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Digital Age in Semiotics & Communication, a journal from the Southeast European Center for Semiotic Studies at the New Bulgarian University and founded by Prof. Kristian Bankov, explores the new forms of knowledge, social and linguistic interaction, and cultural phenomena generated by the advent of the Internet.
A topic is chosen for each issue by the editorial board, but the topics will be always related to the issues of the digital environment. The topic is announced with a call for papers and will also be available on our Facebook page (facebook.com/DigitASCjournal).
The working language of the journal is English. It uses double-blind review, meaning that both the reviewer's and the author's identities are concealed from each other throughout the review process.

Periodicity
The journal will be published annually by the Southeast European Center for Semiotic Studies and the New Bulgarian University Publishing House.

Purpose
The purpose of the journal is to provide a collaborative work field for scholars interested in researching new phenomena in the dynamic digital world. Our main purpose is to build a scientific bridge between the fields of semiotics, communications, social sciences and the problems of the digital era. We believe that our collaborations can raise the level of understanding for modern digital phenomena, providing both a solid theoretical framework and profound applied research.
The pilot issue summarizes the whole research program of the Center and the journal in particular. It is open to various problems concerning developments in digital culture and phenomena. We are interested in working with scholars from different research and applied fields, such as semiotics (both applied and theoretical), communication studies, marketing and advertising, linguistics and literary studies, anthropology and ethnography, cognitive science and psychology, and computer science.
More specifically, our interest is directed to:

- New forms of knowledge;
- New media and the immersive e-consumption of experience;
- New forms of social relations in the age of social media;

- New habits of communication and self-expression/representation;
- Online corporate communications;
- Digital narratology and e-fiction;
- Digital grammatology;
- Digital audio-visualisation;
- Internet linguistics.

The magazine is supported and reviewed by our International advisory board as well as by chosen external reviewers.

For more information and submission of papers: DigitASC@nbu.bg

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DIGITAL TRANSFORMATION OF EDUCATION: SEMIOTIC AND INTERDISCIPLINARY PERSPECTIVES

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The digitization of education is a complex and comprehensive process which is difficult to fit into a single research effort. Therefore, our ambition with this issue of the journal is not comprehensiveness, but rather a combination of different disciplinary approaches. Our hope is to achieve a good example of collaboration which partially took place during the semiotics conference of the same title held in Sozopol at the beginning of September 2022. Digital culture as a subject of scientific research is interdisciplinary in its very essence, much more so than the pre-digital cultural types which preceded it. Its rise has put many of the established disciplinary divisions in crisis, as well as most educational institutions. Another characteristic of digital culture is its unprecedented dynamism. This is something which

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greatly reduces the "shelf life" of our theoretical models, generalizations and results of specific research, especially when considering that the epochal change happened within a generation. The positive side of this enormous complexity is that all research perspectives are now open and there are almost no established scientific hierarchies to stifle the research entrepreneurship of the digital natives.

We cannot introduce this issue of the journal without a brief overview of the main points where digitization has had the most significant impact on education. Although there is no clear boundary between them, I will summarize these influences relevant to the chosen perspective in two groupings: *technological and cultural*.

The most important technological changes in education, resulting from the introduction of new communication technologies and the development of the Internet, are the following:

1. Online learning and distance education: the most obvious and widespread innovations of the educational process concern the possibility of it going beyond the need for the simultaneous physical presence of its participants. This has made education globally more accessible, more flexible for teachers and students, and ultimately more competitive in a new attention economy where the biggest deficit is that of free time. The COVID-19 pandemic has accelerated the adoption of online learning, since universities and colleges have been obliged to adapt to social isolation. Many of the coercive achievements in this regard have since continued to be applied systematically even after the threat has passed.

2. Personalized learning: another organizational innovation with a great impact on higher education, largely imposed by the general context of a hyper-commercialized digital culture, is the possibility of providing each learner with an individual program reflecting his/her specific needs and capabilities. This means that students can access a variety of resources, adapt their learning pace and receive targeted feedback which could lead to more effective learning outcomes and greater value for their time investment.

3. Efficiency and cost reduction: not only learning, but also the entire process of education administration can be optimized, thus reduce the monotony of work for many employees. This could be a qualitatively new level in admissions processing with high levels of free choice, especially with a large number of candidate students. This will also contribute to individual curriculum management throughout the entire period of study, enabling them to move their folders themselves and thus not requiring the mediation of the employees. Not to mention the extraordinary opportunities that

digital platforms provide for the testing and certification process of a large number of students. All this leads to a reduction in costs and, accordingly, the price of education, without compromising on quality.

4. Big Data and analytics: one of the most dynamically developing areas of digital business is the collection and use of consumer data. This process could make a real contribution to universities as well, at all levels of their mission. This is data on the behavior, preferences and achievements of students, guiding the university management to know precisely what to ask of teachers and staff, in order to improve the service (teaching methods, identification of students at risk and optimization of teaching materials, integration of diverse sources of information and forms of assessment).

5. Blended learning: an option which preserves the advantages of real presence and face-to-face contact between teacher and students, but also improves the quality of the exchange with new technological means. Thus, for example, virtual reality has been successfully integrated into many classes in exact sciences and technology. Interactivity in learning can also be deployed, where class discussions are only a small part of it. It can also incorporate gathering of groups of face-to-face and online students which also has huge advantages over just the remote form.

6. Open educational resources (OER): new technologies have helped universities not only to create easily accessible interactive learning resources for their own programs, but also to join forces and create unprecedented volume and quality of materials available to the global world audience. In this way they can democratize education in the most disadvantaged countries of the world.

7. Global collaboration: From those unsuspecting times of what the world wide web would become, its first non-military applications were to link archives with scientific research (ARPANET, BITNET, etc.). Today, digital platforms offer virtually unlimited opportunities for remote scientific and educational collaboration, enabling millions of scholars to experience real-time international academic exchange without having to leave their home or office. In the last decade and especially in the post-COVID-19 years, international education projects have entered a qualitatively new phase.

8. Gamification and EdTech: we also come to those digital innovations which have been specifically developed to modernize the educational process itself, bringing it into tune with the most developed technologies in the entertainment and commercial services industries. This process is only at its beginning, but it holds the greatest potential for development and best fits the semiotic problematic. For many, traditional educational approaches

have lost the battle in the new attention economy, and only with EdTech and gamification can learning be made fun and effective enough to fit into the cognitive formats of the GenZ.

9. Accessibility and inclusion: new digital technologies are now indispensable in improving accessibility for students with disabilities and special needs. Tools such as voice input programs, adaptive keyboards, text-to-speech and voice-to-text programs, and audiobooks make educational content more inclusive. New capabilities are still being developed with virtual and augmented reality technologies.

10. Lifelong learning and professional development: lifelong learning and professional development have become more accessible through online courses and digital resources. This is critical in an age of rapidly evolving skill and knowledge requirements. At the same time, this also hides one of the biggest challenges of the digital revolution: the potential danger of all those who for one reason or another are outside digital literacy or access to technology falling behind at a dramatic pace and being condemned to various forms of marginalization.

As for the *cultural implications* of the digital transformation of higher education, they are profound and multifaceted. They are mostly related to the fundamental change in the values, behavior and norms of the educational institutions and the individuals employed in them.

1. Change in the way of thinking:

– *Adopting a growth mindset*: today's trendsetters have quickly adopted a mindset of continuous learning and adaptability. This means understanding that skills and intelligence must be constantly developed, and that behind every problem there are opportunities for growth and non-standard solutions.

– *Innovation and experimentation*: educational institutions need to promote more risky and permanent educational entrepreneurship in search of constantly renewed teaching methods, tools or strategies. Clearly, not everything will succeed, but a culture of innovation is critical to development.

2. Collaboration and interdisciplinary learning: the digital age has displaced socio-cultural reality in a way that has definitively rendered meaningless the closed disciplinary enclaves which characterized the first centuries of the modern university. The new dynamics of the digital economy have forced all institutions to engage in real-time social reality and compete for increasingly scarce attention, time and audience approval. This stepping one foot into the reality of universities has forced more pragma-

tism and a problem-solving orientation, which naturally brings together capable researchers from different disciplines in meaningful projects. However, it is also leaving the old-fashioned and lazy "barons" to their retirement. In terms of learning, this cultural macro trend has led to curricula developed in collaboration with the private sector, technology firms, and all kinds of for-profit and non-profit organizations. Such programs bring together the most working and up-to-date content from each of many disciplinary teams.

3. A student-centered approach: the new digital environment has also sharpened public sensitivity to the social benefits of educational institutions. This has necessitated a change in the pre-digital concept of education organized around the figure of the professor/researcher and the emergence of a new concept which reorganizes everything around the figure and interests of the student. The educational service now finds itself in the very competitive environment of an overabundance of knowledge and information, pushing universities to offer flexible programs tailored to the individual and social differences of students. Also, the latter are increasingly involved as a single voice in organizing the entire educational process, and in many cases as participants in creating the knowledge that the university offers.

4. Digital literacy and digital citizenship: in addition to skills for the utilitarian use of digital tools, the new era requires the adoption of a comprehensive culture of digital literacy, where students, teachers and employees understand the consequences of their actions in the new technological environment. This means understanding a wide range of ethical issues related to the algorithmic control that platforms give us: the deformation of public information about leading events, the protection of personal data, the artificial polarization of public opinion on social media, and the new digital civil rights, etc.

5. Transparency and openness: with the proliferation of open source resources and open access academic publications, a spirit of greater transparency of academic processes and research has been established. This new culture encompasses the organization of competitions, projects, exams, etc., as well as the maintenance of publicly accessible records of scholars, students, publications, citations, successes and failures of all participants in the educational process.

The list of these highlights is by courtesy of my interlocutor Chat GPT-4, who, given the journal's subject matter, might well join the editorial team. This experiment is not random and represents my first attempt at using artificial intelligence as a significant aid in writing an academic text. The proposed points regarding the technical and cultural consequences for ed-

ucation in the advent of digital technologies are indeed comprehensive, but their exposition was quite superficial. My contribution was to give some depth suitable for to the introductory purposes of this text. Undoubtedly this experiment gives me reason to touch upon the role of Artificial Intelligence for the future of education. There is no doubt in my mind that this is the next "big thing" in this culturally strategic area.

Next comes the part where my interlocutor gives his views on the subject on which I assume he has the most competent perspective, namely the influence of the AI guild on higher education. Here is what he said (without editing):

- **Personalized Learning**: AI can customize learning experiences based on students' needs. Through adaptive learning systems, students can proceed at their own pace, receiving additional resources on topics they struggle with and skipping over material they have already mastered.
- **Learning Analytics**: AI can analyze students' performance and learning habits to predict which students are at risk of falling behind or dropping out. This allows institutions to intervene early, providing necessary support to ensure student success.
- **Automating Administrative Tasks**: From answering frequently asked questions to scheduling and enrolment, AI can automate many administrative tasks, making processes more efficient and allowing staff to focus on more complex tasks.
- **Research**: AI can aid researchers in sifting through vast amounts of data, making predictions, and even suggesting new areas of exploration. This can accelerate discoveries in fields ranging from physics to social sciences.
- **Virtual Assistants and Chatbots**: Many institutions now use AI-driven chatbots and virtual assistants to answer student queries 24/7, aiding in tasks from enrolment questions to campus directions.
- **Smart Content**: AI can help in the creation of customized reading material, study guides, and problem sets for students. For example, digital content can be translated, summarized, or reformatted based on the learner's preferences.
- **Tutoring and Mentorship**: AI-driven tutoring systems can assist students in subjects they find challenging, providing them with additional resources and exercises to enhance their understanding.

- **Language Processing Tools**: Tools like Grammarly or Turnitin use AI to assist students in refining their writing and ensure academic integrity.
- **Exam Proctoring**: AI-driven systems can monitor online exams, using facial recognition and behavior analysis to detect and prevent cheating.
- **Enhanced Accessibility**: AI can assist in transcribing lectures, turning spoken content into written form, or even translating it into different languages, making education more accessible.
- **Campus Safety**: AI-driven surveillance and predictive analytics can help ensure campus safety by monitoring unusual activities or predicting potential security threats.
- **Curriculum Design**: Institutions can use AI to analyze which parts of the curriculum are most and least effective, allowing for continuous improvement.

Challenges:

- **Ethical Concerns**: The use of AI in education raises ethical concerns, especially around privacy, data security, and the potential for bias in AI-driven decisions.
- **Job Displacement**: As with many sectors, there is concern that AI could replace certain administrative roles in higher education.
- **Over-reliance**: There is a risk that over-reliance on AI might lead to reduced critical thinking and problem-solving abilities among students.
- **Infrastructure and Training**: Implementing AI requires significant resources, both in terms of infrastructure and training staff to use and manage the new systems.
- **Equity Issues**: If AI-driven personalized learning becomes the norm, there is a potential that students without access to the latest tech might be left behind." (OpenAI's ChatGPT-4, response to prompt from author, November 5, 2023).

It should be noted that the contributions of AI for its own impact on higher education are logically related to the general panorama of the impact of digital technologies, with each of the points having a more or less significant upgrade. In this reading, AI makes everything better in a user-oriented digitized version of the higher education system. Interestingly, when comparing the available publications in the databases of academic

literature on the subject, as in the previous case, there are no significant discrepancies if they are to be summarized. Naturally, the descriptions of "natural intelligence" in the academic and scientific literature are much more thorough, the statement is infinitely more precise, and everything is organized in such a way as to encourage further research to benefit from what is available. Artificial intelligence seeks completeness. Indeed the implicit understanding of its usefulness is that nothing should be missing, but without going in too deep. Chat GPT does not give references and is very reluctant to mention names, only as a last resort.

Where I found greater differences between the "self-aware" role of AI in the digitization of higher education and the opinions of leading academics on the subject is in the critical perspective. Chat GPT-4 by default ends each answer with one or more "Challenges" paragraphs. Here, as you might expect, the critical notes are rather blunt, and not as comprehensive as the summaries of the positives. Most relevant to me in this regard are the criticisms of Popenici, Harari, Chomsky & Co. These are not scholarly contributions in the literal sense, but the insights of leading experts which stress lines of concern likely to be central themes for the originators of critical thinking as a core mission of higher education for a long time to come. Chomsky (2023) analyzes the structure of human thought and the inability of artificial intelligence to approach it in any way. The more the products of the latter are "sold" in institutions of knowledge instead of those of the former, the more the immune system of society will fall, protecting it from corporate, political and all other abuses. Harari (2023) calls "narrative" the operating system of humanity and sees how with generative media and especially Chat GPT, artificial intelligence is beginning to penetrate it with unpredictable consequences. If until now search engines and all other technologies helped us to keep knowledge at hand without having to remember it, then universal human laziness is now being tempted by the possibility of someone else producing its linguistic product, its most intrinsic and distinctive activity. However, this activity underlies the construction of all socially constructed public institutions, and the fact that one day they could gradually become a creation of artificial intelligence does not bode well. Popenici's (2023) paper addresses a broader range of issues related to uncritical mass enthusiasm for the role of AI in higher education. Although some of them seem to coincide with the "self-aware" challenges of Chat GPT-4, the tone is completely different and the conclusions completely pessimistic: "There is a documented tendency of AI to immensely enhance surveillance and inequality, bias, and discrimination and widen power imbalances." Popenici (2023: 3), previously the research-

er from Charles Darwin University, Australia recalls the sad history of the highly compromised concept of intelligence, which caused enormous ethical damage in the course of the 20th century.

In all of these highly negative predictions about the future of AI in higher education, there is one common denominator that is the most important for this text: the only antidote is a good education, combining deep technical knowledge of the nature of AI with critical thinking techniques developed in the tradition of the humanities and social sciences. It is possible that in the near future, when the university will inevitably lose ground in professional training at the expense of corporate training itself or private, very market-flexible providers of educational services, this *intellectual resistance* will remain its only distinguishing characteristic.

I have emphasized this introduction to AI because it is the great absentee from the collected articles in this issue of the journal. The topic is not one of the most attractive. Interdisciplinarity is undoubtedly a plus for the undertaking, but due to the small number of articles it is also a source of an excessive heterogeneity. Gamification, entrepreneurial education and smartphones are among the most discussed issues. In their article "Gamification in Business and Entrepreneurship Education – Theory and Applications", **Marinov** and **Spasova** analyze the benefits of this new technique in the educational field which they know best. The analysis is based on a well-established and highly articulated model of entrepreneurial skills (EntreComp framework), which helps to determine in which of them gamification has greater educational effects and where less. The second article entitled "Opportunities and Limitations of Digital Educational Tools in Shaping Entrepreneurial Mindset and Competences" by **Kolarov** and **Hadjitchoneva** seems to provide an answer to the first article, based on an empirical study among entrepreneurship students about their propensity to use digital tools during their studies. The answer is that they rather prefer traditional methods, without of course completely denying digital innovation.

There follow two articles which explore digital subjectivity and the digital subject. **Jared Smith** in "Postphenomenology and Education: From Cyborg Students to Immersive Classrooms" explores by means of philosophical speculation the fusion of the self of the new generation of students with technological means (and especially the smartphone), sharing a constructive and optimistic attitude towards the future of digitized education. **Victoria – Delia Bunceanu's** article "New technologies, children and the General data Protection Regulation (GDPR): The Gap between Communication, Infrastructure and the Application of a European Regulation!"

within the framework of Law sciences, and with a rather critical perspective explores the constitution of the "data subject" in the new digitized environment and the inconsistencies when this is applied to children. Her appeal is addressed to policy makers who are invited to take her conclusions seriously.

Dilyana Molerova's article "Building a Fashion Influencer Image on Instagram" is dedicated to an immersion in one of the most successful competitive educational formats: that of influencers. Although the author's main interest is fashion, her summaries are useful in making sense of the entire cultural industry of the influencers, where certain high-quality manifestations of the content offered quite directly shift the focus away from traditional education. **Iokasti-Christina Foundouka's** article "Attempting a Gendered Cultural Semiotic Analysis, through the Transmedial Study of the Myth of Carmen" compares various works inspired by one of the most exciting dramas of the Western tradition – that of Carmen.

The concluding section of the volume showcases two studies that highlight the applied and practical nature of semiotics within the scope of large European digital education initiatives. The first study, conducted by **Giorgos Dimitriadis**, delves into the educational implications of interactive cinema, analyzing it through the lens of student engagement. In the subsequent paper, **Despina Constantinidou** examines the role of language education in equipping students with digital literacy skills, fostering their development as informed and proactive participants in the digital world.

With all these caveats, I wish you pleasant reading of Issue VI of *Digital Age in Semiotics and Communication*!

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GAMIFICATION IN BUSINESS AND ENTREPRENEURSHIP EDUCATION – THEORY AND APPLICATIONS

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Abstract

The aim of this study is to systematize the main advantages and difficulties in the use of game elements in entrepreneurship education. It will examine the expected effects of their application on the quality of education and the level of skills acquired. The first part discusses the need to rethink the way in which entrepreneurship education is conducted in relation to new opportunities provided by technology, but also due to the changing needs and ways of training new generations. The next section analyzes the

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various possibilities for applying "gaming" practices in training and linking them with a systematic framework for the acquisition of knowledge, skills and competencies. The last part presents the methodology used by the authors to create a gaming platform for entrepreneurship education. The final part summarizes some conclusions and makes recommendations for the use of gamification in education in the field of business, entrepreneurship and economics in secondary and higher education.

Keywords: entrepreneurship, entrepreneurship education, gamification, EntreComp, Game of Business.

Introduction

The reality we currently live in is changing very dynamically. This change is related to groups of factors: on the one hand, highly accelerated technical progress, the emergence and adoption of information and communication technologies and digitalization in business and everyday life; while on the other, the paradigmatic transformation of the perceptions, values and way of thinking of the new generations, who were born and grew in this new reality. Despite this and partly due to this, dynamic, entrepreneurship has not only retained its importance for innovation, business, national economies and the world economy, but has also enhanced its significance. It is becoming increasingly preferred as an opportunity for the professional development of new generations. However, the changes are forcing us not only to rethink the new reality and the place of entrepreneurship therein, but also to re-evaluate the methods we use in entrepreneurship and business education, in order to align them with new technologies and new ways of doing business, as well as with the needs, wants and interests of new and future entrepreneurs. This is important for their successful realization. Education in the field of business and entrepreneurship is among the most dynamically developing areas in terms of attempts to apply flexible methodologies and pedagogical methods, in order to bring the classroom closer to real life. Gamification is increasingly used as a means of bringing learning content to the perception and interests of new generations.

The aim of this study is to systematize the main advantages and difficulties of using game elements in entrepreneurship education. It will consider the expected effects of their application on the quality of education and the level of skills acquired. The first part examines the need to rethink the way in which entrepreneurship education is conducted from two points

of view: the new opportunities provided by technology; and in relation to changing needs and the way in which new generations learn. The next part provides an analysis of the various possibilities for the application of "gaming" practices in entrepreneurship and business education and their linking with a systematized framework for acquiring knowledge, skills and competencies (for example, the European framework for competencies in entrepreneurship education EntreComp). The last part presents the methodology used to create a gaming platform for entrepreneurship education and its connection to the competencies embedded in EntreComp. Finally a summary is presented of the conclusions and recommendations for the use of gamification in business, entrepreneurship and economics education in secondary and higher education.

Entrepreneurship training in the new reality

Entrepreneurship training programs can help learners determine if entrepreneurship could be their choice of career (Slavtchev, Laspita, and Patzelt 2012). They can also create added value not only for future entrepreneurs but for all learners, regardless of their professional area (Kuckertz 2013). An increasing number of researchers are examining the impact of entrepreneurship education on entrepreneurial intentions, behavior and societal potential (Bae et al. 2014; Fayolle & Gailly 2015; Liñán & Fayolle 2015; Rauch & Hulsink 2015). Entrepreneurial skills are seen as a broad foundation for building adaptive businesses, active citizens and knowledge-based societies (Isabelle 2020).

Entrepreneurship education relies on both traditional lecture methods and "learning by doing" – e.g., business planning, case studies, online simulations, games and collaborative activities. The goal of entrepreneurship education is to develop an entrepreneurial mindset, i.e. a set of attitudes, skills and behavior to discover entrepreneurial opportunities, access resources and create value (Honig 2004; Matlay 2008; Isabelle 2020). A wealth of research shows that experiential learning as well as learning as a process of discovery and social activity improve learner outcomes. Through business planning, students learn to examine, interpret and integrate data to describe the current state and perceived future of an organization (Honig 2004). In recent times, entrepreneurship education has shifted to teaching business models through practical cases. Case studies allow students to thoroughly review a real or hypothetical situation, analyze information, formulate assumptions, and come up with alternatives and recommendations (Osterwalder & Pigneur 2010). While case studies can help develop

strong analytical skills, learners fail to apply their recommendations and to actually learn from the results. Thus, the acquisition of practical skills and competencies through other flexible approaches and simulations is increasingly being advocated in training.

The generation born between 1982 and the mid-90s, often referred to as NetGen or Millennials, is more receptive than the older generations to entrepreneurship as a career option. Generation Z (from the mid-1990s to 2010) is defined as one of the most entrepreneurially minded ever. These two generations will define business and societal development in the next few decades. Their greater emphasis on entrepreneurial skills, capabilities and potential places new demands on entrepreneurship education, especially in terms of methods, motivation and accessibility. The new generations are highly tech literate (Rosentiel 2010) and generally avid users of interactive media and online video games (Hanus & Fox 2015). Therefore they expect more sophisticated simulations in the classroom (El-Masri et al. 2015). Still, there must be a balance between modeling real-world complexity and the ease of use and learning curve of simulations (Karriker & Aaron 2014).

It is becoming increasingly important for learners to motivate themselves to spend time studying. Time devoted to learning activities is becoming a scarce resource. In choosing how to spend time, traditional learning activities compete with many other available options, most of which are generated by advanced information technology (Simionescu & Mascu 2016). Today's students have little patience for lectures, instructions or step-by-step thinking or traditional testing. Compared to their experience with digital technologies, they find traditional teaching methods tedious (Black 2010). Generation Y seeks an interactive, participatory learning environment (Simionescu & Mascu 2016). From this it follows that there is a need for a fundamental change in the resources used by teachers to transmit information, knowledge and skills.

Everything stated so far implies the development and application of new concepts and tools in educational activity. One of these new approaches is the use of a variety of game elements in the learning process.

Gamification and its opportunities for entrepreneurship education

In 2014, Merriam-Webster University Dictionary introduced a new word: "gamification", with the following definition "the process of adding games or game-like elements to something (such as a task) to encourage the participation" (Merriam-Webster's 2014). Gamification is generally defined as the use of game mechanics for non-game applications, i.e.

"the use of video game elements to enhance user experience and user engagement in non-game services and applications" (Deterding et al. 2011). Gamification includes a number of game elements such as: points, badges, levels, leaderboards, status, trophies, rewards and progress bars (Deterding et al. 2011; Seaborn & Fels 2015). These elements are included in learning activities and tasks, in order to help engage, motivate and reward learners to learn new skills or change their behavior in a particular direction (Deterding 2012). Gamification is an opportunity for motivation leading to psychological and behavioral outcomes (Hamari, Koivisto and Sarsa 2014).

Research investigating the effectiveness of different elements of gamification shows mixed results. However, evaluations are challenging due to the different implementation of game mechanics and the variety of contexts (Hamari, Koivisto, and Sarsa 2014; Hanus & Fox 2015). Some studies have shown that extrinsic rewards can undermine learner motivation and their desire to learn (Deci, Koestner, and Ryan 2001). However, competition and cooperation prove to be good sources of both extrinsic and intrinsic motivation. Other studies have shown that gamification improves collaborative and social work, abilities highly needed in entrepreneurship (Antonaci et. al. 2015). Overall, empirical research findings have shown that gamification improves user experience and engagement, motivational capabilities, and behavioral outcomes (Deterding et al. 2011; Hamari, Koivisto and Sarsa 2014; Hanus & Fox 2015; Isabelle 2021).

At the current time, gamification in education is mostly applied in a variety of courses in computer science and information technology, programming and engineering (Abrahams & Singh 2010; Abrahams & Singh 2011). However, the field is also rapidly developing in areas of education related to business, marketing, corporate management and training (Isabelle 2021). So far, research on the use of game elements in entrepreneurship education is quite limited, consisting mostly of empirical tests of single experiments.

The benefits of gamification in entrepreneurship education can be deduced and summarized in several main guidelines based on the characteristics of gamification and entrepreneurship education themselves. *Firstly,* gamification creates a personalized learning experience by encouraging collaboration between students and providing an opportunity for constant feedback. Game elements render topics related to entrepreneurship more exciting. Games motivate discussions about important business concepts such as marketing, customer strategies, long-term planning or even financial management. Turning learning into a challenge or a game with rewards is conducive to interactive engagement. *Secondly,* gamification makes learn-

ing addictive for learners. The more they learn and experience new things, the better they do. The desire to learn something new engages the learner and taps into natural curiosity. The result is an addictive, deep engagement with each topic. *Thirdly,* entrepreneurship is a skill like any other, but not everyone learns it at the same pace. For those who possess different learning styles or perhaps not the same entrepreneurial flair as others, learning through play can be beneficial since it breaks big concepts into smaller, more manageable pieces. *Next,* through the use of game aspects such as winning prizes, competing with friends or working together, gamification helps to create and maintain player focus to move forward. With the gamification of entrepreneurship education, this means either learning about or completing one more task for a product to be sold. *Fifthly,* this way of learning can keep learners engaged and more motivated for longer through rewards, incentives and points. This is especially helpful for those who have trouble completing all the assignments since they are not fundamentally interested in what they are learning. *Sixthly,* when learners can choose different learning paths related to their primary interests, they are much more likely to have fun and stay focused while retaining information better. In addition, after seeing the value of building a foundation of knowledge and experience, they will take ownership of the topics. *Seventhly,* "learning by doing" is one of the main channels of learning through gamification. Whether the learner is an adult playing the game or a child, each player improves skills such as persistence, communication, cooperation, creative thinking, and task performance, inter alia. After being learned and consolidated, each of these skills then carries over into other aspects of the player's life. *Last but not least,* gamified training provides players with a safe way to build and practice their leadership and management skills. Players can make decisions and then see the outcome for themselves, their team or their company. This encourages even the youngest player to make decisions independently, confidently and take responsibility for their choices.

There are clearly many potential benefits of gamification in economics, business and entrepreneurship education. However, in order to deliver them, an effective framework needs to be formulated of the knowledge and skills learners should acquire.

A framework of competencies in entrepreneurship education

Entrepreneurship education traditionally refers to teaching in the field of entrepreneurship and the training of entrepreneurs. This includes activities aimed at developing a specific way in which learners perceive their world, themselves and others, and how they handle their resources. This is

the result of the accumulation of extensive knowledge and many interrelated skills which can be represented and systematized in the form of different competencies.

