People often had parallel surnames – one in church books and the other in tax records. Sometimes the parallel names are etymologically the same, but only with a small spelling difference (Kass versus Kassi) which could vary from record to record.

– Sometimes names were translated if the person moved from one language territory to another (from Latvian to Estonian) or climbed on the social ladder (from Estonian to German).

– Dialects of the Estonian language greatly influenced the birth of surnames. Later dialect characteristics were often omitted from surnames.

– Old spelling was used in the Estonian language for over half a century after the new spelling was

first introduced in 1843. Many surnames have still preserved the old spelling and those are now considered different surnames (Karu versus Karro) and are pronounced differently.

– Until the 1930s it was quite regular for surnames to adopt spelling changes not connected to the change from old to new spelling but based on the writer's standpoint (Asi versus Ais). Moreover, those changes were impermanent and frequently reversed.

The paper discusses the perspectives of finding solutions to those problems. As can be seen from the first attempts made by professor Aadu Must over quarter of a century ago, one flat solution is insufficient although it works with majority of the cases for a competent researcher.

R

DIGITISATION OF LARGE SCALE MUSEUM OBJECT AND MAKING USER COPIES FOR MUSEUM: A LARGE SCALE (3800 X 4212 MM) HAND PAINTED TOPOGRAPHIC MAP OF PALMSE MANOR ESTATE, DATED 1859-1864

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This paper is about the digitisation of a large scale museum object, and describes the making of user copies for the museum.

Today, the term "digitization" covers a large range of activities from choice of object to be digitised through to possible end use of the digital material. For instance, the museums have taken steps to make their collections accessible not only on-line at the click of a button. It means, in some cases, aside the digital files of the item, the printed repro derived from digital files is a good choice for museum visitors.

For CDC Kanut, the request was somewhat similar to the situation described above: replacing an original historical item with the repro which would have the similar scale for the user purposes.

Namely, Palmse Manor representatives wanted a large scale map to be renewed and placed back to its previous place – on the wall in the manor house exibition room.

Maris Allik, the leading conservator on that task, said: „The conservation task is a challenge firstly because of the large dimensions of the map and the water sensitive media (inks, watercolour paints, and the paper itself), but it is challenging also due to the fact that the unique document has a community value, and has to be available for examination by local people. Last but not least, there is no wall large enough in the Manor House for proper exhibiting of the original, and alternative methods have to be considered, starting with the digitization of the map. That is not an easy task for large scale documents."

This is the moment where the idea to go for the repro first sparks.

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1. Map size

First off, the object is a large scale (3800 x 4212 mm) hand painted topographic map of Palmse Manor estate, dated 1859-1864.

The size, format of this insular map and the scale in which it was drawn is very rare.

The scale is indicated on the map - 500 Faden (fathom) to 10 Zoll (inch). The scale is given as a bar, divided into five sections for each section with 100 fathom to 2 inch. That calculated in centimeters (by Christof Nichterlein) is 1 : 4200 ... 42 meters on land equals 1 centimeters on map.

2. Physical state and condition of the map

The damaged map was exhibited openly over 15 years by hanging on the wall and never left the Manor until autumn 2018, when it was brought to CDC Kanut for conservation and preparation for digitizing. The map was properly prepared for digitizing within 5 months.

3. Setting for digitization

*Black box type studio

*Scanner: RENCAY Archive Scanback + RENVIEW Software

*Lightning: LED Light Typ4, 5.000 Kelvin, 150 Watt, daylight

*The imaging task at hand measures 16 times the size of DIN AØ format. Therefore, the prepared map was scanned by pieces equal to meet the necessary resolution.

*The piece: H 133cm x W 210 cm, all together 8 frames/images.

*Resolution: 13000 x 8000 pixels.

*File size per piece (48bit TIFF): 450-610 MB

4. Background of the map digitisation.

The first step of digitising The Estate Map of Palmse Manor was made in 2015
by Christof Nichterlein from Karlsruhe University of Applied Sciences, Faculty of Information Management and Media.

The aim of his Bachelor Thesis[i] was to bring this heavily damaged map from the wall into a digital version, and to compare it with the Estonian Basic Maps, current landscape situation in 2015.

Another aim for his thesis was to find a method which would adequately describe any kind of estate maps in general and they would be presented in a small web application. This work united methods of photography, of georeferencing, of digitising and of analysing in GIS (geographic information system). Also, the creation of an open source web map viewer was under consideration. Before his work the map was not archived or catalogued.

Before 2015, the map was not entirely rolled out for exibition. The height of the exposition room was less than 3 meters, and about 60 cm of the map lied on the floor rolled into bulge. Christof was able to lay the rolled bulge on the floor for visual access. No other manoeuvres for the map were possible, hence, he took the pictures of the map as it was placed in the Manor House exhibition room. You can imagine the technical issues he faced when placing 2D item in 3D manner – positioning the camera, sharpening the details on surface, etc. Not to mention - he was not allowed to use controlled light system, and he could only use the natural daylight shed from the left side of the room windows, in addition to stationary room lights.

However, 54 photos of the map were taken. Combining and merging them side by side he created the first intact digital version of the map. The resolution of this map came out on resolution of 72 dpi. Camera used for that particular task was Canon EOS 5D Mark II with 50mm prime lens.

3. Step by step:

Taking into account the previous research on the map and the on-site evaluations and expertise in 2018, prior to conservation, CDC Kanut had sufficient tips and overview of the oncoming tasks as well as possible issues. Thus, the chronology of the conservation and digitization process went as follows:

* The map was brought into Kanut facility for repairs and preparation in January in 2019. Preparation goal: to send it back to Palms Manor as a repaired showpiece item. By requirement, the map was to have improved physical state and carry the historical data and chartographical value as an exhibit. In other words, the map would have to represent the same detailed value of the Palmse lands as it was new...

* It was obvious that an item such as Palmse Estate Map – made out of paper, and with that size while kept in the abovementioned circumstances over a decade – would not withstand the future goals and functions forced on it merely by the aid of basic conservation process.

* To avoid further deterioration of the map, the best solution was to undergo the repro making process, and prepare the original for the safe keeping. The claim for the repro was that it needed to maintain the native resolution and maximum possible dimensions to fit on the manor wall. In this respect, the experience and notes by Christof Nichterlein came in very handy.

* Next, we needed a controlled light studio, equipment for saving the images, and eventually to send it to printshop. At that point, after the basic conservation jobs were finished, the map was taken into studio in CDC Kanut facility for imaging.

* In regular digitizing process, the full image (general view) of the large item would not have to be in high detail quality because the details about the items' general view are added to the archive folders. But in order to make a repro, the flow of digitizing process turns from archive folder creation to reprint file image processing. And for that purpose, the digitizing process for archive turns into image rendering process for print shop.

* Both the print job and the image processing for the print version of the map were conducted by Artproof – one of the most professional partners in our repro industry... Followed by more test prints.

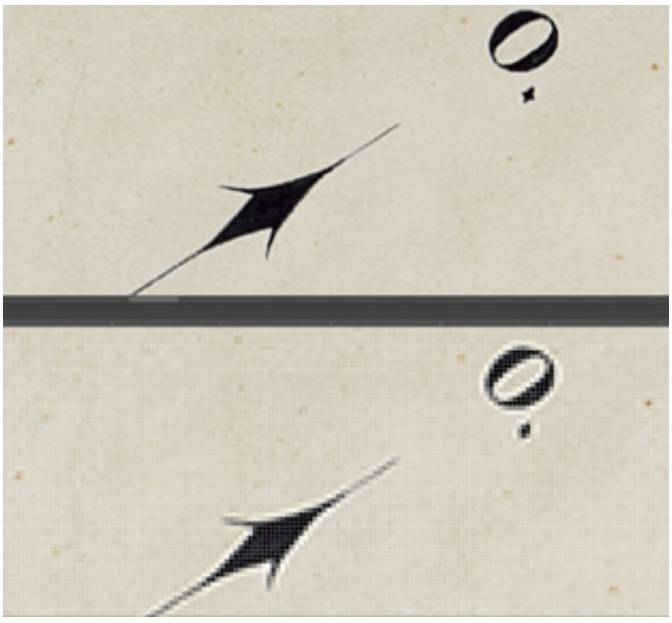
* For the human eye to have the virtually similar image resolution on-print, the printing resolution would have to be 250-300 dpi. We downscaled the map actual size from 1 to 0,7. Resolution of the print copy came as high as 210 dpi. The image sent to printer was in two tiles, each 24k x 14k pixels. To give you the perspective of the entire image of that size on print, the same visual detail for human eye would be seen on 76 monitors (4K) placed side by side as a monoscreen.

