4.6 Digital culture as part of Estonian cultural space in 2004-2014: current state and forecasts

▶ **MARIN LAAK, PIRET VIIRES**

Introduction

Digital culture is associated with the move of Estonia from a transition society to a network society where "digital communication is ubiquitous in all aspects of life" (Lauristin 2012: 40). This sub-chapter will trace some trends in the development of digital culture in the last decade (2004–2014), with the objective of examining the intersection of the habits and needs of users who have adapted to the digital era, and the possibilities of the network society. Modern digital culture also encompasses e-books – an evolution that has brought about and aggravated a number of issues specific to the development of digital culture. Both e-books and digital culture are strongly linked with the forecasts concerning the future of education and cultural creation in Estonia. To understand the development of the sector, we will highlight some of the most general trends in cultural creation and practices of the digital era.

The term 'digital culture' is used as an umbrella concept for the radical changes in the development of human culture in the 21st century. What distinguishes digital culture from earlier forms of culture is that all objects/data (texts, images, sounds) exist in the form of numeric codes stored as data on electronic media, which makes possible the fast processing and storing of massive amounts of data on microscopic carriers and facilitates the programmability of the media (Manovich 2001; Aarseth 2003: 717–718).

The global cultural changes caused by the development of information technology changes have resulted in a myriad of implications for culture: we now speak of such things as levelling, dispersal, hypertextuality, bandwidth, anarchy and synchronicity (see Lister 2003: 13–37; Caldwell 2000: 7–8; Livingstone 2003: 212). Dispersal is the fragmentation of the production and consumption of texts, which in turn is linked to the decentralisation and individualisation of culture. On the other hand, dispersal is linked to the hypertextuality and interactivity of new texts circulating in digital environments. The digital environment has abolished the traditional centre-periphery cultural model: the interrelations between texts are non-hierarchical and the core and periphery of culture are indistinguishable from each other. Texts can be developed as a network in which different media are linked to each other and each node can be semantically linked to any other node (see Laak 2006: 40–41). New cultural units – cultural paths – have been formed (Ibid: 76).

From a subjective point of view, people's perceptions of the world and the practices of text creation and reception have also changed. For example, the written word is giving way to (multimedia) visual culture; there is a shift towards image-centred self-expression (e.g. an audio-visual compilation instead of a poem).

Digital culture is inextricably linked to internationalisation and cultural convergence, and brings into focus the movement of cultural phenomena across the borders of national cultures, irrespective of the social and historical contexts of such cultures.

4.6.1 Changes in cultural creation

The digital era has brought along new, distinct forms of culture. So far, digital culture has been mostly analysed from the perspective of users and consumers. There has been little discussion about the impact of information technology on cultural creators and culture creation processes. Below, we will analyse the relevant trends and new forms of culture using literature as an example.

In the 1980s and 1990s, hypertext literature and hypertexts started to emerge. This phenomenon has been interpreted at the theoretical level by using the cybertext theory (Aarseth 1997). This type of literature is known as digital literature or electronic literature (Viires 2002).

Digital literature has a number of sub-types, but the most pure-genre works are those that make use of the possibilities offered by information technology: hypertext poems, collective online novels, programmed literary texts of more complex structure and multimedia works in which text is merged with film and sound. While there are relatively few examples of classic digital literature in Estonia (see Sarapik, Viires 2011: 13), some works were created already in 1996, such as Hasso Krull's pure-genre hypertext poem "Trepp" (Staircase) (Krull 1996).

The turn of the millennium saw an important shift in the development of information technology and the Internet. The early stage of the World Wide Web's evolution (Web 1.0), which was characterised by static web pages that were seldom changed, was replaced by new-generation web solutions. Web 2.0 allows users to interact, exchange information and collaborate with each other as creators of user-generated content. This means that the users of Web 2.0 generate a vast amount of the Web's content. Examples of Web 2.0 include blogs, Wikipedia, Twitter, Facebook, YouTube, social networking sites, comments posted online, forums, etc.

The relations of Web 2.0 with culture have been explored through the notion of participatory culture (see Jenkins 2006) which corresponds to the democratisation of culture in cyberspace. The roles of authors and readers of cultural texts created in the course of a participatory process have changed – such texts are characterised by interactivity and fragmentation. Besides the concept of participatory culture, Web 2.0 can also be associated with the notion of digimodernism which marks a new relationship between text and computer (see Kirby 2009).

Web 2.0 has a dual effect on cultural creation: 1) the boundaries between professional culture and amateur culture are disintegrating; each user can become an author and publish their work (irrespective of its quality) on a blog; 2) professional creators have also started to use the possibilities of Web 2.0: they write blogs, publish their works and get feedback from readers in Facebook. A special case here is web-based young authors' literature portal Poogen: in addition to publishing their works, aspiring authors comment on the creations of others, and some have risen to popularity and have become acclaimed writers of contemporary Estonian literature (see Kruus 2013).