Given current trends, entrepreneurship as a competence can be defined as the ability to create, implement and develop opportunities and ideas to create value for society (McCallum et al. 2018). This value can be social, cultural or financial. In this sense, entrepreneurship as a competence has different dimensions and covers a wide range of skills, knowledge and actions affecting the social and economic activity of people. Viewing entrepreneurship as a universal competence involves it being developed and built into life. Entrepreneurial skills and mindset are equally important in starting and building a career; in starting and developing a new business idea; in expanding a business or professional portfolio.

Entrepreneurial competence includes the following elements: creativity; adaptability; ethics; literacy (financial; economic and social) and a number of other dimensions. Therefore, all these dimensions of entrepreneurship need to be linked into a systematized framework to allow for an adequate and concise shaping of the field of entrepreneurial competence. Without such a framework, this competence may be diluted and, accordingly, entrepreneurship education as a set of knowledge and skills may not yield good results.

In 2016, the European Commission (EC) developed the European Entrepreneurship Competence Framework (EntreComp). EntreComp is composed of 3 main areas of competence: Ideas and Opportunities; Resources; In action. Each of these areas is made up of 5 competencies. According to this framework, entrepreneurial skill includes a total of 15 competencies. Each of them is further defined through threads describing the competence in different practical dimensions. At the end of this tree structure are learning outcomes. These are the things an entrepreneurship learner should be able to know and/or do, after mastering a given thread, as part of a competence within the three core areas of competence.

The reference framework developed by the EC was proposed to be applied in different sectors, as well as for different purposes by a variety of entities: educational institutions; professional organizations; employers; business structures; policy makers. Due to the broad applications of the framework, the learning outcomes are structured into 8 levels of progress, divided into 4 groups:

Core Competencies Group:

- Level 1: “Discover”
- Level 2: “Explore”

Intermediate Competences Group:

- Level 3: "Experiment"
- Level 4: "Dare"

Advanced Competencies Group:

- Level 5: "Improve"
- Level 6: "Reinforce"

Expert Competencies Group

- Level 7: "Expand"
- Level 8: "Transform"

The eight levels of progress include a total of 442 outcomes (see Figure 1).

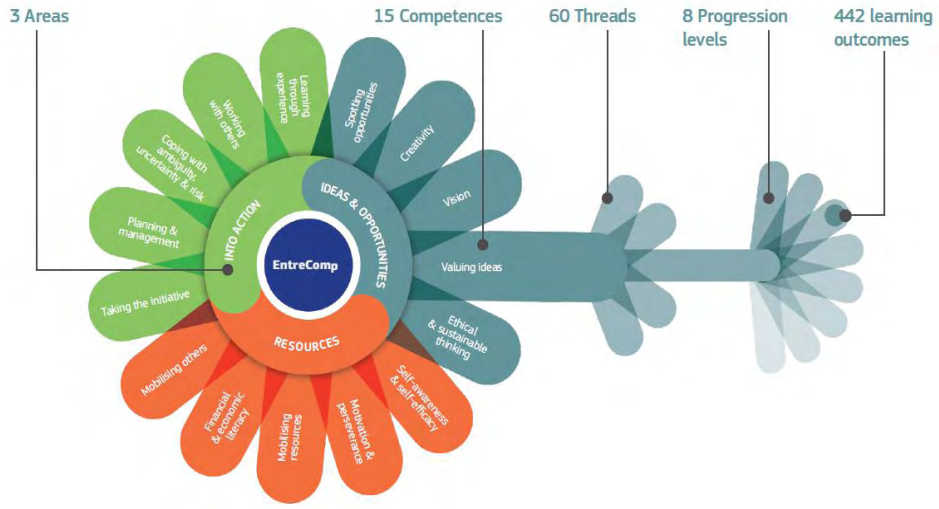

Figure 1: Structure of EntreComp framework
Source: McCallum et al. 2018, p. 26.

The detailed description of entrepreneurship as a competence with 8 levels of mastery allows the EntreComp model to be used to systematize and coordinate educational activities on entrepreneurship for different target groups and different purposes: from non-specialized groups (e.g. students) to professional educational activities; and specialized groups (e.g. managerial staff; management and governance students). According to the EC guidelines for the application of the framework, it can be used in a number of ways:

- As a tool to improve policies or practices for the development of entrepreneurial skills;
- To assess entrepreneurial skills;
- For "train the trainer" initiatives for trainers, teachers, mentors;
- To structure programs and training modules;
- For certification of entrepreneurial skills.

The tree-like structure of the frame allows it to be applied at different depth levels.

Additionally, the EntreComp framework is suitable for application in the development of entrepreneurship teaching methods. This is due to the fact that it is a reference framework for the EU countries. This allows easy comparison, analysis and transfer of methodologies from one member state to another, as well as the development of uniform training approaches in several countries.

Methodology for the creation of the Game of Business gaming platform

The idea of a gaming platform for entrepreneurship education is based on two main factors as discussed above:

- The review and analysis of current trends in entrepreneurship education and the definition of entrepreneurial skills as a universal competence.
- The need to rethink traditional forms and approaches of teaching and learning in general by introducing more engaging and interactive methods and tools.

The "Game of Business" (GoB) game platform is being developed within the project "Game of Business: Simulation Environment for Entrepreneurial Education" with reg. No. 2020-1-BG01-KA201-078958 under the Erasmus+ Program, KD2 "Cooperation for innovation and exchange of good practices", activity "Strategic partnerships", sector "School education", sub-activity "Strategic partnerships to support innovation".

GoB is a broad platform for entrepreneurship education. It incorporates modules covering core competencies which enable students to acquire knowledge and skills for personal and business development. As learners go through the tasks and answer the questions, they acquire entrepreneurial knowledge, skills and competencies important for their professional and personal development. The overall goal is to teach students the basics of economic thinking and entrepreneurial culture, including professional

orientation and development, business idea generation and business development.

The immediate goal we set for ourselves in the pilot development of the game platform is to create entrepreneurial skills in high-school students in non-specialized schools. The entire platform is structured as a game with different levels and modules. A number of game elements enhance the experience of platform users and make learning/acquiring knowledge and skills easier, fun and interactive.

We tried to create a structure of activities within the GoB that would correspond to the European Framework for Entrepreneurial Competence (EntreComp). This would enable the creation of relevant content and link it both to the education provided in the school curriculum, but more importantly to real-life entrepreneurial skills and knowledge. At the moment, the GoB is composed of 143 activities/tasks linked to the 60 competence threads of EntreComp with the possibility of linking to the 442 expected learning outcomes (distributed in 8 levels of progress). Linking the activities in the GoB platform to the components of the EntreComp framework at the lowest level allows the platform to be updated and the "game" adapted to target different groups of learners/users depending on the existing and desired level of entrepreneurial competencies.

For the purposes of this project, it was decided to develop the GoB platform for use in the secondary education system. Therefore, it is envisaged that the maximum level achievable by students playing on the platform will be up to the 4th progress level of the EntreComp framework (Groups "Core Competences" and "Intermediate Competences").

Part of the modules/activities go beyond the basic and intermediate competencies, enabling the platform to be used by more specialized users and students. The game platform allows the content to be customized, both in the direction of complicating game modules (respectively, reaching an advanced and expert level of competence) and simplified, in order to adapt to target groups of a lower age or with lower targets in terms of gained competencies.

The structure of the platform is based on the following principles and includes the following approaches:

- The entire platform is structured according to the "know – see – do approach": each of the steps / activities includes guidance, explanation, advice and real examples;
- The different topics/modules and sub-modules follow an identical content structure: information (explanation, guidelines), examples

(if possible, more video and online content); performance (tasks and assignments).

- The modules and the stylistics used are brought down to the level of the students: no redundant terminology; and the structure of a textbook/linear text is deliberately avoided. The different parts of the platform are formulated in a stimulating way, with the aim of encouraging pro-activity and motivating users to take action. The texts, names, guidelines are presented in an easy-to-read/understand way, with a sequence and formulation of the modules close to the way of thinking and logic of the users.
- The modules cover core competencies enabling students to acquire the knowledge and skills for personal and business development, including all topics normally included in a business development plan, but not exclusively. As learners go through the tasks and answer the questions, they will gain entrepreneurial knowledge, skills and competencies important for their professional and personal development. Progress is measured by achieving the 60 threads of competence and learning outcomes according to the EntreComp framework.
- The purpose of the platform is to develop the skills and knowledge required for business and professional development, without actually writing a business plan. The aim is for users to understand how business ideas are generated and how a business evolves (not only the knowledge and toolkit for filling out a business plan). As they go through the sections and complete the tasks, a business plan is automatically generated. In one of the final modules, the automatically generated business plan becomes visible and users will be able to see the progress they have made and revise it (if necessary). The business plan is only one of the learning outcomes. The learning objective is broader: entrepreneurship and business development competencies.
- Flexibility in training modules: the possibility to introduce new, up-to-date topics and tools.
- Hidden content for educators/trainers (additional menus, progress trackers, learning resources, platform customization tools).
- The game platform allows for teamwork (team play) but can also be used individually.

Gamification often includes three main game concepts: activity goals, reward mechanisms, and progress tracking (Glover 2013). Each of them is represented in the GoB through specific tools and mechanisms.

The objectives of the platform are fully aligned with the principles of gamification: players are presented with tasks/challenges that they must complete in order to move forward. Their progress is measured by their achievements in completing the tasks in the game. At any moment, users know their progress through progress bars. The goal is not to achieve a certain grade, but to reach a certain level.

Game reward mechanisms are implemented in GoB: player leaderboards progress and achievement badges; a system of motivational messages at certain levels of game progress.

Along with reward mechanisms, tracking and evaluating progress is achieved by incorporating a method of tracking development analogous to giving feedback in the traditional learning process. The teacher (mentor, manager, trainer) has more rights in the platform and verifies the quality of the tasks, to enable the player/team to move forward. In certain places, the quality of task implementation is automated (for example, in the financial part of the platform). Here players receive automatic feedback and advice on the quality and correctness of the entered data/decisions.

The automatic completion of a business plan, only visualized when all components are completed, is an additional element of reward/incentive to continue the game. The financial module of the platform allows many versions of a budget/financial plan to be modeled and a comparison between them to be made when analyzing the most suitable income-expenditure model of the idea.

GoB game platform is structured in 8 main modules. We foresee the development of additional modules, both as part of the game and as additional resources such as a dictionary, additional educational content (if the user is interested), and a library of useful resources. The majority of the first seven modules of the game are intended for work with secondary school students. Some parts of the seventh module and the whole eighth module include tasks requiring a deeper interest. They lead to a higher level of entrepreneurial competence, making it suitable for specialized training in entrepreneurship, including universities and professional organizations.

Conclusion

Learning today goes beyond the simple transmission of data. It involves spending time with other people and participating in a range of activities. When young people engage in learning through action, they acquire new skill sets while developing an intellectual curiosity to try new things. Gamification helps make tedious learning seem exciting.

The use of game elements and gamification in economics, business and entrepreneurship education has the potential to increase learner motivation and outcomes. As a result of their digital upbringing, Generation Y and Z students expect the use of information and communication technologies in the classroom. For them, this is natural and they feel attracted by collaborative, interactive and engaging learning environments. They prefer learning environments which include the active use of information and communication technologies.

The Game of Business game platform for entrepreneurship training is structured according to the main concepts in gamification. The platform enables the acquisition of entrepreneurial competence by different groups of users without specialized knowledge and skills. Methodologically, the platform is based on the European framework for entrepreneurial skills EntreComp, enabling the universal application of the platform in different countries and at different levels of education. In terms of content, the platform offers a non-academic text style with useful information and examples to help platform users move forward. The modular structuring of the platform follows the logical sequence of questions asked by the user. Progression in the game is stimulated through the natural curiosity of the players, thus resolving the logical problems that arise in their minds in the process of generating an idea and transforming it into a business concept.

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OPPORTUNITIES AND LIMITATIONS OF DIGITAL EDUCATIONAL TOOLS IN SHAPING ENTREPRENEURIAL MINDSET AND COMPETENCES

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Abstract

This paper examines the potential of digital learning environments in preparing future entrepreneurs through higher education. Despite historic doubts regarding the systematic teaching of entrepreneurial skills, in recent decades entrepreneurship education has distinctly evolved. Unlike conventional professions, entrepreneurship encompasses a diverse array of specific challenges in business creation and management. This makes it challenging to adopt a uniform educational approach. Hence, a blend of appropriate educational methods is essential. These range from inspiring

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learners through entrepreneurial narratives to fostering conceptual and practical skills for recognizing opportunities, validating business ideas, gaining knowledge and skills for managing processes and resources, and cultivating personal attributes crucial for entrepreneurial success.

The paper critically evaluates the potential of digital learning environments in nurturing entrepreneurial competencies. This is achieved by juxtaposing the outcomes of existing theoretical and empirical studies on the utilization of digital tools in entrepreneurship education. The research aims to address crucial questions: what, how, and by whom should entrepreneurship be taught; the distinct advantages and limitations of various digital tools in fostering specific entrepreneurial competencies; and to what extent digital learning environments can enhance the overall effectiveness of entrepreneurship education, considering the extent of resources committed. The array of digital tools encompasses virtual learning environments, interactive communication channels, multimedia products, engaging learning content, and specialized software for practical activities. The research adopts an exploratory methodology, applying qualitative methods. An online questionnaire was conducted to explore the perspectives of current entrepreneurship students in two Bulgarian universities.

The paper concludes that digital learning environments indeed have the potential to significantly enhance the overall effectiveness of entrepreneurship education. However, a discerning approach is essential when selecting the appropriate digital tools tailored to foster distinct entrepreneurial competencies, considering the specific stage of the entrepreneurial learning process. Different digital facilitators demonstrate varying degrees of efficacy in shaping the mindset and competencies of future entrepreneurs in determining entrepreneurial opportunities, cultivating relationships, conceptualizing, organizing, strategizing, and displaying commitment.

Introduction

In recent decades, the training of future entrepreneurs through higher education has become a significant area of research interest. However, dispelling doubts about the ability to acquire the skills necessary for creating and managing business is an insufficient condition for developing effective educational approaches and methods in entrepreneurship education. Unlike other professions with clearly structured knowledge and skills, entrepreneurship manifests itself in an extensive array of specific problems encountered in business creation and management practices. This wide spectrum necessitates the amalgamation of appropriate educational methods. The methods range from engaging learners with inspiring entrepre-

neurial narratives to developing conceptual and practical skills aimed at identifying entrepreneurial opportunities, validating business ideas, acquiring knowledge and skills for managing processes and resources specific to a business, and refining personal traits crucial to entrepreneurial success. In summary, there is a need to tailor educational methods to the set of entrepreneurial competencies which the educational process aims to cultivate. Concurrently, with the evolution of entrepreneurship education, we have observed the development and integration of diverse digital educational tools. These tools offer a range of functionalities and applications, constituting that which is referred to as a digital learning environment. This includes the creation of a virtual learning space, competitive communication channels, multimedia products, interactive learning content, specialized software for experimental activities, and more.

The aim of this paper is to present a critical review of the potential of digital learning environments for the formation (building) of entrepreneurial competences. It seeks to answer key questions: what should be taught, how and by whom; what are the specific advantages and limitations of various digital tools in building specific entrepreneurial competences; and to what extent can digital learning environments contribute to the overall effectiveness of entrepreneurship education, considering the scope and committed resources.

An online survey was conducted using a questionnaire to explore the perceptions of current students studying entrepreneurship at two Bulgarian universities.

The paper is structured as follows: a theoretical section comprising five segments focusing on a review of the literature defining the entrepreneurial mindset; discussing entrepreneurial competencies; exploring entrepreneurial training and education; investigating changing educational approaches and learning methods; and identifying digital technologies integrated into learning. The empirical part covers the data and methodology of the empirical study, followed by the results and discussion, concluding succinctly at the end.

Defining the Entrepreneurial Mindset

An essential concern of entrepreneurship education is the cultivation of an entrepreneurial mindset and competencies. This is related to the growing acknowledgment that possessing these mindsets and competencies is a primary prerequisite for both initiating an entrepreneurial career and achieving success.

Defining the entrepreneurial mindset remains a subject of ongoing debate. As revealed in Naumann's study (2017), scholars predominantly delineate specific attributes of entrepreneurial thinking, categorized into core and meta-cognitive traits. While the core traits are observable through an individual's behaviour, the latter remain implicit. Naumann identifies eight crucial definitions of an entrepreneurial mindset (Table 1).

Table 1. Entrepreneurial mindset definitions

Author	**Definition**
McGrath & MacMillian (2000, p. 15)	"ability to sense, act, and mobilize under uncertain conditions"
Ireland, Hitt, & Sirmon (2001, p. 968)	"way of thinking about business that focuses on and captures benefits of uncertainty" "growth-oriented perspective through which individuals promote flexibility, creativity, continuous innovation, and renewal"
Haynie & Shepherd (2007, p. 9)	"ability to adapt thinking process to a changing context and task demands"
Dhliwayo & Van Vuuren (2007, p. 124)	"way of thinking and acting about business"
Shepherd, Patzelt & Haynie (2010, p. 62)	"ability and willingness of individuals to rapidly sense, act, and mobilize in response to a judgmental decision under uncertainty about a possible opportunity for gain"
Baron (2014, p. 55)	"think, reason, make decisions, plan and set goals in relatively unique way"
Davis, Hall & Mayer (2016, p. 2)	"constellation of motives, skills, and thought processes that distinguish entrepreneurs from non-entrepreneurs"
McMullen & Kier (2016, p. 664)	"ability to identify and exploit opportunities without regard to the resources currently under their control", only working when entrepreneurs experience promotion focus

Source: Naumann (2017).

Naumann (2017) concludes that an entrepreneurial mindset fundamentally embodies "a way of adaptive thinking and decision-making in complex, uncertain, and dynamic environments." He identifies seven attributes which influence the entrepreneurial mindset: (i) five central -cognitive tuning and purposefulness, heuristic-based logic in decision-making, vig-

ilance, prior knowledge, and social interaction; and (ii) two meta-cognitive – metacognition and cognitive adaptability. He emphasizes that the effect of the first five attributes translates into recognizable and observable behaviours, while the latter two, in addition to influencing the first five, facilitate the entrepreneur's learning and adaptation.

Another significant contribution from Naumann's analysis is the correlation of the entrepreneurial mindset with four other entrepreneurship research themes: the integrated approach of entrepreneurial trait theory; resource-based theory; strategic entrepreneurship; and entrepreneurial education. Briefly described, these connections are as follows: (i) personal characteristics significantly influence the entrepreneurial mindset; (ii) the entrepreneurial mindset represents a distinct resource, often referred to as the fourth resource alongside natural resources, labour, and capital; (iii) the entrepreneurial mindset constitutes a vital element in the strategic entrepreneurship model, contributing to the development of a competitive advantage; and (iv) the formation of an entrepreneurial mindset is not only possible but critically important through entrepreneurship education. Despite differences in understanding the nature of the entrepreneurial mindset, a thorough study of its determining factors could significantly advance entrepreneurship education.

One of the latest studies on the entrepreneurial mindset by Daspit et al. (2023), which analyses 61 publications, proposes the following comprehensive definition: the entrepreneurial mindset is a cognitive perspective which empowers an individual to create value by recognizing and acting on opportunities, making decisions with limited information, and remaining adaptable and resilient in conditions often characterized by uncertainty and complexity. This study also examines the determinants of the entrepreneurial mindset and its impact on enterprise success, offering pedagogical insights. The scope of this paper also covers notions linking the entrepreneurial mindset to learning, particularly emphasizing the role of design-thinking in enhancing entrepreneurial thinking, along with the significance of workshops, labs, and modules. Specific pedagogical tools found to influence entrepreneurial thinking include simulations, specialized projects, and online discussions.

Daspit et al. (2023) emphasise the integrated learning approach as a key pedagogical technique for developing an entrepreneurial mindset. This approach synergistically combines passive and active learning through various techniques such as: lectures, learning logs, projects, case studies, brainstorming, prototyping and testing, personal reflections, self-directed assignments, interviews, and ideation exercises.

Towards Entrepreneurial Competences

As a distinct area of knowledge, entrepreneurial competencies emerged after the establishment of the concept of managerial competencies proposed by Boyatzis (1982). According to Boyatzis, competence can encompass any characteristic of an individual, such as: knowledge, motive, personality trait, self-perception, social role, and skill, that he applies in his work. Penchev & Salopaju (2011) conducted an extensive review of the literature on entrepreneurial and managerial competencies. As a result they propose two groups of entrepreneurial competences: (i) core entrepreneurial competencies needed at all times from the start-up (proactiveness, change, risk-taking, recognizing opportunities, flexibility, networking, decision-making, creativity, innovativeness), and (ii) entrepreneurial competencies crucial subsequently in the running of the company (leadership, communication, specialization, problem-solving).

Within the framework of the ENGAGE.EU European University Alliance project, one of the challenges is to synthesize innovation-entrepreneurship (inno-preneurial) competences. During this process, an in-depth review of available typologies was carried out, including those developed and presented by authors such as: Caird (2013), Moberg et al. (2014), Bacigalupo et al. (2016), Nakamoto & Rice (2017), Shaver et al. (2019), and Jung & Lee (2020). A synthesis of this review highlights the consistent presence of the following entrepreneurial competencies in all typologies, albeit under similar names: recognition of opportunities; taking the initiative; coping with uncertainty, ambiguity, and risk; motivation and persistence; self-efficacy and self-confidence; mobilizing others and collaborating; planning and management (execution). The fundamental inno-preneurial competencies are presented at four main levels: personal, functional, actionable, and thinking (Table 2).

Table 2. Inno-preneurial competences

Self	Taking the initiative	Motivation and persistence	Self-efficacy and self-confidence
Function	Creating and recognizing opportunities	Creativity and innovativeness	Decision-making under uncertainty
Action	Collaborating in diverse and interdisciplinary contexts	Mobilizing resources	Implementation
Thinking	System thinking	Future and disruptive thinking	Ethical and sustainable thinking

Source: Authors' elaboration based on the ENGAGE.EU Project.

Moreover, entrepreneurship trainers and practitioners utilize multiple digital-based frameworks, in order to describe and measure entrepreneurial mindset as a cornerstone during entrepreneurship education and its outcomes (Table 3).

Table 3. Digital based frameworks to describe and measure entrepreneurial mindset

Frameworks and Tools	**Source**
GET2 Test – General measure of Enterprising Tendency	http://www.get2test.net/
ASTEE Measurement Tool	Moberg et al. (2014)
Entrepreneurial Mindset Profile (EMP)	https://www.emindsetprofile.com/
EntreComp: The Entrepreneurship Competence Framework	https://ec.europa.eu
Entrepreneurial Mindset Index (EMI)	https://www.nfte.com/
MindCette Entrepreneurial Test (mcetTM)	https://www.mindcette.com/
CS-EMS College Students' Entrepreneurial Mindset Scale	Jung et al. (2020)
bdc Entrepreneurial potential self-assessment	https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/business-assessments/entrepreneurial-potential-self-assessment
Humanmetrics Entrepreneur Quiz	https://www.humanmetrics.com/entrepreneur
Truity Personality Test	https://www.truity.com/test/300-question-personality-test

Source: Authors' elaboration based on an empirical survey of entrepreneurial education in NBU and UNWE.

Training and Education for Creating Entrepreneurial Competences

Within the European Union countries, building entrepreneurial qualities is a priority in modern higher education. This priority stems from the "Bologna Process" in higher education, which emphasizes the development of entrepreneurial capacity and the entrepreneurial mindset among young Europeans. Entrepreneurship education today encompasses three distinct yet complementary objectives: (i) boosting motivation for entrepreneurial careers among students, (ii) equipping students with the skills to initiate and manage their own businesses, and (iii) fostering entrepreneurial abilities to identify and capitalize on opportunities. The main challenge arising from these objectives is: how can the traditional approaches and methods entrenched in higher education be evolved and customized to effectively achieve these objectives?

The significance of this challenge is rooted in the nature of entrepreneurial activity. It strongly reflects an individual's characteristics, is profoundly influenced by its implementation context, and is action-oriented rather than knowledge-focused. This characteristic presents substantial difficulties in defining a professional framework for training future entrepreneurs. Furthermore, integrating entrepreneurship education into a curricular framework designed for more mature and structured professions amplifies this challenge. In essence, entrepreneurship education faces the challenge of finding a balance between unifying tendencies, aligning various specialties, necessary disciplines, resources, and teachers, while adopting the most effective entrepreneur training methods.

In contrast to many well-established academic disciplines, where the learning process has proven effective, the training of entrepreneurs presents unique challenges. This is mainly due to the greater emphasis on developing personal qualities, when compared to the knowledge required for other professions. It is widely acknowledged that the development of personal qualities cannot be solely attributed to the educational process. It is also a product of the overall environment in which the personality of an individual is formed from early childhood. Education is an essential instrument, albeit one of many, in developing modern entrepreneurial competencies. For example, a literature review by Raposo & Paço (2011) underscores vital links between education, venture creation, entrepreneurial performance, and entrepreneurial activity. They conclude that "education and training should focus more on changing personal attitudes than on knowledge since the effects could be more significant for the business creation process and for overcoming perceived barriers to entrepreneurship".

Markowska (2011) offers an integrative model for entrepreneurial competence development, emphasizing that beliefs contributing to successful entrepreneurial performance are crucial. Entrepreneurs need to become agents of their own development.

Changing Educational Approaches and Learning Methods

After decades of scepticism regarding the possibility of instilling entrepreneurial mindsets and competencies through the formal education system, entrepreneurship disciplines and comprehensive programs are now widespread across all levels of formal education. However, unlike many established academic disciplines, entrepreneurship is still evolving and being continuously enriched by research on various entrepreneurial practice aspects.

A key discourse in this evolution revolves around the ultimate goals of entrepreneurship education. Should the focus be on increasing motivation for choosing an entrepreneurial career, thereby increasing the number of entrepreneurs? Or should the emphasis be on enhancing the quality of entrepreneurial initiatives, measured by increased innovation and higher added value? Both objectives are increasingly emphasized in traditional economic and management education. Given the role of entrepreneurship in addressing a range of societal and economic problems, priority should be given to boosting the number of entrepreneurs among the economically active population. In line with this, researchers like Raposo and Paço (2011) suggest that "education and training should focus more on changing personal attitudes than on knowledge since the effects could be more significant for the business creation process and for overcoming perceived barriers to entrepreneurship".

It is worth noting that three approaches to entrepreneurship education are recognized today (Lackéus 2015): (i) "about" entrepreneurship, which provides a general understanding of the phenomenon and directs students' attention to entrepreneurship as a career choice, (ii) "for" entrepreneurship, which promotes entrepreneurial practices and encourages students to become entrepreneurs, and (iii) "through" entrepreneurship, which introduces experiences aimed at training entrepreneurs. All three types of entrepreneurship education encounter specific methodological challenges regarding the creation of an entrepreneurial mindset. As is evident from various perspectives, an entrepreneurial mindset is not merely about acquiring knowledge but involves providing experiences and exposures akin to real-world situations.

Many educational pedagogues consider that traditional passive learning not only lacks motivational potential (aside from the influence of the teacher's personality) but also does not lead to the meaningful development of new competencies. This is due to its limitations in balancing the four elements in the learning process, as per Kolb's theory (Kolb 1984). Kolb's theory posits that learning occurs in a cycle of four stages: (i) concrete experience, (ii) reflective observation, (iii) abstract conceptualization, and (iv) active experimentation. Furthermore, Kolb's theory distinguishes four learning styles based on how learners acquire and process information. Gemmell (2017), when examining learning styles among entrepreneurs in science-intensive industries, concludes that a preference for learning through active experimentation over reflective observation suggests entrepreneurial innovation behaviour and significant entrepreneurial benefits. Solutions which leverage current technological advancements, especially digital technologies, are being sought, in order to o enhance the learning process by ensuring a balanced and meaningful participation of each of the four elements in Kolb's cycle.

Integrating Digital Technologies into Learning

Over the past nearly 80 years, digital technologies have undergone extensive development. Their widespread applicability has become particularly apparent in the last two decades. In the field of education, their application has led to several educational innovations, including but not limited to: Bring Your Own Device (BYOD), blended learning, flipped learning, and flipped classrooms, as well as online learning. Johnson et al. (2014) categorize emerging digital technologies into seven groups: consumer technologies (e.g., 3D video, mobile apps, telepresence); digital strategies (e.g., BYOD, games and gamification); enabling technologies (e.g., cloud computing, IoTs, real-time translation); internet technologies (e.g., badges and microcredits, learning analytics, virtual and remote labs); learning technologies (e.g., crowdsourcing and crowdfunding, digital identity, social networks); social media technologies (e.g., 3D printing, rapid prototyping, augmented reality); and visualization technologies (e.g., geolocation, machine learning, virtual assistants). Within these categories, there are specific technological solutions relevant to entrepreneurship education, which assist in preparing for, launching, and developing a real business.

Sousa et al. (2017) distinguish digital technologies with direct applicability in learning, which provide technological support for learning methodologies, contexts, tools, simulators, and support systems for digital learning (Table 4).