* Details compared to previous digital copy quality – 210 dpi and 72 dpi – can be seen below:

*The repro was printed on acrylic latex coated canvas. [fredrix 901sj]

* To sum up: given the circumstances and previously set goals brought us a repro, a digital user copy by print that can be now seen for visitors in the Palmse Manor.

* High quality preservation copies were made with the aim to preserve the conserved original. The original map is rolled all the way back and packed for safekeeping.



Conclusion:

The map was digitized twice between the years 2015-2019 for different purposes. The aim of Christof Nichterlein's approach was to digitize the damaged map in the place of exhibition area in Palmse Manor for analysing it in GIS and also to create an open source web map viewer.

The second step of digitizing the map was more complex considering the future

purposes for map usage. It was followed by both preservation and access requirements for the map. The conserved map was digitized in studio, arranged for this on special workplace and lighting environment. Printed derivate was framed and exhibited in the museum. Conserved original map was rolled, properly packaged and preserved in manor depository.

Finally, the challenge was met successfully.

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[i] Bachelor Thesis written by Christof Nichterlein. The Estate Map of Palmse Manor. A Comparison of Past and Today and the Way to an Open Source WMS, 2015/2016 Karlsruhe University of Applied Sciences Faculty of Information Management and Media

FROM MANUSCRIPT TRANSCRIPTION TO POETRY PERFORMANCES: CULTURAL HERITAGE CROWDSOURCING IN PRACTICE

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Providing free access to cultural heritage in a digital environment and introducing opportunities for participation to preserve, replenish, and create cultural heritage collections is mostly regarded as a mutually beneficial opportunity. In simplified terms, cultural heritage and research institutions stand to benefit from collective intelligence and creativity, as well as to obtain help in processing digitised collections while the general public benefits from being introduced to the richness of diverse cultural heritage, opportunity to share their knowledge and acquire a new one, and participate in heritage volunteering.

In 2014, the Institute of Literature, Folklore and Art of the University of Latvia (ILFA, a holder of Latvia's largest folklore collection) started its first crowdsourcing action dealing with folklore manuscript transcription. Since then volunteers have spent more than 730 days or 17,520 hours in the digital platform (lv100.garamantas.lv) to transcribe more than 100,000 manuscript pages thus providing a prominent help to make folklore collections searchable through digital archive garamantas.lv.

In 2017, a new project was started with an aim to develop crowdsourcing tools for several other kinds of interaction, carry out targeted actions to involve public stakeholders into joint knowledge production and study volunteering experiences, including motivation and practices. By the end of the project in August 2019, six crowdsourcing initiatives were launched dealing with ethnographic surveying (Archive Asks) and personal calendar, poetry reading (Read Aloud #1, #2, #3), and archive sounds (Sing with the Archives). These platforms along with other participatory tools offered by ILFA are represented in the website iesaisties.lv.

The paper will critically examine ILFA's five years-long experience in crowdsourcing practice by comparing the methodology and results of different crowdsourcing actions, analyzing success factors and revealing challenges and fails. Particular attention will be given to the ethnographic and statistical analysis of engagement and participation, as well as to the use of tools developed within projects in the education (and their potential for further re-use).

DIGITAL AND INTERACTIVE LITERATURE – TRANSGRESSING THE BORDERS OF LITERATURE?

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This paper aims to analyse digital literature and its implications for the concept of literature and its methodology of studying. Even though this new „digital turn" brings nowadays several instruments that help investigating new genres of discourse, researchers may ask themselves if literature expressed in a digital medium does not bring us back to old questions that were already stated, for example, by the reception theory or by a reader response literary theory.

First of all, we can understand digital literature in two distinct ways: as literary discourses expressed online or digitally, or as discourses produces by digital instruments. Both of them can bring an enhancement of the reader's contact through a visual dimension, but this step was already made by graphic novels, like *Persepolis* by Marjane Satrapi. What is more is that the way interactive, digital literary texts are built emphasizes a cultural and societal aspect: the 21st century is centered on speech, not on the event, but at the same time conveys the idea of a technology of life, interpersonal relationships, and the virtual that replaces the experience. It is true that online "connects" individuals, but in what ways is it authentic? Here is also the question of the concept of "trust" in the social web, which can eventually reshape social reality.

Furthermore, a digital-born text may be subject to the so-called "distributed authorship", allowing multiple "narrating voices". A good example could be *Zwirbler (Twister)*, a novel begun in 2010 by Gergely Teglasy, an Austrian-Hungarian writer. It is interesting because it is an example of user-generated content: it offered the possibility for different users to interfere – to make suggestions, comments on the original text, therefore having the chance to generate plot twists or changes. In this context, interesting is the genetic study of such a text born in the virtual environment, because we are talking about a fluidity

of notions that remodel physical maps. And this includes fluctuating "existence" or the emergence / fluctuating online presence of "authors," while dissolving the border between the public and the private. On the other hand, a dynamic, interactive application which incorporates programming languages and functions transforms readers in users and co-creators. Another question arises here: to which extent do then al platforms turn into performative stages where every user can "exercise" his or her "writing talent" or just make a choice from a set of variables already thought by a programme? For example, *DNA* is an interactive, Web-based novel which allows readers to select his/her narrative path. In this case of machine-created texts, the freedom of the reader to interpret literature is limited.

Therefore, this paper will argue if digital and interactive literature truly transgresses the borders of literature or just re-enacts debates that were already heated in the 20st century.

FINDSAMPO - A NEW DIGITAL TOOL FOR ARCHAEOLOGICAL FINDS UNDER DEVELOPMENT

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In this paper we will offer two perspectives, a heritage manager and a researcher perspective, on a new find recording scheme, which is currently under development in Finland. FindSampo (in Finnish *Löytösampo*) is a concept for a digital web service for collecting information on archaeological finds made by the public, especially by hobbyist metal detectorists. The database is developed by The Finnish Archaeological Finds Recording Open Linked Database (SuALT) project, a four-year consortium funded by the Academy of Finland that started in 2017. The partners in the project are the Finnish Heritage Agency (FHA), the University of Helsinki and Aalto University. As a multidisciplinary research project, SuALT develops innovative solutions for reporting, collecting and managing archaeological finds, applying citizen science and semantic computing. In the end, the digital platform, FindSampo, will give the public, researchers and other scientists open access to study finds and its spatial information online globally.

In recent years, the growing flow of new archaeological finds made by metal-detectorists has given unprecedented challenges to cultural heritage managers, particularly in the Archaeological Collections of the FHA who are managing the finds data. One of the needs is to distribute the information of new metal-detected finds. During early 2010s, avocational metal detecting became more popular and the amount of finds reported has since then constantly increased. With new digital collection management the data from these new finds will be easily accessible for all in FindSampo. Finds data are also connected to existing databases nationally, for example, the open digital services of the FHA (www.kyppi.fi), and internationally to similar databases of archaeological finds made by the public, like the British PAS and the Danish DIME.

Ontologies and metadata models are needed to represent archaeological information as a digital resource for digital humanities research. For Archaeological Collections it is important that the self-recorded finds data made by the public is well-matched with the FHA's collections management. The ontology infrastructure is needed for linked data so that it interoperates with other national and international databases. The concept-based ontology of archaeological object names, for example, that the FHA has

developed, is essential when the recorded find information needs to be accurate and compatible. Using formal data structures, it is possible to share archaeological information for different user needs in versatile ways.

Different users and different user-needs

User experience research has been one of the key methods for assessing the needs of different user groups of FindSampo. We have focused on three major end-user groups for the database; the public, researchers and heritage managers. In early 2018 we launched an online questionnaire survey, where we asked different user groups to express their expectations, motivations and concerns about how the database would function. However, of the 178 received answers the majority came from the general public, especially metal detectorists and landowners. Hence we realized that we need to reach out to other end-user groups as well in order to collect more data. It was evident that we also needed to get the project more known within these groups. We therefore organized public outreach events, such as lectures and talks in different cities as well as active social media platforms. We also conducted a road trip throughout the country in order to get more detailed information regarding the future design and content of the database. These focus group meetings and interviews are currently being analysed and some preliminary findings can be presented.