In view of the above, a major change in cultural creation that has happened in the last decade is the information technology leap, active exploitation of the possibilities of Web 2.0 and participation in the world of networks. Figuratively speaking, cultural creators, in particular writers, have been captured in the first decades of the 21st century by a "digimodernist web explosion" (see Viires 2013). An interesting phenomenon to note is that there is still a line between the "anything goes" approach of the internet world – with its lack of boundaries and hierarchies – and institutional culture. For example, in literature, publishing a book is still considered to be a certain kind of initiation, a transition from the world of the web to the elitist world of 'real literature'

4.6.2 Digital heritage

Digital preservation of the nation's cultural heritage, making it available to the public, and the development of e-services have made a major qualitative and quantitative leap forward in the decade of 2004 to 2014. "Memory institutions" – museums, archives and libraries – are entrusted with the task of preserving the Estonian cultural heritage. While traditionally the mission of memory institutions has been the collection, preservation and making available of cultural heritage, the digital era of the 21st century has added the requirement of making our cultural heritage also available in a digital format, a powerful reflection of which is the development plan The Fundamentals of Estonian Cultural Policy, adopted by the Parliament in November 2013 (Kultuuripoliitika 2014).

The chapter Principles of the development and implementation of cultural policy foresees the digitisation of the most valuable part of our cultural heritage by 2018 and the ensuring of its long-term preservation in accordance with international standards and quality requirements. The interoperability of the information sys-

tems of the cultural sphere is ensured by standard descriptions and web services. All works digitised by state institutions, and all digitisation which is funded by the state, are freely available to the public, provided the relevant rights exist. The use of digitised cultural heritage in e-learning and in the provision of e-services to the media and creative industry is promoted. (Kultuur 2013: 4).

This policy document also foresees increased digitisation in all spheres of culture. The priority areas of digitisation are audio-visual (film, sound), heritage artefacts and printed works. It should be noted that there is a discrepancy between the objectives of the development plan and the actual possibilities. It is particularly obvious when we compare the findings of a survey on the volume of digitised information, conducted among Estonian memory institutions in December 2012, and the forecasts for December 2020 (Table 4.6.1).

From the Table 4.6.1 we see that the objectives set out in the development plan Culture 2020 for the digitisation of the most valuable segment of our cultural heritage by 2018 is not realistic: the digitised share of photographs, documents and printed matter is less than 10% at this time. It is expected that only 50% of heritage photos and art will be digitised by 2020. Moreover, the memory institutions responsible for the digitisation of our cultural heritage face a number of issues, from philosophical (what is valuable?) to practical (how do we choose from millions of valuable items?). Next, we will analyse the developments in the field of cultural heritage from the perspective of memory institutions. We will describe the current state in the field of digitisation, issues that need to be solved, and forecasts.

TABLE 4.6.1 1 Digitisation of cultural heritage: state of affairs in 2012 and forecast for 2020 (proportion of digitised material, %)

	2012	2020	Kasv %
Photo heritage	2,29	57,79	55,5
Document heritage	1,63	2,63	1
Print heritage	2,12	7,02	4,9
Heritage artefacts	19,89	31,65	11,76
Art heritage	12,46	61,73	49,27
Heritage maps	12,46	?	?
Other	19,6	?	?

Source: The Implementation Plan for Digital Preservation of Cultural Heritage 2015–2020 Ministry of Culture 2014. Version 1.3.

Notion of cultural heritage

The term 'digital cultural heritage' has two meanings: 1) older material cultural heritage that has been converted into a digital format; 2) more recent cultural production that was created in a digital format and for which no other (analogue) format exists.

To co-ordinate digitisation and digital preservation of cultural heritage in Estonia and monitor progress in digitisation, the Council for Digital Preservation of Cultural Heritage, made up of representatives of various memory institutions, was affiliated to the Ministry of Culture of Estonia in 2004, and Digiveeb, a portal collecting and distributing information on digitisation, was established (http://digiveeb.kul.ee/?id=66234). In the spring of 2014, new members were included in the Council – representatives of the Ministry of Education and Research and the Ministry of Economic Affairs – to develop a sectorial action plan (see Talihärm 2014). The Council completed the development of the Operational Programme for the Digitisation of Cultural Heritage 2015–2020 in December 2014. The document divides cultural heritage into the following categories: film, documents, photographic, art, print and artefact heritages. The classification is based on the location (memory institution) and specifics of the heritage which determine the digitisation actions starting from the choice of materials through to volume of data, standards, users, and then to databases.

Types of digital cultural heritage

The specifics and stages of digitisation depend on the type of heritage (documents, photographs, art, printed matter, films, audio material, maps, etc.). It should be noted that the term 'digitisation' is an umbrella notion that encompasses different activities: 1) preparation (selection, restoration, conservation and other activities related to the physical carrier), 2) digitisation (scanning), 3) archival processing (preservation), 4) creation of user files, 5) creating meta-descriptions and adding them to the digitised object, 6) entry into a database (making available).

For the Ministry of Culture, a priority in the field of digitisation has been the digitisation of the film heritage preserved on analogue carriers in the archives of the Estonian Public Broadcasting Company. The audio-visual heritage includes films, TV films, radio programmes and music. The Estonian Film Archives, a structural unit of the National Archives of Estonia, is also focusing on the digitisation of heritage films. The Estonian Literary Mu-

seum is responsible for the digitisation of folklore and cultural history materials.