Table 4. Digital technologies in learning

Digital learning methodologies	**Tools and Simulators**
Project based-learning; problem based-learning; digital stories; online learning environments; digital moments; technology integrated teaching methods; digital storytelling; educational games; authentic learning	Web-based video; computerized environments; spatial science technology; slow-motion: narrated stop-motion animation; generic modelling language; digital video; augmented reality; design-based research; gamification; learning manager; simulation; computer-based teaching; library webinars
Digital learning contexts	**Support Systems for Digital Learning**
Collaborative communities; cooperative learning; digital combinational system; collaborative learning; flipped classroom using digital media; moving from fixing to online space; experiential online development; open educational practice; network participation.	eLearning; mobile learning; learning object repository; blended learning; blackboard; Moodle learning manager; twitter; videoconferencing; MOOCs (massive open online courses)

Source: Authors' elaboration based on Sousa et al. (2017).

Educational technologies, such as social media, serious games, and MOOCs, are increasingly being integrated into entrepreneurship education, presenting both opportunities and limitations. Social media, categorized as social software, is primarily utilized before and after online entrepreneurship education courses for preview and review. Learning platforms and face-to-face (F2F) methods still remain the primary modes of instruction and active learning in entrepreneurship education. Serious games (SGs) contribute to making entrepreneurship education more engaging and attractive when compared to courses without SGs. These games simulate real business scenarios and, based on action orientation, help participants learn entrepreneurial motivation, skills, and knowledge. Nevertheless, research on the benefits and effects of serious games on entrepreneurial competencies and entrepreneurial performance is still in its nascent stage. However, it is worth noting the observations about the challenges found in an empirical study (Fellnhofer 2015): "the use of a serious game in a digital game-based learning environment significantly influences entrepreneurial behavior and intentions when comparing players and non-players. However, the entrepreneurial attitudes toward entrepreneurship and toward entrepreneurship education are not significantly different between playing and not-playing survey participants."

A clear distinction should be maintained: serious games can encompass both traditional board games and digital games that occur entirely in virtual reality. On the other hand, digital educational tools such as MOOCs facilitate the accessibility of entrepreneurship education due to their flexibility in terms of time and distance. They provide a convenient way for students to learn at their own pace. However, they lack F2F interaction, frequent feedback, sufficient support services, and the self-discipline required to complete entrepreneurship courses.

In a follow-up study, Sousa et al. (2019) proposed possible concrete digital solutions for individual tasks arising in the entrepreneurial process, as well as in the training of entrepreneurs and entrepreneurship education of students (Table 5).

Table 5. Digital solutions to individual tasks arising in entrepreneurial process and training

Start-up stages	**E-education methodologies**	**Entrepreneurs and university's students' methodologies identification**
Business plan/ model	Project based-learning; problem based-learning; digital stories; online learning environments; technology integrated teaching methods; digital storytelling; educational games; active learning	Mentoring; Business counselling; Self-directed experienced learning; Education
Choice and structuring of the idea for the enterprise	Collaborative communities; cooperative learning; collaborative learning; network participation	Networking opportunities; Example of success
Pilot project of the entrepreneurial idea	Augmented reality; web-based video; gamification; simulation	Incubation/office facilities; Subsistence allowance; Seed capital; Social media & advertisement
Market and product analysis	Web-based video; narrated stop-motion animation; generic modelling language; digital video; augmented reality; gamification; simulation; webinars	Example of success; Training; Social media & advertisement

Start-up stages	**E-education methodologies**	**Entrepreneurs and university's students' methodologies identification**
Achieving sustainability of entrepreneurial idea	Collaborative communities; cooperative learning; collaborative learning; network participation	Education; Economic/Financial facilities; Family support
Evaluation of entrepreneurial skills and characteristics	Flipped classroom using digital media; cooperative learning; collaborative learning; moving from fixing to online space; experiential online development; open educational practice; online learning environments; technology integrated teaching methods; digital storytelling; educational games; active learning	Follow-up support; Co-operative education

Source: Authors' elaboration based on Sousa et al. (2019).

Based on an empirical survey on entrepreneurial education at NBU and UNWE, the main digital tools used in entrepreneurial education to facilitate learning methods have been systematized (Table 6).

Table 6. Digital tools used in entrepreneurial education facilitating learning methods (LM)

"About" LM	**"For" LM**	**"Through" LM**
Online Education Platforms (e.g. Moodle), Virtual Classrooms, Zoom, Microsoft Teams, Google Meet, Skype	Webinars, Online Mentoring, Online meets with Entrepreneurs	Business Modeling Apps, Video Pitching, Virtual Teams on Entrepreneurial Ecosystems (EE) Analysis
All Materials (PPPs, Scientific Papers, Books, Videos) Provided in Virtual Environment	Case Study Sessions, Social Media Contacts and Communication	Investors Online Sessions
Online Tests & Assessment	Quiz (e.g. Kahoot, Beekast, other tools as above described in Table 3)	Virtual Business Modeling, Virtual EE Analysis

Source: Authors' elaboration based on empirical survey on entrepreneurial education in NBU and UNWE (Hadjitchoneva et al. 2023).

Certain common general challenges encountered in entrepreneurship education can be stated as follows: (i) a relatively narrow frame for entrepreneurship education (fitting into frames developed for more structured professions); (ii) scepticism regarding the possibility of acquiring key entrepreneurial competencies through education; (iii) reluctance of both students and teachers to thoroughly explore the possibilities of digital educational tools; and (iv) significant barriers to developing original (for Bulgaria) educational content for use through digital tools.

Digital educational tools have the potential to offer a range of opportunities in shaping entrepreneurial mindsets and competencies, but they also come with limitations to their effectiveness. Specifically, in both case studies, opportunities are closely related to factors such as the rapid metamorphosis of the 'Digital Native' generations, availability of education platforms that are quick to adopt (Open Source, Paid, On Subscription Basis), diversity of technologies and tools to use, learning from everywhere and at any time, and time optimization (e.g., no transport time loss). Digital tools can provide an interactive learning experience, enabling students to engage with the material through quizzes, games, and simulations, thus enhancing their understanding and retention of concepts. However, observations indicate that students and teachers are reluctant to use these types of tools, even though these educational tools can be personalized to meet the individual needs of each educational course, teacher, and student. They can thus provide a customized learning experience which can be tailored to specific entrepreneurial competences to be strengthened. An advantage of digital educational tools is related to the need for physical infrastructure. For instance, using a digital learning platform like Moodle can eliminate or reduce overhead costs compared to traditional classroom-based training.

However, some opportunities may present or contribute to certain limitations. Certain specific limitations include: (i) internet and technical equipment or tools being equal possibilities (e.g., PCs & mobiles without microphone & camera, high internet speed as connectivity problems can disrupt the learning experience, affecting students' engagement and performance); (ii) readiness to learn and adapt quickly (both professors and students); (iii) dependence on motivation and self-discipline progress; (iv) ease of procrastination; (v) additional investments (e.g., paid subscriptions); (vi) varying levels of technical competencies and ability to progress (digital gap); (vii) anonymity challenges; and (viii) challenges related to long-term digital concentration. Digital educational tools can limit opportunities for collaboration, discussion, and feedback, as well as for hands-on, practical experience. This is a critical component of entrepreneurship

education. Furthermore, they can make it difficult for teachers to identify areas where students may need additional support.

Digital learning environments can contribute to the overall effectiveness of entrepreneurship education by providing a flexible and scalable platform for delivering entrepreneurship content to students. By leveraging digital tools such as virtual learning environments, multimedia products, interactive learning content, and specialized software for experimental activities, entrepreneurship educators can create engaging and interactive learning experiences which cater to the diverse learning styles and preferences of students. However, the extent to which digital learning environments contribute to the overall effectiveness of entrepreneurship education depends on several factors, including scope and committed resources. Notably, the following barriers can influence the effectiveness of digital learning environments in entrepreneurship education: (i) outdated, irrelevant, or poorly designed content will not be effective in developing entrepreneurial competencies; (ii) non-engaging and non-motivating digital learning environments will not ensure that students remain interested and engaged in learning; (iii) additional, timely, and useful support is not provided as students progress through the course; and (iv) difficulties with access to technology, instructional design expertise, and technical support.

In order to take advantage of the opportunities of and limit the constraints of digital tools for shaping entrepreneurial attitudes and competences, our research has determined the following areas for the development of entrepreneurial education: (i) using traditional learning methods and digital learning methods as complementary tools, leveraging each where it has the strongest impact for training purposes; (ii) more digitalization at the "about" level learning methods (e.g., MOOCS); (iii) more face-to-face learning methods at the "for" and "through" levels learning methods; (iv) structural systematic approach importance for building lasting digital technology learning methods; (v) focusing on creativity and critical thinking; and (vi) prioritizing a humanity-centric approach for excellence in entrepreneurship education.

Data and Methodology of the Empirical Study

Evaluating the opportunities and limitations of digital educational tools in entrepreneurship education is a challenge requiring the development of a system of indicators and relevant criteria to measure the impact of using specific tools. In order to implement this approach, however, it would be appropriate to conduct a continuous study. This would require a significant investment of research resources. Instead, the chosen research approach is based on a survey of the opinions of students who have undergone stud-

ies in entrepreneurship at two Bulgarian universities. During these studies, they acquired knowledge about the main areas of entrepreneurial competences and training methods for developing these competences. The opinions studied concern both the degree of relevance of specific training methods to the development of a given area of entrepreneurial competences and the degree of familiarity of students with the most common digital tools applicable in teaching and their relevance to competence development. For exploratory purposes, the questionnaire used in this study identified areas of entrepreneurial competencies synthesized by Man (2001): (i) Opportunity – skills and competencies related to recognizing and developing market opportunities through various means; (ii) Relationship – skills and competencies related to person-to-person or individual-to-group-based interactions, e.g., building a context of cooperation and trust, using contacts and connections, persuasive ability, communication and interpersonal skill; (iii) Conceptual – skills and competencies related to different conceptual abilities, which are reflected in the behaviours of the entrepreneur, e.g., decision skills, absorbing and understanding complex information, and risk-taking, and innovativeness; (iv) Organizing – skills and competencies related to the organization of different internal and external human, physical, financial and technological resources, including team-building, leading employees, training, and controlling; (v) Strategic – skills and competencies related to setting, evaluating and implementing the strategies of the firm; and (vi) Commitment – skills and competencies that drive the entrepreneur to move ahead with the business.

Over the last two decades, other approaches have been attempted to systematize entrepreneurial competencies. Some of these attempts are presented in this paper. However, in order to reduce the risk of differences in the interpretation of the content of some of the competencies, Man's systematization was preferred, since it is both sufficiently comprehensive and understandable by students. With regard to the methods used in entrepreneurship education, the study presents the most popular ones employed in the teaching of the surveyed students in the disciplines they study. They are as follows: Development of a business plan/business model/feasibility study; Role play; Case studies; Guest speakers from practice; Visiting companies; Internship/learning experience in a company; Project for a newly started company (business model analysis and development proposal); Company survival project (strategy for overcoming crises); Growth management project (scale-up, chain building); and Social Media (Blog, Facebook, Twitter, LinkedIn).

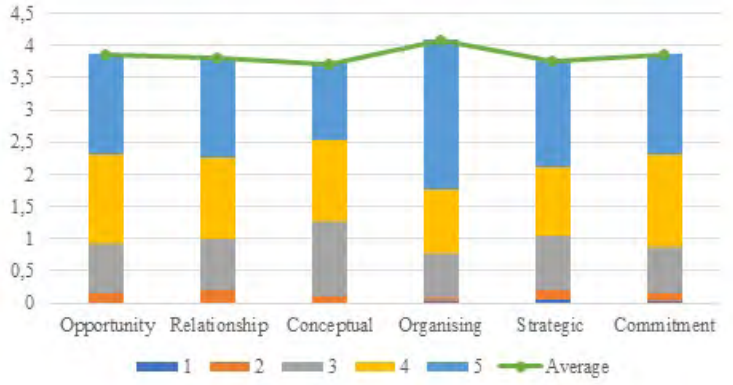
Finally, the questionnaire presents the following digital tools applicable in entrepreneurship education, for which students have to indicate their

level of familiarity and evaluate their application in terms of entrepreneurial competences formed: Virtual assistants (e.g., Siri, Google Assistant, Bixby and similar); Intelligent agent (interactive trainer, data organizer, etc.); ChatGPT, Virtual world (computer simulated environment and use of avatars); Flipped classroom (pre-training on a given topic in a virtual environment); Screencasting (video recording of the computer screen with audio included); Virtual learning environment; Interactive whiteboard; Augmented reality; Crowdsourcing (validating an idea by drawing on collective knowledge and experience); Learning and learning content management system (e.g., Moodle, eStudent and similar); Artificial Intelligence (data analysis, optimization, personalization, assessing); Massive Open Online Course (MOOCs); Educational games (Serious games); Authentic learning (learning by doing, developing a case study for a specific context, performing real tasks in a real environment); and Digital storytelling of entrepreneurial stories. The surveys were conducted in an online format between 13 May and 13 June 2023. Post-processing was done using the tools of descriptive statistics.

Results and Discussion

A total of 67 surveys were completed. Processing the gathered data yielded valuable insights and conclusions, enhancing our comprehension of the potential and limitations of digital tools in entrepreneurship education.

In terms of possessed entrepreneurial competencies, the students surveyed rated themselves relatively high, with average values ranging from 3.72 for conceptual skills to 4.09 for organizational skills (out of 5). Each competency area showed a range of scores, as illustrated in Figure 1.



Note: The lowest score is 1, the highest score is 5.
Figure 1: Distribution of students' skills self-evaluation
Source: Authors' elaboration.

Regarding the assessment of the role of training in developing competency areas, the survey recorded average scores. This indicated a belief in the thesis that entrepreneurial competencies are built through training. However, some students expressed scepticism, particularly concerning competences related to interrelationships, engagement with business, and associated responsibilities. Figure 2 presents the perceived effectiveness of various entrepreneurship education methods in building specific entrepreneurial competencies. For example, developing a business plan/ business model/feasibility study is viewed as a prominent learning method for competencies related to discovering entrepreneurial opportunities. Competencies linked to relationship building are significantly impacted by methods such as visiting enterprises and using social media. For strategic entrepreneurial competences, the most frequently indicated method is the development of a company survival project, followed by the development of a business plan/business model/feasibility study.

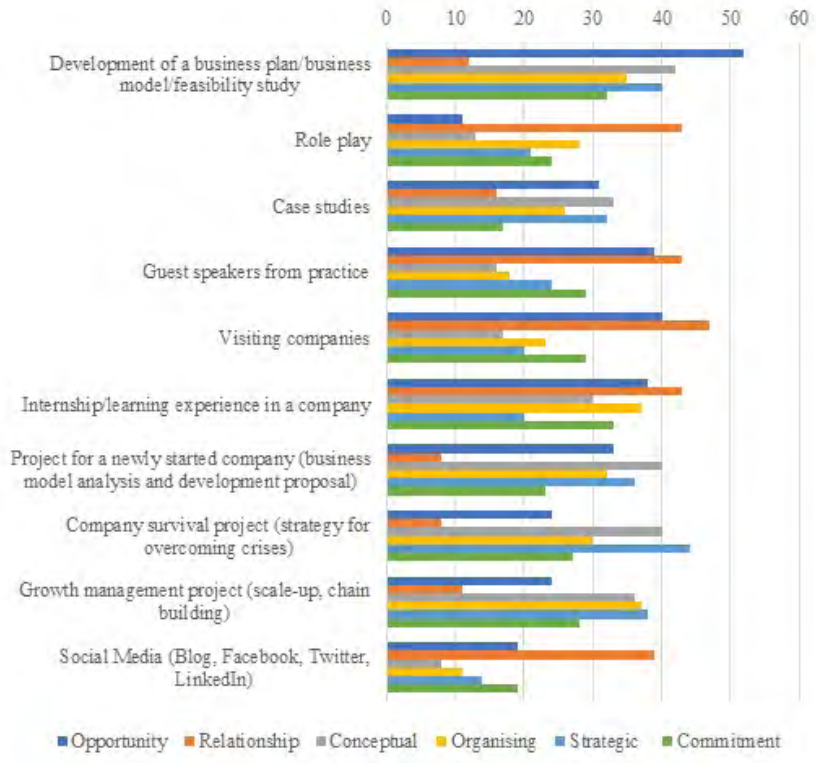


Figure 2: Effectiveness of methods for building entrepreneurial competencies (N=67)
Source: Authors' elaboration.

The applicability of digital tools within specific entrepreneurship education methods is largely determined by the nature of these methods. Digital tools find limited applicability, primarily serving as mediums. They can be used in methods such as lectures by practitioners, visits to enterprises, and internships (in a real environment). However, for other methods, digital learning tools can be applied to varying degrees. Social media emerges as the top choice, followed by the development of business plans and various projects tailored to different phases of an enterprise's life cycle.

In this context, it might be assumed that digital tools primarily contribute to the development of conceptual and strategic entrepreneurial competences. This assumption could be further validated through follow-up questions in the survey.

In the empirical study, students demonstrated varying degrees of familiarity with a range of digital learning tools. Virtual assistants (e.g., Siri, Google Assistant, Bixby, and similar), interactive whiteboards, and learning content management systems (e.g., Moodle, eStudent, and similar) were the most familiar, while Massive Open Online Courses (MOOCs), augmented reality, and virtual worlds (computer simulated environment and use of avatars) were the least familiar.

Concerning the role of specific digital educational tools in preparing students as entrepreneurs, students considered authentic learning (learning by doing, developing a case study for a specific context, performing real tasks in a real environment), intelligent agents (interactive trainer, data organizer, etc.), and artificial intelligence (data analysis, optimization, personalization, assessing) as the most significant. The high score of these tools was likely due to the natural desire of entrepreneurs to minimize risks related to lack of information and uncertainty.

On the other hand, students rated augmented reality, virtual worlds (computer simulated environment and use of avatars), and Massive Open Online Courses (MOOCs) as the least significant digital educational tools. Augmented reality and virtual worlds were perceived as visualization tools with no particular practical value for entrepreneurial careers, while MOOCs were relatively unpopular in respondents' educational practice.

In assessing the possibilities and limitations of digital educational tools in entrepreneurship education, evaluations by students of the role of specific tools in the formation and development of each group of entrepreneurial competencies proved crucial. Figure 3 illustrates the differentiation in the capabilities of specific digital tools for respective competency groups.

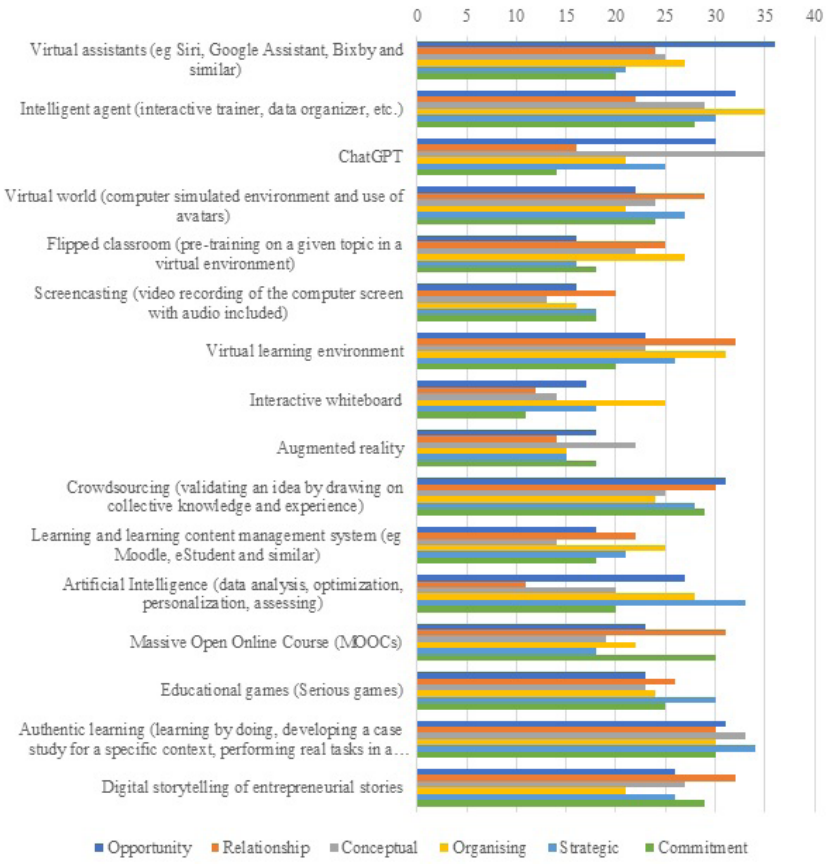


Figure 3: Capabilities of digital tools for building entrepreneurial competences (N=67)
Source: Authors' elaboration.

The assumption that digital learning tools, in general, would be primarily useful for the development of conceptual and strategic entrepreneurial competences, is not confirmed.

Albeit in varying proportions, digital educational tools are rated as almost equally important in the formation of each group of competences. By a small margin, they are rated as significant in the formation of organizational competencies and competencies related to the discovery of entrepreneurial opportunities. Unsurprisingly, digital tools are given the least priority in the formation of competences related to commitment to the business (commitment).

The utilization of digital learning tools in entrepreneurship education should align with learning objectives which vary according to the types of entrepreneurship education. These types correspond, to a significant ex-

tent, with the main phases of the entrepreneurial process: (i) assessment and self-assessment of own potential (attitudes, personal characteristics, behaviour) for entrepreneurship; (ii) selection and structuring of the entrepreneurial idea; (iii) development of a business model/business plan; (iv) securing financing (investors, business angels, etc.); and (v) business development and growth. Figure 4 presents the relevance of different digital learning tools to these entrepreneurial process phases. However, it is notable that some phases did not perceive any digital tool as particularly relevant, such as funding provision, where no digital tool was mentioned by more than a third of respondents.

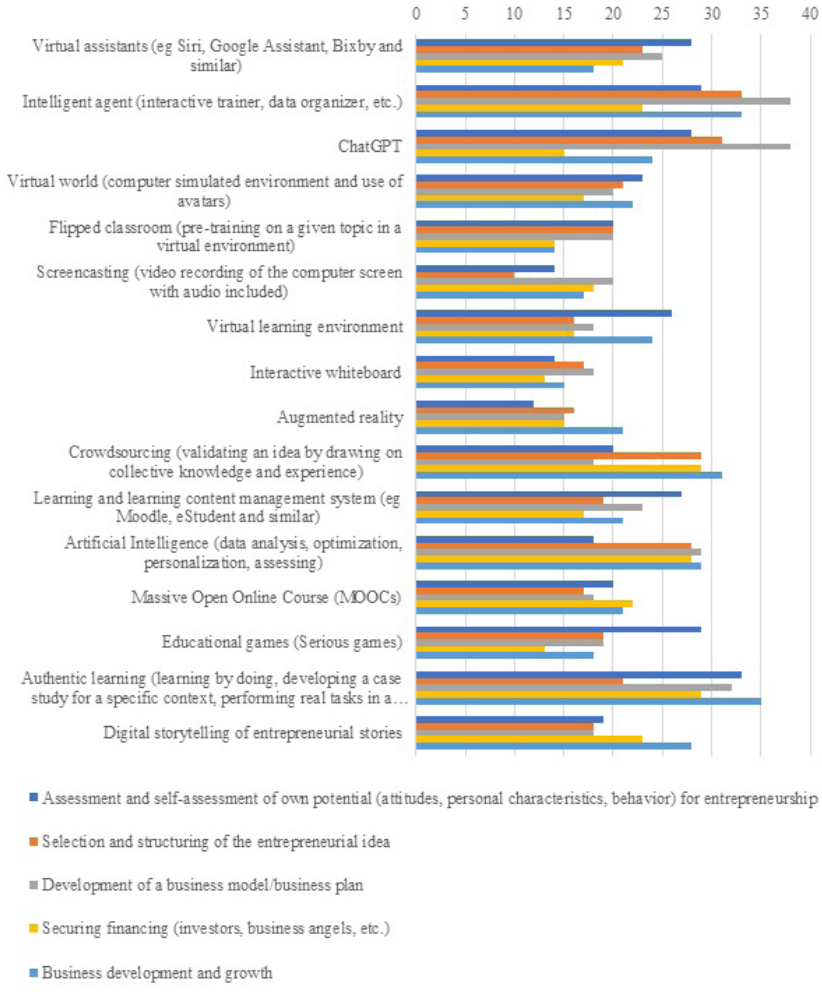


Figure 4: Capabilities of digital tools in terms of their relevance by entrepreneurial process stages (N=67)
Source: Authors' elaboration.

Assuming that a digital tool is significant, if mentioned by more than half of respondents, only two such tools were notable in one of the phases: Intelligent agent and ChatGPT in the Development of a business model/ business plan phase. Intelligent agent was close to 50% relevance in the Selection and structuring of the entrepreneurial idea phase, while Authentic learning was significant in the Assessment and self-assessment of own potential and Business development and growth phases.

Certain digital tools, such as Flipped classroom, interactive whiteboards, and augmented reality, garnered relatively low popularity, being mentioned by less than one third across all stages. This can be attributed to their perception as modern technical tools aimed at facilitating learning rather than providing practical useful content. Some digital tools were not particularly popular. For example, Educational games (Serious games) were perceived as most important in the first stage of the entrepreneurial process, ChatGPT at the third stage, and Digital storytelling of entrepreneurial stories at the fifth stage.

Favourites among all digital tools were Intelligent agent and Authentic learning, while the least relevant ones in the considered context were Interactive whiteboard, Screencasting, and Augmented reality.

In conclusion, the analysis of responses regarding the relevance of digital tools by the stages of the entrepreneurial process reveals a certain scepticism and perhaps an assumption that these tools cannot displace other traditional methods and approaches in acquiring the knowledge and skills needed to meet the challenges encountered in the different stages of the entrepreneurial process.

Conclusion

The empirical study conducted in this research sheds valuable light on the role of digital tools in entrepreneurship education. The insights acquired from analysing the data of 67 completed surveys provide a nuanced understanding of the possibilities and limitations that these tools present. In terms of Entrepreneurial Competencies, the self-assessment by students reveals a relatively high level of confidence, with particularly strong ratings in organizational skills. These self-perceived competencies are crucial, since they form the basis upon which the impact and effectiveness of education, including digital tools, are defined. Effectiveness of Training and Education Methods in building entrepreneurial competencies is also highlighted. The survey indicates a belief in the significant role which training plays in competency development. Methods such as developing a business plan/business model/feasibility study and engaging with case studies are perceived as particularly effective in enhancing entrepreneurial abilities.

The Familiarity and Perception of Digital Tools varied among students. Virtual assistants, interactive whiteboards, and learning content management systems were widely recognized and considered significant. On the other hand, augmented reality, virtual worlds, and Massive Open Online Courses (MOOCs) were less familiar and perceived as less relevant. This is possibly due to a lack of practical value in entrepreneurial careers or relative unpopularity. Strategic Alignment with Learning Objectives and Entrepreneurial Phases is crucial when integrating digital tools into entrepreneurship education. Aligning the use of digital tools with specific phases of the entrepreneurial process ensures their relevance and effectiveness. Tools such as intelligent agents and authentic learning were notable in certain phases. This suggests their potential in enhancing entrepreneurial skills. Perceived Significance of Digital Tools in Entrepreneurship Education, when viewed through the lens of different entrepreneurial competencies and phases, demonstrates a cautious approach. On the other hand, certain tools such as authentic learning and intelligent agents were recognized for their importance. Others such as interactive whiteboards and augmented reality were seen as less relevant, reflecting a certain scepticism about the disruptive potential of digital tools.

Overall, the empirical study emphasises the need for a nuanced and thoughtful approach when integrating digital tools into entrepreneurship education. It highlights the importance of aligning these tools with specific learning objectives, competency development, and entrepreneurial phases to optimize their impact. The findings present a valuable resource for educators and stakeholders who aim to leverage digital tools effectively in shaping the entrepreneurial mindset and competencies of future business leaders.

Further research and continued exploration in this domain are essential, in order to maximize the potential of digital tools in entrepreneurship education. While this study provides valuable insights into the role of digital tools in entrepreneurship education, it is important to acknowledge its limitations. One significant limitation is the relatively small sample size, comprising 67 surveys from students in only two universities in Bulgaria. This restricts the ability to generalize the findings to a broader population. Additionally, focusing on a specific geographic region limits the cultural and contextual diversity of the study.

Thus, future research would aim for a larger and more diverse sample size, including participants from various universities, regions, and even countries. This would provide a more comprehensive understanding of the role of digital tools in entrepreneurship education on a global scale.

Conducting longitudinal studies would offer insights into the evolving impact of digital tools on entrepreneurial competencies over time. Fol-

lowing students throughout their education and into their entrepreneurial ventures could provide valuable data on the long-term effectiveness of digital tools. Comparative studies between different educational systems and cultural contexts could shed light on the influence of these factors on the perception and effectiveness of digital tools in entrepreneurship education. Understanding these variations is essential for tailoring strategies to specific contexts. In addition, combining quantitative insights with qualitative research methods, such as interviews or focus groups, would provide a deeper understanding of students' perceptions, motivations, and challenges in the use of digital tools. Qualitative data can establish nuances which quantitative data might miss. Future studies could involve industry professionals and stakeholders in the research, who would offer practical insights into the specific digital tools most relevant and effective in real-world entrepreneurial scenarios. In-depth studies of specific digital tools could even be considered, in order to evaluate their impact on particular competencies. Understanding the unique contribution of each tool can enable educators to tailor their usage to specific learning objectives.

