COST Action Evolution of Reading in the Age of Digitization

Newsletter No.1

Summer 2015

COST Action Evolution of Reading in the Age of Digitization (E-READ) kicked off in Ljubljana, Slovenia, on 08 April 2015.

As part of the European COST programme in 2014 the Action "Evolution of Reading in the Digital Age" (EREAD) was triggered, bringing together scientists from very different research fields that focus on reading with a special emphasis on differences between paper and screen reading. In a series of conferences and workshops that will take place up to the end of 2018, COST funding will allow scientists who conduct research in neuroscience, arts and humanities, and social sciences to gather with stakeholders from publishing and educational establishments to discuss the implications of digitization on reading. The Action is chaired by Anne Mangen from the University of Stavanger, Norway (also the grant holder) and vice-chaired by Adriaan van der Weel from the University of Leiden, Netherlands.

The main reason for such a broad interdisciplinary approach is the recent outcomes of research conducted on digital and screen reading. Whereas some studies report no or minimal differences in cognitive outcomes from reading short texts on paper and screen, even more evidence indicates that digital texts are read differently than those on paper, with different cognitive as well as emotional outcomes. These research outcomes indicate that a bottom-up reconceptualization of reading is necessary to accommodate the full range of complexities of texts, substrates, technologies, and reading processes and outcomes. The initiators of EREAD firmly believe that such a reconceptualization is only possible through increased theoretical-methodological collaboration between scientists doing experiment-based research and scholars from the arts and humanities.

One of the main goals of the Action is to reduce the widespread speculation regarding the positive and negative effects of digital reading, replace it with empirical evidence, and develop an aggregate

measure of reading on paper and screens. As information technology is one of the fastest growing sectors, and as digital learning tools are being widely introduced to European schools, the results of the Action will be of interest to educational decision-makers, teachers, publishers, and software producers.

The first meeting of the E-READ's COST Action took place at the School of Arts and humanities, University of Ljubljana, Slovenia, on 08, 09, and 10 April 2015 and was attended by around seventy researchers from more than twenty countries. The Ljubljana meeting will be followed by a set of workshops, conferences, and meetings around Europe up to the autumn of 2017. The next meeting of the Action is scheduled for October 14-16, in Szeged, Hungary.

The COST Action runs its own website – : http://ereadcost.eu/ – which also serves as a portal for different research projects on digital and print reading. A monograph with crucial research findings will be published at the end of the COST Action.

Short reports on Working Group (WG) meetings in Ljubljana

WG1 Continuing/skilled (PISA-age) reading.

Coordinators: Nuria Castells (ES), Thierry Baccino (FR) and Rackefet Ackerman (IL).

The first WG1 meeting in Ljubljana was dedicated to presentations and discussion of participants' research. About 15 researchers participated in the meeting.

In order to get to know each other, there were several presentations dealing with topics such as the impact of different variables that affect digital reading, luminance and text presentation (Spritz), special typeface for children with low vision, the relationship between emotion and cognition, the impact on metacognitive processes, source evaluation when reading web pages, comparison between reading on paper vs. screen and the use of annotating strategies or intervention strategies.

In the second day, participants decided about the main objective that the group should pursue: Improve comprehension of digital texts in various environments, such as internet searches, university studies, working places, and dealing with diverse devices.

In order to achieve this broad objective the group also set two different aims:

(1) Conduct research on the ways people use and integrate information from multiple devices and in different contexts. The studies to be developed under this umbrella were thought to be cross-cultural, in the sense that there could be different practices taking place in different European countries.

(2) Identify skills, selective reading, and different levels of comprehension that affect digital reading in comparison to paper reading. Studies may focus on identifying the specificities of reading electronically and the impact of digital reading on the various potential levels of comprehension (superficial vs. deep, inferential, integrative and critical comprehension, and metacognition).

Although these specific aims have already been agreed, the workgroup is open to other themes or subjects that can emerge in next meetings.