Our film heritage contains the most problematic objects of digitisation – more than 3,500 hours of professional films and newsreels have been created (16,000 works) in the past 100 years. About 1,800 hours of that material – the most valuable works – need to be digitised, while only about 20% of all works have been entered in the Estonian Film Database.

Digitised works have been available on the programmes of national TV channels ETV and ETV2 for a couple of years now. Another initiative of incalculable worth in the field of film heritage was the establishment of the Estonian Film Database (EFDB) in 2010 (**http://www.efis.ee**). EFDB is continuously developing content and making the national filmography available on the Internet. A special feature and added value of the database is that all Estonian films are described frame by frame in order to provide information about the Estonian history, culture, politics, economy, science, law, administration and life in the past 100 years. The database also includes searchable keywords, a lexicon of names, various metatexts and accompanying texts, documents, scripts and photographs. Users can also watch the films. EFDB has created the conditions for active reuse of our national film heritage for the purpose of creating new audio-visual works (TV programmes, films, multimedia texts, new media art, etc.)

Similar activities in the field of literary culture and print heritage have been carried out by the Estonian Literary Museum since 2004 (http://kreutzwald.kirmus.ee). Their information environment is called Kreutzwaldi sajand: eesti kultuurilooline veeb (The Kreutzwald Century: the Estonian Cultural History Web) and includes different types of cultural heritage from various archives (photographs, documents, printed matter plus a lexicon of names). This information environment is extensively used by teachers of the Estonian language as a learning source: in 2014, the portal had an average of 836 visitors per day (approximately 5 million clicks).

The digitisation of printed matter and making it available on the Web was started more than ten years ago in the form of small projects. The first joint project of Estonian libraries was the Red List of Estonian Printed Matter I (http:// www.nlib.ee/PunaneRaamat/) that included 413 endangered printed materials published between 1535 and 1850 (**Maaslieb 2009: 208–215**). The Archival Library of the Estonian Literary Museum launched project Grafo in 2004 to digitise old reading primers, calendars and reference books(http://www2.kirmus.ee/ grafo/). At the same time the Literary Museum

began systematic digitisation of the first editions of the Estonian-language fiction of the late 19th and early 20th centuries in the Kreutzwald Century information environment. (http://kreutzwald.kirmus.ee). The University of Tartu Library launched a project called EEVA to make available the first works of fiction published in Estonia in the 17th to 19th centuries (mainly in German) (http://www.utlib.ee/ekollekt/eeva).

An outstanding achievement in making print heritage available to the public is project DEA – The Digitisation of Estonian Newspapers (http://dea.nlib.ee). The project was developed cooperatively in 2004 by the National Library of Estonia, the Archival Library of the Estonian Literary Museum and the Academic Library of Tallinn University. DEA makes available on the Internet the older Estonian-language press of 1821–1944 and the Estonian-language newspapers published outside Estonia since 1944. The newspapers are digitised from microfilm (**see Olonen 2014: 82–83**). By the end of 2014, 380 titles and 1.3 million pages of newspapers were made available as image files. In 2013, DEA registered 300 visits per day (**Kiisa 2014: 201**). A new project of the National Library is making newspapers available in text format.

In the late 2000s, the Estonian cultural and educational magazines (Looming, Akadeemia, Keel ja Kirjandus, Vikerkaar, Teater. Muusika. Kino, Täheke, Muusika, Nõukogude Kool, etc.) started to be digitised and made available in the database DIGAR of the Estonian National Library and through the websites of the magazines (Digira OÜ). The project is supported by the Cultural Endowment of Estonia.

The Estonian Libraries Network Consortium (ELNET) was established in 1996 to manage the preservation of the print heritage in Estonian libraries. In 1998, the international software Innopac was introduced as a joint database of the 15 largest libraries and on 1 January 1999, the e-catalogue ESTER was made available to readers (**see Olonen 2014: 68–75**). The ESTER database was taken to a new level in 2014 when the databases of the libraries of Tallinn and Tartu, which had been stored in different servers, were merged (http://www.ester.ee). As of 19 January 2015, the e-catalogue ESTER contained about 9 million item records and 3 million bibliographic records; the database is continuously updated. The e-catalogue ESTER also includes (besides publications – books, periodicals, etc.) records of sheet music, audio discs and recordings, photographs, manuscripts and various other e-resources. Articles can be searched at the single record level in the ISE database of the ELNET Consortium (http://ise.elnet.ee); about 200 articles are added to the database daily (**Kiisa 2013: 199**).

The total number of Estonian national publications (books, periodicals, sheet music, etc.) includes nearly 330,000 titles (55 million pages). About 2.5% of that amount was digitised by the end of 2014 (4,000 publications per year). The main digital archive storing digital print heritage is the National Library of Estonia's digital archive DIGAR. According to the Operational Programme for the Digitisation of Cultural Heritage, DIGAR contained a total of 20,000 titles and 113,000 publications as of the end of 2014. About 85,000 of them are accessible on the Internet. The use of digitised publications is growing fast: In 2011 and 2012, DIGAR was accessed about 45,000 times and in 2013, the number of visits more than doubled (101,500 visits).