The majority of the end-users have expressed enthusiasm towards FindSampo. The main motivations for using the database amongst detectorists has been the ability to report their finds in an easy way on-site but also being law obedient. Another motivation relates to find recording processes. Detectorists hope that by reporting finds online it will speed up the cataloguing process at the FHA. Another key element is that detectorists want feedback on their finds and they also want to engage more with professional archaeologists and heritage managers. However, the metadata needs to be in a form that suits the needs of a large audience. For example, researchers have expressed that they want to have an easy-to-use tool not only for browsing objects but also for doing e.g. in-depth spatial analyses of certain object types, typological and chronological studies and also for studying the materiality of objects.

Two major concerns have come up regarding FindSampo, both in the questionnaire but also during interviews, in all the end-user groups. Sharing the find information online, such as the exact location of the finds, is a concern that we must take seriously within the project because the sites are naturally vulnerable to looting. However, the ancient monuments, which are protected by law, are already publicly available online. It seems that the majority of end-users wants to keep this information embargoed, at least until these new sites have been studied by archaeologists, limited to heritage managers only. Another concern relates to the find validation process. While heritage managers are concerned about the possibility that they will be overwhelmed with all the new finds reports and the work related to that, detectorists, in turn, are worried that their finds won't be processed quickly enough. There are several options for handling these obstacles: one being a functional ontology, which is currently underway at the FHA. Image recognition is another solution but it requires high-quality images. The best option would be to combine these with the input from a community of both experts and the public who would be able to contribute to the validation process. By doing so we can contribute to citizen science but also make sure that our cultural heritage is handled and studied in a democratic way.

USING DATA TO UNDERSTAND THE USER PERSPECTIVE OF THE DIGITAL OBJECTS AND DISPLAYS IN THE MUSEUM EXHIBITION

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Keywords: *museum, exhibitions, role and behavior of the users/visitors, survey, sociology, automated data collection, data analytics*

Museums have invested huge sums of money to digitise their collections, and more and more often digital objects, displays, touch-boards, interactive games and other elements are used to bring the digital collections to the museum space. The same digital objects can also be used to collect data about the visitor activities and this information can potentially be used to understand the visitor engagement with these objects. The aim of this presentation is to discuss the possibilities of using data collected by the digital objects in order to understand the user engagement with the digital objects.

Museums have traditionally been holders and systematisers of large amounts of data. The collections have both material (heritage and historical objects) and immaterial (meta-data, stories, accompanying narratives, research/curatorial interpretations) data. At the same time, museums today have not been equally interested in collecting the data relating to the visitors. Only in the recent times, systematic and critical attempts have been made to understand the visitors by using different kinds of data, both collected automatically (Palmieroux) as well as asked from visitors with different survey technologies (e.g. Kenderdine). However, the data collected by the digital displays has not been discussed from the perspective of its usefulness for understanding visitor interaction and engagement.

Estonian National Museum opened in 2016 with 2 permanent exhibitions: Estonian exhibition "Encounters" and Finno-Ugric exhibition "Echo of the Urals". Exhibitions differ in their concepts, design and offer to different visitor types diverse museum experiences. In both exhibition the physical objects are in the focus, but both of these exhibitions also use of digital content and resources. However, the use of digital materials across these exhibitions differ.

In both exhibitions the use of digital materials has been carefully chosen by the curators and designers. The aim of these digital technologies within the exhibition has been to make the exhibition experience more interactive. At the same time, the aim from the museum side has been to keep the digital exhibits sustainable from the maintenance perspective for the upcoming years. The digital displays are chosen in the way that they support the exhibition narrative. Digital elements in the exhibition space aim also to extend the exhibition by making collections (photos, films etc. digital materials) available for the visitors. This means that visitors have access to bigger and more diverse collections. Extended use of digital collections can also be seen as a way to reduce the role of curator as the access provider or editor of the materials. The digital displays support visitor in being more active deciders then passive viewers. For example in the Encounters visitors can see the whole collection of 3000 photos of the Estonian everyday life from the years 1913, 1914 and help visitors to interact with the source material themselves and make their own interpretations.

The digital displays are also used in order to combine different materials, for example in "Encounters" and in "Echo of the Urals" visitors can see from archive materials and films, photos, fiction, and other varied materials of one cultural event. The presentation of social relations or social networks in digital screens helps to make more sense of the different relationships of people from 150 years ago and how these have been related to the historical events related to nation building. Some of the digital displays use the curated collections to display more knowledge, more materials and help to visualise hypothesis. From the museum perspective, digital layers allow for richer, deeper and more nuanced story-telling within the exhibition space, compared to the exhibition without digital layers.

But do visitors appreciate this? Can they use and understand the curatorial intent and how does visitor engagement look in the museum? Do the digital displays support the profounder engagement with the content? And does the information collected by the digital exhibits allow for more detailed understanding of the visitor engagement?

In the context of the Estonian National Museum, the engagement with the digital displays can be analysed daily through the logs of e-tickets for language change system, which show the displays use and visitor journeys in the exhibition. This analysis indicates and helps to understand which topics have been relevant to different visitors. We will also attempt to gather log data from the different touch-tables and other digital displays where such log data can be collected.

This data will be compared and contrasted to the data from visitor observations. To explore the potential and the individual usage experience of multi-touch tables, interactive and participatory screens the visitor observations and interviews with visitors about the usage of exhibitions were conducted. The presentation aims to understand the potential of the log-data collected by the digital objects in order to understand the visitor interaction. Traditional observation and interview data will complement the data, but can also be used to better understand the limitations of the automated data collections.

ANALYTICAL DIMENSIONS FOR UNDERSTANDING DIGITAL ELEMENTS IN THE MUSEUM EXHIBITION SPACE

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Digital objects have often controversial roles in the exhibition space. Are they intended to support the museum experience, are they distractions and tools for entertainment or are they taking away the chance to explore the authentic objects? These controversial discussions of digital museum objects together with limited financial resources have resulted in limited examples of best practices of how digital objects can be meaningfully integrated into the exhibition space.

The aim of the current paper is to analyse the permanent exhibition "Encounters" of the Estonian National Museum in order to understand the conceptualisation and use of digital objects. When the museum was opened in October 2016, the digital layer of the museum aimed to explore different digital solutions, in order to bring new possibilities of inclusion and engagement to the museum space. Our aim is not to assess the digital exhibits based on their success or failure, but rather look at the opportunities

they allow on a number of different scales that could potentially bring museum closer to the visitor and allow for increased sense of inclusion.

In the process of developing the digital elements for the permanent exhibition, the starting point was always cultural heritage content. The team of curators and exhibition designers developing the exhibits, discussed what would be the best expressive form for the cultural heritage content that needs to be explained, the technological form was always secondary. Curatorial discussions of the digital elements within the exhibition space ended up having five primary digital layers: a) Historical originals (objects, documents, photos, documentary films etc); b) Curator's texts on e-ink screens; c) Interactive multimedia touch screens for showing large amounts of data: whole collections, visualisations of researcher's hyphothesis etc; d) Staged films for emotional intimacy, which used fiction film as a form and documentary data as a script; e) Hands-on exhibits or '3D multimedia exhibits', combining material and digital in the exhibits.

In the preliminary analysis, we propose looking at the digital elements of the exhibition by using the following analytical dimensions. 1/ We will consider the spatial dimension of the digital exhibits. Can one take the digital experience outside of the exhibition space? 2/ We also want to discuss the temporality of the digital dimension – how static or changeable are the digital elements used at the permanent exhibition? The social dimension of the museum has been discussed by several authors (Simon, 2010; Tatsi, 2013). Some of the critique of the digital resources developed for the museum space has been that these are often inviting solitary experiences. We will therefore look at the dimensions of 3/ private/public as well as 4/ single/multi-user aspects of the digital elements. As digital elements often relay on the audio-visual materials, then increasingly, in order to tell the story of the historical events, 5/ fictional re-acting or re-creation of the past is needed to provide the necessary audio-visual component. But we will also look at the dimensions of 6/ authoritative voice vs collaborative voice as well as 7/ planned openness or determinedness of the interpretation allowed with the digital elements. 8/ borrowing from the works of Lepik and Lotina (2015) and Lotina (2016) we will look at the modes of engagement that these digital elements are predominantly inviting.