The workgroup established expected outcomes or deliverables, such as obtaining guidelines to construct media environments; to provide proposals for teachers to teach learning strategies (related to processes that lead to deep comprehension); and to design a comprehensive e-reading test.

Finally, one workshop was scheduled for this current year: data analysis on emotional texts, by T. Baccino (11-12 June 2015), and three more for next year: on data mining, by T. Baccino; on metacognition by R. Ackerman (January or February); and another on critical reading by H. Strømsø.

WG2 Developmental aspects of reading.

Coordinated by Mirit Barzillai (IL), Jenny M. Thomson (UK) and Paul van der Broek (NL)

The time in Ljubljana was devoted primarily to learning about one another's research, creating a common conceptual framework in which to place our work, and defining the core questions and research themes that would guide the group. To these ends, the group split into small groups to discuss the ongoing and proposed research of group members. This discussion revealed both the diversity of ages, components of digital media, and the cognitive, behavioral, and perceptual outcomes being examined, as well as the core questions and themes that underlie the work of this group. Thus, core research questions are:

1. What is the influence of Ereading on reading and learning across development?

2. Which skills are needed to successfully process/integrate/understand digital texts?

In particular, the group recognized the necessity of investigating the cognitive/attentional skills of readers as they interact with digital text as well as the reading fluency and comprehension outcomes. An additional theme throughout the discussion was the importance of examining the pedagogical and assessment implications of digital technology in such a way as to inform instruction and assessment of children across development.

Discussion on future workshops and trainings highlighted the themes of attention/WM, reading fluency and comprehension, instruction and technology, special populations. A workshop on constructing meaning from multiple digital sources was proposed. This meeting will cover topics like the attentional and comprehension challenges to navigating, evaluating, and integrating information from multiple sources.

In the interim the group is plotting the different interests and research questions of individual members to better visualize where different members intersect, which research areas are well represented and what we should focus on for future research.

WG3: Experiential and Emotional Aspects of Reading.

Coordinated by Anezka Kuzmicova (SE), Art Jacobs (DE) and Gitte Balling (DK).

WG3 is currently the Action's largest working group. Twenty-seven participants were present at its first meeting. Prior to the meeting, participants submitted formalized descriptions of their research profiles. Based on these descriptions, the working group leaders proposed to divide WG3 into two subgroups, where the opening discussion would revolve around the following two topic clusters, respectively:

Subgroup 1: The reading and e-reading experience as a private and/or self-contained phenomenon (aesthetic-emotional cluster; facilitators: Arthur Jacobs, Gitte Balling).

Subgroup 2: The reading and e-reading experience as shared behavior and/or precursor of transferable skills (social-cognitive cluster; facilitator: Anezka Kuzmicova).

As participants presented themselves at the introductory roll, they were asked to make a tentative choice between the two clusters. This resulted in an even split, with twelve members in each subgroup. More in-depth introductions of individual research interests followed after the division.

While largely interconnected, the two subgroups proceeded to define their distinctive objectives as follows:

Subgroup 1 aims to study reading and e-reading at the level of text processing narrowly defined. Among the research methods to be employed are paper & pen experiments (quantitative metrics;

possibly also qualitative paradigms). Pending significant effects, these experiments will be followed up by psychophysiological studies. The planned research will explore possible interactions between text genre (e.g. fiction vs. non-fiction) and technology (print vs. screen) in eliciting empathetic emotions, immersion, and other affective responses. Apart from the second 2015 meeting scheduled for October (Szeged, HU), an additional workshop will take place this November (Catania, IT; host: Renata Gambino) in pursuit of these objectives.

Subgroup 2 aims to study digital reading practices, particularly those of young European populations, in a broader cultural and societal perspective. Rather than conducting experiments in laboratory settings focusing on text processing as an isolated phenomenon, the subgroup plans to observe the naturally occurring phenomena that precede and follow text processing proper (e.g. the digital practices informing readers' text choices; post-reading on-line evaluations). The main variables to be explored include experienced interactivity in the sense of technological affordances, and sociality in the sense of between-reader collaboration. Apart from the second 2015 meeting scheduled for October (Szeged, HU), the above objectives will further be pursued at an additional workshop this November (Le Mans, FR; host: Brigitte Ouvry-Vial).