The Estonian university libraries store and publish their publications in digital repositories (E-Ait repository of the Academic Library of Tallinn University; DSpace of the University of Tartu Library and the digital collection of the Tallinn University of Technology). The progress made in the digitisation of print heritage shows how and in which directions the role of libraries is developing in the 21st century.

The most recent task of libraries is the archival processing of websites; the National Library has already started this work. In 2014, there were approximately 78,000 .ee domains and 20,000 other domains (.eu, .com, etc.) on the Estonian Web. The Estonian Web Archive, managed by the National Library, was opened to the public in November 2013 and has had about 7,000 users so far. About 1,000 websites are archived periodically, plus special collections (expatriate, local government, etc.) and extraordinary websites (closed domains, local governments, etc.), a total of 31 million URLs and 1.6 TB of data (http://veebiarhiiv.digar.ee).

The institutions responsible for the digitisation of heritage artefacts are Estonian museums. The activities are coordinated by the Estonian National Museum in Tartu. According to a survey conducted at the end of 2013 by the Ministry of Culture, 508,750 museum items need to be digitised. To preserve the heritage artefacts and other heritage pieces, a joint database began to be developed in the first decade of the 21th century – The Information System of Estonian Museums (MUIS). By the end of 2014, MUIS included information about digital heritage created by 60 Estonian museums and the Kanut Conservation Centre. The availability of cultural heritage in a digital format has significantly increased the number of visits to the websites of memory institutions: compared to 2013, the number of MUIS users doubled in 2014. In the first months of 2014, the average number of visits per day was 650.

There are plans to describe and digitise at least 125,400 museum items in 2014–2018. According to a survey conducted by the Ministry of Culture in 2013, the size of the photo heritage preserved at Estonian memory institutions was 1.8 million photographs, 960,000 photographic negatives and 51,000 slides. The art collections of Estonian memory institutions contain about 175,000 works, 27,195 of which have been digitised.

The document heritage contains mainly unique archival items, (handwritten) single copies and documents and original works with a small number of copies, preserved in archives and libraries. The main institutions preserving the legacy of documents are the National Archives, the Estonian Folklore Archive and the Cultural History Archive of the Estonian Literary Museum and the Manuscripts and Rare Books Department of the University of Tartu Library; a smaller number of documents are preserved in various museums. The Estonian memory institutions preserve items from the 13th century to the present day, a total of approximately one billion pages. About 1.6% of the document heritage has been digitised and the share of digitised items is expected to increase by not more than 1% over the next five years. We can see that the gap between the targets set out in the development plan and the actual possibilities is huge.

According to the development plan, the digitisation of the document heritage will be coordinated by the National Archives. Users can access digitised records through the portals SAAGA and AIS. SAAGA started making available digitised genealogy materials in 2005 (church records, etc.); from 2008, all items digitised by the National Archives and the Tallinn City Archives have been accessible to the public. As of December 2014, SAAGA contained about 149,500 digitised items (18 TB). The AIS database of the National Archives contains 7.8 million entries.

KIVIKE, the general digital repository of the Estonian Literary Museum, was developed in 2011. The repository contains fails and metadata of the heritage preserved in the museum. As of December 2014, KIVIKE contained about 286,400 digitised items (22 TB), and by March 2015 it held fully 1 million data records.

Preservation and archival processing

The digitisation of cultural heritage is carried out in line with international quality standards, taking into account the physical state of each object. If necessary, objects are conserved (this concerns mainly art). A major issue is long-term preservation because the preserva-

tion of digitised objects – huge files – requires powerful servers and cutting-edge database systems.

Each type of digitised cultural heritage is stored in a relevant central archive; the descriptions are made available as open data (see Vallner 2012). Based on the specifics of the material, the operational programme on digital cultural heritage foresees the division of digital resources into four central repositories that prioritise the data. The Information System of Estonian Museums, MUIS, (heritage artefacts, photos and art), DIGAR (print heritage), SAAGA (document heritage), the Estonian Public Broadcasting and the Estonian Film Archive (audio-visual heritage, films).

The DIGAR database of the National Library is the first specialised repository of e-books, including print files; the development of the database was begun in the early 2000s. In addition to DIGAR, the University of Tartu Library developed their own file repository DSpace and the Academic Library of Tallinn University has a similar repository called E-Ait. In 2012, the Literary Museum established digital repository KIVIKE which includes different types of cultural heritage: documents, audio files, films, photographs as well as art, to a lesser extent. This means that different types of digital heritage are not preserved separately. After the implementation of the prioritising strategy of central repositories all digital cultural heritage – audio, film, photographic, document and print heritage – will be stored in four repositories (MUIS, DIGAR SAAGA, ERR). According to a survey conducted by the Ministry of Culture at the end of 2012, the total volume of all digital user copies and archives preserved at memory institutions was 1.2 PB (petabytes). The expected increase after the launch of the operational programme is 1 PB per year. International standards require that when huge amounts of data are archived, back-up copies must be made and held in various locations in order to minimise the risk of accidental damage and loss of data. For this purpose, a new application RIIGIPILV (State Cloud) is planned to be developed in the near future. This will open new opportunities, but the already existing databases and repositories of memory institutions also need to be developed further, taking into account the expensive investments made so far and the huge amount of data stored in such databases.