Addressing these limitations and pursuing these recommendations will contribute to a more comprehensive understanding of the role of digital tools in entrepreneurship education and enhance the effectiveness of educational strategies aimed at fostering entrepreneurial competencies.

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POSTPHENOMENOLOGY AND EDUCATION: FROM CYBORG STUDENTS TO IMMERSIVE CLASSROOMS

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Abstract

This analysis uses a postphenomenological lens to provide insight into the shift occurring within society at large. It focuses on the educational domain, and arguing for a reevaluation of instructive approaches. Philosophical research into technology and education is seemingly lacking, and so this article seeks to fill the present gaps. This analysis initially delves into the postphenomenological frameworks of technological mediation, intentionality, and dimensions, to clearly differentiate the embodiment and cybernetic relationships as they are understood within various texts. Following this the epistemic and practical dimensions of these relations are explored to then be juxtaposed with the descriptive argument of the overall cultivating cybernetic relationship between human user and technological artefact in contemporary times, using the smartphone as the core example case study. Finally, a normative argument is made considering the previous cybernetic insight, in that if the classroom setting is to evolve and adapt,

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it too must embed technology within the classroom, lessons, and overall educational engagement. It represents an equalizing technological balance of cybernetic student and immersive classroom where the intentionality of user, technology, and classroom blend together to continue the cultivation of our blossoming relationship with technology.

Keywords: Postphenomenology, cybernetics, education, technology, mediation

Introduction

"We shape our tools and thereafter our tools shape us."
Marshall McLuhan

Technological change and innovation is in an upward spiral: the peak is unknown and perhaps will never actually be achieved. Attempting to grapple with these changes is and will continue to be paramount for an individual's and society's thriving and well-being. Very few today can avoid the power of the internet and smartphone and in fact many have sought to harness them for their own benefit.

Technological being is the status quo of our postmodern Lifeworld and adaptation is a necessary constant in such. The qualitative and quantitative changes brought forth through technology require a degree of mindfulness for a beneficial adaptation. Without adapting, one risks falling victim to the crushing power of technological change: being swept to the side of obscurity. Much of the work in the philosophy of technology and Science and Technology Studies aims to address these changes, adaptations, and realities we have cultivated through our continued development, implementation, and uses of technology, advising how best to understand and engage with such. They seek how to best shape the tools that shape us, and what to expect in their mediative roles. This article intends to add to these dialogues of technological design and adaptation into an area with little contemporary focus.

Not so much attention has been paid to the educational realm with such studies into technology, although that may change perhaps with the recent surge of ChatGPT usage. This aim of this article is to highlight one of the significant factors leading to the shift the educational environments are enduring and offer a potential way to address the challenges new technologies are creating. The notion of educational institutions needing to adapt

and update their style of engagement in this regard is not a novel idea. As a teacher of seven years, ranging from kindergarten to university, I have witnessed the accumulating need to rethink the approach of the necessary job of education, with countless others in the realm agreeing as well. A neo-Luddite approach, in which technological innovations are restricted or removed from the classroom, seems counterproductive to the realities of our Lifeworld. There are calculators, easy to find summaries of any book, and now an artificial intelligence capable of writing whole essays in every pocket. To shy away from such may only weaken the ability of future generations to cope and engage effectively and beneficially with technology. Instead, with an understanding of the technological frameworks at work within the phenomenological experience of a young learner, I will reveal an avenue to consider: I will be calling the "Immersive Classroom."

In order for this all to be made clear, I will first be introducing the Postphenomenological framework which I will use as the basis of this discussion. I will highlight two of its technological mediative relationships which will be juxtaposed to two nodes in the educational environment: student and class. The role of technology as a mediator of education is not a new phenomenon. Books, blackboards, and pencils all stand as historical examples which we humans have harnessed in order to educate and push younger generations further than the predecessor generation. Instead, by focusing on the total environment of a young learner in today's contemporary Lifeworld, I will show that we are moving towards a more intimate relationship with technology, one which is making us increasingly cybernetic. This is not to say we are or will be physically infusing ourselves with technological artifacts, but instead our sense of agency, intentionality, and being, is one which is co-constituted by technology ever more than before, and more deeply than before. For the younger generations growing up with such a co-constitution, for example, with the widespread use of smartphones in their earlier years, such a state of being comes comfortably. It is due to this cybernetic state of being that classrooms themselves must adapt and become cybernetic as well – an immersive classroom able to engage with and hook into the young learner cyborgs.

Technological Mediations, Intentionality, Dimensions

Postphenomenology is a relatively new contender in the philosophy of technology. Taking inspiration from, and then quickly detaching from the technological determinism of Heidegger and his *On the Question Concerning Technology*, postphenomenological thinkers attempt to understand the relational and phenomenological nature surrounding technology. At the

core of this field is human-technology relations, as set out by Postphenomenology' s founder, Don Idhe. This highlights the different connective ways technology mediates our experiences in our Lifeworld (Idhe 1990). There are a few different relations which mediate these experiences, and the two I will be focusing on are the embodied and background relations. From there I will dig into these mediational relations further by introducing the next level of each relation, in what Peter Verbeek describes as cybernetic relations, where the intentionality of the human user and technological mediator of the phenomenon begins to blur in an overlap of thought and action. Intentionality here should be best understood as a directed towardness the world: to think, perceive, and act in a certain way in relation to the environment one finds themselves in. Following this I will briefly describe the epistemic and practical dimensions of technological mediations as outlined by Kiran, since it will play an important role in the following two sections on user/smartphone cyborgs and immersive classrooms.

To begin, let's look at the embodiment relation of technological mediation (Idhe 1990: 72):

(I-Technology) -> World

In this relation the user (I) and technology merge to then go towards and experience the world. I, the user, embody a technology which is then used in an interaction. A pair of glasses, or a blind person's cane, stand as examples of such. Both artifacts are brought into bodily awareness, and become a kind of extension of the self, enabling a different perception that is then acted upon. The intentionality in this relation can clearly be assigned to either of the entities: human or artifact. A human user engages with and enacts their will toward the world through the use of this technology, which allows for and augments specific intentional actions. I intend to use a pair of glasses in order to see the world more clearly, and my embodied artifact enables and can even augment such an intention. The artifact, too, can have its own intentionality. It is a different kind of intentionality, but an intentionality nonetheless. To borrow from Verbeek's work (which will be engaged with more below), technological intentionality is the "specific ways in which specific technologies can be directed as specific aspects of reality" (Verbeek 2008: 392). So, in the case of embodiment relations, the technology has its own intentionality through its design, intended use, and implementation for specific reasons. Factors, such as semiotic affordances, can impart some influence on the human user, as if the technology itself is telling one how to use it: small nudges for what and how of use, although not in a determinant way. The pair of eyeglasses are shaped in such a way

that nudge me to put them on a specific way, and the specifics of the glass itself fit me. It intends to be used in this way (though not determined), and by this person. Embodiment relations see a play between the human and technological intentionality which can be distinguished quite easily. In a sense, embodiment relations allow for users to direct their intentionality toward the world through technological mediation, which also imparts its own intentionality into the totality of the experience. We intend to use a pair of glasses in order to see the world more clearly, and they intend for it to be so as well, showing what it offers: in this case, a clearer vision if used in this way.

The other relation of note in this discussion is the background relation, which sets the technological mediator on the other side of the equation (Idhe 1990: 108):

I -> (Technology-World)

In the background relation the technology is merging with the world, or environment, which I, the user in the equation, goes on to experience. A refrigerator or air conditioning unit stand as examples of this relation. These sorts of technology are off to the side, remaining outside our mode of awareness through the transparency of both the design (a desire to make such technologies quieter, for example) and widespread use (ubiquitous existence) such technologies have. They form the backdrop against which our realities are manifested. Refrigerators keeping food from going bad or an air conditioning unit to keep a room at a constant desired temperature are intentional actions of these technologies. I (most of the time) do not need to impart my own intentionality onto such, except to set the degree by which such technologies operate to manifest my own environment. Like the embodiment relation, there is an interplay between intentionalities. The intentionalities here lay at how I, the human user, wish to designate the technology for my own relation to my background and environment, to then experience it in the totality of the world within the mediational equation. What temperature to set, where to position a chair, how much to close the blinds are up to the human user to decide in their intentionality. However, each, in their own way, afford and advertise such, imparting their own sense of intentionality influence over the user, similar to that of the embodiment relation.

One can see how the embodiment and background technological mediations play an important role in understanding our Lifeworld and the push and pull that technological mediation has in influence of intentionality. However, such relations do not stop there. Whereas glasses and re-

frigerators have a clear line between artifact and user, both physically and intentionally, what happens when these lines blur? What occurs when one's thinking, actions, and being within the world are co-constituted by technology, beyond and deeper than what we have already discussed? The result is cybernetic relations, where embodiment relations become fusion, and background relations become immersive.

When the intentionality of an embodied action is a fusion between human user and technological artifact, it appears as such:

(I/Technology) -> World

The small, but significant, difference here is that where embodied relations had a combination of I and technology, there is now that fusion which brings both together to then impart and experience the world. An easy physical example of this is a pacemaker, a fusion of human and artifact that come together. While such a physical fusion is seeing limited current use, the fusion I will be focusing on here is that of the intentionality, as laid out by Verbeek (Verbeek 2008, 7: 391). The thinking and action made towards the world in this relation is unclear. The question is whether the user or technology holds primacy in the decision making and is the result of the intentionality of both fusing together. Assigning the total agency or intentionality becomes lost in the blurring lines between human user and technology. Did you want to click on that online advertisement, or did your comprehensive data enable your technological artifact to do so, by means of using effective targeting? But is not also your data *you* in some way? This is that blurring phenomenon between human and technology in fusion relations. In the following section I will be arguing for this fusion relation to be our current reality in regard to our smartphones which cultivates a certain overall attitude to technological being in such a way.

Much in the same way, an environment which cybernetically connects with technology becomes an immersive one (Rosenburg & Verbeek 2015: 22), as outlined as such:

I <-> (Technology/World)

There are two important notes to be made about the difference between background and immersive relations. First, much like the fusion relation, technology and the world, or environment, become intertwined together, to a degree much greater than the previous background relation. The second is the connection between the user, I, and the cybernetic environment, in which there is now a back-and-forth relational interplay. This is where the immersive environment is responding to, and being responsive with,

the user. It adapts to the user accordingly, and also imparts its own will. An example of an adaptive cybernetic immersive technology is a smart refrigerator which identifies what food is present and/or needed, and what the human user may enjoy eating or cooking, and then makes an order to the local supermarket, and advises what one could make. This framework will be used for the final section of immersive classrooms.

Before moving into cyborg students, and then immersive classrooms, I will be describing the epistemic and practical dimensions of technological mediation which play a key role in understanding how these relations help manifest our realities we all live in. As discussed by Kiran, technologies shape and reshape humans and environments through their mediation effects. There is a paradoxical two sidedness to any technological mediation that one needs to be considered, if one wishes to fully understand what is phenomenologically occurring (Kiran 2015: 123). When in the epistemic dimension, this two sidedness is expressed as magnification-reduction, and the practical dimension as enabling-constraining.

When one endeavors into an epistemic activity, in order to understand or know something, and uses technology to assist them, the technology is able to help magnify certain aspects to help focus the human user's intention. At the same time it reduces other aspects, which also assist with the focus of activity, putting such in the blind spot (Kiran 2015: 128). Its intentionality is this ability to assist in this way. One can imagine the magnifying glass as a good example of this magnification-reduction phenomenon. When one peers into a magnifying glass, there is something being magnified and being focused upon, while at the same time the focus on anything outside of the desired focus is reduced and blurred, put to the side and forgotten. One is thus entering into a new world which was manifested by the technological mediation. Attention and focus is finite, and technologies assist in directing such in the epistemic dimension of technological mediation.

The echoes of the practical dimension are similar to that of the epistemic. Enabling and constraining are also related to attention, but also capability – potential and actual. Technologies, and the kinds of intentionalities they give off, afford us the kinds of potentials and actualities they enable, while also constraining other kinds (Kiran 2015: 131). It does this through a user's understanding of its possibilities and affordances of such. The door of a refrigerator tells us where we should open it, while also constraining us to other methods we could use. We can see, with little to no effort, where to place our hand to open it, and without a thought in our minds of where else we could once the perceptional gestalt strikes us (not without conscious

effort, anyways). It does not determine an action, but nudges and influences us, constraining other possibilities we might imagine. The affordances of a directed and outlined pavement of a street do not restrict our ability to drive elsewhere, it just heavily hints at the best possible way to do so to avoid collision and accidents.

These dimensions will become important in the discussion of cyborg students They will highlight the epistemic and practical expressions that are occurring, which can then be addressed in the immersive classroom inversely and adaptively. Intentionality stands as one of the most powerful forces in an individual and collective way of being, since it is the very basis of our directed being in the world. Technology is a key factor in how such intentionalities are realized, created, adapted, and acted upon in our Lifeworld. The dimensions reveal in what ways our sense of being and intentionality are influenced through the use of technology, either through magnifying and reducing, or enabling and constraining. Let us now turn to see how smartphones have cultivated a cybernetic relationship with us, blurring the lines between human and machine.

Cyborg Students – A fusion of intentionality

With a clear understanding of technological mediation and the various differing relationships which connect us and our environments, I will now move on to making my claim that the widespread and ubiquitous use of smartphones constitutes a cybernetic fusion relationship on the basis of intentionality. This shows a further intertwining and distortion between human and machine. This argumentation of cybernetic being stretches back as far as Haraway, who states "By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs," when referring to the metaphysical and ontological changes technological being brings (Haraway 1991). The argument of cybernetic being made soon pushes this understanding further, given that smartphones were first popularized as early as 2007 with the first iPhone. It follows that this cybernetic phenomenon is more present and underway in younger people who began using such artifacts in their childhoods/early teenage years. Once the relationship is established I will highlight some of the epistemic and practical dimensional factors that require consideration when thinking of the immersive classroom. The following section will then provide the conceptual framework which will seek to balance out the cybernetic equation, creating a more beneficial learning experience.

As discussed in the previous section, a fusion relationship is one in which the human user and technology have melded into one agent towards and engaging with the environment. We and our smartphones are cultivating such a relationship, both with us and the smartphone partnership and with cybernetic technology as a whole. As was argued by Verbeek in another article, technology also has the power to moralize and normalize our thinking and actions (Verbeek 2011). By adding in a new entity into our being and environment, our attitudes and perspectives can shift. A speedbump forces one to slow down or risk damaging their vehicle, thus normalizing a behavior in a particular environment. In a much grander way, one cybernetic tool in wide use opens up our acceptance for others. What can be and is normal, is partially constructed by the technologies that make up our environment.

The smartphone is a handheld artifact which finds itself in nearly every pocket. Is is a device which enables users to communicate and engage with our Lifeworld endlessly (until the battery runs out) and instantly (so long as there is data or Wi-Fi). It carries with it vast potential for epistemic and practical uses for users, among others. We engage with it as a means to an end, in order to achieve our various and varied goals and desires. The smartphone, too, acts upon us, as it vibrates or pings with notifications, and comes equipped with various smaller tools which enable a wide range of personalized activity. Its intentionality is its potentiality of tasks, and actuality of equipment to do so. The totality of smartphone intentionality comes to fuse with our own, thus producing the proto-cyborg. The extent to which contemporary life has become embedded with smartphone technology points to multistabilities (variations of use) which appear to be cultivating and establishing a cybernetic relation. Looking at a couple of these multistable variations of the use of smartphones will allude to this cybernetic relationship of intentionality, such as QR coded menus and wireless earbuds.

QR coded menus are the keys used to unlock the digitized menu in restaurants. Using this technology, restaurant patrons are able to freely access the menu without needing a physical copy handed to them. The normal intention of sitting down at a restaurant is to (usually) order food to eat. Walking through the overall phenomenological experience of a QR code menu will reveal a cyborg relation of intentionality of user and smartphone at play. At first, the smartphone, and QR code to scan it with, enact their intentionality over the user through their potentiality of connection. If one wishes to engage with their own intentionality of wanting to see the menu to make an order, customers abide by the intentionality given to them by

the technologies: they must blend. There is the very clear affordance of a QR code located on the table for all patrons to see, and the server may even indicate it as well to reinforce. Once scanned, the patron (and user) is able to have full control over their viewing of the menu on their miniature digital portal. The choice of food will be the result of the patron/user themselves, influenced in part by how the digital menu is constructed (and perhaps one day by the user's own data nudging towards an informed preference). The user themselves will choose what they want to eat, enacting their own intentionality, which is then passed over to the server (who may or may not be using smart technology themselves to record the order).

While the specific intentionalities in this situation are distinguishable, the QR code-smartphone-digital menu and user choice of order, the overall product is one which is blended. If one wishes to accomplish their goal of ordering and eating food at this restaurant, there must be a blending together of technological and human user intentionality. One might say such an experience does not happen if a physical menu is requested, which is true, but these QR coded digital menus are becoming more commonplace as their popularity catches on (for both patron and restaurant).[1] In fact, following the COVID-19 pandemic, some restaurants did away with a physical menu all together, requiring the technological intentionality altogether. The practical and epistemic benefits of using one's smartphone to have easy access to a digital menu while at a restaurant represents one such multistability of smartphone usage. Its embeddedness in the activity of ordering food, a cross-cultural and popular activity, is one which requires the blending together of human user and artifact intentionalities. The total intentionality undertaken in this phenomenological experience is one in which is a combination of the two. It is not merely a user relating to the world through the smartphone, as an embodiment relation would be, but instead the two becoming one, in order to complete an objective. The smartphone "wishes" to be used to scan and have its screen read, as it was equipped for such a purpose, and the user wishes to view the menu to order. QR coded digital menus are just one empirical example of the growing fusion we have to our smartphones.

Personalizing one's self-sound environment through the physical embodiment relation of user and Bluetooth-connected earbuds represents another multistability of smartphones that indicate a cyborg fusion relation

[1] May, L. 2022. How the Pandemic Gave QR Codes New Life and They're Here to Stay. *QSRweb,* 1 March 2022. Available at: https://www.qsrweb.com/news/how-the-pandemic-gave-qr-codes-new-life-and-theyre-here-to-stay/ (accessed 18 June 2023).

of intentionality. Stacey Irwin's *Digital Media, Human-Technology Connection* is a rigorous postphenomenological investigation into earbud embodiment relations. It will be discussed here in relation to the intentional use of producing a self-sound environment,. The smartphones which enable such, represents another example of a cyborg relation. As Irwin explains, "Embodiment is a crucial part of the earbud experience because earbuds are wrapped around the body and plugged into the body" (Irwin 2016: 81). Earbuds themselves represent an embodiment relation, where the human user brings this technology, typically now small earbuds that fit into the ear, into their bodily awareness, and it disappears into transparency as it is used. The world itself is shifted with the embodiment of earbuds, since users are able to create their own sound environment in a way that has not been seen before. Irwin states, "The atmospheric soundbed of the world is different from an earbudded soundscape. Both might be chosen and embodied, reverberating and permeating, but the earbudded one is personally selected so it is more exclusive of any random sound. Atmospheric sound encompasses all of the lifeworld sounds available at any given moment… But earbudded sound is almost always chosen and selected and individualized" (Irwin 2016: 88). The smartphone today carries the potentiality of enabling earbudded sound to create our own self-sound environment. Similar to that of the QR code menu, there is a blending and fusion of intentionality between human user and smartphone. The smartphone reveals its intentionality through its potentiality, which will be acted through the human user to create an actuality: their chosen, selected, and individualized sound environment. The use of Bluetooth earbuds furthers this phenomenon, since users are able to be wireless with their use of the technology, pushing the transparency of the embodiment relation for earbuds, furthering it into background acknowledgement. The intentional act of producing a self-sound environment was manifested through a combination of the human user's desire for individualized sound and the smartphone's intentionality through potentiality and affordances of use. Fusing the two together enables the cyborg to have near complete dominion over the sense of sound.

These two empirical cases of smartphone multistability show a clear fusion of intentionality, leading to this cultivation of cybernetic being, for both the smartphone and future possibilities. Those young enough to have had such powerful and ubiquitous technological mediation present even in childhood are bound to have psychological and metaphysical ease in such a state of being. In the years of understanding and creating their own sense of identity, belonging, and relating to their environment, the smartphone has

been there to assist them in such: being a part of such. Considering now the epistemic and practical dimensions of this relationship will yield the specifics to focus upon for the following section on immersive classrooms, and how best to educationally engage with these young cyborgs.

For cybernetic smartphone use, as with any technological mediation, there are the magnifying/reducing and enabling/constraining phenomena present. I will be identifying one aspect of both sides of both of the dimensions, to be used as the focus for the immersive classroom's adaptability and engagement.

When considering the epistemic dimension of user/smartphone cyborgs, what is magnified and reduced is the avenue by which epistemic inquiry is generated and addressed. What this means is that thanks to the quick and easy accessibility of things such as Google or ChatGPT, there is an understanding that answers to questions can be given with little to no effort on part of the asker. What is magnified is the extent of the power which such technological mediums hold for our ability to engage in epistemic activity; the extent to which it has us enter new worlds and realities through the domination of our attention. What is reduced is one's own epistemic abilities outside these worlds and realities it allows for entry. That is, if the magnifying domination is not understood or is not harnessed, the power and ease which smartphones have provided us in our fusion relationship can overshadow our own epistemic development and capabilities; or at least allow for an easier time for such to occur. This potentiality can lead to incomplete or self-serving epistemic attitudes, such as those in epistemic bubbles or echo chambers. Anything outside the magnifying scope of this epistemic domination brought about by smartphones becomes reduced, such as the actual role technology is playing in epistemic activity and others means and ends of epistemic inquiry. An immersive classroom will need to grapple with the magnifying power of the epistemic dimension of such technologies, in the way that information is quickly, easily, and comprehensively provided, while also considering what could be being reduced in such, like information not immediately and easily present, what could be being left out of such, and how/if to address it.

In a similar manner the practical dimensions of this relationship enable and constrain, in accordance with and towards this information power. If one desires to understand the framework or process behind some question or assignment, using our technological tools may at many times yield the quick and easy answer. It is true that one could ask ChatGPT to explain the process behind a mathematical concept, but the cultivating allure of obtaining answers and responses with the click of a button is enabled by our

smartphone technology. It also enables multiple potential avenues, since there are books, articles, videos, songs, and many other mediums available by which information is shared online. What is constrained, much like the refrigerator door handle, is other ways in which we might approach such problems. Anything outside the magnifying focus is reduced, and also constrained. Those multiple potential avenues may be constrained if one's results or data does not enable its presence. The affordances provided are strong and hard to ignore: the pavement is strong and unwavering. An immersive classroom will need to account for the enabling nature of technology, in order to afford certain avenues for answers to inquiry, such as having questions easily searchable online, while constraining other ways of engaging with content, in a creative and novel way.

Understanding how best to adapt to the epistemic and practical dimensions of cybernetic living will allow for education to engage with students in a way that does not diminish the power of technological being, but instead seeks to use it for its own beneficial ends. It does not shy away: it doubles down.

Engaging with and educating cyborgs – Immersive Classrooms

With new technologies come new manifestations of reality. New realities require new ways of adapting and engaging with them. Educational environments find themselves filled with the proto-cyborgs of user/smartphone intentionality fusion, and as was highlighted at the end of the previous section, new degrees and depth in the dimensions of the technological mediation require addressing, if education is to be effective and beneficial. The informed prediction that this postphenomenological analysis will yield is one which seeks to balance out the equation of technological power, rather than ignore or resist it. To start, let us briefly look at a simplified classroom mediation framework:

Student -> Learning Objective

Here, the students represent the subjects, the learning objective the object, and the connective tissue is everything surrounding the class which leads to the student connecting to the learning objective. This, like technology, is the thing which creates the subject and object in the equation to begin with. When a student enters a classroom, there is a learning objective sought after in that space and environment. What connects the two is the content molded and delivered by the teacher, which directs the student to an understanding of the learning objective. A book, practice exercises, video, lecture, the mediational tools to connect the two, vary from teacher to

teacher, class to class, and, sometimes, student to student. This simplified framework has been the one used for many classes for many years, however, technology has challenged its process.

Let us look at this same relationship but now with the lens provided by the previous section on cyborgs:

(Student/Technology) -> Learning Objective

The cyborg student enters the educational relationship already fused together with the intentionalities of the technology. The numerous multistabilities of postmodern living in our technological Lifeworld have made this relationship almost a necessity. The class content and learning objective are now dealing with not just a student, but the technology that has fused its intentionality with such. Thus, because of that, if the content or learning objective attempts to separate the cyborg, there is understandable resistance. In terms of their state of being, this is who they are, the technology molded by the world has turned back and molded us. So any content or learning objective that dismisses this does a disservice to the cyborg. Smartphones may be only the tip of the cybernetic iceberg of future developments of human and machine. This is but one reason why any educational environment which neglects the epistemic and practical power of technologies such as ChatGPT and Google (both accessed via the cybernetic smartphone) may prove ineffective at preparing future generations.

Instead of a quasi-Neo-Luddite stance of technology in education, the relationship ought to be addressed in the following conceptual framework – the immersive classroom:

(Student/Technology) <-> (Learning Objective/Technology)

In this relationship between student and learning objective, the technology balances itself out. The content, too, sees the change of immersive cybernetic environments, in which it is engaging back and forth between both the cyborg student and cybernetic learning objective. Both are now acting upon one another, actively adapting and molding each other, and ultimately differing on an individual and classroom basis. The learning objectives are themselves intertwined with technology, meaning that a learning objective is inherently technological in its being: what is learned is what the objective is, as well as the technology enabling one to achieve such an objective. A cyborg student is now immersed in the activity of education, in which they too play an active role in the cultivation, creation, and achievement of a learning objective, with technology being infused throughout. Engaging now with the cyborg dimensions cultivated by user/

smartphone fusion will show why this immersive classroom will consider the two-sidedness of the epistemic and practical issues discussed last section, providing pragmatic examples for each.

With the epistemic dimension, there was an understanding of the domination of attention due to the magnifying capabilities of cybernetic being with smartphones. An immersive classroom can jump onto this and use it as a benefit, using the technology of the class and individual student to enter the world of the content. By using the epistemic power of domination a classroom can create a degree of focus enabling students to engage deeply with their own learning, and reduce the noise of anything which does not pertain or add to the specific area under inquiry. Allowing students to have music via earbuds while independently working would reduce literal noise, in order to achieve focus, while only having specific screens available to reduce the distracting allure of other content. One of the biggest examples can be interactive lessons using a variety of different technological tools. This would enable students to engage in different styles of understanding, avoiding a constant singular approach. This will both open up new possibilities, and have students discover the ways which work best for them. In these ways, students can come to understand for themselves the epistemic dimensional power of technology, seeing it as a tool to be used to assist in magnification, and reducing in accordance with our own intentions, instead of falling victim to the domination outright. Self-reflective questions after each example would help students realize such for themselves.

With the practical dimension an immersive classroom needs to consider the enabling and constraining nature of technology, using both sides to its advantage and showing students it in action. Constructing content that plays on the enabling nature in a similar way to the reducing of before, an immersive classroom can afford the versatility of information mediums and avenues of learning and production. Rather than allowing the easy affordances of technology to provide the answer, an immersive classroom can generate its own structure of affordances. These are used in partnership with the students: creating an open ended and creative engagement. Students can work together in real time via technology on shared documents or use AI like ChatGPT as an assistive tool on some projects. What can be constrained is that which weakens the learning objective or classroom experience itself. This means the cybernetic learning objective must remain fluid enough to adapt and flow with the interests and production of the students, disallowing those afforded potentialities and actualities which would constrain a beneficial educational experience by tapping into the personal use and bias through technology. It needs to enable that which

aids education, and constrain that which does not. Through this cybernetic learning in the practical dimension, students can also come to see the enabling and constraining nature of technology, teaching them in a meta sense the powers and dangers of such, and how best they can harness it for themselves.

The central theme to this conceptual framework of the immersive classroom is to both capitalize on the benefits and reduce the risks of the cultivating cyborg intentionality of user/smartphone use, as well as to teach students themselves how they may best use the epistemic and practical dimensions of such for their own benefit. By immersing students in a learning objective embedded through technology, they will easily be able to "hook" into it and engage with it openly, comfortably, individually, and collectively.

Conclusion

The end point to which our technological molding will take us is unknown, although one can determine the general trajectories we find ourselves on. This article seeks to highlight one possibility of trajectory, in which we are becoming cybernetic, at least in terms of our intentionalities in the world. Our way of thinking and acting is being increasingly co-constituted by technology. For this reason, we must consider what this means and adapt accordingly. Our environments are being added to with new innovations, and with any change in the environment comes a change in us.