A number of smaller independent task forces were also established within and across the subgroups.

WG4 Ergonomics of reading

Coordinated by Theresa Schilhab (DK), Matt Hayler (UK) and Jean-Luc Velay(FR)

The group aimed at a get together that seemed meaningful with respect to establishing connections and in the long run would advance contact between members outside the official, physical meetings. Thus, the group sought to invite participants to exchange ideas on personal background, scientific perspectives and interest in E-READ.

In practice, for initiating the emergence of a common ground knowledge dissemination was initiated in order to get a collective overview of the field of WG4 and E-READ in general by giving short presentations of the selected papers (intra-WG4papers that were distributed before the meeting) to ignite exchanges and begin forming a knowledge platform to serve as a common frame of reference. Based on extant research projects, at the meeting the group aimed at identification of interests and strategies for collaboration.

On location: At the very first meeting members introduced themselves, their scientific background and interest in the COST-program in general and in WG4 more specifically. The presentation round made it clear that the interests represented by WG4 members lie within fields like ergonomics and embodied cognition, but also within such fields as book history, reader response and market and publication.

To give impetus to discussions, Theresa Schilhab and Matt Hayler gave short presentations introducing the intra-WG4 papers on ergonomics and embodied cognition. The subsequent discussion was devoted to a plenary brain storm in which we attempted to graphically chart and condense the field of WG4 into the following areas of interest; Reading a particular text/device (sub-headings are contexts, usage, markets and publishing, participation, and reader response; Movement from one form to another (sub heading is from P to E) and; Meta discussion (sub-headings are ontology and discourse).

On the second day the group made a first identification of strategies for collaboration especially with respect to E-COST tools such as training schools, STSM's and workshops. Given the various interests the last part of the discussion on future collaborations continued in three sub-groups.

Finally, the group agreed on before the next meeting in October to compile a catalogue of short bios on WG4 members for distribution and to devote a large part of the October meeting to more formal workshop presentations inviting all WG4 members.

COST E-READ stakeholders: why the Action matters to the community

As digital devices and digital content are widely overflowing educational institutions, businesses and private life, the impact of digital change on reading comprehension became a matter of interest for educational and cultural policy, reading promoters, software producers and publishing industry. Below are sketched a few reasons why research on paper and on-screen reading matters for a variety of stakeholders in these areas.

Policy makers

The COST Action "The Evolution of Reading in the Age of Digitisation" investigates how reading changes as our texts migrate from books onto computer screens and e-readers.

The present project brings together researchers from psychology, neuroscience, reading history, pedagogy, literary studies and sociology in order to devise new research paradigms for capturing the different dimensions in the complex changes that come with the digitization of texts, their display on screens and new reading environments on computers, where the text has to compete with other

information. Scholars from thirty countries in the EU and associated COST countries apply their expertise to an issue that currently changes the lifeworlds in each of these countries. They establish collaborations that develop cross-disciplinary research paradigms and yield scientific evidence, which will provide much-needed clarity on the effects of digital reading.

The changes under investigation pose new challenges for general literacy (a key factor in the EU's growth strategy; Europe 2020) and, at the same time, call for the development of digital reading skills for the citizens of the 21st century knowledge economy (that concerns the Digital Single Markets Strategy for Europe 2015). The effects of digitization are recent and not yet well-understood, but some evidence points toward a decline of attention to, recall of and retaining of what we have read. A better understanding of these processes can inform educational policy and help devise teaching and learning environments that respond to the problems of digitisation and, in turn, make use of the unprecedent possibilities of connectivity, open access and circulation of knowledge which the digital revolution offers.