Priorities and the future of digitisation

In the past ten years, Estonian memory institutions have made significant progress in the digitisation of cultural heritage. By the end of 2014, they had achieved good cooperation and coordination of activities. Selecting objects for digitisation is based on the following principles: 1) potential for use, 2) national value or value in terms of cultural history, 3) integrity of a collection, 4) existence of meta-data, 5) lack of copyright and protection of personal data; lack of other restrictions on use, 6) existence of a web-based user environment, 7) rarity.

When selecting objects from the huge collections of the Estonian memory institutions, the priority is given to those related to Estonia: by 2020, there are plans to make available as open data the materials concerning the formation of the Estonian state, from the national awakening in the 19th century to the annexation of the Republic of Estonia by the Soviet Union in 1940. The aim is to provide an opportunity to merge photographic, film, document and print heritage items to develop e-learning materials. Digitisation takes into account the specifics of each type of heritage: while automated mass digitisation is possible in the case of printed matter, artefacts and artwork that exist in a single copy can only be digitised separately. In such cases digitisation takes place at a memory institution to avoid damaging the objects during transport.

The abundance of databases containing the same type of data is an inevitable outcome of the digitisation work carried out in Estonia in the last decade. From the user's perspective, all necessary information should be available through a single portal. Based on the Estonian Research Infrastructures Roadmap, the development of the trans-institutional portal E-Varamu was started at the ELNET consortium in 2014. E-Varamu is a semantics-based search engine, which allows accessing related information in all databases of the Estonian memory institutions and research and development institutions. It is a single e-environment, the purpose of which is the long-term preservation and making available of the digitised resources of Estonian memory institutions – libraries, archives and museums – and to increase the institutions' digitisation capacity as well as to ensure the preservation of collections that are important for Estonia (http://e-varamu.tlulib.ee/E-varamu).

E-Varamu enables the Estonian digital cultural heritage to be made accessible through Europeana and other cultural heritage environments, such as the location- and period- based map application Google Field Trip (http:// www.fieldtripper.com). At the national level, the portal Open Data was created (http://opendata.riik.ee). The purpose of this portal is to make available digitised cultural heritage and to ensure the publication of information through different channels.

The digital era has also taken science to a new qualitative level. Estonia has kept pace with international developments and a new area of education and research – digital humanities – is emerging. This requires fast access to huge amounts of data (e.g. text corpora and databases) which in turn will create possibilities for the introduction of new methods.

Another process brought about by the digital era is the joining of Estonian research collections with the international research database DataCite (DOI), initiated by the University of Tartu Library in 2014. The database includes an open database of articles. A number of Estonian academic journals,   such as Folklore, Mäetagused, Methis, Interlitteraria, etc. have   joined the open access CrossRefference (DOI) database (http://dx.doi.org).

4.6.3   E-books as part of cultural space

E-books are an integral part of the digital culture of the 21th century. As international data indicate, the use of e-books is steadily increasing: in the Anglo-American cultural space, the share of e-books on the book market was between 20 and 30 percent in the first half of 2013 (Vihalemm 2014: 435). In the field of scientific literature, the use of electronic resources, e-books and open-access databases has reached 90%. E-books are gaining in popularity also in Estonia, although more slowly. The findings of the survey I. The World. The Media., conducted in 2011 by the Institute of Social Studies of the University of Tartu, revealed that 5% of the population used electronic devices to read books and 23% would have liked to own such device **(see Vihalemm 2014: 434)**. In the autumn of 2014, 9% of the population were already using e-readers.

At present, e-books are not competing with printed books but in a few years the situation may change, taking into account the rapid development of the field. We should stress that the use of e-books reflects the change in the reading habits of the Estonian population only partially – longer texts, fiction and cultural magazines can be read also by using library networks, as well as the Internet. What is more, the e-book concept is not interpreted uniformly and is much broader than the .epub format which is currently promoted in Estonia.

In its narrower meaning, e-book is a library term: an e-book is a digital version of a print book which is available under licence or openly accessible http://et.wikipedia.org/wiki/Vaba_juurdep%C3%A4%C3%A4shttp://et.wikipedia.org/wiki/Raamat. In a broader sense, an e-book is any text-based work

that is accessible digitally, irrespective of its electronic file format (.doc, .rtf, .pdf, .html, .epub). Audio books can also be considered to be e-books in the broader sense of the term.

The creation processes of e-books (in the narrower sense) and print books do not differ: both include high-level editing in terms of content and language, design, lay-out and proofreading. E-books are read with the help of dedicated software by using a personal computer, laptop or e-book reader. The dedicated software allows the reader to increase or reduce the text size (zoom in and out), search keywords, translate, highlight and add comments.

A major problem regarding e-books is piracy. Dedicated software has been developed (Digital Rights Management or DRM) to control or prevent copying and printing and to ensure copyright protection, taking into account the legislation of different countries. One way to protect an e-book is to use Social DRM – digital watermarking. Better protection is provided by internationally recognised software solutions (e.g. Adobe Digital Editions or Adobe DRM) that prevent transferring an e-book from one device to another and allow a (purchased) e-book to be accessed only in an authorised computer or e-reader. Adobe DRM offers the possibility of making an e-book available for a specified length of time. After the expiry of the licence the book cannot be accessed.