Through a postphenomenological lens, I argued that we are cultivating a cybernetic relationship through our smartphone use, and that younger generations have this cultivation already in place. They have been molded into a new kind of student with the entirety of the internet at their fingertips and they are well aware of such.

Like nearly every other realm, technology poses a challenge for education. It has changed the status quo. The environmental context is different, and so education itself must adapt and operate differently. A classroom full of proto-cyborgs must be engaged with in a different way than those who came before. Technology must be embedded throughout to balance out the mediational equation. Constructing an immersive classroom which seeks to connect with the technological being of students offer the opportunity not only to engage with students in a more creative and individualized manner, but also to instruct students on a deeper level about the power such a technological relationship holds. The "what's" of learning objectives in a classroom must take a back seat to the "how's" and "why's", since students learning for themselves will be essential, and technology will be the cybernetic partner in such a process.

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NEW TECHNOLOGIES, CHILDREN AND THE *GENERAL DATA PROTECTION REGULATION (GDPR)*: THE GAP BETWEEN COMMUNICATION, INFRASTRUCTURE AND THE APPLICATION OF AN EUROPEAN REGULATION!

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Abstract

One of the central concepts of the General Data Protection Regulation (GDPR) is the "*data subject*". This notion in relation to the establishment of rights and obligations for *controllers* and *processors* becomes a common denominator in the implementation of this Regulation at the level of all Member States of the European Union. The *Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR)* was adopted, in order

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to protect the privacy of *data subject,* whether a parent, an young person or a child. However, starting with the title we can identify two different actions: to assure *the protection of personal data* and *the free movement of this data* within and outside the Union borders. In this context we must take the following into account: the reality of conceptual gaps in interpretation of this document; old or non-existent infrastructure; legislative bottlenecks and the risks involved in the protection of children's data. Are parents, young people or children properly informed about their rights and the risks to which they are exposed in an era of digitalization? Can online school ensure the protection of children? Does the current infrastructure allow the optimal implementation of the General Data Protection Regulation? My research, in this context, has the aim of identifying gaps between information, infrastructure and the application of the GDPR, using the content analysis method and the questionnaire as a qualitative method of research. The expected results of this research are awareness by state institutions about the risks to which children are exposed in an era of digitalization and the awareness of the controllers about the obligation to ensure the protection of children's data in the processing process.

Keywords: GDPR, children, new technologies, controllers, rights, risks

Introduction

The idea of a united Europe was launched on May 9, 1950 by Robert Schuman, French Foreign Minister, at the initiative of Jean Monnet. The "*Schuman Declaration*" is considered the birth certificate of the European Union. The founding principles of the Union are freedom, democracy, equality and the rule of law, the promotion of peace and stability, respect for fundamental human rights and freedoms.

Used for the first time in 2000 in the *"Treaty establishing a Constitution for Europe"* (unratified), the motto of the European Union is *"united in diversity"*. In accordance with this motto, the Union was created to promote and maintain peace and prosperity on the continent while allowing the free manifestation of the identity of the nations of its Member States through recognition, sharing and promoting their culture, traditions and languages.

Jacques Delors introduced the concept of *European personality*, an idea built around promoting a unitary conception of the situation of the family in society on the economic and social organization of the Member States of the Union but also on the existence of a unitary organization at the level of

cities and rural worlds. Therefore, in addition to national identity, the European citizen also develops, manifests and experiences a European identity in a multicultural *federation of national states*[1].

The concept *"culture"* will instead be related to the definition in Edward Taylor: *"Culture ... is the whole complex that includes knowledge, beliefs, arts, morals, right, habits and any other acquired capabilities and habits of [a man] as a member of society"* (Tylor 1903).

Therefore, the moral norm, regulation, law, the idea of acceptance and tolerance in relation to the other are the basis for defining a civilization. *"Tolerance makes the difference possible and the difference makes tolerance necessary"* (Walzer 2002) in the edification and maintenance of human civilization as a unity in diversity, reason and temperance being the central elements of defining tolerance.

In a multicultural space such as the European Union, communication allows the construction of relations between cultures. Common elements and identity differences can be identified through communication, but also middle paths which enable the construction of connections, and the construction of intercultural bridges. However, interculturality can have two valences: positive, by promoting tolerance, or negative, by promoting aggression, intolerance (Charaudeau 2001: 342).

Given the concepts of *communication* and *interculturality* in a positive sense, in elementary terms, *communication* is the relationship established in a certain context between a *sender* and a *receiver*. By using a *channel* and a *code*, the communication allows the transmission of a message that serves a pre-established *purpose*. In a multicultural society, communication is essential in building a climate of cooperation and maintenance of peace and security for the common good. The language of communication and decoding a message becomes a pillar in the affirmation of identity but also in the understanding and observance of identitarian differences.

[1] "*Delors is famous for the seemingly contradictory concept of a 'federation of nation states', which he developed by perusing a large volume of legal and constitutionalist scholarship. With great simplification, the core of the concept may be described as the appropriate attribution of selected powers and competences to different levels of authority, according to the specific requirements of achieving effective joint public policy decisions. In this concept, Delors accepts and expresses the reality of two potentially conflicting needs: providing Europe with an emotional identity (he sometimes speaks of 'giving Europe a soul') and guaranteeing its Member States their culture and traditions.*" Salm C., W. Lehmann. 2020. "Jacques Delors Architect of the modern European Union". *EPRS European Parliamentary Research Service*. Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652009/EPRS_BRI(2020)652009_EN.pdf (accessed 6 June 2023).

In the article *"Language, discourse and cultural identities"* Patrick Charaudeau wondered if *language has an identity role* (Charaudeau 2001: 342). Paraphrasing Charaudau, subject to application of the General Data Protection Regulation (GDPR) at European Union level and at the same time in each Member State in part, I wonder if in this context regulation can hide a manifestation of national cultural identity[2] in terms of how to act.

In accordance with some provisions of the General Data Protection Regulation (GDPR) each Member State is entitled to intervene in completing or clarifying certain provisions of this document[3]. Decisions thus left to the Member States in managing the implementation of the provisions of a European document, even through its provisions, give a national perspective on its interpretation and application.

We do not intend in this article to verify the reasons for the elaboration and approval of normative acts complementary to the *General Regulation on Data Protection (GDPR)* at Member States level, but we are interested in how the identity element at the national level can govern the emergence and approval of new normative acts at the level of national legislations. This process is very important if we take into account the fact that the respect for the right to privacy and the protection of personal data are two European goals of placing the human being at the heart of society. Even if from a territorial point of view this regulation has limited effects, applying to all European citizens, regardless of the headquarters of the operators, its implementation becomes global. "*Data protection focuses on the data subject.*" (Şandru & Alexe 2018: 9).

I. The European Union, the personal data protection and the digital age

The European Union is a dynamic space. It is a space still expanding, and a space where there are Member States and candidate countries, Member States with their own organization and functioning system and their own

[2] "*Toutes nos sociétés, y compris les européennes, sont composites et tendent à le devenir de plus en plus: mouvements complexes d'immigrations et d'intégrations d'un côté, multiplication du communautarisme (groupes régionaux, sectes, associations) de l'autre. Car les communautés se construisent autour de valeurs symboliques qui les inscrivent dans des filiations historiques diverses, mais des communautés qui sont davantage des "communautés de discours" que des communautés linguistiques. Pour traiter de l'identité culturelle à travers les faits de langage, il faut se référer à ce qu'est la compétence langagière.*" (Charaudeau 2001: 343).

[3] *General Data Protection Regulation,* Article 58, paragraph (6); Article 84, paragraph (1); Article 85, paragraphs (1) and (2); Article 90, paragraph (1). Avalaible at: https://www.dataprotection.ro/servlet/ViewDocument?id=1262 (accessed 20 January 2023).

rhythm of development and their own evolution. The Union's constants are given by the search for an administrative and political unit that allows for a common unitary development and course of action for all Member States.

The application of the provisions of the *General Data Protection Regulation (RGPD),* simultaneously and directly in all Member States of the Union is another test of its functioning in a sensitive area: that of ensuring the protection of personal data both within the borders of a Member State and at Union level or outside its borders.

The pandemic caused by the COVID-19 virus but also a series of older trends in the evolution of relations at the European Union level lead to a prioritization of public and private sector digitization. It encouraged the development and use of programs which include the development of activities through the use of new technologies in virtual reality. Electronic communication between state institutions and citizens is increasingly encouraged. The pandemic created the premises for the manifestation of the era of digitalization at Union level.

Education, health, commercial and administrative activities have all long ago moved online. A recovery program of € 750 billion was adopted at European Union level in July 2020 for all Member States. Entitled "*Next Generation EU",* this program aimed at "*mitigating the economic and social consequences caused by the COVID-19"* pandemic.

According to the European Commission, Europe needs to be "*better prepared for the challenges posed by environmental and digital transitions*".[4] This European program funds a number of national programs in all Member States that meet the conditions imposed by the European Commission, in the form of grants (€ 312.5 billion EUR) and loans (€ 360 billion EUR).[5]

In a digital but also united Europe, in a Europe of interoperability of public services but also of digital transformation for the benefit of the citizen, in a Europe that respects the legal framework for the protection of people's privacy but also of personal data, we will have to consider, however, that "*among the most significant characteristics of contemporary society are: Speed, Information Voracity, Vulnerability.*"(Vasiu 2011: 10)

Any access to a webpage, any action on the internet leaves "*digital traces, "which combined and connected in a virtual ecosystem*" can lead to "*a transposition of personality into a virtual environment"* (Vasiu 2011: 14–15).

[4] Ledroit, V. 2023. Plan de relance européen: où en est-on? *Toute l'Europe,* 24 October 2023. Available at: https://www.touteleurope.eu/economie-et-social/plan-de-relance-europeen-quelles-sont-les-prochaines-etapes/ (accessed 20 January 2023).

[5] See note 4.

Data subjects, real or false personalities created in the online environment, whether they are children, young people, parents or grandparents do not have, technically speaking, control over the fact that, by simple activity on the internet, they become subjects of profiling and possible virtual attacks.

The European Commission notes the increased frequency of large-scale attacks on information systems and the tendency "*to use information and communication technologies for the purpose of political, economic and military supremacy, including through offensive capabilities*".[6] The protection of personal data has become a complex and sensitive subject in the age of digitization. The rights of data subjects, as set out in the *General Data Protection Regulation (GDPR),* bring the individual to the center of democratic societies.

The right to privacy and the right to the protection of personal data has become the core of human existence. If information means power, "*personal information contributes to the existence of the ability to influence or manipulate*" (Şandru & Alexe 2018: Preface). There are risks of a loss of autonomy, control, free will by data subjects or even their recording of material or financial losses as a result of cyber attacks. The protection of personal data decreases with the increase of the degree of exposure of people in the virtual environment.

An era of digitization, the future, therefore, comes with risks to all that human rights mean, but if the individual is exposed, democratic societies must find, by supporting this direction, a common denominator between digitization and respect for fundamental human rights and freedoms.

II. General Data Protection Regulation: between the obligation to inform data subjects about their rights and the existing gaps in communication between public institutions and citizens

In the article "*Une analyse sémiolinguistique du discours*", Patrick Charaudeau talks about the phenomenon of psycho-socio-linguistic construction of meaning, made by the intervention of a subject, himself psycho-socio-speaker[7]. For Patrick Charaudau, speech should be included in a

[6] CEDO: România plătește daune de peste 300.000 EURO unor asociații de proprietari de păduri. *LegalUp.* Available at: www.legalup.ro/protectia-datelor-personale-in-era-informationala (accessed 20 June 2022).

[7] "*[…] Pour nous, il est une façon parmi d'autres d'aborder le discours qui consiste à insérer celui-ci dans une problématique d'ensemble qui tente de relier les faits de langage à certains autres phénomènes psychologiques et sociaux: l'action et l'influence. Dès lors, il s'agit de traiter du phénomène de la construction psychosocio-langagière du sens, laquelle se ré-*

broader issue, as a whole, in which the facts of language are closely related to certain other psychological and social phenomena: *action* and *influence*.[8]

Language having several dimensions: *cognitive, social* and *psychosocial* and *semiotic*[9] is multidimensional. Its social and psychosocial dimension involves questioning the value of the exchange of signs and the value of the influence of the facts of language.

The act of language has a certain intentionality generated by a concrete exchange situation and is built in a space that involves constraints and strategies. The interdependence between external influences (*external space*) and internal influences (*internal space*) involved in the act of language, determined the appearance of a three-level structuring model: *situational, communicative* and *discursive*.[10]

In a democratic society, regulation generally involves official, normative, institutional communication. This includes the elaboration of texts of normative acts, their public debate, their adoption in a final form, as

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alise à travers l'intervention d'un sujet, lui-même psycho-socio-langagier." Charaudeau, P. 1995. "Une analyse sémiolinguistique du discours". *Langages*, 29e année, n°117. Larousse, Paris, 96–111. Available at: http://www.persee.fr/web/revues/home/prescript/article/lgge_0458-6X_1995_num_29_117_1708 (accessed 20 June 2023).

[8] See note 7.

[9] "*[…] le langage comprend plusieurs dimensions […]:**une dimension cognitive** à propos de laquelle se pose la question de savoir s'il y a une perception du monde et une catégorisation de celui-ci indépendante de l'action du langage ou si celles-ci se font nécessairement à travers le langage.[…]**une dimension sociale** et psycho-sociale à propos de laquelle se posent des questions sur la valeur d'échange des signes et sur la valeur d'influence des faits de langage; […]**une dimension sémiotique** […]à propos de laquelle se posent les problèmes de rapport entre la construction du sens et la construction des formes […]*". (Charaudeau 1995: 96–97).

[10] *"Cette série d'hypothèses définissant l'acte de langage comme naissant dans une situation concrète d'échange, relevant d'une intentionnalité, s'organisant autour d'un espace de contraintes et d'un espace de stratégies, et signifiant dans une interdépendance entre un espace externe et un espace interne, nous a amené à proposer un modèle de structuration à trois niveaux: — **Le niveau du situationnel** pour rendre compte des données de l'espace externe, et qui constitue en même temps l'espace de contraintes de l'acte de langage. […]*". *— **Le niveau du communicationnel**, lieu où sont déterminées les manières de parler (écrire), en fonction des données du situationnel, en répondant à la question:* "*on est là pour comment dire ?*". *(qu'il soit communiquant ou interprétant) se pose la question de savoir quels* "*rôles langagiers*" *il doit tenir qui justifient son* "*droit à la parole*" *(finalité), montrent son* "*identité*" *et lui permettent de traiter d'un certain thème (propos) dans certaines circonstances (dispositif). — **Le niveau du discursif** […] lieu d'intervention du sujet parlant, devenu sujet énonciateur, lequel doit satisfaire à des conditions de légitimité (principe d'altérité), de crédibilité (principe de pertinence) et de captation (prin cipes d'influence et de régulation) un ensemble d'* "*actes de discours*"*, c'est-àdire, finalement, pour réaliser un texte.*" (Ibid., 102–103).

agreed between state institutions and civil society and their approval. From the moment of their approval, the provisions of the official texts enter into force and they produce effects seen into benefits or sanctions. We must therefore distinguish between text, context and situation, seen as a contractual condition of production – interpretation of normative acts.

*"We will consider that a text is composite in terms of its semiological materiality (so pluri - coded) [...], in order to have meaning it depends on a plurality of semiological subjects, which are combined in a textual integration, send to each other (in ratios of "anchor" or "relay" as proposed by R. Barthes in his time) and cannot dissociate from each other". (*Charaudeau 1995: 108)

The official communication, which regulates the functioning of a society, whether we are referring to the state and the nation, or whether we are considering Europe as a union, involves a kind of "*communication contract"* [11]established between official institutions and citizens with a dual identity: a national and a European identity.

If at international level there are treaties, conventions, pacts, protocols and Charters, as cooperation and regulatory documents, respectively a *"communication contract"*, then at European level we have, directives and regulations. Laws, ordinances or government decisions intervene at the national level.

If Member States are required to transpose European directives into national law, the regulations shall apply directly. In this case, it is also the *Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR)* that is the subject of the present research. As a text of normative act, GDPR allows analysis from a discursive perspective. This is a multidisciplinary interpretation with several branches: pragmatic, psychosociological, rhetorical – enunciative or socio – ideological.[12]

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[11] "*Ce que nous proposons, c'est de construire une typologie, non des formes ni des sens, mais des conditions de réalisation des textes, c'est-à-dire des* "*contrats de communication*"*, en considérant qu'il existe des contrats plus ou moins généraux qui s'enchâssent les uns dans les autres, et que chacun de ceux-ci peut donner lieu à des variantes.*" *[…]*" (Ibid., 105–106).

[12] "*Toute linguistique est, d'un certain point de vue,* "*naïve*"*, dès lors que sa théorie et ses outils d'analyse ne sont pas centrés sur la découverte des enjeux de signification psychosociale des actes de langage qui s'échangent dans une communautés socioculturelle. C'est dans la charge sémantique des mots, à travers les modes d'organisation du discours qui les intègrent, et en situation d'échange que l'on peut repérer les traces de ces enjeux. Une telle approche du discours se situe donc dans diverses filiations: pragmatique, psychosociologique, rhétorico-énonciative, voire socio idéologique. Elle est par nécessité pluridisciplinaire.*" (Ibid., 110).

For the beginning, we will review the situations of the use of "*to inform*" *(*5 occurrences*)* / *"be informed"* (9 occurrences)/ *"information"* (137 occurrences) in the text of the regulation in order to identify at the same time the parties of the "*communication contract"*, the *status, social role* and place of each actor in the communication *hierarchy*, and the *balance of power* established between the actors during the communicative act.

Although one of the actors, in this case, is a public institution *(an operator),* given the kind of communication addressed *(official communication)*, the complex context of the implementation of the *General Data Protection Regulation (RGPD)* allows the approach of situational competence to be addressed, in the sense that Patrick Charaudeau gives to this term in "*Langue, discours and cultural identity*"[13].

We can say that the *subject* who has the obligation to inform the data subject, i.e. the right to communicate something to someone is the *operator* (a public institution in this case). This establishes the context and the reasons for initiating the communication: *What* does it communicate? *Why* do they communicate? *How much* do they communicate? *How* do they communicate? *What is the purpose* of the information which is being transmitteds?

In order to continue the creation of the context of the communication, as provided for in the *General Data Protection Regulation,* it should be noted that the terms of the "*communication contract"* are set out in the Regulation. However, compliance with the conditions under the communication act (time, place and mode of transmission of messages) is supervised by a national supervisory authority and also by a network of supervisory authorities created at the level of the European Union and functional in each Member State.

In accordance with the provisions of Article 51 of the *General Data Protection Regulation* paragraph (1) and (3), Member States shall ensure that one or more independent supervisory authorities are responsible for monitoring the application of the provisions of the RGPD. This is in order to

[13] "*La compétence situationnelle exige de tout sujet qui communique et interprète qu'il soit apte à construire son discours en fonction de l'identité des partenaires de l'échange, de la finalité de l'échange et du propos qui est en jeu. L'identité des partenaires de l'échange détermine "qui parle à qui ?", en termes de statut, de rôle social et de place dans les rapports de force (hiérarchie). C'est l'identité du sujet parlant qui détermine et justifie son "droit à la parole". La finalité de l'acte de communication se définit à travers la réponse à la question implicite: "Je suis là pour quoi dire ?", et à ce niveau de généralité, on y répond en termes de visées discursives ("prescription", "sollicitation", "information", "incitation", "instruction", "démonstration"). […]*" (Charaudeau 2001: 344).

protect the fundamental rights and freedoms of individuals with regard to the processing of and with a view to facilitating the free movement of personal data within the Union. Where several supervisory authorities are established in a Member State, it must designate the supervisory authority representing the others in the European Committee.

Although the logic of the balance of powers places the operator in the position of authority in the communication, the beneficiaries of the information transmitted by the operators are the data subjects. In practical terms, operators are obliged to communicate to data subjects that they have rights in communicating with them and the informed data subjects can choose how much they want to exercise their rights.

The power of the information transmitted to data subjects is directly proportional to the power at their disposal in relation with the operators, as can be seen in the table below.

Opinion/ Article	***"to inform"/ "be informed"***
opinion (42)	*"3. A data subject who has obtained restriction of processing pursuant to paragraph 1 shall be informed by the controller before the restriction of processing is lifted. […]"*
opinion (61)	"*The information in relation to the processing of personal data relating to the data subject should be given to him or her at the time of collection from the data subject, or, where the personal data are obtained from another source, within a reasonable period, depending on the circumstances of the case. Where personal data can be legitimately disclosed to another recipient, the data subject should be informed when the personal data are first disclosed to the recipient. Where the controller intends to process the personal data for a purpose other than that for which they were collected, the controller should provide the data subject prior to that further processing with information on that other purpose and other necessary information. Where the origin of the personal data cannot be provided to the data subject because various sources have been used, general information should be provided."*
opinion (66):	*"To strengthen the right to be forgotten in the online environment, the right to erasure should also be extended in such a way that a controller who has made the personal data public should be obliged to inform the controllers which are processing such personal data to erase any links to, or copies or replications of those personal data. In doing so, that controller should take reasonable steps, taking into account available technology and the means available to the controller, including technical measures, to inform the controllers which are processing the personal data of the data subject's request."*

Opinion/ Article	***"to inform"/ "be informed"***
opinion (87)	*"It should be ascertained whether all appropriate technological protection and organisational measures have been implemented to establish immediately whether a personal data breach has taken place and to inform promptly the supervisory authority and the data subject."*
The opinion (60)	*"The principles of fair and transparent processing require that the data subject be informed of the existence of the processing operation and its purposes. The controller should provide the data subject with any further information necessary to ensure fair and transparent processing taking into account the specific circumstances and context in which the personal data are processed.[…]"*
Article 7 Conditions for consent, paragraph 3	*"3. The data subject shall have the right to withdraw his or her consent at any time. The withdrawal of consent shall not affect the lawfulness of processing based on consent before its withdrawal. Prior to giving consent, the data subject shall be informed thereof. It shall be as easy to withdraw as to give consent."*
Article 8 – Conditions applicable to child's consent in relation to information society services (the holder of parental responsibility over the child must be informed about the processing)	*"1. Where point (a) of Article 6(1) applies, in relation to the offer of information society services directly to a child, the processing of the personal data of a child shall be lawful where the child is at least 16 years old. Where the child is below the age of 16 years, such processing shall be lawful only if and to the extent that consent is given or authorised by the holder of parental responsibility over the child. […]* *2. The controller shall make reasonable efforts to verify in such cases that consent is given or authorised by the holder of parental responsibility over the child, taking into consideration available technology.* *3. Paragraph 1 shall not affect the general contract law of Member States such as the rules on the validity, formation or effect of a contract in relation to a child."*
Article 11 Processing which does not require identification, paragraph 2	*"2. Where, in cases referred to in paragraph 1 of this Article, the controller is able to demonstrate that it is not in a position to identify the data subject, the controller shall inform the data subject accordingly, if possible. In such cases, Articles 15 to 20 shall not apply except where the data subject, for the purpose of exercising his or her rights under those articles, provides additional information enabling his or her identification."*

Opinion/ Article	***"to inform"/ "be informed"***
Article 13 Information to be provided where personal data are collected from the data subject, paragraph 1	*"1. Where personal data relating to a data subject are collected from the data subject, the controller shall, at the time when personal data are obtained, provide the data subject with all of the following information:* *(a)* *the identity and the contact details of the controller and, where applicable, of the controller's representative;* *(b)* *the contact details of the data protection officer, where applicable;*
Article 13 Information to be provided where personal data are collected from the data subject, paragraph 1	*(c)* *the purposes of the processing for which the personal data are intended as well as the legal basis for the processing;* *(d)* *where the processing is based on point (f) of Article 6(1), the legitimate interests pursued by the controller or by a third party;* *(e)* *the recipients or categories of recipients of the personal data, if any;* *(f)* *where applicable, the fact that the controller intends to transfer personal data to a third country or international organisation and the existence or absence of an adequacy decision by the Commission, or in the case of transfers referred to in Article 46 or 47, or the second subparagraph of Article 49(1), reference to the appropriate or suitable safeguards and the means by which to obtain a copy of them or where they have been made available."*

Opinion/ Article	***"to inform"/ "be informed"***
Article 15 Right of access by the data subject, paragraph 2	*"2. Where personal data are transferred to a third country or to an international organisation, the data subject shall have the right to be informed of the appropriate safeguards pursuant to Article 46 relating to the transfer."*
Article 17- Right to erasure ('right to be forgotten'), paragraph 2	*"[…] 2. Where the controller has made the personal data public and is obliged pursuant to paragraph 1 to erase the personal data, the controller, taking account of available technology and the cost of implementation, shall take reasonable steps, including technical measures, to inform controllers which are processing the personal data that the data subject has requested the erasure by such controllers of any links to, or copy or replication of, those personal data. […]"*
Article 18 Right to restriction of processing, paragraph 3	*"3. A data subject who has obtained restriction of processing pursuant to paragraph 1 shall be informed by the controller before the restriction of processing is lifted."*
Article 23 Restrictions, paragraph 2, letter h)	*"1. Union or Member State law to which the data controller or processor is subject may restrict by way of a legislative measure the scope of the obligations and rights provided for in Articles 12 to 22 and Article 34, as well as Article 5 in so far as its provisions correspond to the rights and obligations provided for in Articles 12 to 22, when such a restriction respects the essence of the fundamental rights and freedoms and is a necessary and proportionate measure in a democratic society […]* *2. In particular, any legislative measure referred to in paragraph 1 shall contain specific provisions at least, where relevant, as to:* *[…] h) the right of data subjects to be informed about the restriction, unless that may be prejudicial to the purpose of the restriction."*
Article 34 Communication of a personal data breach to the data subject, paragraph 1	*"1. When the personal data breach is likely to result in a high risk to the rights and freedoms of natural persons, the controller shall communicate the personal data breach to the data subject without undue delay."*

The *data subject* has the most benefit from the implementation of the GDPR. The *controller* in most cases has obligations. Instead of arguments it is enough to analyze the provisions of the *Article 6: Lawfulness of processing of the GDPR*, those of the *Article 8: Conditions applicable to child's consent in relation to information society services* and *Article 9: Processing of special*

categories of personal data and to analize the provisions of the *Chapter III: Rights of the data subject* in the *General data Protection Regulation (GDPR)*, in particular the *right to erasure ("right to be forgotten")* or the *right to object*. Some conditions are very difficult for controllers or processors to comply with or are simply impossible to implement.

Also, given that this European Regulation is directly applicable in all Member States of the Union at the same time and taking into account that the rights of data subjects have no borders in the application of the Regulation, questions arise as to the accuracy of the communication channel in compliance with the *"communication contract"* existent between data subjects and controllers.

I analyzed if the regulation has been translated into the official languages of each Member States in order to make it easily accessible to data subjects, citizens of each State of the Union. The result was that many Member States have opted to post on the official websites of the national authorities of versions of the GDPR in official language(s), in English and sometimes in French. The purpose was to make the text easily accessible to all data subjects, European citizens, speaking these international languages.

However, the GDPR allows for national interventions in the regulation of special conditions of implementation at national level of this document. The national laws are not translated into languages of international circulation (the case of Germany or Hungary). This puts the European citizen in the situation that he does not know all the implementing rules of the regulation, applicable at national level, in a Member State. Communication as process can be, in this case, corrupted.

Another situation which can create communication problems is the translation of the GDPR into a national language. For example a concept with major implications and impact on all public administration activities and not only, one of the central concepts of the GDPR is *"data subject"*. This concept has, in English and in French (*"personne concernée"*), a positive meaning by reference to the provisions of the GDPR, implying the idea of protection, of ensuring the right to privacy of individuals.

However, the translation of this concept, from English into Romanian, takes upon a different meaning in the Romanian version of the regulation. *"Persoana vizată" ("targeted individual"*) is the person you are targeting, the person you are monitoring, which is why the meaning of this concept in Romanian is not predominantly positive. This meaning can establish a distance between the subject with rights and the text of the regulation, although this text has the role of protecting him.