We will use these eight analytical dimensions to map the diversity of the digital elements in the permanent exhibition space. Heuristic mapping and visitor observation will be used to make sense of the key components when planning digital elements for a museum exhibition. Examples from each of the five layers listed above will be analysed through the outlined lenses. Analysis of the permanent exhibition will include the following digital elements: a) Historical originals – here we will analyse the use of audio-visual originals as well as digital photographs within the exhibition space; b) Curator's texts – we will look at the conceptualisation of e-ink screens in the museum space; c) Interactive multimedia touch screens - we will analyse several more or less playful uses of screens and their relation to collections; d) We will look at the witch process audio-visual fictional re-creation that aims for emotional engagement; e) As an example of hands-on exhibits or '3D multimedia exhibits', combining material and digital in the exhibits, we will look at multi-media mixer "Freedom synthesiser".

We propose to discuss the first results of such mapping. These analytical dimensions will allow more systematic understanding of the role and expectations relating to the permanent exhibition. As the work is at the moment in the preliminary analysis stage, we will focus on the operationalisation of the analytical dimensions – if these are the ideas and aspects considered relevant in the literature, how can we make sense of these dimensions within the museum space. Can these analytical dimensions be used in planning digital elements? What kind of aspects have been more relevant when digital elements were designed and planned? What kind of elements seem to be more relevant when attempting to understand the visitor inclusion?

S

SHARING OPEN KNOWLEDGE ABOUT MALTA'S CONTEMPORARY ARTS SCENE AS DIGITAL CULTURAL HERITAGE

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In 2015 Fondazzjoni Kreattività, the organization that operates Malta's National Centre for Creativity, embarked on a research project geared to adequately preserve, document and make available the substantial number of art objects and associated ephemera it holds, which form part of the country's National Art Collection. Since the project began, a number of key ideas have been developed through community archiving initiatives that have involved workshops with artists, cultural stakeholders and the public. The initiatives put forward to develop the documentation and archiving processes of its own collection have afforded Fondazzjoni Kreattività the strength to serve as a key institution responsible for contemporary cultural heritage more widely in Malta. This is a major shift in terms of cultural policies on digital preservation and collective memory engagement in Malta, which can also be applied to the performing arts, film, literature, and other creative modes of expression. This presentation delves into the practical and theoretical side of contemporary art preservation policies from an institutional perspective, focusing on the methodology and actions that are being undertaken in this case, which involves aspects of citizen science in an attempt to move away from the conventions of grand institutional narratives. The process of the systematic preservation of the legacy of Fondazzjoni Kreattività employs wiki technology to gather and share knowledge on the modern and contemporary holdings in Malta's National Art Collection. Focusing specifically on the ways in which this online information community engages with Fondazzjoni Kreattività and its audiences, the project at the heart of this presentation is primarily based on the drive to disseminate information about the collection and ensure interactive opportunities for engaging with these works of art through exhibition and documentation, as Digital Cultural Heritage.

CALCULATING TOPICS IN ESTONIAN FOLKSONGS: PROBLEMS WITH TEXTS IN NONSTANDARD LANGUAGE

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One of the most specific genres of Estonian folklore is runosongs, an archaic indigenous tradition Estonians shared by several Finnic peoples. The knowledge of this genre, collected in various ages and modes (texts, melodies, sound and video recordings) has been gathered together into the Estonian Folklore Archives, where the database of runosong texts has been work in progress since 2003 (Oras, Saarlo & Sarv, 2003-2019). By the current moment the database contains approximately 2/3 of runosongs ever collected in Estonia, i.e ca 100 000 texts (or 6 million words) together with basic metadata on the time and place of collection, collector, and performer, if available.

Availability of so many texts in digital format has opened up new insights into the research of runosong tradition. In pre-digital times no one was able to analyse the whole body of texts to find out how the

folkloric variation has been functioning: where lie the main regional divisions in this tradition, and on what are they based. My studies have shown that layers of metrical, typological and word use variation behave in notably different ways and it is not easy (or even possible) to draw the general regions of runosong.

My research question in the current study is if it is possible to detect, using topic modelling, what is the topical structure of runosong corpus. Here, we immediately face the problem of linguistic variation. When applying the algorithm on the whole corpus, the variants of different dialects come up as topics. The language of runosong is based on colloquial dialectal language, it varies similarly to dialects, but uses a specific, archaic poetic register. Therefore, the songs cannot be automatically lemmatized, it is not easy to eliminate stopwords etc. Using the method of stylometry (with R application Stylo, Eder *et al.*, 2013) for the study of linguistic variation, and network community detection algorithm (Blondel *et al.*, 2008) used in network analysis application Gephi (Bastian *et al.*, 2009), I have detected the runosong regions with similar language use (which do not exactly overlap with dialectal areas) – of course the statistics based on word form frequencies includes both, the linguistic as well as content aspects of songs. Within such a region, however, the use of topic modelling (wherefore I have been using MALLET application, McCallum, 2002) gives meaningful results.

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INNOVATIVE USAGE OF NCL DIGITAL COLLECTIONS - LIBRARY AS A COLLABORATIVE HUB OF DH IN TAIWAN

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The digital humanities (DH) research is based on a large number of digital data, which has attracted the attention of library who holds a vast amount of digital collections. This paper overviews the development of DH in Taiwan, and discusses the roles and services of libraries in a digital age. National Central Library (NCL) is examined as a case study to reflect on its various innovations and practices in DH, especially focusing on integrated services of 'Taiwan Memory' (https://tm.ncl.edu.tw/index), as well as its data collecting, usage, and promotion.

'Taiwan Memory' cooperates with universities, senior high schools, elementary schools not only digitized cultural heritage of schools, but also initiates activities to engage users to share school memory together.

Digital cultural heritage and DH platforms can get more exposure through exhibitions. Exhibitions titled 'Taiwan Memory: Campus Memories through Generations' and 'Digital Humanities: A Case Study of Classic Chinese Novel *Dream of the Red Chamber*' are discussed as examples.

In conclusion, NCL acts as a collaborative Hub to cooperate with diverse institutions to promote digital cultural heritage. Challenges and strategies of utilizing digital collections are discussed and some elements on future directions are outlined.

THE COLLECTIONS OF FRIEDEBERT TUGLAS AND THE HISTORY OF IDEAS IN 20TH CENTURY ESTONIA

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The Museum Department of the Under and Tuglas Literature Centre administers the legacy of Friedebert Tuglas, the writer and Member of the Academy of Sciences, in the form of his library, photographs, manuscripts, postcards, art collection and sound recordings; the library and art collection that formerly belonged to the writers Artur Adson and Marie Under and arrived in Estonia in 1996 from Sweden; and the art collection of the Foundation for Estonian Arts and Letters and the book and art collection of the writer and art scholar Paul Reets, which arrived in Estonia from the United States of America in 2004 and in 2012. Tuglas is the key figure in that rich collection because he deliberately collected a wealth of materials about cultural and political changes from the beginning of the 20th century and the history of ideas of Estonia. His collections illustrate the unfolding of the 1905 Russian Revolution in Estonia; his forced political exile after that until 1917; the founding of the nation state and its cultural policy until 1940; the internal exile of Tuglas in the 1950s; and the gloomy results of first decades of the Soviet occupation and the erratic literary contacts through the iron curtain.

The collections will be all accessible as a digitised archive by 2020, with the manuscripts and the collected volumes of Tuglas also available as machine-readable texts. This paper intends to show how the digitised collections of Tuglas as a very transdisciplinary field of research are designed for use, and to illustrate their importance through some research results that have already been achieved.

OPTICAL CHARACTER RECOGNITION WITH NEURAL NETWORKS

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Sanskrit language has contained very ancient culture etc. Medicine, Mathematics, Hindu mythology, Indian civilization. Most of these manuscripts are written on palm leaves. It therefore becomes critical that access to these manuscripts is made easy; Digital Humanities is giving a scope to share this knowledge with the world and to facilitate further research on this Ancient literature. With this motivation, our first step towards this is to create a OCR for Sanskrit language. In this paper, we propose a Neural Network based Optical Character Recognition system (OCR) which accurately digitizes Ancient Sanskrit manuscripts (Devanagari Script) that are not necessarily in good condition. We use an image segmentation algorithm for calculating pixel intensities to identify letters in the image. The OCR considers typical compound characters (half letter combinations) as separate classes in order to improve the segmentation accuracy. For out ground truth we are taking Ramayana text written by Valmiki.