The creation, reading and selling of e-books became topical in Estonia in 2010. The first major e-book distributors emerged, such as Eesti Digiraamatute Keskus (EDRK) and Digira OÜ who started to promote e-books and e-readers. EDRK advertised their services on their website as an e-book revolution – a book only a click away.

Estonian libraries also quickly followed suit and started to distribute e-books. The technical literature department of the Tartu City Library was a pioneer in this field: they started to lend e-books (.epub-format) together with e-readers on 1 April 2011. In the first year, e-readers and e-books were borrowed 250 times. After that, interest in e-books has been steadily increasing **(Leima 2012)**.

The Tallinn Central Library started lending e-books after launching a dedicated lending environment ELLU in 2012. While the Tartu City Library offered e-books together with e-readers, the Tallinn Central Library made e-books available online through ELLU. Both libraries lent books for a specified period of time and with a limited number of copies. In 2012-2013, the total number of e-loans in the Tallinn Central Library was

14,037 or 0.6% of all loans. The number of titles borrowed through the ELLU environment increased in 2012–2013 from 412 to 662; the library also offers classic literary works free of charge (the project is supported by the Ministry of Culture). The biggest problems of e-lending are related to licence fees: after 35 loans, a new licence has to be bought (see Seppam 2014).

It is obvious that a modern reader takes it for granted that all books, including the newest, are available as e-books. From the perspective of Estonian libraries and readers the most economical way would be to gather all e-lending into a single environment.

A major factor inhibiting the development of the field is Estonia's value-added tax (VAT) on e-books. While print books are taxed with a 9% VAT, e-books constitute, according to the applicable legislation, an electronic service and are subject to a 20% VAT. This means that e-books are not much cheaper than print books, despite the fact that the production costs of e-books are significantly lower. High VAT leaves the producers no choice but to charge higher prices for e-books. The average retail price of an e-book is EUR 7.53 or 68% of the average price of a print book. For buyers such prices are unacceptable. High VAT limits the spread of e-books and affects the reading habits of the Estonian population in the context of digital culture.

The Ministry of Culture started to support-free-of-charge distribution of Estonian classical literature, which carries the national cultural memory, in the .epub-format in 2012. Under the programme "Estonian Literature", a project competition was announced for the distribution of Estonian classical literature and literary works that are important from the perspective of national culture. The project was continued in 2013 and 2014. A priority of the project is "school literature", i.e. books that are required reading. Over the last two years (2013 and 2014), a major part of non-copyrighted Estonian-language fiction (starting from 19th century works) was published as e-books with the support of the Ministry of Culture. By the end of 2014, a total of 250 literary works were available for downloading in ePUB format. The project continues in 2015.

The ePUBs produced under the project of the Ministry of Culture can be downloaded free of charge from the digital archive DIGAR of the National Library. In the first year of the project (2013), Digira OÜ produced 163 ePUBs, and in 2014, 87 ePUBs from 35 authors were produced in a cooperative project between the National Library, the Literary Museum and Digira OÜ. In 2013, the first copyrighted classical literary works (by authors who died less than 70 years ago: Betti Alver, Heiti Talvik,

Karl Ristikivi, Marie Under, Artur Adson and Friedebert Tuglas) were made available.

The titles downloaded most frequently from DIGAR in 2014 were: A. H. Tammsaare's "Kuningal on külm" (2180 downloads), August Kitzberg's "Libahunti" (1753 downloads), F. R. Kreutzwald's "Eesti rahva ennemuistsed jutud" (1574 downloads), Eduard Vilde's "Mäeküla piimamees" (1033 downloads), A. H. Tammsaare's novel "Elu ja armastus" (965 downloads), Eduard Vilde's "Vigased pruudid" (960 downloads) and "Prohvet Maltsvet" (705 downloads), F. R. Kreutzwald's "Tark mees taskus" (700 downloads), Matthias Johann Eisen's "Eesti muistsed jumalad ja vägimehed" (675 downloads) and F. R. Kreutzwald's "Julge rehepapp" (600 downloads). Classical literary works were downloaded free of charge from DIGAR a total of 65,000 times in 2014. This figure is further increased by e-books purchased for EUR 0.00 from bookstore chains Apollo and Rahva Raamat, Eesti Digiraamatute Keskus (EDRK), Digira and other e-book distributors.

The EDRK sales environment contained 1,608 titles in 2014; they expect to sell 60,000 items by the end of this year. The number of books sold through EDRK increased by 12% in four years (2011–2014).

The national e-book programme needs to be reviewed and focus placed on the required-reading books for schools instead of the current project-based approach oriented to the free market. The exhaustion of non-copyrighted literary works in 2015 is also a problem. The national e-book programme should consider finding funds to pay royalties in the future: the majority of required-reading books are protected by copyright.

Memory institutions also need help with preparing licence agreements and creating a database of copyright holders or their heirs. At the moment, memory institutions are left on their own and have to cope with any problems arising in relation with e-books by themselves, while the public has high expectations of reading valuable Estonian literary works, including those published in the Soviet era, in the e-book format.

The number of e-books in Estonia is increased by the digital book creation service EOD, which offers print copies of e-books for a fee. The development of the service was initiated by the National Library under an international cooperation project. If a book is not protected by copyright, a digital copy is made available in e-catalogue ESTER. The University of Tartu Library has also joined the EOD service.