We used questionnaires with open items as a qualitative method of research, in order to verify the quality of the information process on the existence and implementation of the *General Data Protection Regulation (GDPR)* at European level, the knowledge held by data subjects in Romania regarding the protection of their personal data, as well as the perception of Romanians regarding the concept *"data subject"*. We used the answers of 80 subjects aged between 17 and 73 years in our research. The questionnaires contained a number of common questions for both, adolescents and adults, but also different questions to mark the different status of subjects, life experience and level of knowledge. The questions for the two categories mentioned, adolescents and adults, are presented in the table below:

Nr. crt.	**Questions**	**for adolescents**	**for adults**
1	When I hear "persoană vizată (data subject)" I think of.....	X	X
2	Have you encountered the phrase "fundamental human rights" so far? If YES, where or in what context?	X	X
3	Can you mention some examples of fundamental human rights?	X	X
4	Can you tell what the right to privacy mean for you?	_	X
5	How important is for you the respect of the right to privacy?	_	X
6	Have you encountered the concept "personal data" by now? If YES, where or in what context?	X	X
7	In your opinion, are there similarities and/or differences between the right to privacy and the right to the protection of personal data? If you have identified such similarities and/or differences, could you mention them below?	_	X
8	How would you define "personal data"?	X	X
9	To what do you associate the concept of "personal data"?	X	X

10	Do you think that the protection of personal data is necessary? If YES, why?	X	X
11	Considering that ensuring the protection of personal data is important, what would be, from your point of view, the greatest danger in ensuring the protection of personal data?	–	X
12	Do you know international, European or national documents governing the protection of personal data? If YES please note all or part of their title.	X	X
13	Can you give some examples of situations of collection, processing, storage or archiving of personal data?	X	X
14	Have you ever had the impression that your personal data is not protected? If YES, in what context?	X	X
15	Does the Internet, the development of new technologies, the digitization present risks in ensuring the protection of personal data? If YES, why? If NO, why?x	X	X
16	Assuming that the risks ensuring the protection of personal datxa in the online environment are very high, you would sustain the development of new technologies or the creation of a secure framework to respect for the right to privacy? What are the reasons of your choice?	X	X
17	Do you have children? If YES, how dangerous do you think it is their activity in the online environment by using Facebook, Tik-Tok or Whatsapp accounts?	_	X
18	Do you know institutions that manage, in Romania, the protection of personal data in processing this data by public or private operators? Could you mention an institution or many of them?	X	X
19	Do you know institutions that manage, at the European Union level, the protection of personal data in processing this data by public or private operators? Could you mention an institution or many of them?	–	X
20	Assuming that you are the President of the European Commission, what message would you have for Romanian citizens on the threshold of the digital age?	X	

A. Some information needed to interpret the data existing in the adolescent questionnaires:

The home area of the students is Baia de Aramă, Mehedinți county, Romania. There is no other high school for a distance of 40 km west. The students here come from several localities, some isolated.

The information has been collected on 20 April 2023. Age of students: 17 – 18 years.

In order to collect as much data as possible in a short time, I asked to take courses at the Constantin Brâncoveanu High School in Baia de Aramă. I managed to take 4 hours of course but students from at least 5 classrooms participated. The students were from the Natural Sciences and Computer Science profile.

Because I was new for them and because the field of data protection was new the students were quite reluctant at the beginning. In order to relax the atmosphere and obtain sincere reactions from the students, I entered in the classroom alone. I also chose to give students the opportunity to sign their questionnaires or not so that they did not feel forced to answer.

I used at brainstorming at the beginning, because I wanted to have real reactions and real perceptions on the concept *"persoană vizată"*. The participation was not enthusiastic in the first 10 minutes. I sensed the fear of ridicule as the field was not known to them.

I asked the teenagers to complete the questionnaires after the first 10 minutes of the course. I stated that the only person who will read them would be me and, depending on the answers received, maybe five members of a commission. All students began reading the questions but most gave up completing them after reading the front page of questions. The conclusion was clear to me: the information part on the implementation of the *General Data Protection Regulation* had not been carried out at high school level, with one exception: a student who had attended an ERASMUS program with a module dedicated to data protection.

After one hour of discussions about data protection, I allowed students to return to the questionnaires and complete them without trying to document themselves by using the Internet. The initial request had been for the answers to be given without documenting themselves, but the fear of ridicule in the face of too many information gaps was stronger: the students initially refused the activity.

First results:

one of the answers offered for the concept *"data subject"* is flawed. The students were confused between *"an informed person/ important person"*

*("persoană **a**vizată"* in Romanian) and *"persoană vizată"("data subject"* in English*)*;

the answers for what *"persoană vizată"* meant for them, as provided during the brainstorming exercise at the beginning of the classroom were: *"important person", "victim", "villain";*

the data completed after one hour of discussions about data protection:

– 23 questionnaires contain the student's first and last name, the age and the signature;

– 22 questionnaires contain the student's age, but do not contain the student's first and last name or the signature.

The rest of the information can be read in the table below:

Nr. crt.	**Questions**	**Teenager`s answers**
	When I hear "persoană vizată (data subject)" I think of.....	Positive meanings: a protected, privileged person; an expert; a person with rights; a person who knows his rights and cannot be misled in different situations; an identifiable person; a person who is identified or identifiable; persons who are targeted; a person authorized to do something; a person specialized in a certain field; a person with legal documents, an authenticated person; an important person; "myself"; Negative meanings: a victim; a targeted person; a person accused for something; a supervised person; wanted, accused person; a person who can be pursued in the virtual environment; a person with a hidden identity; an assaulted person; a pursued person; a person under surveillance; a person under supervision; a person affected by a particular decision, a victim; a person affected by a particular situation or decision; a person accused or involved in a case; a person who is being pursued by a person or institution for certain purposes; a person pursued by someone who has negative purposes; a person pursued by an institution or another person; a person who is in someone's attention; all persons are targeted;
	Have you encountered the phrase "fundamental human rights" so far? If YES, where or in what context?	at school; on TV; in a report written by an NGO member; in textbooks; today; on Internet; in books; through individual study; in documents contained information about the consent of processing personal data at the bank or hospital; on radio.

Nr. crt.	Questions	Teenager`s answers
	Can you mention some examples of fundamental human rights?	The right to life; the right to vote; the right to be free; the right to express an opinion; the right to be protected; the right to the protection of personal data; the right to be informed; the right to privacy; the right to study; the right to privacy; the right to work; the right to health; the right to confidentiality; the right to decide for your life;
	Have you encountered the concept "personal data" If YES, where or in what context?	online; on the internet; at school; when creating an e-mail account; in the context of opening a bank account; in applications that collect personal data; in certain documents when enrolling in exams; at college; have heard people talk about this phrase; on various social networking or shopping sites; in the terms and conditions section of a site; in an "ERASMUS +" project on the risks of digitization; when filling in some forms; for creating an account on Tik Tok; in some institutions (banks, town hall; police, post); in creating an account on Facebook, Instagram, etc .; when filling in medical records;
	How would you define "personal data"?	data that should be confidential; data that makes us unique; data with which we have access to accounts; name, surname, telephone number, location, CNP; age, e-mail, bank account, gender, biometric data, bulletin series, passport series, ID, passwords, PIN; date of birth; data that includes information about us, data that helps us to distinguish from each other; private information about the physical aspect, information that can be found in our legal documents; the information that creates your identity; data that a single person has, which define us as human beings; information about an identifiable natural person; confidential information; characteristic data; any information that leads to the identification of a person; data that aim to more easily identify a person; data that differentiate between individuals; specific data about each person, after which he can be identified;
	To what do you associate the concept of "personal data"?	information about a person; our life; the creation of accounts; the processing of personal data for certain activities; everything related to a person; personal profile; telephone number; CNP; e-mail address; name, address; citizenship; postal code; parents; biometric data; people; the online environment; private information; with the idea of protection; with the security of personal data; identity transposed into the online environment; confidentiality; with details about someone; with information that belongs only to us;

	Do you think that the protection of personal data is necessary? If YES, why?	to avoid online identity theft; in order not to give our data to persons who exploit them in a "unpleasant way"; because data protection involves the protection of the person; because personal data can be used without our consent and can lead to fraud, crime, unwanted advertising, etc; to avoid exposure to certain risks in the online environment; because it is important to protect our identity; because everyone has the right to their own space; because everyone has the right to identity, to their own image and humanity when faced with innovation; because digitalization has to deal with many dangers; because citizens need to be protected; for the safety of the individual; because a lot of data can be sold on the black market; because data can be stored in databases owned by companies or institutions being object of abuse; because we have the right to confidentiality;
	Do you know international, European or national documents governing the protection of personal data? If YES please note all or part of their title.	No
	Can you give some examples of situations of collection, processing, storage or archiving of personal data?	registration in an educational institution; for employment; for registration in a competition, creation of an account on social networks, for commercial purposes, for marketing purposes, in the case of online shopping, for creating an account on Google / Iphone; storage on servers; for research purposes; for recruitment; for medical purposes; collection during conversations on whatsapp, messenger, when we access various sites; on the Internet, when we accept mandatory cookies; by filling in medical records, when we leave the country; for a driving license; at the level of institutions, on Facebook; through fake social networking sites; when opening bank accounts; Instagram, Facebook, TikTok collects data.
	Have you ever had the impression that your personal data is not protected? If YES, in what context?	YES, when we accept Terms and conditions on websites; when we make payments online; when we accept cookies; when we use applications on the phone; on Facebook, Tiktok; when we shop online; when we communicate our CNP to other institutions.

	Does the Internet, the development of new technologies, the digitization present risks in ensuring the protection of personal data? If YES, why? If NO, why?x	YES because with the evolution of new technologies are required more and more personal information; Yes, due to the appearance of viruses; Yes, because with the development of new technologies, the skills of attackers in the cyber environment will develop too; because many sites are not secure; Yes, because it involves many risks because access to information has become very easy now, online space has become very dangerous; Internet is not safe; "Yes, because nothing can control the human mind." "Digitization has brought risks to the protection of personal data. As the use of the Internet and digital technologies increases, personal data have become increasingly vulnerable to cyber attacks and unauthorized use." "Yes, because there are websites that can store your data and do not provide protection and respect our privacy." "Yes, because there can be a very high risk of destruction of human mind or risks of falsification of documents."
	Assuming that the risks ensuring the protection of personal data in the online environment are very high, you would sustain the development of new technologies or the creation of a secure framework to respect for the right to privacy? What are the reasons of your choice?	8 teenagers responded YES to the development of new technologies and the Internet 14 teenagers responded YES to create a secure framework for respect for the right to privacy 8 teenagers answered YES to find a middle ground <u>Answers:</u> "I would agree with the use of the Internet but the laws should be changed and applied much harsher." "Yes for the internet. It is very useful in our lives. We need a framework that ensures confidentiality." "I would choose to protect data precisely in order to preserve human rights and to protect the privacy of every person." "I would choose a middle ground between the two directions presented because the Internet is in a continuous development that cannot be stopped. The most effective would be to remedy the risks of surfing the internet without inhibiting its development." "I would campaign to create a secure framework for privacy because I have often felt in danger when my personal data was recorded." "The Internet is constantly evolving, both technologies and digitalization. This poses major risks to ensuring the protection of personal data. These domains work due to data, whether public or personal." "Technology is very useful and needs to be further developed but needs to be developed in such a way as to be safe." "I think we should give up technology because it has come to control us and become addicted, people are becoming more lazy." "I believe that the Internet and technology must continue to develop but taking into account certain ethical principles. My preference is for continuous evolution despite the risks."

	Assuming that you are the President of the European Commission, what message would you have for Romanian citizens on the threshold of the digital age?	"Information is power and safety! Find out from reliable sources and keep up the good work!" "Navigate carefully on the Internet! Try to avoid unauthorized sites and protect your personal data!" "Let's be careful online!" "Read twice before signing or accepting any request regarding the use of personal data!" "Use what you have on your shoulders and take care of you!" "Claim your rights!"

B. Some information required to interpret the data existing in the adult questionnaires:

The reluctance to complete the questionnaire increased significantly for the adult public, when compared to the situation of adolescents. If some teenagers chose to answer questions but not to sign it, many adults refused to complete the questionnaire. It was specified that access to the data will be provided only for the doctoral student and, perhaps, for members of the thesis support commission but many adults refused to answer the questions.

One possible explanation for this attitude, provided by the study of the subjects` behavior can be the fear of being ridiculous. Some subjects requested that the doctoral student *"don't judge them by their responses", "ou should not consider that I am stupid"*. Although I insisted *that "there is no wrong answer", "everything can be interpreted", "no one can be considered stupid because he does not know something, everything"*, some adults opted not to complete the questionnaire.

Another reason to refuse to complete the questionnaire by some adults was, according to them, *"the field of data protection, a sensitive area"*. The lack of information on the implementation of the *General Regulation on Data Protection (GDPR)* has led to the only known field of data protection, a field that refers to secret data, sensitive data.

The main problem was the signing of the questionnaire, and the assumption of the answers. A second issue was *"the difficulty of the questions"*, whcih was actually associated with the lack of information on personal data protection field. Some subjects collected data from the Internet although the completion rule was *"to exclude any document consultation on the Internet"*. A third problem was the large number of questions. After the first page of the questionnaire, the subjects began to get bored.

The subjects were from the Bucharest area, but not necessarily domiciled in the capital. They were all public servants working in central public institutions. 30 valid questionnaires were obtained for this research, the results of the data collected being presented in the table below.

Nr. crt.	Questions	Adults answers
1	When I hear "persoană vizată (data subject)" I think of.....	Positive meanings: any person we speak about; GDPR; a person directly involved in a discussion or topic, student, employee, pensioner; person whose data are processed; Negative meanings: a targeted person; a person analyzed, monitored, supervised for a certain reason; a person who, for various reasons, has disturbed someone and is under close monitoring; person who bothered someone; person in question, a subject of a study; a person who is directly affected by a certain problem or decision; a person pursued for a certain reason;
2	Have you encountered the phrase "fundamental human rights" so far? If YES, where or in what context?	"in mass-media, in documents issued by various institutions"; "every day on the news we hear about human rights, abuses and violations"; "at events organized for the protection of people, especially women"; "in court"; "in various contexts at work, at the Council of Europe, at the European Commission"; "yes, frequently but I can't say exactly where"; "to public debates or discussions"; "in politics, in the expressions used by politicians, in specialized books, in articles, in the media"; "Yes, in the Charter of Human Rights, in the Universal Declaration of Human Rights, in the Romanian Constitution"; "Yes, in the course on GDPR"; "Yes, especially in press articles, on TV"; In the Romanian Constitution, in the European Convention on Human Rights, to the United Nations Organization"; "in the Romanian Constitution";
3	Can you mention some examples of fundamental human rights?	the right to life; the right to freedom; the right to health; the right to equal opportunities; the right to work; the right to a healthy environment; the right to quality services; the right to be informed; the right to defend yourself; the right to privacy; the right to express yourself; the right to free movement; the right to equality before the law; the right to freedom of thought; the right of conscience, the right to affirm your faith; the right to education; the right do not to be subject to slavery;
4	Can you tell what the right to privacy mean for you?	"the rights and obligations for each of us, provided in the Constitution"; "the need to keep some aspects of my life out of the eyes of the others"; "the right to choose whether I want to provide details about my personal life, about my family"; "the right to be left alone"; "the right to have a personal life"; "the right do not be supervised when someone wants it"; "personal it"; →

4	→	→ "personal privacy"; "confidentiality of correspondence"; "protection of personal data"; "the way in which a person can manifest himself freely as he wishes, provided that he does not violate the rights of others"; "the right to keep hidden from the rest of the world his problems, desires, personal plans and information"; "the right to have an intimate, personal or family life"; "the right not to interfere in the private life of someone"; "the right to intimacy and to protection of personal data"; "freedom of thought"; "the right do not disclose in public personal matters";
5	How important is for you the respect of the right to privacy?	"without privacy we would become programmed robots"; "fundamental'; "very important"; "very"; "essential for any individual"; "extremely important"; "it is the quintessence of democracy"; "it is a FUNDAMENTAL right";
6	Have you encountered the concept "personal data" by now? If YES, where or in what context?	"at work"; "in public and private institutions"; "in legislation"; "when I complete my data in applications or on websites"; "whenever a report is postponed"; "at the bank"; "in the case of personal data processed by operators"; "in data protection legislation"; "in the communication and data transfer or talking about information security"; "in the General Data Protection Regulation; "in European and Romanian legislation"; "when I create a site, when I shop things online"; "when I sign contracts or commitments"; "Yes, in contracts, applications"; "Yes, day by day, through the activity I carry out"; "in a professional context working with personal data daily";
7	In your opinion, are there similarities and/or differences between the right to privacy and the right to the protection of personal data? If you have identified such similarities and/or differences, could you mention them below	"Yes, there is a strong resemblance. I want my private life out of the eyes of the other people because some people can be ready to take advantage of me." "They have nothing in common. Data protection is required while no company will ask you for personal details. Personal data are related to information known to all companies." "Yes, these are rights." "Yes, they are complementary. The right to life includes the right to privacy and the protection of personal data" "Yes, they seem to be very similar. I can't make appreciable deferenations." "Similarities: protection of personal information, respect for privacy. Differences: legal field, specific regulations." "The similarities are that both rights refer to privacy, personal life, individual issues. Differences: personal data are records of privacy items." →

Nr. crt.	Questions	Adults answers
7	→	→ "Yes. The right to privacy is a right to intimacy. The right to protection of personal data is the right to control the access to your personal data: CNP, telephone, name" "Yes, the right to respect the private and family life, the information about my domicile and correspondence as well as the access to my health condition."; "I think they are synonymous" "The respect for fundamental rights is not related to a person's identification data." "Yes. My personal data discloses aspects related to my private life: CNP, bank account, etc"
8	How would you define " personal data"?	"private data and information of each person"; "address, telephone number"; "my identity"; "name, surname, address, date of birth"; "essential data"; "data concerning personal, civil status"; "national identification number, date of birth, place of birth, truly personal data which no one knows in detail"; "identification information, medical information, professional information"; "records of personal items"; "data strictly related to a particular person, birth dates, address, health data"; "data by which a person can be identified"; "information about an individual, information through which an individual can be identified";
9	To what do you associate the concept of "personal data"?	"with an encrypted environment, with a secure box"; "Identification data" "with a small room, personal, that we have to take care to whom we allow to enter in or to whom we reveal the existence;" "with a business card of each person";"with the right to life"; "with personal, extensive data related to our person" "with intimate data" "with the protection of privacy and privacy"; "with the assurance and protection of an individual's personal data in all his social interaction" "with strictly personal data: birth data, address, medical data" "with the concept of privacy"; "with information, contact details of a person";" with identity protection"
10	Do you think that the protection of personal data is necessary? If YES, why?	"Yes, for the defense of the right to privacy"; "Yes, because there are people or organizations ready to take advantage of our personal data"; "Yes because no one wants his data to be known by anyone"; "Yes, to ensure a certain confidentiality, privacy of personal data"; "I am convinced of that, because under normal conditions we only agree to share privacy with close people"; "Yes, it is necessary due to respect for privacy →

10	→	→ and the prevention of identity theft"; "Certainly YES, because it is individual information and its sharing should be possible only with the consent of the person concerned"; "Yes, so that someone else does not abuse or benefit of our personal data"; "Yes, it is necessary. Personal data must not be used by anyone, anyway"; "Yes because personal data can be used to commit crimes"; "Yes, I believe that personal data should only be accessed with the consent of the data subject"; "Yes, so as not to easily identify or use a person's identity";
11	Considering that ensuring the protection of personal data is important, what would be, from your point of view, the greatest danger in ensuring the protection of personal data?	"data theft via Internet"; "the greatest danger is the people specialized in breaking databases in the online environment"; "spam, fishing fraud"; "to steal from others"; "the risk of theft, their illegal use"; "not to appear on the internet"; "the greatest danger would be the systems and infrastructure used for the collection and processing of personal data, they may have vulnerabilities"; "certain security breaches could lead to the leakage of information that could subsequently be used for criminal acts"; "identity theft"; "access of other persons to our personal data"; "personal databases can be "broken" quite easily"; "digital databases are vulnerable"; "if the personal data are protected I do not see any danger"; "any individual can acquire the identity of another person through different channels, means, purposes"; "the danger that once stored they can go public and thus the right to privacy can be altered";
12	Do you know international, European or national documents governing the protection of personal data? If YES please note all or part of their title.	"Charter of Human Rights"; "I do not know the title but I know that there are such documents"; "European Convention on Human Rights"; "I am convinced that it exists but I do not know the titles clearly"; "General Data Protection Regulation (GDPR), "Data Protection Directive", "Law 190/2018"; "Law 102/2005"; "Regulation (EU) 2016/679"; "General Data Protection Regulation"; "An EU Regulation from 2016, I don't remember the name";
13	Can you give some examples of situations of collection, processing, storage or archiving of personal data?	"population census"; "operations carried out during voting campaigns"; "public institutions process personal data";"banks, various service companies (telephony, electricity, gas, etc.) with which you conclude a contract containing personal data"; "in the case of online orders, for open bank accounts"; "to generate an electronic signature, for generate an identity card, a passport"; "for mobile operators, on theInternet, for electricity, registration in online systems, to pay online orders"; "in case of employment contracts, registration at various events"; "to the doctor, to work, to the school, to the bank, for various contracts, for opening bank accounts"; →

Nr. crt.	Questions	Adults answers
13	→ Can you give some examples of situations of collection, processing, storage or archiving of personal data?	→ "when shopping online"; "for a subscription to the phone, cable TV, etc".; "in telephony, insurance, banks"; "for database creation";
14	Have you ever had the impression that your personal data is not protected? If YES, in what context?	"yes, when I register with my eemail address on a site after which I receive another 100 million with publicity"; "I did not have this impression"; "Yes, at the bank"; "Yes, when I filled in questionnaires that were not anonymous"; "Yes, in the case of telephone operators. There are a lot of commercial agencies that have information about me, information Inever offer to them"; "Yes, some companies collect personal data and share it with other companies without the users consent"; "Yes, from various social platforms as well as in mobile applications"; "Yes, at work"; "Yes, in the case of mobile phones, e-mails"; "I haven't thought about it yet"; "Yes, by targeting certain [on social media platforms]"; "Yes, at work when I am asked for a copy of my identity card, although that copy already existed in the Human Resources file";
15	Does the Internet, the development of new technologies, the digitization present risks in ensuring the protection of personal data? If YES, why? If NO, why?	"Yes, the rapid evolution of technology"; "The biggest risk is the internet, because through it you can access a database from any corner of the world or by anyone legally or not"; "not, because today's technology provides algorithms that help protect data against hackers"; "Yes, because there is a risk of theft, of illegal use of data"; "Yes because in general the profit justifies the disclosure of data to other economic operators"; "Yes, due to the large volume of data, data transfer and storage, data collection on social networks"; "Certainly YES due to security risks"; "Yes, because the infrastructure is not sufficiently developed"; "Yes, because the data can be accessed by malicious users"; "Yes, there are always ways to steal personal databases. They can be marketed later"; "Yes, because personal data [collected] can be easily accessed"; "Yes, because there are more and more interests and methods of "breaking" databases easily"; "Yes, any digital database can be "broken" by a hacker, if he has an interest in doing so";

16	Assuming that the risks ensuring the protection of personal data in the online environment are very high, you would sustain the development of new technologies or the creation of a secure framework to respect for the right to privacy? What are the reasons of your choice?	"The evolution of technology cannot be slowed down"; "continuously data security is essential"; "I would opt for the development of the internet"; "Yes by assuring the security of the information by access levels"; "Yes, the risks are great but I am convinced that there are solutions too"; "The development of new technologies and the Internet brings benefits in all areas of activities"; "Yes for the development of new technologies and the Internet for the simple reason that the development is closely correlated with the progress of technology"; "Yes for the internet because I use it"; "the best solution is to develop a secure framework for respecting the right to life, a framework to be implemented in new technologies field"; "Yes for data protection. Everyone has the right to be protected"; "the development of new technologies is related to the development of science, the right to privacy is related to certain rights"; "I believe that when you provide critical personal data you take the risk that it may be discovered if you do not request their experess deletion. The technology and the Internet must develop and, in fact, everyone is responsible for the data they provide"; "Yes for creating a rigorous framework to respect the right to life because I believe that this right is very important."
17	Do you have children? If YES, how dangerous do you think it is their activity in the online environment by using Facebook, Tik-Tok or Whatsapp accounts?	"It presents risks"; "Yes, I have, and their exposure in these environments is very dangerous because there are criminals, pedophiles"; "Very dangerous"; "Yes, very dangerous for identity theft and fraude"; "I have no children but I am convinced that young people are vulnerable to various applications and must be protected"; "That presents significant risks and data protection is very important"; "I have children and I consider their exposure in the online environment to be particularly dangerous"; "I have children and I consider their exposure in the online environment very dangerous because their identity can be stolen"; "Quite dangerous to very dangerous. Children are especially vulnerable in the online environment"; "Yes, I have children. Exposing them to the online environment is very dangerous"; "Yes. Creating accounts for them is dangerous because [online platforms] do not have the ability to manage the content it displays to a child. The account can only be created for people over 13 years of age. In reality, there are even smaller children behind these accounts."; "I do not have minor children but I consider their exposure in the online environment very dangerous";

18	Do you know institutions that manage, in Romania, the protection of personal data in processing this data by public or private operators? Could you mention an institution or many of them?	STS, The Agency for Digitization, SRI, The Directorate for Computer Creating an Identity Card; "I only know CNCDs that I'm sure don't protect us in any way!"; The Ministry of Environment, Waters and Forests; "Yes, the public institutions, the ministries, the town halls or the medical offices"; The National Authority for the Supervision of Personal Data Processing (ANSPDCP); NOTE: Most respondents are confused when they speak about Operators or the RGPD implementation management and control institution (the national authority).
19	Do you know institutions that manage, at the European Union level, the protection of personal data in processing this data by public or private operators? Could you mention an institution or many of them?	European Data Protection Board; "OECD but I am not convinced of their effectiveness"; European Commission; Court of Justice of the European Union; "there is an institution at European level but I do not know its name"; European Data Protection Supervisor; Council of Europe; European Commission through the European Committee / European Data Protection Supervisor; ECHR;

III. Lack of information on data subjects? Lack of adequate training of data protection officers? Infrastructure unsuitable for optimal implementation of GDPR? The confirmation of the direction of evolution in the implementation of GDPR can also come from the press....

Let us have a look at the Romanian press:

release date	**title of the article**	**Link**
June 7, 2023, 06:45	*"The UK will host the world's first artificial intelligence summit"*	https://www.hotnews.ro/stiri-international-26319140-marea-britanie-gazdui-primul-summit-mondial-dedicat-inteligentei-artificiale.htm
June 7, 2023, 13:12	*"Bitdefender says it has identified a global cyber threat campaign targeting mobile devices. What were the targets"* NOTE: The mobile devices have been used by students in online education!	https://economie.hotnews.ro/stiri-it-26317442-bitdefender-spune-identificat-campanie-globala-amenintari-informatice-care-vizeaza-dispozitivele-mobile-care-erau-tintele.htm

release date	**title of the article**	**Link**
June 5, 2023, 14:51	*"The [Romanian]Ministry of Finance admits that it has frequent data loss incidents: What IT acquisition does to solve problems"*	https://economie.hotnews.ro/stiri-telecom-26315159-ministerul-finantelor-admite-are-incidente-frecvente-pierdere-datelor-achizitie-face-pentru-rezolva-problemele.htm
June 5, 2023, 19:00	*"European Commission calls on online platforms to identify content generated by artificial intelligence"*	https://www.hotnews.ro/stiri-esential-26313478-comisia-europeana-cere-platformelor-online-identifice-continutul-generat-inteligenta-artificiala.htm
May 31, 2023, 7:26	*"Artificial intelligence "godfathers" warns that there is "a risk of extinction" of mankind due to AI"*	https://economie.hotnews.ro/stiri-it-26301941-nasii-inteligentei-artificiale-avertizeaza-exista-riscul-disparitie-omenirii-din-cauza.htm
29 May 2023, 13:56	*"France threatens Elon Musk with a Twitter ban in the EU"*	https://economie.hotnews.ro/stiri-companii-26297597-franta-ameninta-elon-musk-interzicerea-twitter.htm
26 May 2023, 10:55	"*Elon Musk's Neuralink Company has been approved to test brain implants on humans*"	https://science.hotnews.ro/stiri-creierul-26291230-compania-neuralink-lui-elon-musk-primit-aprobarea-testeze-implanturi-cerebrale-oameni.htm
26 May 2023	"*TikTok is testing an AI chatbot that will be integrated on its platform*"	https://mediastandard.ro/tiktok-testeaza-un-chatbot-ai-ce-va-fi-integrat-pe-platforma-sa/
25 May 2023, 08:32	*"As if he were wearing a camouflage coat and had a sniper rifle". Chinese hackers infiltrated the US essential infrastructure / What is known about Volt Typhoon*"	https://www.hotnews.ro/stiri-international-26288450-cum-purta-haina-camuflaj-avea-pusca-luneta-hackerii-chinezi-infiltrat-discret-infrastructura-esentiala-sua-stie-despre-volt-typhoon.htm
25 May 2023, 06:40	"*Former head of Google: Artificial intelligence is an existential risk to people, to be injured or killed*"	https://www.hotnews.ro/stiri-international-26288334-fost-sef-google-inteligenta-artificiala-este-risc-existential-pentru-oameni-raniti-sau-ucisi.htm
23 May 2023	"*With artificial intelligence, reading thoughts becomes possible. Privacy is violated*"	https://editiadedimineata.ro/cu-inteligenta-artificiala-citirea-gandurilor-devine-posibila-se-incalca-intimitatea/amp/

release date	title of the article	Link
22 May 2023 09:52	*"GDPR 2023: Meta (Facebook), fine-record in the European Union, for data transfer in the USA (media sources)"*	https://economie.hotnews.ro/stiri-it-26281755-gdpr-2023-meta-facebook-amenda-record-uniunea-europeana-pentru-transfer-date-sua.htm
21 July 2022	*" The largest data leak in the Romanian medical system: a state institution accidentally discloses the diseases of over 130,000 patients"*	https://recorder.ro/cea-mai-mare-scurgere-de-date-din-sistemul-medical-romanesc-o-institutie-a-statului-divulga-din-greseala-bolile-a-peste-130-000-de-pacienti/
19 May 2023, 07:15	*"Google will gradually give up cookies from 2024"*	https://www.hotnews.ro/stiri-international-26276184-google-renunta-treptat-cookie-uri-incepand-din-2024.htm
18 May 2023, 12:33	"*Artificial intelligence systems have become "unhealthy" and can become a danger to democracy, warns another top in the field*"	https://economie.hotnews.ro/stiri-it-26274627-sistemele-inteligenta-artificiala-devenit-nesanatoase-pot-deveni-pericol-adresa-democratiei-avertizeaza-inca-somitate-din-domeniu.htm
18 May 2023, 07:04	*"Montana becomes the first American state to ban TikTok"*	https://economie.hotnews.ro/stiri-companii-26273772-montana-devine-primul-stat-american-care-interzice-tiktok.htm
24 March 2023, 10:15	*"An American state introduces parental consent for the use of social networks by children*"	https://www.hotnews.ro/stiri-international-26160143-stat-american-introduce-consimtamantul-parental-pentru-folosirea-retelelor-socializare-catre-copii.htm
26 January 2023, 08:05	*"A hacker seized the personal data of all Austrians and put them up for sale"*	https://www.hotnews.ro/stiri-international-26044038-hacker-pus-mana-datele-personale-ale-tututor-austriecilor-scos-vanzare.htm
2 December 2022, 12:07	*"Viktor Orban's party, accused of using the data sent by citizens for the COVID vaccination campaign*"	https://www.hotnews.ro/stiri-international-25938422-partidul-lui-viktor-orban-acuzat-folosit-campania-electorala-datele-trimise-cetateni-pentru-vaccinarea-anti-covid.htm
6 September 2022	*"Instagram Received A Fine-Record. 405 Million Euros For Inadequate Management of Children's Accounts"*	https://legalup.ro/instagram-amenda-record/

Press articles dating back only from September 2022 and from 2023 are related to the topic of this research. There are many more articles interesting about how GDPR implementation could be affected in the future, but we chose only a few titles relevant for the direction of development of new technologies, and actions with high impact on data protection field. The above titles indicate the fact that the development of new technologies comes with risks to the protection of personal data. However, they are also an indicator of the lack of training in the implementation of GDPR for Romanian operators and for the lack of adequate infrastructure for an optimal implementation of GDPR. There are gaps in the seriousness of the approach to the implementation of GDPR in the European Union: France is very involved and responsible, Romania less.