ESTONIAN LANGUAGE COMMUNITY CA. 1900: LEARNING FROM LINKED METADATA

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The expansion of digital resources has provided new avenues for historical research in a number of ways. Based on digital text collections, corpus linguistics has become one of the core disciplines for language researchers over the last few decades. Enriched texts allow one to extract facts, people, or geographic locations from texts and allow us to better understand what people were writing about.

An intriguing option that has come to be explored more recently is the use is the study of collection metadata themselves (e.g. see Lahti *et al.*, 2019). That is, with the study of collections and registers themselves, it may be possible to say something substantial about the historical events too. This naturally entails a more careful consideration of how the data points end up in the archives and whether they can be considered representative of an era, or may be biased in some way (e.g. by focussing on authors that were later canonized by critics, cf. Algee-Hewitt *et al.*, 2016).

In this presentation, I will present explorations of historical bibliographic data (i.e. Estonian National Bibliography), that aims to give a complete and comprehensive overview of publications in Estonian or related to Estonia. It is an aggregate of various bibliographies collected by book scholars over generations, and has been now made available in a digital structured format. I explore it from two angles: 1) printed books in the context of community demographics; 2) individuals involved in writing and publishing books and their backgrounds.

Pre-processing / Data and methods

The study relies on the Estonian National Bibliography (ENB), which is publically available on data.digar.ee. The data was harmonized with some heuristics and custom dictionaries.

Demographic data for the period was aggregated from various published primary and secondary sources. The individuals involved in the language community were retrieved from publication data in ENB, by taking all names associated with the publications (excluding original authors of translated works). Finally, for enrichment ENB data links with VIAF were relied upon, adding biographic information to the authors based on Wikidata and DNB collections, and adding a few more sources (ISIK, VEPER). As a result, bibliographic data combined with demographic data was established, and an enriched dataset of individuals actively involved with print publications.

Case studies

The demographic data show that due to internal migration within the Estonian population, most cities consisted of around 50% of immigrants around the turn of the century which has been described as heavy dialect contacts. However, only a minority of them were born in a different dialect area, due to which practical influence of dialect contacts on language can be expected to be marginal in terms of spoken language.

The publication record shows an exponential growth in both the number of printed works, and number of printed works per capita, as well as number of authors per capita. This provides a foundation for a steady rise in the written language community, that is mediated a bit by political events. Publication record shows rather abrupt changes in the relative roles of competing Estonian, German, and Russian languages as result of administrative policies.

The birthplaces of the associated individuals show a dominance of Livland in the late 19th century, to the extent that cumulatively, Livland comes to dominate the intellectual population over Estland. This trend can be understood in terms of administrative policies, that resulted in Livonian communities gaining affluence and also good coverage of public schools a decade or two earlier. However, between the north-south split of Estonian dialects, northern dialects are also dominant in large parts of Livland, so among the written language community, speakers with a native northern language still dominate.

Conclusions

The study of collection metadata provides an intriguing avenue for humanities research. It also opens up new discussions, particularly on the potential representativeness of the collections and the different ways that data points could be harmonized or generalized from. While these discussions may take a while to take place, opening up collections as datasets, and making them structured and machine-readable, is a clear step towards exploring these possibilities. In the case studies presented here, the encyclopedic metadata was used to study the shape of an emerging language community more than a 100 years ago. The same datasets, and other datasets like it, could be used to study many different questions relevant to humanities scholars of different fields. The more datasets become interlinked to each other, the more their investigative as well as critical potential can be released.

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PRESERVING LINGUISTIC HERITAGE: MATERIALS OF ESTONIAN DIALECTS AND KINDRED LANGUAGES AT THE UNIVERSITY OF TARTU

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Keywords: *linguistics, archives, corpus, Estonian dialects, Uralic languages, online database*

This paper introduces the Archives of Estonian Dialects and Kindred Languages (AEDKL) and the Corpus of Estonian Dialects (CED) – a collection of materials in Estonian and related languages that are freely available online. The AEDKL consists of fieldwork recordings, written materials, photos and videos of Estonian Dialects, Finno-Ugric and Uralic languages. The CED is a collection of electronic data containing authentic dialect texts from all Estonian dialects.

The AEDKL contain four types of materials: 1) sound recordings (Finnic: Estonian, Livonian, Votic, Ingrian, Veps, Karelian, Finnish, Ingrian Finnish; Finno-Ugric: Inari Saami, Erzya, Moksha, Komi, Udmurt, Hungarian, Khanty; Samoyedic: Nenets, Kamas); 2) unpublished manuscripts, including student papers and thesis defended at the Institute of Estonian and General Linguistics, fieldwork diaries, transcriptions and written notes on the Uralic languages; 3) photos from fieldwork expeditions and various linguistic events; 4) video recordings.

The archives consist of about 2800 hours of fieldwork recordings of the Uralic languages. The majority of the sound recordings are of the Estonian dialects with the remainder composed of recordings of other Finno-Ugric languages. The earliest sound recordings date back to the 1950s and written materials to the 1920s. There are a total of 393 000 pages of written manuscripts in the archives (~ 268 000 pages are digitally available). The collection holds about 2900 photos from fieldwork expeditions and linguistic events. Photos are divided into two series based on media type: paper and digital photos. There are around 1300 paper photos that are digitized, and digitization is still in progress. Around 1600 digital photos are from recent years of fieldwork and different linguistic events. Video recordings are from fieldwork conducted during recent years. Also, old film rolls from the 1970s and 1980s have been digitized. There are 51 hours of video recordings, but in the current version of the database viewing these videos is not integrated into the online archive system.

The CED offers a data set of Estonian dialectology and consists of sound recordings, transcribed texts utilizing Finno-Ugric phonetic transcription, dialect texts in simplified transcription, morphologically annotated texts, syntactically parsed texts, a database containing information about consultants and recordings. The corpus enables one to apply various methods that are used in corpus linguistics and corpus-based dialectology, thereby opening up new horizons in the study of certain aspects of Estonian dialects such as dialect syntax.

The online databases of the AEDKL and CED are freely accessible and open to all researchers at <www.murre.ut.ee/arhiiv/> and <http://www.murre.ut.ee/murdekorpus>.

V

NEW CREATIVE PRACTICES: ALT LIT - SOCIAL MEDIA LITERATURE

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Keywords: *digital literature, social media, Alt Lit, Estonian literature, poetry*

Since the years 2006–2007 we have witnessed a massive emergence of new creative practices that are linked with the development and spread of social media platforms (e.g. Twitter, Facebook, Tumblr). In terms of literature we can see emerging new forms of literature like twitterature, Facebook and Tumblr poetry, collective Facebook serial stories, stories on Wattpad etc. These kinds of literary works are created using the advantages of Web 2.0. The authors do not need any specific technological or programming skills and the social media environments provide good and accessible platforms both for authors as well as readers.

This kind of literature created via social media is characterised by democratising literary production, dialogue between participants, textual and narrative dynamics, and mixing of various forms of media. According to the periodisation of digital literature, we can define such kind of literary works as the third generation of digital literature (cf Viires, 2017).

The paper will discuss one example of the third generation digital literature – so-called *Alt Lit* (Alternative Literature). The term came into circulation in the United States in 2010 and Adam Hammond (2016) describes Alt Lit as a community, medium or style. Alt Lit is published and circulated on the internet and the authors are extremely active users of social media. The texts are often collaborative, and are edited based on feedback from readers (Hammond, 2016: 142). The authors of Alt Lit have created strong and visible authorial images and as Adam Hammond puts it "its best-known practitioners tend to be those who spend the most time online" (Hammond, 2016: 144).

In my paper I am also discussing if the works of some Estonian authors can be associated with the term Alt Lit. These authors – Kaur Riismaa, Liina Tammiste and Keiti Vilms – have all used social media platforms (Facebook, Twitter) for their creative work and are challenging the boundaries of literature. However, we can say that the real challenge for the social media literature authors is not so much how to get the texts published online. The real challenge is to find readers and reach the right audience.

Social media literature is a growing phenomenon and has changed the ideas about traditional literature. The questions to be addressed are: the change of the role of the reader and author; the role of online publishing; the importance of visibility; the changes in textual practices; the possible combination of oral culture with written literature; the phenomenon of hybridity.

I also argue that the concepts of „participatory culture" (Jenkins, 2006) and „digimodernism" (Kirby, 2009) are relevant for analysing Alt Lit. But the central questions that come into focus when we are discussing Alt Lit are the following: how to distinguish professionalism and amateurship and what are the borders of literature and literariness?