Making e-books and printed matter electronically available has a direct impact on cultural consumption and increases opportunities for cultural participation.

Converting the traditional forms of printed material into a digital environment is crucial from the perspective of the preservation of national cultural memory. A challenge of the 21st century – the emergence of electronic literature and the production and distribution of e-books – means that the functions of libraries in modern society need to be reviewed. Libraries are changing from places where printed materials are preserved into versatile information environments that give readers access to virtual bookshelves.

Conclusions

Digital culture as part of the Estonian cultural space is closely related to other major areas of culture. The digitisation of cultural heritage has enriched our cultural space, facilitated the distribution of knowledge and directly affected the development of education, culture, research and business in Estonia. However, the issues related to copyright and data protection in the digital environment have become more prominent.

The impact of the digital era on culture is expressed at a number of levels and in various forms. The function and role of memory institutions has changed: besides collecting and preserving the national heritage, memory institutions collect, disseminate and make available information about the national heritage as well. The digital revolution of the 21st century has forced national memory institutions to adapt to new requirements that have emerged in a principally new cultural situation that is oriented to active cultural participation.

Digital cultural heritage has huge and socially important potential in the field of education, as explained in the previous chapter (4.5). While the call for "substituting the learning materials that pupils have to carry back and forth to and from school with government-financed e-textbooks and e-workbooks", and the need for an e-schoolbag may have seemed to be bold ideas in 2011 and 2012 **(Felt 2012)**, by 2014, the creation of e-learning materials has become a necessity and a national priority.

All types of digitised cultural heritage can be used for developing new generation learning materials and digital learning environments. The resources of the digital cultural heritage enable the flexible development of learning materials for different levels of education and facilitate the integration of subjects. The digitised cultural heritage – films and works of art, literary works and manuscripts, historic records and audio carriers – can be used to develop new forms of learning targeted to active young users. The choices made by memory in-

stitutions as to which works should be digitised must be based on the needs of e-learning (besides the preservation of endangered museum artefacts).

The fact that the role of memory institutions has changed is also demonstrated by the fact that over the last decade such institutions have transformed from passive collectors of information to active disseminators of digital cultural heritage. The creation of digital cultural resources and the development of new e-services by memory institutions should be supported and directed by the government, taking into account the development of other important areas. Cultural heritage that is available digitally and on the internet is used by a larger number of people – a prerequisite for the viability and sustainability of culture.

Taking into account that Estonian memory institutions are increasingly involved in cooperation, we have a good opportunity to introduce our cultural heritage and disseminate it internationally as well as make it accessible through international information environments and databases.

The biggest obstacle to making digital cultural heritage available is that our legislation on proprietary rights and copyrights is outdated. The legislation needs to be reviewed and amended. Solving those issues is complicated by the fact that more often than not there is no information on authors (heirs, contacts, etc.). Regarding films, it is often difficult to establish their physical location.

At this moment all memory institutions have a common problem – where to find the money required to pay the staff members who are dealing with digitisation. The support received from the Structural Funds cannot be used to cover labour costs related to digitisation. Although the technical capacity has significantly improved over the last ten years (scanners, servers), finding the labour force required for digitisation remains a major problem. So far, labour costs have been covered from other sources. However, in the long term this is not a sustainable solution. The field is developing rapidly and the gap between the needs of users, the expectations of society and the capacity of memory institutions is growing.

Until 2014, digital cultural heritage was created mainly within ad hoc projects. The current trend shows a shift from single projects towards mass digitisation. This means that we need national level decisions and strategies that are in line with other similar instruments (Information Society Strategy). The development plan Culture 2020 prepared by the Ministry of Culture is not sufficient. The Operational Programme for the Digitisa-

tion of Cultural Heritage 2015–2020 is a step forward in addressing a number of issues and gets closer to the key issue - cooperation between the Ministry of Culture, the Ministry of Education and Research and the Ministry of Economic Affairs and Communication.

This moment in time is characterised by the fact that the impact of information technology on human activity and culture is intensifying and changes are accelerating. New technological platforms have made new technology accessible to a huge number of users. The current change means that, besides the development of new technologies, the number of their users is increasing rapidly. The digital environment has become a norm in both social and cultural terms. These are the changes that allow us to include the "digital turn" in the list of the cultural turns of the 20th century (see Tamm 2011). Estonian researchers of digital culture were among the first ones who introduced the notion digital turn into international cultural analysis (see Pruulmann-Vengerfeldt et al. 2013).

The changes caused by information technology are related not only to the technological field. They can strongly affect people's perception of the world. While the earliest hypertext theories dealt with establishing connections based on associative thinking, the current domination of the networks of multi-linear connections may result in a situation where changes start to affect the way how people think. The skill of creating linear connections would be replaced by a fragmentary and discursive way of thinking that is based on free associations. This may create the risk that people lose the ability to perceive the connections between the causes and effects of various processes. In turn, this may result in major changes in human culture, changes which are yet to be examined. (Re)producing traditional forms of culture in digital format, the digitisation of cultural heritage and its dissemination through electronic channels would help to compensate for such changes. ●

REFERENCES

Aarseth, E. (1997). *Cybertext. Perspectives on Ergodic Literature.* Baltimore, London: The Johns Hopkins University Press.