In the face of the challenge posed by artificial intelligence, experts are beginning to issue clear warnings to states and governments. The current infrastructure represents a risk in the face of the pace of development of new technologies. Children are highly exposed in the online environment, but not all Member States have really begun to take steps to protect them. Romania has not made and does not make enough efforts to ensure the protection of children in the face of the challenges posed by the development of new technologies.

Are the phrases above conclusions? Statements without scientific support? Currently there are only open doors to hypotheses waiting to be verified. Will the future increase the gap between the regulation and application of the *General Data Protection Regulation (GDPR)* or will the governments of the Member States of the Union find quick solutions to open the digital age without risks?

The answer, if I dare to look for an answer, can be found in Charaudeau P., "*Une analyse sémiolinguistique du discours*": "*The transformation process and the transaction process are carried out according to different procedures, but are solidary in relation to the principle of relevance that requires a common knowledge, built even on the basis of the transformation process. We can even say that this solidarity is hierarchical. Indeed, identification, qualification operations, etc. of the transformation process are not done anyway or freely. They are achieved in a context of supervised freedom under the control of the transaction process following its directives: it gives them a communicative orientation, it gives them meaning.*" (Charaudeau 1995: 100)

The problem, if I insist on finding one, is that Patrick Charaudeau was talking about the double process of semiotizing the world ("*le double processus de sémiotisation du monde*") and I was looking for a visionary response to the problems facing the world in the face of risks on respect for the human rights and fundamental freedoms at the beginning of the digital age.

Conclusion

"Migration, new communication technologies, continuous cultural exchanges have led to the establishment of a diversity of ways of life in the same society."[14] The establishment of the European Union, a multicultural society, has led to the continuous search for a *modus vivendi*[15], the coexistence of different ways of life, profitable for all European citizens, *subjects* of communication, *senders* and *receivers*, *data subjects, identities*.

National languages mark our identity, our culture defines us as individualities, our discourse betrays our openness to the others but also the assertion of our own *Me*[16], our manifestation in a space of unity and diversity forms us as personalities. The European Union was created by respecting principles and values such as freedom, democracy, equality and the rule of law, promoting peace and stability.

However, we must consider the old contradiction between freedom and security. "*Given how unpleasant freedom without security is, just as security without freedom is unpleasant, it seems that we will never stop dreaming about the community, but we will never find the pleasures enjoyed in dreams in any self-proclaimed community.*"[17] However, "*intermediaries that keep democracy alive are national governments. [...] We cannot build Europe against governments.*", Jacques Delors said in October 2010[18]. Here we can speak

[14] "*The existence of several ways of life in which people can thrive and even be happy induces the idea that, despite the fact that these kinds of life can be competing, none of them is the best. Modus vivendi, or the coexistence of different ways of life, is based on the idea of the existence of several profitable ways of life for people, precisely because none of them is the best for everyone. Modus vivendi does not mean seeking the ideal regime, but achieving reasonable compromise by institutionally reconciling different ways of life. It is a compromise based on the historical reality of social pluralism and on the ethical, anti-universal and anti-fundamentalist reality of the pluralism of values.*" Carpinschi, A. Toleration as modus vivendi. In Walzer, M. 2002. *Despre tolerare.* Bucureşti: Institutul European, III–IV.

[15] See note 14.

[16] *"Si on retient que parler, c'est participer à une mise en scène du langage ouverte, jamais totalement close, jamais terminée; que parler est une lutte permanente pour conquérir le droit à sa propre existence; que parler, c'est, qu'on le veuille ou non, vouloir influencer l'autre, alors, on comprend que parler soit à la fois c`est témoigner de son identité et construire l'identité de l'autre, de même qu'écouter l'autre, c'est tenter de découvrir derrière son discours le paysage de sa culture.*" (Charaudeau 2001: 348).

[17] Bauman, Z. "Comunitatea. Căutarea siguranţei într-o lume nesigură", Editura Antet, f.a., 6, cited in Carpinschi, A. Toleration as modus vivendi. In Walzer, M. 2002. *Despre tolerare.* Bucureşti: Institutul European, XIV.

[18] Jacques Delors: "Europa are nevoie de un suflet". *Actualitate Parlamentul European*, 8 October 2010. Available at: https://www.europarl.europa.eu/news/ro/headlines/eu-affairs/20101006STO85428/jacques-delors-europa-are-nevoie-de-un-suflet (accessed 6 June 2023).

about the manifestation of national identity at the level of regulation and implementation of normative acts approved at European level.

Returning to the application of the *General Data Protection Regulation*, a recognition of the gaps between states at the level of the infrastructure that enable data security and protection of data subjects against possible risks caused by the rapid development of new technologies would perhaps reduce technical mimetism in transposing European documents into national law. Thus it might reduce the gap between regulation and application of European legislation at national level.

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BUILDING A FASHION INFLUENCER IMAGE ON INSTAGRAM

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Abstract

This article examines the shift from analogue to digital transmission of information, the metaphor of virtual community, and the everyday life of social networks. It also studies the construction of virtual identity taking place under the influence of the influencer system on the Internet. Viewing fashion as a process of constant production and reproduction of the social, of imitation as a means of social adaptation, the text examines the transformation of fashion into a primarily digital representation through influencer marketing. The analogue and digital evolution of codes is distinct, and the need of media and digital literacy are a growing challenge for modern society. This work will provide a clearer delineation of the fluid nature of identity and social belonging as well-articulated behaviors.

Keywords: virtual community, influencers, fashion, digital literacy, identity, CGI

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Introduction

Having lived for several decades now in a digital world that is evolving in a multifaceted way and at an unstoppable pace, we have a large amount of available information outlining the changes that have occurred as a result of the Internet in our daily lives. It is difficult, however, to summarize the variable processes which occur on a daily basis. Information about these changes relates not only to culture, ways of working, automation of processes, but also to self-presentation in different social environments online. Identification and individuation in the construction of our identity are related to copying the style of our modern idols. Unmediated communication through live contact has overwhelmingly been replaced by virtual contact with the everyday lives of those we like. The mythology still exists, only the way has changed, because analogue media formats are now online. In addition to being easily accessible, they are characterized by enabling two-way communication as well as the rapid exchange of information, ideas, and cultural capital.

This paper aims to outline the difference in the construction of image and identity, and for this purpose it will use interdisciplinary theories, including those of Roland Barthes, Lev Manovich, Lawrence M. Friedman, Charles Taylor.

Flashback

I take the liberty of using this term for several reasons. The first is the present moment in which witnessing the transformation in terms of computer use continues to be part of our modernity. In the early sixties this technique was used mainly for production purposes. Now only three decades later there is already talk of using the computer as a universal media machine (Manovich 2001). The second half of the previous century is still not that far back in time. The repercussions of the penetration of technology into everyday life are multifaceted. While the future trends of influencing our cultural foundations are beyond the scope of this paper, I will mark them as unpredictable. For this reason, I assume that in a few more decades, mention of factual technological changes, both in terms of the computers and devices themselves and the effects on our culture and behaviour, will be an artifact and an artifact alone.

Between 1936–1945, the German engineer Konrad Zuse (1910–1995) built the first working digital computer. A few decades later, all extant information media are being converted into digital data. The 1990s already saw a variety of interactive installations and websites. The media revolution

is a fact. In fact, the new media is the old, the difference lies in the conversion of the analog representation of information into digital. The main reason is that digitization allows information files to be easily opened and manipulated by a computer. Culture and artistic production itself passes through the computer filter, in such a way that the texts distributed online essentially become the new media. There is talk of comparing the semiotic nature of the code with the computer interface (Manovich 2001).

According to Manovich, one of the three common trends of culture is automation. This means a partial removal of the human factor from the creative process itself. The restriction of human intervention and facilitation achieved in the technological use of websites, applications and web-based system is compensated by the interactivity of the media themselves. The Internet user is not just an observer, they are involved as an active participant and "director" of what is happening in front of them in their own virtual world. When we talk about social environments – they actively participate in the construction of another reality. (Manovich 2001)

Being Social

In the years when the increased penetration of the Internet into our daily lives and the unfolding of the media revolution became evident to all, the ways of communication between users also underwent development. Blogs and microblogs, forum directories, chat programs and software (mIRC, ICQ, Skype and others). There are many examples of social environments and technology solutions that enable users to communicate, share information about themselves and the world they care about. Examples are: MySpace, Twitter, Facebook, Instagram, TikTok and a number of others. The reason why different media exist is because different people exist. The world's largest free social network, Facebook, came into being in 2004. At last count, just over eight years on, Facebook has been translated into over 110 languages and has over 2. 96 billion users worldwide.[1] In his article for Brandingmag, Louis Reyes points to interactivity as a feature of much of the Facebook ecosystem. User posts, reactions and the ability to chat are a great way for users to interact and share.[2] Instagram's emerged in

[1] How Many Users Does Facebook Have? (2013–2023). *Oberlo.* Available at: https://www.oberlo.com/statistics/how-many-users-does-facebook-have (accessed 3 February 2023).

[2] Reyes, L. 2022. Succeeding in Platform – Based Marketing – Part 3: What Is Unique to Each Platform? *Brandingmag*, 24 May 2022. Available at: https://www.brandingmag.com/luis-reyes/succeeding-in-platform-based-marketing-part-3-what-is-unique-to-each-platform/ (accessed 3 February 2023).

2010, and just two years later, it was purchased by Facebook because of the potential of the growing image-sharing network. In 2022, there 1.28 billion[3] users. A characteristic of Instagram is the connection to personal aesthetics, which explains the dominant content of photos and images.[4] The power of traditional media's impact on consumers is progressively losing steam. Interactive social environments are providing new ways of disseminating information. Users themselves are involved in the process through sharing and commenting. Participation in this process builds a community of individuals united by similar interests.

In 'The Digital Sublime. Myth, Power and Cyberspace' (2004) Vincent Mosco (1948) describes in detail the six metaphors that inhabit cyberspace. One of which is that of virtual community. This represents the development of a real online social experience which brings users together to share their lifestyle and build and strengthen a sense of community. This metaphor suggests that it is possible to engage the user electronically and connect people not only emotionally but also cognitively. (Mosco 2004). Not only the existence and functioning of micro-groups, but the right and freedom to build and claim individuality is based on this.

People realise and exercise their right to plan and develop their own lives with as much freedom as possible. (Friedman 1999) They assert and affirm their individuality, while at the same time, with this shaping, seeking selfhood. "They look for those with whom they share a common standard, a common language their understandings (literally and figuratively); they arrange themselves in categories that they find psychologically convenient." (Friedman 1999: 69). Interactive media prompt us to identify with someone else's mental structure (Manovich 2001): we clearly distinguish this process in influencers and their followers. In Compliance, identification, and internalization: Three processes of attitude change (1958), Herbert Kelman (1927–2022) describes three varieties of social influence: compliance, internalization, and identification. The latter is observed when individuals are influenced by a well-liked and respected personality. The essence is that "identification differs from imitation in that it is an unconscious imitation,

[3] Dixon, S. 2022. Number of Instagram Users Worldwide from 2020 to 2025. *Statista*, 29 August 2023. Available at: https://www.statista.com/statistics/183585/instagram-number-of-global-users/ (accessed 3 February 2023).

[4] Reyes, L. 2022. Succeeding in Platform – Based Marketing – Part 3: What Is Unique to Each Platform? *Brandingmag*, 24 May 2022. Available at: https://www.brandingmag.com/luis-reyes/succeeding-in-platform-based-marketing-part-3-what-is-unique-to-each-platform/ (accessed 3 February 2023).

whereas imitation is conscious copying" (Sharp 1991: 94). People in both the real and digital world are affected by those around them. Using the behaviour of others as a basis for deciding one's own correct behaviour has also been observed (Cialdini 1984). Another observed factor is unconscious imitation and conscious imitation. Individuals with pleasing appearances have a generally recognized advantage in social interaction (Cialdini 1984). The scope of this advantage falls into a category called "halo effects." The latter occurs when a positive characteristic dominates the way in which others perceive it. Physical attractiveness is such a characteristic, and we automatically attribute additional qualities to the individual: intelligence, high morals, kindness, etc. (Cialdini 1984). K. Bankov's interdisciplinary approaches in his study of the face-trust-semiotics relationship suggest that "a trustworthy face is a tangible and objectively measurable asset; one that gives indisputable advantages to the owner and creates difficulties for those who lack it." (Bankov 2021: 538). Thus "The face of the professional influencer is monetized trust." (Bankov 2021: 539).

The concept of modern influencer marketing originated not from the aforementioned social media, which currently provides fertile ground for the existence of such personalities, but from Melinda Roberts. In 2002, she created TheMommyBlog.com. Her online space is dedicated to sharing the moments of happiness, anxiety, and uncertainty: all part of the parenting routine.[5] Despite the lack of clear evidence as to who was the first social media influencer, one thing is certain: the rise of social media has undoubtedly changed influencer marketing.[6] The emergence and evolution of social media provides users with new opportunities to connect with each other. Influencers are using this opportunity skillfully to connect with their users on a new, emotional, level through curated self-expression. The process of communicating (actively or not) with someone whose photos inspire thoughts of belonging to the same social paradigm.

Participation in social networks has conditions, of course. These conditions apply not just for influencers or less popular users, but to everyone. Self-presentation is one of the fundamental requirements: online communication in this intangible space demands it. In order to be a Facebook

[5] Weinstein, G. A History of Social Media Influencers. *Find Your Influence*, 26 July 2021. Available at: https://findyourinfluence.com/a-history-of-social-media-influencers (accessed 3 February 2023).

[6] Peker, B. 2020. A Brief History of Influencer Marketing. *Storyly*, 20 June 2020. Available at: https://www.storyly.io/post/a-brief-history-of-influencer-marketing (accessed 3 February 2023).

audience for others' self-presentations, you need to present yourself. In this exchange, the same people occupy both positions: that of participant and audience, of recipient and addressee. (Thumim 2012) An element which can be called "essential", without which online communication would be difficult, is the image. Photos of family events and celebrations, photos of pets, tourist attractions and natural landscapes. Every user has the opportunity to communicate their interests, as long as their choice of presentation does not go against the rules of the community (distribution of pornographic content, propaganda of violence, etc.).

Barthes (1915–1980) notes that we live according to a kind of universal imagery, giving the example of the USA: "only images exist, are produced and consumed" (Barthes 2001: 118). Another characteristic difference for advanced societies is that the increased consumption of images comes at the expense of beliefs, suggesting a characterization of societies as more liberal, yet less authentic (Barthes 2001). Photographs are taken deliberately: not to be kept as a personal memory in an archive, but to be shared online for others to see. They are taken until they become "beautiful" and appropriate, until we are sure they will garner enough likes and reactions. Realistically, image building has no connection to identity. (Taylor 1989) The effort and deliberate "directing" of the images is a testament to how users are trying to meet the requirements for certain socially challenged standards. 'One is a self only among other selves. A self can never be described without reference to those who surround it' (Taylor 1989: 35) and the individual can only be him/herself when among others.

The Rebellion

Accepting and rejecting fashion elements are choices which each of us uses as a way of expressing our own relationship to the world and constructing our identity. The selection of an outfit and the act of dressing are choices about how we will show ourselves to others, given that objects and situations constitute the actual code of dress (Barthes 2005). Fashion itself is an imitation of an example and satisfies the demand for social adaptation; it is a product of social demands. At the same time it satisfies the need for differentiation, the tendency towards dissimilarity, the desire for change and contrast (Simmel 1957: 543). We strive for the choices of those in whose social groups we want to be present. At the same time we try to differentiate ourselves, though not entirely. There is ample evidence of rebellion in the history of fashion. This is as a consequence of significant historical, economic and political factors. Disapproval and meek resistance

gave rise to fashion trends that have left a cultural legacy which continues to echo today.

Opposition to the Vietnam War in 1967, the emancipation of women, and demands for equal civil rights for blacks in the United States built the foundation of the hippie movement. The mid-seventies saw the emergence of the ever-rebellious punks in England who obliterated the notions of good and bad taste in one fell swoop. A few years later followed the panic in the financial markets, the stock market crash of 1987, the Gulf War that followed, the fear of the AIDS epidemic, rising unemployment, and emerging environmental and humanitarian concerns about the global balance. All these events generated a discontent which is evident in the appearance of fashion. The models are too thin, almost anorexic; they have piercings and tattoos. Seattle-born grunge spread rapidly across Europe. The movement was a descendant of British punk and also developed against the backdrop of rocking music. The rebellion was evident in the quite undisguised rejection of fashion (Ormen-Corpet 2000).

The development of codes in the semiotic structure of fashion is no less impressive than the speed of change in the digital world. The dissemination of images of fashion creations nowadays is instant, thanks to the internet. Four decades ago, it was a strictly controlled and well-kept secret among professionals. In the late 1990s, nearly 2,000 journalists from 40 countries, 100 television stations and 400 radio stations were involved in the prêt-a-porter collections in Paris, covering more than 100 fashion shows in one week. International media coverage with the widest possible audience is particularly important for fashion houses, since the potential development of perfumes, cosmetics, accessories and other complementary products lie behind the perfect image of each of the top models, dressed in dream clothes and with flawless make-up and hairstyles, not to mention the large number of jobs as well.

Fashion is often seen as an art, but it is first and foremost an industry that has repercussions all over the world (Ormen-Corpet 2000). The fashion capitals of Milan, London, New York, Paris, Tokyo have not lost their charm, but thanks to the Internet attending fashion events can happen today without leaving the comfort of your own home. Contemporary fashion cities are in an electronic format: fashion blogs, Instagram profiles and social media whose perception goes beyond the virtual space. (Calefato 2021) Today's top models are the debonair influencers on social platforms and their communities. The drive to select clothing in a manner consistent with a particular lifestyle is based on an emotional mechanism which places the subject in a relationship with the object based on social approval (Calefato 2004).

The Common Ground

Print media and illustrated magazines are online today. Culture is overwhelmingly in the digital world. These are the communities we choose to be a part of. They are the idols, communicating through a variety of means their lifestyles, values, preferences and worldviews, including fashion preferences expressed through the publication of the plastic structure of the garment-image (Barthes 2005) We want to be like them, while at the same time looking for ways to assert ourselves. All this requires a high level of media literacy. It concerns the culturally conditioned relationship between three processes: institutional governance; symbolic and material representation of knowledge, culture, and values; dissemination of interpretive skills and abilities among a diverse population. (Thumim 2012)

We have an unlimited opportunity expressed in the ability to access the vast amount of information available on the internet, and knowledge itself is an inexhaustible resource. Therefore, determining an individual's social status is consumption (Taylor 1989), and relates to the very ways in which users use and exchange digital culture. The process of choosing information in our own digital world reflects on our clothing and lifestyle choices. Identity is a process of change, unfolding throughout existence, and the identity presented in virtual space usually does not fully correspond to that in reality.

The line between real-world and virtual-world identity is slender. Returning to the beginning of the text, where we mentioned the unpredictable impact of future trends on cultural foundations and the subsequent approach to the discourse of appearance and identity, we will turn our attention to the predictions of a coming period of CGI. One of the examples I will refer to is Knox Frost: a virtual identity of a non-existent person in the real world. In his communication, Knox Frost shares his current story as an Atlanta robot. His main goal, like many young people his age, is to fit into a social group, and his behaviour is marked by finding new ways to help his community and others along the way. His content generates strong discussions in the comments underneath posts, and the effect of engaging with his followers around the world has seen exponential growth, reaching over one million organic followers in just one year.[7] Knox Frost's communication is characterized by its advocacy on topics and issues of

[7] Knox Frost. 1M Total Reach. *Find Your Influence.* Available at: https://findyourinfluence.com/knox-frost (accessed 3 February 2023).

social relevance, even entering into a collaboration with the World Health Organization and helping to spread the word about COVID-19.

Brands around the world are also using virtual influencers as an alternative way of reaching new audiences and potential customers. The successful construction of their artificial images is a new reading and application of advertising principles which serve youth as a fetish. In addition to the cosmetic and medical industry, fashion also sells a dose of immortality through its periodic change. (Meinhold 2013) Thus, popular virtual idols, although artificially created, are a great example to follow – a trendy and young template, mostly between the ages of 16 and 20.

One such template is Rozy, a robot launched in 2020 by a subsidiary (Sidus Studio X) of a South Korean advertising agency. Following her rapid rise in popularity, Rozy secured income and sponsorships from media companies and luxury brands, including such names as Chanel and Hermes.[8] Lil Miquela is a robot collaborating with fashion brands such as Dior and Prada, and includes in her portfolio collaborations with supermodel Bella Hadid for a Calvin Klein campaign. Lil Miquela's name is on Time magazine's list of the most inspiring people of 2018[9]. According to the same article, the robot created by Aww Inc in Tokyo, Imma, has 2.3 million likes on TikTok and Instagram followers to date number 400,000. He has collaborated with luxury brands including Dior, Valentino, Puma, Nike. Collaborations with cosmetics companies (Goshi), the design house Marimekko, Swiss luxury watches (Carl F. Bucherer) are also evident in the content shared by Imma. The robot even decorates the cover of Grazia magazine.

In "The Fashion System," Barthes defines the person on the cover primarily as a paradox. The body is both an abstract institution and an individual body. The representation is not just of his beauty, but of a body deformed by the need to produce a generalization, which is the modern outfit. So, the model's body becomes nobody's body. The artificially created virtual image of CGI not only has no physical body, but its communicated image is not his work, but the result of the collective work of specialists.

There is a significant difference between the images presented by human influencers and those presented by CGI. For the latter, creating content for social environments is considerably easier,[10] which in turn allows for targeted

[8] Virtual Influencers Rivalling Human Instagram Models. *News.com.au*, 6 August 2022. Available at: https://www.news.com.au/technology/online/social/virtual-influencers-rivalling-human-instagram-models/news-story/6a32fc537f4bd7b4efac1ee877f2fc1c (accessed 5 February 2023).

[9] See note 8.

[10] See note 8.

consistency of their images and what they communicate. Russel Belk writes about our limited ability to segment the audience of our online presentation and about consciously managing the presentation of ourselves. According to him, "the self is much more managed, co-constructed, and interactional" (Belk 2013: 490). For us as users of social media, the diligence to minimize the presentation of controversial entities, even if required, at CGI is an expected outcome of agency teamwork working on building a good image for their robot. Here again we can emphasize the difference between image building and identity building. (Taylor 1989) The second is absent in CGI.

The strong presence of this image in the virtual everyday life of so many people does not address the question of which is the current dominant opposition: analog- digital; young- old; individual – collective? Or, by taking our lives online, are we seeking to assert individuality and recruit followers for virtual images which are suspiciously close to our real identities, while our new idols are themselves robots?

From the theory examined here and drawing a dividing line between image and identity, we can conclude that the more democratic societies are and the more freethinking their units are, the more their credibility fades. The virtual intersection with the everyday life of those we like and emulate requires authenticity in that which is presented. This is shown by data from a survey conducted in the spring of 2022 in the UK, nearly 67% of respondents defined as fashion consumers demand authenticity from influencers.[11]

A Final Word

The digitalization of most of our daily lives is no longer a novelty, but a routine. Whatever the results of the analyses and discussions devoted to comparing the years before and after the Internet entered our lives, there is a constant need to seek out peers and develop our networks of contacts. Rifkin (1945) adapted Descartes' maxim "I think, therefore I am" and modified it to read "I am connected therefore I exist" (Rifkin 2000: 223). The digital age provides almost countless opportunities for communication and a stage with a wide audience on which to present ourselves to both those with whom we are connected and those with whom this process is forthcoming. Good literacy and conscious judgment are needed to distinguish the valuable from the illusory, of mass from individual culture.

[11] Level of Importance of Authentic Influencers to Fashion and Lifestyle Buyers in the United Kingdom as of Spring 2022. *Statista*, 3 July 2023. Available at: https://www.statista.com/statistics/1320926/authenticity-influencers-fashion-lifestyle-buyers-uk/ (accessed 5 February 2023).

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ATTEMPTING A GENDERED CULTURAL SEMIOTIC ANALYSIS THROUGH THE TRANSMEDIAL STUDY OF THE MYTH OF CARMEN

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Abstract

The story of Carmen is perhaps one of the most translated, adapted, culturalized, indigenized and re-produced stories in the western world's canon. Carmen herself has become a myth, an icon, a strong sign of female independence, eroticism and threat. Although suggested to be read as an Orientalistic story of a femme fatale, later readings and reproductions have turned the story of Carmen into a discourse regarding gender, class, race and systems of power. "Whether the adaptation portrays Carmen as victim or victimizer, in short, depends on the politics of the particular contexts of creation and reception" (Hutcheon 2006: 154).

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This study, however, does not aim to contribute to this vast discourse on femininity, sexuality and violence[1], all issues raised by Carmen's story, but rather track the adaptations and trace the cultural ideologies manifested through female representation. Women in culture, in this case Carmen, act as a counter mirror, reflecting the culture's Other. Quoting Pollock (2003: 210) "woman is the sign, not of woman, but of that Other in whose mirror masculinity must define itself". In this case study of Carmen's adaptations, cultural semiotic theory will be used as a methodological and analytical tool in the attempt to understand how the sign "woman" is used almost metonymically as the embodiment of counter-culture.

Adaptation and transmedial transfer

"Storytelling is always the art of repeating stories" (Benjamin 1992: 90)

Christian Metz argues that "there is a reason for the possibility as well as for the necessity of adaptations" (1974: 44). One of the reasons is, of course, in capitalist terms massive financial gain based on the desire to repeat acts of consumption in the form of texts (audio, visual, verbal, etc). Another reason is the necessity of the person or culture to re-tell an old story in a new way, in order to conceive and understand it through the new culture's mechanisms of cognition and meaning making. The adaptations are not newly invented stories which aim to speak only of the culture producing them, but have an overt and defining relationship with the prior text and its culture. The palimpsesteous nature of the original work(s) has an obvious "haunting" effect to the adaptations and transfers, but it is exactly those differences in comparison that can signify to the scholar and "speak" about the intentions of the new text. Hutcheon (2006: 7) argues that "adaptation is repetition, but repetition without replication. There are manifestly many different possible intentions behind the act of adaptation: the urge to consume and erase the memory of the adapted text or to call it into question is as likely as the desire to pay tribute by copying". Adaptations are both an act of repeating, in order to underline a story already told, while preserving acquired knowledge and cultural heritage by "re-animating" them, so they can speak to "now and here", while also an act of questioning and redefining their meanings and knowledge production.