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HOW TO ATTRACT SCHOOLCHILDREN TO COLLECT FOLKLORE: THE EXAMPLE OF THE DATABASE OF GRAFFITI

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Keywords: *collecting of contemporary folklore, data collecting, graffiti, paremic graffiti, street art*

In Estonia the creation and digitisation of electronic databases of folkloric archival material began in the late 1990s. Lately, Estonian folklorists have created a number of digital genre typological databases of archival collections, for example, of Estonian folktales and legends, riddles, proverbs, sayings, local heritage, folk calendar, songs, etc.

The paper provides an overview of an internet-based genre typological database (http://www.folklore.ee/Graffiti), one of the results of a joint Estonian-Polish project "Creativity and Tradition in Cultural Communication", which lasted from 2010 to 2012. The database includes approximately 700 units of paremic graffiti. The documental photos were taken beginning in January 2011, mainly in the public space of the city of Tartu, Estonia, but also elsewhere in Estonia and abroad.

The paper (1) outlines the concept of paremic graffiti and (2) introduces the basic structure of the database and its underlying principles, giving examples of how an academic database must take into consideration the specific nature of a genre and support the analysis.

Paremic graffiti is defined as graffiti in which, in order to convey his or her message, the author has made use of proverbial generalizing sayings (including classic proverbs and their modifications or so-called anti-proverbs) as well as aphoristic quotes and humorous and juicy expressive catchphrases, slogans, and clichés. The recorded graffiti texts allow us to identify syntactic formula patterns which refer to the existence of the paremic element. The paremic nature is defined by the syntactic formulae of the graffiti texts as well as the purpose of – similarly to traditional folk wisdom – giving meaning to everyday experience. Paremic graffiti is characterized by topics like society, politics, criticism of the ruling authorities, ideology and religion, lifestyle, school, sex, alcohol, drugs, and private matters. A paremic text in graffiti often involves and supports elements of pop-culture and helps to fill the human, philosophical, socio-political, self-expressive, and sometimes very aggressive and protest-minded aspirations of the author of the particular graffiti text. The aphoristic form and poetic style of expression so natural in paroemias – consonance, rhyme – allows for a creative approach and in the message-centred graffiti serves as a means to be used for announcing one's truth, platforms, mindedness, and beliefs or will to influence the world.

The academic database of graffiti differs from internet blogs and albums because it is based on the needs of particular researchers. For example, the emphasis on the paremiological aspect can be highlighted in a database. In addition to this, the search engine enables to find graffiti by textual parameters, while the database contains metadata and folkloric typology. The database spreads graffiti via Internet, being involved in the reproduction of folklore and the creation of new cultural meanings.

Below, I outline the basic structure of the database and its underlying principles, giving examples of how an academic database must consider the specific nature of a genre.

1. Ephemeral nature. Paremic graffiti disappears and changes quickly, making it difficult for the researcher to record the material, while marking graffiti as a dynamic context- and period-centred cultural phenomenon.

2. Accumulating nature. It is important to reflect the open nature of a graffiti text – in the course of communication between different authors the meaning of a paremic text can be subject to change, therefore long-term observations are a prerequisite to revealing change in the meaning of any specific text (the database includes recordings of the same text from different moments in time).

3. Socio-cultural nature. The collection and analysis of paremic graffiti should definitely apply context-centred methods which take into account the social context (i.e., who creates for whom, where, when, for what reason, what is the receiver's cultural potential to interpret the graffiti text), and consider the connection that graffiti has with other domains and other forms of art.

In addition, I introduce an Android application that was created by undergraduate Airis Kruus in spring 2019. The application was made on the existing website and is suitable for both graffiti viewers and collectors. Those interested can view (the existing) graffiti and collectors can post graffiti in the graffiti location with a camera or at home, choosing pictures from the gallery. The application can be used as an important tool for both scientists in their research work and for schoolchildren in the educational programmes with the aim to attract them to the interpretation and collection of folklore.

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DIGITAL MEDIATION OF ART AND CULTURE – FROM WEB TO AUGMENTED REALITY

Florian Wiencek
Kasra Seirafi
(Fluxguide, Austria)

What are current data-based practices and strategies of "digital mediation of art and culture"? In how far are they inherently digital? And what are networked forms of learning from and about cultural data as well as co-creative knowledge generation afforded by different forms of digital media?

The paper will take the plenum on a comparative journey through data-based mediation practices and strategies, (re-)using cultural heritage sources in different modalities – from Web over mobile media

to Augmented Reality. In all these digital mediation forms the term mediation is also understood as designing the "in-between", the interface between visitor and cultural objects. Using the analytic lens of Software Studies (Manovich, 2001, 2013) the paper will introduce research results that show, how the digital mediation forms itself and especially its interfaces have evolved into a digital display for art and culture in their own right: from remediating analogue forms of mediation into the digital realm to the creation of disruptive new experiences based on cultural data.

The point of departure is the database, which will be introduced as nexus for digital mediation based on Florian Wiencek's recently published PhD research (Wiencek, 2019). It is conceived of as a cultural form (Manovich, 2001). The task of a digital repository goes far beyond providing accessibility and enabling the findability of data. Rather databases are a framework for storytelling and co-creative knowledge generation on the basis of housed data; a basis for diverse possible experiences through re-contextualization and reuse of the data within or outside the gallery, depending on the visitor interaction. Software and technology will in that context be introduced as agent in their own right in the mediation process, for which the notion of critical mediation of art (Mörsch, 2011) is central. The introduced examples will start from web-based practices around online collections (e.g. Smithsonian Cooper Hewitt Museum, Staedel Museum, Rijksmuseum) and cultural repositories as mediation medium (such as Google Cultural Institute, Artsy, Europeana), introducing informal, personalized and networked learning and knowledge generation as connectivist (Downes, 2012) and co-creative practices (see Carletti, Giannachi, Price, & McAuley, 2013; Shedroff, 1994; Wiencek, Morbey, & Lombardi, 2012).

A second set of examples introduces digital learning tools and strategies based on cultural data employing mobile media as well as Augmented Reality (AR). These examples extend personalized and participatory mediation strategies in location-based settings inside the gallery or in public spaces. The paper will introduce the Art. Lector concept (K. Seirafi & A. Seirafi, 2016) that was developed by Fluxguide in cooperation with the University of Applied Arts in Vienna in a multi-year R&D project. It implements a 3-phase learning concept developed especially for school classes while being also applicable for individual learners that enables a holistic, digital learning experience for teachers and students before, during and after a museum visit. It promotes active learning instead of passive content consumption, employing forms of E-Learning and gamification in a cultural learning setting. Examples of different implementations of the strategies will be introduced: such as an avatar-based learning tour and learning platform at Deutsches Berbaumuseum Bochum (Germany), an app-based school learning service at Kennedy Space Center (USA), a museum-scavenger hunt at Stadtpalais Stuttgart (Germany) or location-based mediation of Roman history through the combination of micro-content and micro-learning in the apps "Römerspuren" and "Helden der Römerzeit" (Germany and Austria).

The move to Augmented Reality as medium for cultural learning affords the integration of physical space and digital information, opening up new opportunities for holistic visitor experience design and explicit mediation (Moesgaard *et al.*, 2015) in the museum. This gives visitors not only access to information but also a better understanding of situations and processes. To conclude the tour through different digital modalities of cultural learning, the paper will summarize major results from the research project HoloMuse (K. Seirafi & Wiencek, 2017). The innovation project researched the state of the art of AR in the museum, explored the needs and understanding of different stakeholders with regard to museum augmentation and developed concepts and mediation strategies that effectively use AR for cultural learning resulting from these insights. The concepts were piloted with museum partners such as Kunsthistorisches Museum Vienna (Austria) and Deutsches Museum Munich (Germany).

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ESTONIAN LANGUAGE AND CULTURE IN THE DIGITAL AGE 2019–2027 RESEARCH AND DEVELOPMENT PROGRAMME OF THE ESTONIAN MINISTRY OF EDUCATION AND RESEARCH ESTONIAN LANGUAGE AND CULTURE IN THE DIGITAL AGE 2019–2027

The general purpose of the programme is to support the preservation of the Estonian language and culture, increase and strengthen the capacity of R&D in the field of Estonian language and culture in supporting Estonian research, and, more broadly, the development of the whole society in accordance with the sector strategies. Therein, increasing the digital dimension, cross-field nature, applicability, and using the results in further studies and other fields are important. As a result of the programme, the digital dimension in the research of Estonian language and culture is a part of daily life that provides additional value.
During the panel nine projects funded from this programme give an overview of the topics and activities planned for the next three years.