Felt, K. (2012). *Eesti oma e-raamat.* Riigikogu Toimetised, nr 12. http://www. riigikogu.ee/rito/index.php?id=16144&op=archive2 (28.12.2014).

Jenkins, H. (2006). *Fans, Bloggers, Gamers. Exploring Participatory Culture.* New York, London: New York University Press.

Kiisa, K. (2014). Exciting Reading from the Past: Archiving and Usability of the Periodicals stored in the Digital Collections of the National library of Estonia. In Lauristin, M. & Vihalemm, P. (eds.), *Reading in changing society.* Tartu: Tartu University Press.

Kirby, A. (2009). *Digimodernism: How New Technologies Dismantle the Postmodern and Reconfigure our Culture.* New York, London: Continuum.

Krull, H. (1996). *Trepp. Hüpertekstuaalne luuletus.* http://www.eki.ee/kodud/krull/.

Kruus, P. (2013). Nooruse valuuta. „Noorkirjanik" ja „rühmitus" nullindatel. *Methis. Studia humaniora Estonica, 11,* DOI: 10.7592/methis.v8i11.1001.

Kultuur 2013 = Kultuuripoliitika põhialused aastani 2020. http://www.kul.ee/ sites/default/files/kultuur2020.pdf.

Kultuuripoliitika 2014 = "Kultuuripoliitika põhialused aastani 2020" heakskiitmine. RT III, 14.02.2014, https://www.riigiteataja.ee/akt/314022014002.

Laak, M. (2006). Kirjandusajaloo mittelineaarsed mudelid: teksti ja konteksti probleeme digitaalses keskkonnas. *(Dissertationes litterarum et contemplationis comparativae Universitatis Tartuensis, 4.)* Tartu: TÜ Kirjastus. DOI: 10.12697/IL.2014.19.2.7.

Laak, M. (2013). Heritage, User and the Environment: Rewriting the Narrative of the Literary Past in the Digital Space. In Pruulmann-Vengerfeldt, P., Runnel, P., Viires, P., & Laak, M. (eds.), *The Digital Turn: User's Practices and Cultural Transformations.* Frankfurt am Main: Peter Lang Verlag.

Lauristin, M. (2012). Eestlaste kultuurisuhte muutused liikumisel siirdeühiskonnast võrguühiskonda. In Aarelaid-Tart, A. (toim), *Nullindate kultuur I: teise laine tulemine.* Tartu: Tartu Ülikooli Kirjastus.

Lister, M. (2003). *New Media: A Critical Introduction.* London, New York: Routledge.

Livingstone, S. (2003). *Young People and New Media: Childhood and the Changing Media Environment.* London, Thousand Oaks, New Dehli: Sage Publications.

Leima, L. (2012). E-lugerite ristsed möödusid valutult. *Tartu Ekspress, 7. juuni.* http://www.tartuekspress.ee/index.php?page=1&id=1038t.

Maaslieb, H. (2009). Paberilt baidiks. *Varamu lummuses: Eesti rahvuslik arhiivraamatukogu 100.* Tartu: Eesti Kirjandusmuuseum.

Manovich, L. (2001). *The Language of New Media.* Cambridge (Mass), London: The MIT Press.

Olonen, R. (2014). Infotehnoloogia kasutamisest Eesti raamatukogudes. Rmt: Raamatukogud ja raamatukogundus Eesti 2002-2012. Koost. M. Volt. Tallinn: Eesti Rahvusraamatukogu, 65–92.

Sarapik, V. & Viires, P. (2011). Üksildus küberruumis: autori individuaalsus ja teksti autonoomia. *Methis. Studia humaniora Estonica, 8,* 7–20. DOI: 10.7592/ methis.v6i8.552.

Seppam, T. (2014). E-books in the Tallinn Central Library: First experiences. In Lauristin, M., & Vihalemm, P. (eds.), *Reading in changing society.* Tartu: Tartu University Press.

Talihärm, Ü. (2014). Pealelend. [Intervjuu Pille-Riin Larmile.]. *Sirp, 21. märts.*
Tamm, M. (2011). *Humanitaarteaduste metodoloogia. Uusi väljavaateid.* Tallinn: Tallinna Ülikooli Kirjastus.

Vallner, U. (2012). *Avaandmed – samm tuleviku internetti. – Eesti infoühiskonna aastaraamat 2011/2012.* Tallinn: Director Meedia OÜ. http://www.riso.ee/et/content/avaandmed-%E2%80%93-samm-tuleviku-internetti#.VOCq8PmsWEo.

Vihalemm, P. (2014). Kultuurisuhte muutumine. Kultuuris osalemine ja raamatuhuvi iseseisvuse taastanud Eestis. *Akadeemia, 3,* 422–449.

Viires, P. (2002). Küberkirjandusest meil ja mujal. *Looming, 8,* 1235–1240.

Viires, P. (2013). Digimodernistlik eesti kirjanik. *Methis. Studia humaniora Estonica, 11,* 9–21. DOI: 10.7592/methis.v8i11.999.