Educational community

Achieving literacy is of the utmost importance for each child and adult in today's world and is key to meeting the goals of Europe 2020, EU's strategic growth strategy. Roughly one in five Europeans, however, lacks adequate reading skills. As E-readers (e.g., Kindle) and tablets (e.g., iPad) are being increasingly introduced in schools to foster reading skill and interest, it becomes all the more critical to understand the potentials and limitations of learning using new technologies. Indeed, there is evidence that digital texts are read differently than those on paper and that cognitive as well as emotional outcomes may vary as a function technology.

Outputs of the E-READ COST Action will offer new information on the pedagogical potential and drawbacks of using new technologies. Research pointing to how students use new technologies for reading and acquiring new knowledge can help inform educational practice, the design of digital content for schools, and the creation of applications for improving reading at school. Action's results should have a profound effect on education across Europe by providing a comprehensive understanding of reading in the digital age.

Action's aims that are of special interest to the educational community include:

- Evidence-based recommendations to educational practitioners and policy makers;

- Recommendations for optimal text/content design for educational publishing;

- A solid platform for strong and competitive education policies and pedagogies built on empirically derived knowledge of the effects of technology on reading.

Project deliverables that are of special interest to educational community are:

- A comprehensive, interdisciplinary, and testable model of reading;

- Relevant indicators of reading (different kinds of texts) on paper vs. screens;

- Recommendations for educational industry (developers and publishers of e-books, textbooks, and educational software);

- Recommendations for the pedagogical field;

- A shared European research/knowledge database for national education policy makers, publishing associations, reading assessment agencies and test developers to strengthen European competitiveness;

Reading promotion organizations

Reading is a fundamental practice of our civilization that has been evolving both in response to broader cultural and social changes and as a result of the emergence of new technologies and media. Nevertheless, it seems that the nature of reading has never changed as rapidly and radically as in times of digitization:

1) We are witnessing the formation of new reading behaviors (e.g. unprecedentedly easy interaction with the content, non-linear reading, multitasking);

2) We are gradually becoming aware of the neurological and cognitive effects on new forms of reading on the brain, and especially of the potential effects of technical, material and audio-visual affordances of screens on low- and high-level processes of reading;

3) We are facing the challenge of reconceptualising literacy competences and thinking skills that are necessary to comprehend and create digital texts, which in turn is related to the necessity of developing reliable forms of assessment and testing reading skills (e.g. information search and retrieval; inference based comprehension; critical reflection).

Simultaneously, recent research indicates a dramatic decline in reading enjoyment and interest among teenagers. Digital texts are assumed to be an effective means of raising reading motivation and e-readers (e.g., Kindle) and tablets (e.g., iPad) are commonly introduced in schools to foster reading interest.

Relying on cutting-edge collaborative interdisciplinary research, COST Action E-READ looks into theoretical and practical implications of these phenomena in the context of the technological, social aspects of reading. Its objective is to develop and maintain a solid platform for strong and competitive education policies and pedagogies based on empirically derived knowledge of the effects of technology on reading. In particular, the research conducted within the Action is aimed at developing a number of metrics for assessing the impact of digitization on reading, which in turn will result in objective evidence-based knowledge of paper and screen reading. These metrics will, among others, enable evaluating individual readers according to, e.g., PISA criteria, and generating knowledge about implications of digitization for individuals and societies across a range of genres and purposes of reading. Hence, reading promotion organizations, educational practitioners and assessment agencies will find E-READ to be a central source of data and guidelines on how to develop successful strategies for the promotion of reading in times of the domination of digital texts.

Significantly, the Action works closely with EU-READ, the consortium of European reading promotion organizations and hopes to expand this network, as well as facilitating communication between research and educational policy making, educational practices, the needs and interests of the book industry, and European citizens.