DATA AND CORPORA OF ESTONIAN CHILDREN AND YOUTH MULTILINGUAL COMMUNICATION

Reili Argus
(Tallinn University)

The aims of the project are 1) to create Estonian children and youth multilingual communication data set (with several sub-corpora), which would create basis for multilingualism research in Estonia and 2) research on the collected data.
The sub-corpora are: early bilingual communication sub-corpus (recording of every day spontaneous speech), data from Estonian as L2 usage among pre-school and primary school children (spontaneous speech and experimental data), data from young bilinguals' blogs, Facebook and other social media multilingual communication, multilingual vlogs. Unlike monolingual corpora (standard language, oral communication) or learner language corpora, data and corpora of multilingual communication are rather diverse, and a lot depends on a particular contact linguistic situation. For that reason, such corpora are not numerous and there is no unified set of principles of their creation.

INTERDISCIPLINARY CORPUS OF SETO

Liina Lindström
(University of Tartu)

The project aims to compile an interdisciplinary corpus of modern Seto, based on the interviews that were conducted during earlier fieldwork trips (2010-2016 in the eastern part of the area where Seto is spoken, in Russia) and will be conducted during the current project. During the project, about 50 hours of recordings will be transcribed and annotated on at least two levels (morphological annotation, thematic annotation). Audio and video recordings together with transcribed and annotated texts form

a corpus, where all these levels of analyses are available. The corpus includes data which is interesting for researchers of different disciplines, such as linguistics, folkloristics, ethnology, anthropology, history, religious studies, etc. In addition to the compilation of the corpus, the members of the project study Seto language and culture, using the corpus as their main data source.

LEXIS AND PLANNING OF ESTONIAN: DESCRIPTIVE AND PRESCRIPTIVE ASPECTS

Margit Langemets
Jelena Kallas
(Institute of the Estonian Language)

The project aims at lexicological research, focusing on vocabulary and language planning: new words and meanings, and linguistic trends (such as changes in morphology) that require linguistic assessment; the historical stages of language standards; semantic relations of words. The principles of language planning theory will be updated, taking into account the actual language use and new digital capabilities for analyzing information: corpus renewals, corpus query systems, a web platform Neoveille for identifying new words. Lexis is described in terms of corpus-based analysis and principles of language management, and vocabulary, morphology and language advices are analyzed from the descriptive and the prescriptive point of view. New information will be added to the Ekilex dictionary system and to the language portal Sõnaveeb.

The results of the study will be published in the following ÕS (ÕS 2025). The reasonings and explanations are given in clear language and explicitly, so that the language user understands the recommendation and (ideally) wants to follow it.

THE PROSODY AND INFORMATION STRUCTURE OF SURPRISE QUESTIONS IN ESTONIAN IN COMPARISON WITH OTHER LANGUAGES

Pärtel Lippus
(University of Tartu)

The project focuses on the prosody and semantics of surprise questions in Estonian in comparison with French, Hungarian and German. Surprise questions differ from information-seeking questions and rhetorical questions in that their main function is to express the speaker's reaction towards unexpected situation or information. The aim of the project is to pinpoint the prosodic characteristics of surprise questions, and to study how their information structure and modality differ from those of other question types.

In addition to its importance for general linguistics the project is necessary for filling several gaps in the description of Estonian. The results of the project provide new knowledge about surprise questions as a separate category in Estonian and other languages. The project significantly promotes the study of semantic and pragmatic functions of Estonian utterance prosody, using the most up-to-date digital methods as well as promoting international cooperation.

POSSIBILITIES OF AUTOMATIC ANALYSIS OF HISTORICAL TEXTS BY THE EXAMPLE OF 19TH-CENTURY ESTONIAN COMMUNAL COURT MINUTES

Maarja-Liisa Pilvik
(University of Tartu)

Estonian communal court minute books from the 19th century form an important source for studying Estonian language and cultural history due to their systematic structure and topical contents. The books reflect the life, economic status, and the general mentality of the peasantry at that time, misconducts and disorders, as well as the development process of Estonian literary language. In spring 2019, a crowd-sourcing project was launched by the National Archives of Estonia for inserting the texts from thousands of minute books, thereby making this rich historical source more accessible. The aim of the current project is to enhance the usage possibilities of these communal court minute books by developing the methodology for the automatic processing of historical texts. This involves text normalization, automatic morphological analysis, named entity recognition, and other techniques.

DIGI-OWLDI: FIVE CENTURIES OF WRITTEN ESTONIAN VOCABULARY, MORPHOLOGY AND PHONOLOGY

Külli Prillop
(University of Tartu)

Written Estonian is five centuries old. The written language has gone through many lexical, morphological and orthographic changes, for which reason the old texts are not fully understandable to most contemporary readers.

Many old texts are digitized but the audience of the texts is limited due to the hard to understand language. Digi-OWLDI (old written language dictionary) helps to preserve all the valuable information stored in old Estonian texts. The dictionary offers knowledge about the development of written Estonian words; it describes meaning changes as well as sound changes in word forms.

Digi-OWLDI is an essential tool for everyone who wants to delve into the fascinating old Estonian texts.

SOURCE DOCUMENTS IN THE CULTURAL PROCESS: ESTONIAN MATERIALS IN THE COLLECTIONS AND DATABASES OF THE ESTONIAN LITERARY MUSEUM

Mari Sarv
(Estonian Literary Museum)

Research in the framework of the project focuses on sources (or their creation) that, according to researchers of the Estonian Literary Museum, reflect important phenomena in Estonian culture. Two main foci of the research are (1) manifestations of the tensions and bottlenecks of society in cultural expression, including on the basis of the egodocuments of key-persons in cultural history, (2) reflections of the changes in worldwiew in cultural texts and variativity of folkloric texts.

The project supports implementation of digital methods and international standards in the management, publication and research of archival sources. The use of existing and emerging research corpora and

databases and possibilities of computational analysis will allow for an increasingly better and more evidence-based overview of the various aspects of the information stored in the collections of ELM, as well as of changes in society, culture, mindsets.

THE ETHNIC HISTORY OF ESTONIAN PEOPLES IN THE LIGHT OF NEW RESEARCH

Mari Tõrv
(University of Tartu)

The Project „EREA II“ is about the core question of humanities – who we are and where we come from. “EREA II” will launch a unique digital platform to present the newest scientific results and critical synthesis about the ethnic history of Estonian peoples. This multi-disciplinary project assembles the data from archaeology, history, genetics, linguistics, folkloristics, ethnology and geography enabling more precise and versatile conclusions and generalisations to comprehend the processes behind the formation of Estonian peoples from the first inhabitants to time of rapid changes in 21st century. “EREA II” assembles the data available in different scientific/research collections, databases and archives through the presentation of new interpretations about the ethnic history of Estonian peoples and makes it accessible to the general public in Estonia and to the international scientific community.

TEEN SPEAK IN ESTONIA

Virve-Anneli Vihman
(University of Tartu)

Teenagers are innovative language users and can inspire broader language change, although their role in language change is still unclear. Hence, it is vital to investigate teenagers’ language usage in order to describe youth language and culture, research language innovation and better understand longer-lasting linguistic and social processes. Today, a great proportion of youth interaction and language practices take place in online environments. Unfortunately, we have little information on teenagers’ spoken language and ‘netspeak’ in Estonia. This project (Teenspeak in Estonia, TeKE) will investigate youth language, aiming to produce the first systematic Estonian corpus of teenagers’ spoken and Internet language, and to thereby inspire further research on teenagers’ language use in Estonia. The project undertakes to investigate language use and code-switching among teenagers, explore language variation by age, gender and region, and compare netspeak to spoken language.

I. A HANDS-ON DATA EXPLORATION & CHALLENGE TO BECOME A DERIVED DATA-SET AUTHOR ON THE BRITISH LIBRARY'S OPEN DATA-SET PLATFORM (DATA.BL.UK)

Mahendra Mahey
(British Library Labs)

- Do you want to understand some of the challenges of working with cultural heritage data in a large national library such as the British Library?
- Do you want to explore and get some 'hands-on' experience of working with the British Library's digital collections and data?
- Do you want to leave a 'legacy' of being a data-set author/creator/curator on the British Library's data-set platform?
- Do you have **some digital literacy in using familiar data exploration tools** such as Microsoft Excel (see '**GUIDANCE FOR THIS WORKSHOP'** below)?

If the answer is 'Yes' to any of these, then this workshop could be for you!

Mahendra Mahey, manager of British Library Labs (BL Labs) will examine some of the BL's digital collections/data & discuss challenges he has had in making the BL's cultural heritage data available openly or onsite at the British Library.

Mahendra will invite delegates to explore data-sets at their leisure, setting a challenge for those who are interested, skilled in exploring, finding patterns and grouping data. They could become data-set authors/creators of derived data-sets, based on pre-existing digital collections/data provided on the day or already available on data.bl.uk.

The workshop will conclude with reflections from the delegates and possibly highlighting a number derived data-sets that were generated by participants on the day that could now potentially exist on data.bl.uk. If selected, these new derived data-sets will be attributed with the creators' / authors' details and each will have its own cite-able Digital Object Identifier (D.O.I). These new data-sets would then be available for reuse by any researcher in the world.

GUIDANCE FOR THIS WORKSHOP

We **strongly recommend** you come to this workshop with an appropriate device such as a **laptop** pre-installed with appropriate tools to analayse different kinds of data-sets, e.g. Microsoft Excel may work with smaller data-sets such as metadata (see other data exploration tools below). If you don't have one, and would still like to attend, please request to 'pair up' with someone who is willing to share and has already signed up.

Other data exploration tools include: Notepad++ (e.g. for viewing text and XML); Open Refine (e.g. for cleaning data); Tableau Public (e.g. for visualising data); Google Sheets (e.g for visualising geo-spatial data); Spacy (e.g. for text and data mining), RStudio (an open source Statistical package), MATLAB (data analysis tool) & NLTK (Natural Language processing).

Please note that this workshop is NOT about training you in using any of these tools, just tools you may be already familiar with to explore and find patterns in our data.

Datatypes you may be examining in this workshop could include: .ZIP, .PDF, .TXT, .CSV, .TSV. .XLS, .XLSX, RDF, .nt, XML (TEI, ALTO and bespoke), .JSON, .JPG, .JPEG, .TIFF and .WARC

Please ensure you are able to read these files on your device **before the workshop** if you are interested in exploring them during our session.

II. CADAVER.EXE (FORAYS INTO NEW DIGITAL POETRY)

Justice (Ruby) Thélot
(independent researcher, artist and poet)

New ideas exist in front of us, in the web of context, they are dormant and we need to unearth them. Borrowing from the practices of Surrealist and Automatist writers and artists, this workshop seeks to utilize the collective unconscious (accessed through the "feed") in order to come up with funny, exciting, new, associations. What we will be doing basically is a digital exquisite cadaver with our timelines. Copying and posting screen-grabs onto a digital canvas at random. We will utilize our own likes, follows and cookies to pierce through and bring forth the unconscious language of the timeline.

Participants will come out of the workshop with digital collages, poems, pot-pourris of posts which they can assemble into mini-zines, digital or even analog by printing them. The goal being to broaden the scope of what can be considered as "digital literature".

I want participants to PLAY! An essential part of Dadaist philosophy was indeed the notion that we could bring a child like energy and fun to art, poetry and writing. This workshop is sure to create uncanny juxtapositions and engender laughter in the group.

This is essentially an exercise in new-automatic-writing. We are composing new texts (poems) or collage from posts that already exist. Scrolling has become a modern ritual. We do it religiously 5 times a day, at dusk and at dawn. We will unearth the unspoken text of our timelines, we will see our activity of scrolling under a new lens and effectively we shall transform this often passive looking process (looking at the feed) into an active creative process (making something with the feed).

III. PYTHON FOR DIGITAL HUMANITIES

Sree Ganesh Thotempudi
(University Heidelberg)

The first part of the workshop will be spent learning the basics of the Python programming language. We will start from the assumption that the students have never used Python and move them through the basics of the language. The second part will focus on using these newly gained programming skills to automatically manipulate XML data. Using the lxml and Beautiful Soup Python libraries, we will take data from the Perseus repository and convert the TEI-XML in the repository to CTS-compliant XML and then feed the data back into the Perseus repository. In this second part, the students will design and implement their own XML manipulation pipeline that they will then be able to use later to automatically manipulate or convert large corpora of XML texts from one format to another.

Besides the basic skills in Python programming, the students will also learn to manipulate text using regular expressions, to expand the capabilities of Python by installing external libraries, and to use Python to make basic API calls, using the Perseus API as an example case. We expect you to have some familiarity XML and, preferably, some experience with a scripting or programming language. We also expect you to have either a Linux or Mac computer. Any Windows users will be expected to install a Linux virtual machine before the start of the workshop.

IV. ACCESSING TEXTS AND DATA IN THE COLLECTIONS OF THE NATIONAL LIBRARY OF ESTONIA

Peeter Tinits
(University of Tartu, National Library of Estonia)

The workshop presents a practical introduction to the use of textual data and metadata within the collections of the National Library of Estonia.

For example, the collections currently house a digital collection of around ~3.4M pages (~6.0M articles) from ~2,000 periodicals (1821…2019) and ~25,000 book-length publications as well as a metadata registry for ~300,000 printed publications published in Estonian or in connection to Estonia among other sources. These materials are the result of decades of digitization and data collection, while steps have always been taken to make the collections useful also for researchers. With the developments of the technological toolkit of a researcher in social sciences and digital humanities, these collections can find new value also within the research communities.

The workshop will offer a practical introduction to the access of textual data and metadata in the library collections, explain to what degree this can be done and how, and offer some use cases for this. It will introduce ongoing efforts at the library to keep improving this access and discuss also the future plans on this. Particularly, the workshop will look to its participants to understand the features that would make it most useful for researchers, and interesting for the general public. The participant should expect to walk away with some practical understanding of how the data can be accessed as well as ideas on what this could be used for.

V. LANGUAGE RESOURCES FOR CONTENT SEARCH AND METADATA SEARCH

Kadri Vider
Neeme Kahusk
Olga Gerassimenko
(University of Tartu)

The Center of Estonian Language Resources offers a 3-hour tutorial of main types of European language resources for the broader audience of DH researchers that might be interested in language resources usage.

Digital Humanities researchers (**max 20 participants**) interested in using Language Resources are invited to learn to perform content and metadata search in the Estonian and European Language Resources. We will demonstrate the main types of Language Resources of CLARIN, European Research Infrastructure of Language Resources and Technology, and Center of Estonian Language Resources as CLARIN national center.

1. KORP is a corpus query system that allows to perform flexible and intricate corpus searches based on all the features tagged or systematically appearing in content and metadata. KORP was created in Göteborg University Language Bank Språkbanken and is being developed in several other countries besides Sweden and Estonia: Finland Language Bank Kielipankki, Norway Centre for Saami language technology Giellatekno, Denmark, Iceland.

Tutorial (90 minutes) will teach to use the corpora found in Estonian and Finnish KORP, to make best use of simple, extended and advanced search interface, to export the results for the work with statistics programs. We will demonstrate the restricted access (text and speech) corpora that are available to the academical users through a Single Sign-On technology.

2. RABA is an Estonian Federated Content Search system that uses both text and speech corpora and lexical resources such as dictionaries to perform quick and efficient content search in differently annotated differently organised resources.

Tutorial (60 minutes) will teach to use simple and advanced query interfaces and make use of different data collections included in the content search. We will also demonstrate the usage of CLARIN Federated Content Search that covers other CLARIN data resources and collections.

3. Virtual Language Observatory is the most comprehensive CLARIN browser search system built to automatically harvest language resources, tools and services of CLARIN centers and to explore the large number of resources from various domains and providers in a uniform way.

Tutorial (30 minutes) will show the possibilities of narrowing and broadening the search in VLO to find specific resources or similar resources. We will demonstrate the smart usage of search facets and visualized uniform information about resources. Estonian register META-SHARE that provides VLO with data will also be demonstrated and taught in order to register the new resources that the participants of the tutorial might wish to add to the database.

The tutorial will be held in English with a focus on the Estonian resources but the knowledge of Estonian is not required to participate. The participants would need to bring their own laptops. Stable internet connection is necessary.

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