Academia and scientific community

The goals of E-READ COST Action center on improving our understanding of the strengths, weaknesses, and unexploited potential of digital reading. In particular, we aim to gain a better understanding of how to promote reading for in-depth learning and self-driven reading using digital media. Towards these goals, the Action will promote collaboration across a broad range of reading-related research domains, such as cognitive psychology, ergonomics, and literacy. Of particular importance is the crosstalk between experiment-based research (e.g., psychology; neuroscience) and qualitative research (e.g., media/reading history; pedagogy; literary studies; sociology). Even within experiment-based disciplines, scientists often work in relative isolation from other disciplines. This Action will promote bottom-up, concerted and interdisciplinary research, thus overcoming such theoretical-methodological dispersal and isolation in European reading research. This will be achieved through networking during work-group meetings, lab visits, and student exchanges. Action outcomes are expected to produce practical recommendations based on firm scientific bases and Action members will act to connect relevant bodies to publications of the Action as both beneficiaries, and as information sources and resource providers for research. The Action includes representatives from more than 30 countries. This provides a unique cross-cultural opportunity for promoting the transition from paper to digital reading in areas where this transition is in a nascent phase.

Hardware and software producers

The COST EREAD action is of special relevance for several stakeholders in industry as the action could potentially provide an insight on software and device design as well as on the development of use and experience of e-books and digital documents by the public.
IT software and hardware development companies, especially those concerned with the design and production of screens and electronic reading devices, are interested in improving their user interfaces for usability and readability. Research data on the reading experience on paper versus screen/electronic devices are important for electronic book publishers and online newspaper industry which produces e-books and digital documents. Such results could improve the content layouts and accessibility. Besides, a better view of the users' specific needs for e-reading across private, leisure and professional context appear as a key issue.
Software and hardware features should also be analyzed in the current social and economic context of e-reading and digital content production and consumption. For instance, these last years, the main retailers of cultural and entertainment products (e.g. Amazon and its Kindle, Fnac and its Kobo) have developed digital content platforms. Through these platforms, they resell electronic devices and related software to the public under their own brand. These stakeholders could be interested in

getting a deeper understanding of end users' reading experience in order to better promote their products and develop their services.

Publishing industry

Europe wields immense cultural influence through its educated readership, international stature of its publishing industry and an editorial diversity largely supported by fixed book prices. But new devices (audiobooks, e-books, tablets,) are reshaping the roles of authors and publishers inspiring new commercial strategies and creating new experiences for readers, who are confronted with texts in multiple versions and formats.

As anticipated by Donald McKenzie in *Bibliography and the sociology of texts* (Cambridge University Press, 1984, pp. 70-71), a 1984 founding book for both historical and contemporary Book and Reading studies at large, the digital revolution entices an era and cultural literacy in which " we do not buy the book so much as the time in which to read it. With new forms of text, we buy, in bulk, the reading, viewing, or listening time in the form of an entrance fee to the cinema, a hiring fee for the disc or video {…}, or we pay an access fee for the information in a data bank."

Indeed, despite assumptions that "reading is both an unnatural, non-innate, and highly artificial activity of the mind-brain" (A. M Jacobs, "Towards a neurocognitive poetics model of literary reading", 2014), contemporary cultural and social practices seem to highlight a renewed definition of reading beyond its traditional one of acquired text and even image reading proficiency. Milad Doueihi (*The digital Culture*, 2008) and in a recent oral address (Université du Maine, Le Mans, May 2015) emphasizes "a powerful reading culture" that encompasses natural activities of the mind-brain (looking around, viewing, listening, playing..) that were not traditionally seen as "reading" and currently stem from the model and evolutions of games.

So one can see how the new paradigm of reading as a time related and customized activity resorting to multiple visible matter rather than purposefully written material, and implying a variety of reading practitioners, triggers an entirely new set of questions and potential endeavours for publishing industries of today. Eager to understand the market and the characteristics of their customers, they might benefit from the results which the whole range of research on publishing, reading and readership is able to provide about the buyers social (families, roles, status) characteristics and the cultural circumstances that surround them (e.g. as displayed in J. Travnicek surveys presented in *Reading Bohemia*, Akropolis, Prague, 2015); as well as about their economic, technological, political circumstances and their response to the overall marketing mix made available by publishers (as developed in A. Baverstock fifth edition of *How to market books*, Routledge, 2015).


WG 4