[1] See Catherine Clement's feminist study of the operatic medium in Clement, C. 1988 [1979]. Opera, or The Undoing of Women. (transl. Betsy Wing). University of Minnesota Press.

Regarding transmediality, the author is interested in exploring not only the way in which the circulation and exchange among media affect the constitution of both the literary or artistic procedures that bring about the transformation of a pre-existing product, but also more importantly the ideology that imbues this transformations. According to Picornell (2014: 6) "this phenomenon is related to the ability of cultural communities to agree to new conventions that govern collective identification processes, to create new products with which the individuals who share a baggage of cultural references identify, regardless of whether such references stem from an ancestral past or from a recent consumer product".

An adaptation into a different media is a semiotic translation, a transcoding into a different set of conventions. "Each medium, according to the ways in which it exploits, combines, and multiplies the 'familiar' materials of expression – rhythm, movement, gesture, music, speech, image, writing (in anthropological terms our 'first' media) – each medium […] possesses its own communicational energetics" (Gaudreault & Marion 2004: 65). A study of transmedial transfer, as process as well as product, has to take into account not only the form but the social and communication dimensions of media too. It is not only a matter of turning the mode from telling to showing, for example, but also of adopting and adapting representational politics and communicational strategies.

Petrilli (2014: 211–212) underlines the problem of translation and sense-making as inevitably governed by ideological issues. "Translation theory cannot avoid the problem of ideology […] it necessarily involves the problem of the relation among signs, and to semioethics […]" (Petrilli 2014: 212). And she continues by saying that "[…] to translate in one way rather than in another […] is rich with ideological implications" (Petrilli 2014: 215). Although Petrilli is referring to interlingual translation, a reduction can be made to intersemiotic translation practices, such as adaptations and transmedial transfers. What and how is translated into the new text, what is included and what is omitted, what is faithfully translated and what is freely adapted, is strongly imbued by culture and politics, thus ideology.

Political, aesthetic, and autobiographical intentions of the various adapters are potentially recoverable, and their traces visible in the text. The political dimensions, for example, feminist, postcolonial, race, ethnicity, etc., are all inscribed onto the texts body and are communicated to the reader/audience through signification. In art, intention determines what text the artist chooses to adapt and how. A reading to the adaptation must not though be merely reduced to an autobiographical attempt. As R. Krauss (1981) suggests, an artist's style, and conscious choices in rep-

resentation, cannot be inextricable from his biography, but "this maneuver of finding an exact (historical) referent for every pictorial sign, thereby fixing and limiting the play of meaning, should be questionable with regard to art" (Krauss 1981: 21). Yet as Hix (1990: 81) argues, "it is arguably no easier to separate the creating agent from the creative act than it is to separate the ethical agent from the ethical act". It is still highly problematic to root meaning and value and motive in the artists' personal desires and creative needs (as of course interpreted by the critic), as well as in their relations (conscious or not) to the dominant artistic movements and conventions of their age.

"In the act of adapting, choices are made based on many factors, as we have seen, including genre or medium conventions, political engagement, and personal as well as public history. These decisions are made in a creative as well as an interpretive context that is ideological, social, historical, cultural, personal, and aesthetic", according to Hutcheon (2006: 108). When the adapted text is differentiated to a greater extent than can be explained by generic requirements or personal circumstances, the variations function as indicators of the socio-cultural voice. Each new version of the story of Carmen (taking the argument back to our case study) appropriates aspects of history, in order to suit the "author's" particular beliefs, which can be psychological, political, personal-historical, aesthetical, etc. However, we still have to rethink one more aspect, the function of the adapter's intention towards the audience.

"An adaptation, like the work it adapts, is always framed in a context - a time and a place, a society and a culture; it does not exist in a vacuum", writes Hutcheon (2006: 142). Every media transfer, intersemiotic translation or adaptation is bound to be different from the source text. There are multiple causes of change, varying from form demands (medium specificity), the adapter's intention, the audience's cognition and of course the contexts of both creation and reception. The context can refer to the form of the medium (e.g. silent black and white cinema, HD television, etc.), or elements of presentation and perception, defined by cultural, historical and political time-space, and the time-space of society. When studying adaptations, the historical approach is inevitable. This is sometimes because visual imagery is historicized (which is the case of specific genres like historical drama) but mainly and most importantly because the signification processes which govern the adaptation process are inextricably connected to the society's history (both synchronic and diachronic).

"When" and "where" are two main questions concerning adaptations. An "original"[2] text is translated usually into a different language, place or/and time period. Recontextualization of the adaptation is a form of transculturation. According to Hutcheon (2006: 147) "transcultural adaptations often mean changes in racial and gender politics". Sometimes the intention of the adapter is to purge a text of elements that their particular culture in specific time or place might find difficult or controversial and at other times, the adaptation attempts to "de-repress" an earlier text's politics (Stam 2005b: 42–44). In transcultural adaptations differences of philosophy, religion, national culture, gender, or race can create gaps which need filling. The way the adapter chooses to fill those gaps is rich in meanings and signs. Hutcheon (2006: 150) refers to the process of transcultural adaptation by borrowing the anthropological term "indigenization", strongly implying agency. She writes "[…] people pick and choose what they want to transplant to their own soil. Adapters of traveling stories exert power over what they adapt" (Hutcheon 2006: 150), raising discourse on post-colonial politics.

Due to globalization or more specifically the cultural "Americanization" of the modern west, adaptations now days are made for wider audience, heteronymous, consisting of different cultures, languages and politics. In this case adapters tend to deemphasize national, regional, cultural, religious or historical specificities, an adaptational acts to which Hutcheon (2006: 158–160) refers to as "Historicizings/Dehistoricizings" and "Racializings/Deracializings".

Gender and culture: a semiotic approach

We can all agree that a system of representation is a point of production for definitions and meanings. These can be both seen in the particularity of the "opera" but also in its relations with other systems. When dealing with an intended palimpsest of representations, such as the reworks, remakes, adaptations, translations etc of texts, the texts produced each time renegotiate the meanings produced by the former texts from which they draw the thread and weave a new plot of meanings and definitions. According to Pollock (2003: 160), the texts produced "do not record an individual man's [or woman's] personal fantasies or romantics obsessions. They are rather symptoms of and sites for the renegotiation and redefinition of femininity

[2] There is no such thing as an original text, invented anew. All texts are part of chains connected by intertextual relations. There is only a source text that the adapter is familiar with and consciously adopts and adapts.

and sexuality within the complex of social and gender relations" at the time of their making.

Through the language of romantic love, one can detect an attempt to stabilize the positions of masculinity and femininity. Through the visual representation, an attempt is made to organize and exorcize both the pleasure and the threat posed by the "troubling act of looking at an image of woman/difference" (Pollock 2003: 176). An enclosed, framed woman viewed through the cinema's screen or the print of a photograph, with her eyes averted, floating on an undefinable background and chopped up into fetishistic body parts, poses no threat to the viewer. Her physicality is substituted by signification. Therefore, we must see the represented woman not as a "woman", but as a sign, constructed through signification and representation practices.

Cowie in her essay "Woman as sign" was the first to coin "the term". In her study she argues that the woman represented does not stand for herself, of her icon, in Peircian terms. It is a sign imbued by signification practices, standing for other than "woman". It is therefore possible "to see 'woman' not as a given, biologically or psychologically, but as a category produced in signifying practices […] The form of the sign, i.e. the signifier in linguistic terms, may empirically be woman, but the signified is not 'woman'" (Cowie 1978: 60). The signifier 'woman' does not thus reflect pre-existent, real or social produced categories. The attention must be drawn to the signifying practices, in order to detect what the signified is. The object woman in relation to the object of representation of "woman", is a relation between the linguistic signifier and signified, i.e. it is a relation of equivalence not equality. When these two are put together and woman is weighted with the form and meaning of the represented "woman", woman is formed as a sign. It cannot be dissociated from the message that it inevitably carries. Woman can signify in many ways. However, if it is weighted with a definite signified, it becomes a sign, a sign other that "woman", arbitrarily, historically and culturally constructed. So what does the sign "Carmen" signify?

The ideality of manliness and lady-like femininity is often demonstrated in art through the contact and the implied contrast between the bourgeois man and the fallen woman. Art, with its public and moral function contextualizes the morally fallen to demonstrate the ideas of its culture. The Ego of culture is thus defined as the opposite of the Other, through the mythical construction of the "fallen ones".

According to O' Sullivan et al. (1994: 193), myths serve the ideological function of naturalization, i.e. "to make the political natural". In other words, in order to make the common cultural and historical values, stances

and beliefs of a culture look natural, normal, obvious, common sense and even real. Barthes (1972: 117) also argues that the "[…] myth has in fact a double function: it points out and it notifies, it makes us understand something and it imposes it on us" at the same time. Structurally, the myth is constructed from a semiological chain. The materials of mythical speech, according to Barthes (1972: 114) are reduced to pure signifying function as soon as they are caught by myth. Language and pictures are all united in the same sum of signs. The myth superimposes on the signifiers of the chain of signs the meaning and form of the myth in a double way. In the signification process, the myth signifies through signs and the signs signify through the myth. The myth signifies through signs in a sense that the meaning is already complete, "it postulates a kind of knowledge, a past, a memory, a comparative order of facts, ideas, decisions" (Barthes 1972: 117). In the case of Carmen, it postulates a shared fear of the female inner Other and metonymically of the cultural Other, the one which resides beyond the cultural semiosphere or on the borders of the semiosphere, and is not subjected to its commonly shared values and stands.

Chandler (2007: 102) adds a very interesting parameter in the mythical discourse. He states that "individual myths and cultural practices defy interpretation, making sense only as a part of a system of differences and oppositions expressing fundamental reflections on the relationship of nature and culture". Polar oppositions, such as male/female, inside/outside, nature/culture, domestic/wild, are universal categories of the human perceptual-cognitive structure. They presuppose the universal human predisposition to draw a boundary between self and other, social and non-social, or else between culture and nature. These polar categories are often associated with each other. In this way, the female and male polarity also stand for the contrasting duality of nature and culture, chaos and order, civil and uncivilized, wild and tamed. Woman has often been identified as the Other of man, represented as Nature that needs to be tamed, in order to become productive by man/Culture. In the original story of Carmen, her alternity by gender is enlarged by her racial identity. For most European cultures, Carmen as a Gypsy is an "exotic" inner Other. "Inner otherness is an important factor in history, or rather, in the models that have contributed to form history. History would have been different without the moors in Spain, the gypsies in much of Western Culture, and, more obviously, woman in what has through most of history been the man's world" (Sonesson 2004: 162–163).

In *Figure 1,* the contrasting relationship between Male and Female is depicted with the use of the cultural semiotic's canonical model. Based on the canonical model of the Estonian school of semiotics, G. Sonesson draws a

schema to define the terms Ego, Alter and Allius, as well as their inter-relations (Figure 2.). According to Sonesson's extended model, we can perceive Ego as the center of the Culture's Semiosphere, Alter as the external subject of the Extra-Culture and Allius as a Non-person. Ego recognizes Alter as an Other and is in speaking terms with, while Allius is a non-person, about whom Ego and Alter only speak and not directly to (see Figure 3.). The kind of otherness that is of interest in this study is the non-reciprocal one, that which the Tartu school refers to asymmetrical. According to Sonesson (2004: 163) "[…] it is not only the relation of Culture to Non-Culture that is asymmetrical, but also that to Extra-Culture. The asymmetry concerns the relationship to the other Culture as non-subject, not only as non-person. There is a possibility to communicate, but the relationship is not reversible".

Bakhtin has argued that it is only the Other which is directly known, since only he/she can be seen in complete[3]. Therefore, the Ego is always constructed in opposition to the Alter. Taking this argument a step further, the Other is seen and understood only through the mechanisms of perception and recognition of the Self. Therefore, it is the Ego that is constructed as a projection of the Culture's ideal Self, while the oppositional Alter is constructed on its counter image, a counter *imago dei* to serve its purpose as a counter definition of the Ego. "Woman" as the opposite of "man" is shaped and defined by the male cultural Ego and "man" in its turn draws its power from the oppositionally constructed image of the female Other.

Sonesson (2000: 537; 2004: 153) very distinctively notes that cultural semiotics is not about individuals, nor about a culture per-se, it is about the model which the members of a culture make of their Culture. Bearing that in mind, through the translations, adaptations and reworks of an original text, one can trace the model the artists (as members of a culture that define and are being defined by it) make of their culture.

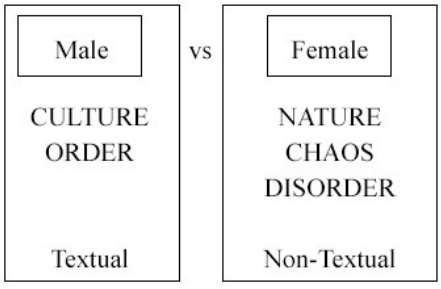

Figure 1: Male vs Female in canonical cultural semiotic model

[3] Bakhtin (1990: 23) "precisely that which only I see in the other is seen in myself, likewise, only by the other".

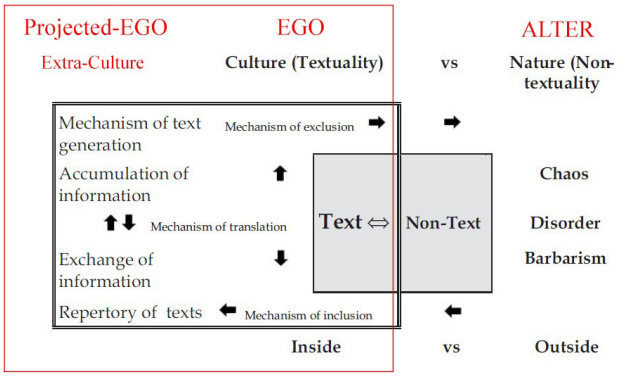

Figure 2: Extended canonical model.

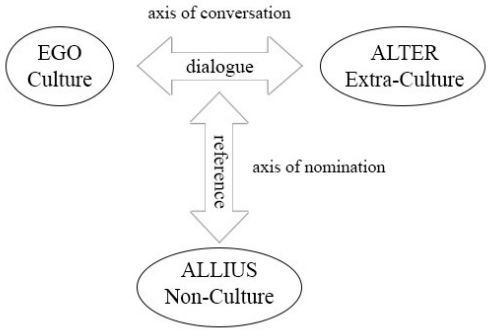

Figure 3: Sonesson's schema on the axis of communication.

Introducing Carmen

The story of Carmen revolves around a single protean figure, culturally stereotyped yet retrofitted in ideological terms for adaptation to different times and places. Prosper Mérimée's original novella was published in 1845. In 1875, Georges Bizet, in collaboration with the two librettists Henri Meilhac and Ludovic Halévy, presented an adaptation of Mérimée's Carmen at the Parisian Opera. Mérimée's novel was translated from a written text into a multimodal performative text, adapted for the Opéra-Comique audience. The narrator's voice is silenced in the operatic version: the story is told through a combination of dialogue, song, music and dance by the protagonists. The story that is told is only a part of Mérimée's original text, focusing on the part where Don Jose, meets, falls in love with and murders Carmen. These two texts, Mérimée's novella and Bizet's opera play will both act as source texts for future translations and media transfers.

Analyzing the texts with the Cultural Semiotics Model

Carmen (1845), Prosper Mérimée, novella.
(Other by race, class and gender)

Prosper Mérimée travelled to Spain in 1830 and wrote about his travels in the Revue de Paris. In the issue of December 29, 1833, he tells the story of a young woman named "Carmencita", a charming Spanish witch, translating the title "sorcières espagnoles". At that time, neighbouring Spain was a major source of inspiration for the French, their exotic Other. Many writers (Gustave Flaubert, Victor Hugo, Alexander Dumas, among others) conceptualize their stories in the general orientalist climate of the time. They take the form of travel diaries focusing on the Third World provinces, moving between fantasy and arbitrary ethnography. Between 1830 and 1845, Mérimée combined various texts[4], to finally come up with the final version of his *Carmen* in the travel biweekly specializing in exotic Third World travel journals, the *Revue des deux mondes* (October 1).

In 1845, Mérimée, combining all the above elements, wrote and published a novel entitled "Carmen". It is the story of a French traveler and scholar who meets and describes Carmen, a young gypsy woman, attractive but not conventionally beautiful, with a deviant behaviour. She smokes (a particularly delinquent feature for the French upper and middle class readers), she is an outlaw and possibly a murderer. Then she meets Don Jose, a Basque ex-military man, from whom the reader reads a second description of Carmen. Don Jose falls in love with Carmen, follows her into illegality, becomes her companion in the gypsy society, and finally murders her, driven by his jealousy for her. Carmen is extravagant and capricious. She is accused (by both the narrator and Don Jose) of being a sorceress and diabolical. It is her fault that Don Jose is jealous and it is her fault that he must kill her.

The novel concludes with a quasi-ethnographic description of the minority group of gypsies in Europe and particularly in Spain. The Gypsy tribe is described as animalistic, violent, without principles and order, with particular, amoral internal laws, and no written language or specific religion. The Gypsies are identified as Nature and Chaos, they are non-textual, the binary opposite of French culture identified as the Culture, Order and textuality. In this view it becomes the Gypsies' fault that Carmen must die;

[4] In 1840, a friend, Eugénie de Montijo, told Mérimée the story of a brigand who killed his mistress; in 1844, he wrote to her that he had just read George Borrow's The Zincali (1841) and The Bible in Spain (1843) (Hutcheon 2006: 154–5).

she is a non-person because she belongs to a non-culture and she cannot exist within the Culture's semiosphere.

The author and first person narrator of the novella Mérimée is identified as Ego (white, male, upper class member of Culture). He tells the ego-culture mediated story of Don Jose, a *brigadier* whom he met in Spain. He himself recounts the story of him and Carmen, an Andalusian gypsy. They are both Others, as Spaniards to the author and the public/readers of France. However, Carmen as a woman, a Gypsy among Spaniards and an outlaw, is a triple alien, Allius, to both Don Jose and the author/reader. She is Allius by gender, class and race. Don Jose, in the beginning, a virtuous male soldier belongs to Culture. Later in the narrative, as he meets and falls in love with Carmen he shifts to Extra-Culture. This is a Culture that it is not his own but upon which he projects his Ego. Carmen on the contrary as a mysterious dangerous woman, a thief and a Gypsy is Non-Culture. As the narration progresses, Don Jose and the reader, become familiar with the Gypsy culture and she moves from the state of Non-Culture to that of Extra-culture, i.e. acknowledging a "culture" structurally different, but with its own internal laws, order and morality. (see Figure 4)

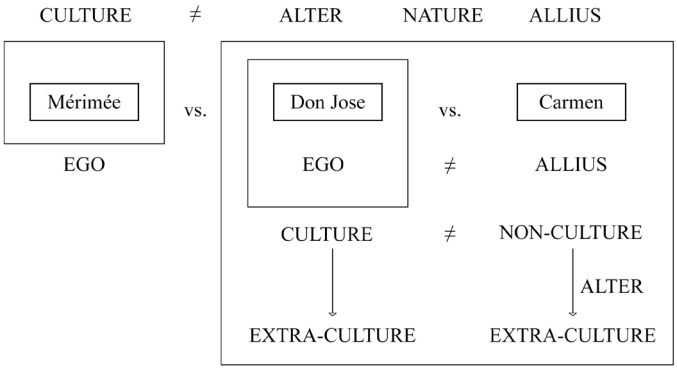

Figure 4: Cultural semiotic analysis: Mérimée's Carmen.

First transmedial adaptation:

Carmen (1875) Gorge Bizet, Henri Meilhac and Ludovic Halévy, opera in four acts.

(Other by race, class and gender)

There is of course no record of the staged play of Bizet's opera which would allow us to study and comment on aspects of props and scenery. The study of Bizet's adaptation is only based on the opera's libretto and musical compositions, retrieved from future re-executions.

Hutcheon (2006: 36, 40) argues that "a novel, in order to be dramatized, has to be distilled, reduced in size, and thus, inevitably, complexity" and that "in the process of dramatization there is inevitably a certain amount of re-accentuation and refocusing of themes, characters, and plot". Bizet's media transfer is characterized by great textual condensation and omissions. New parts and roles are created to serve the new play's main goal, and spectacle. As the story transforms from the mode of telling to showing, the parts described are reduced. The first act takes place in the public area outside the cigarette factory. The second act evolves in Lilla Pastia's inn, a Gypsy inn keeper and a smuggler. She is a character who, along with Carmen's female gypsy companions -Zuniga, Frasquita and Mercédès- do not appear in the original text. The third act takes place in the mountains, in contrast to the original text's plot that is mainly dramatized in the Spanish countryside. The operatic version chooses to limit the representation of the wild to a single act, probably due to the mediums restrictions. For the fourth and final act, in which Carmen's murder occurs, a scene is added outside an ancient amphitheatre where the bullfights take place. One of the roles expanded for the sake of spectacle is that of the bullfighter, Escamillo. In the novel, there is only a brief reference to him, towards the end of the narrative, while in the opera he occupies a fairly large role. Bizet's Carmen and Don Jose are somehow toned down. The digressive Gypsy is not a murderer or a thief, yet she is a smuggler. She is not married to a prison inmate, but she is free and emotionally unstable, according to her librettists. Carmen is a worker in a tobacco factory and a smoker, at a time (19th century) when smoking was an identifying sign used by French prostitutes. Don Jose, is neither a thief nor a serial killer, he is an honest man lured into illegality by Carmen. Both characters have been somewhat sanitized for the family-oriented Opéra Comique audience. In contrast to Carmen, as the female Other, a new character, Micaëla is introduced into the plot. Micäela is invented as a maternally approved rival for Don José's affection and as a pure and innocent foil for Carmen. She is Jose's childhood friend, virtuous, law-abiding and prudent, she is everything Carmen is not; she is an Other to Carmen.

Bizet's Carmen is murdered by Don Jose in a festive atmosphere and in a spectacular manner. The ending is inevitable, as it is written on the Gypsy woman's tarot cards. Mérimée's Carmen dies because she was born a Gypsy and she cannot escape her race and thus fate. Bizet's Carmen is murdered because in 19th century Paris her liberated sexuality and independence are conceived as diabolical and evil predisposition. To Carmen's –"*Ce que je veux, c'est* être *libre et faire ce qui me plaît*.", : "What I want is be free to do

whatever I want", Don Jose responds by asking her : "*Tu est le diable, Carmen*?", "You are the devil Carmen?" (Carmen, act III, scene II), leading the plot to her legitimized murder.

In this first adaptation, the story is not told from the point of view of the author, but that of Don Jose. In this version of Carmen we can see and hear her, unmediated by overt male intervention. She speaks/sings for herself. Hutcheon (2006: 8) describes it as "a change of frame and therefore context: telling the same story from a different point of view. For example, it can create a manifestly different interpretation". In the original text the narrator of the story is a white, French, educated and prosperous male (who is being identified probably as Mérimée himself). The readers of the novel were originally intended to be the upper and middle class French, women and men alike. The audience of the Opéra Comique of Paris when the novel was adapted into an opera play were upper class bourgeois families. Is this very significant change of viewing point just a "medium specific" choice, or a conscious intention by the adapters (Georges Bizet and the two librettists Henri Meilhac and Ludovic Halévy)? According to the author, Carmen, although unmediated and self-expressive, is still a construction made as an inverted *imago dei*. Although it is probably just a medium specific choice, Carmen attains a voice for the first time. However, almost a century of adaptations will have to pass until she is given her own voice.

In this adaptation Don Jose, the white male brigadier, stands for the Culture's Ego. Micaëla, the new female character, along with Don Jose's mother, are Others as women, but Culture as white, virtuous, lady-like females. Although Bizet has smoothed out the edges of Carmen for the Opéra Comique audience, Carmen is still an Allius, as a woman, a Gypsy and an outlaw. Carmen is an Allius by gender, class and race. Don Jose swifts from Culture to Extra-Culture as the plot progresses and the white male brigadier enters the Gypsy community and becomes a murderer driven by passion (see Figure 5). If compared to the novella, this operatic version lessens the Orientalistic hues of the plot, based upon the colonialized viewing of the Spanish countryside and the Gypsy culture. Both Spaniards and Gypsies are still represented as exotic Others for the French audience. However, a big semantic difference can be spotted compared to Mérimée's wild characters. In Mérimée's version, the author-narrator holds the position of the culture's Ego. In Bizet's adaptation, the audience, the upper class bourgeois men and women, stand for the culture's Ego. It is suggested by the adaptor that they identify with the two more "cultured" characters of the plot; Don Jose and Micaëla. However, the bourgeois family audience of the Opéra Comique in 1875 Paris was not ready for such an excess of lovers, passions and female

murder on stage. They were unable to identify with the Ego suggested by Bizet and for this reason the play was a popular failure.

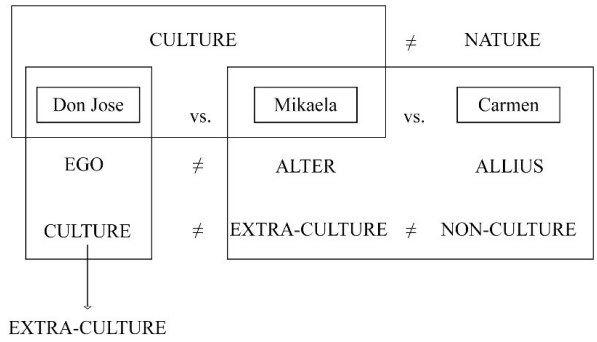

Figure 5: Cultural semiotic analysis: Bizet's Carmen.

"Transcultural" adaptations:

Carmen Jones (1954) Otto Preminger, musical film.
(Other by class and gender)

Carmen's racial identity as an Hispanic Gypsy was the basis of the plot for the ethnographic portrait constructed by Mérimée. This identity, although partially refined, remained central in the Orientalistic operatic version created by George Bizet. When Carmen's story traveled across continents, it was translated into American English and adapted into a Broadway musical by Oscar Hammerstein II, entitled Carmen Jones in 1943. By shifting continents she also shifted race. The American Carmen, brought to the screen later on by Otto Preminger in 1954, is of African descent and so is the entire cast of the film. At that time the Afro-American for the Americans was the inner Other, in the same way as the Gypsies were for Spaniards. Hammerstein's intentions sound patronizing and essentializing today: "The nearest thing in our modern American life to an equivalent of the Gypsies in Spain is the Afro-American. Like the Gypsy, he expresses his feelings simply, honestly, graphically. Also as with the Gypsy there is rhythm in his body, and music in his heart" (Hammerstein 1945: xviii). As stated by Hutcheon (2006: 94) "an adaptation can obviously be used to engage in a larger social or cultural critique". Adapters have vastly used adaptations to articulate their political positions and comment on synchronic ideologies. Otto Preminger's Carmen partly choses to avert the political discourse and direct it towards gender politics.

The transcontinental transfer of Carmen demanded a change of medium: from the elitistic form of the Parisian opera to the popular medium

of cinema, albeit preserving the musicality of the mode of narrating and thus the musical genre. The adaptation from a bourgeois targeted audience operatic play to a populist American musical with an all-black cast, was a radical move, since it was the time before the Civil Rights Movement. Black performers were not necessarily welcome in mainstream stages. Black performers (musicians) were forced to play for a white audience with their face averted, while separate all-black theaters flourished at the time. Due to racial and political tension, a mixed-race love relationship presented on stage or on screen would not have been acceptable. By giving the characters of the plot, the same racial identity, Carmen has lost her racial otherness as a Gypsy between Spaniards and shifted the narrative discourse from racial politics to gender. This shift is contexted in the synchronic new discourse of women's rights, empowerment and fight for liberation towards the end of the WWII.

Carmen Jones is an example of what Hutcheon (2006: 158) refers to as *indigenization* of the adaptation. The verbal text of the opera is not simply translated, but transformed and adapted to the "Afro-American" dialect. This dialect is not recognized by the white American audience as language but a non-cultural form of communication used by the belittled Afro-Americans. In this adaptation, Don Jose, becomes Joe, but retains his military identity. Carmen, remains a worker, this time in a parachute manufacturing factory (the plot is dehistoricized by being dramatized during the WWII). Micaëla's character name is changed: it is Afro-Americanized to Cindy Lou. The Spanish bullfighter is now a famous boxer and Carmen's Gypsy companions are no more smugglers but sexually liberated women working in the cabaret. When Joe deserts the army for Carmen's sake, instead of the Spanish countryside, he flees and hides in a Chicago motel. There, Carmen takes some of her jewelry to a pawn shop, in order to ensure their survival. Joe is restrained in his motel room, while Carmen dwells in the public sphere, in order to economically support both. This shifting of roles provokes a reaction in the interwar male sensibility of both the protagonist and the viewer. Carmen's fate cannot be surpassed in her musical version. She is murdered by strangulation (a change with a stereotypical reference to the animalistic nature and cruelty of the Afro-Americans), by her lover Joe. The American Carmen is not condemned as an immoral, evil woman, but as a femme fatale who is too liberated for her time. After violently murdering Carmen, Joe sings to Bizet's tune "String me high on a tree/so that soon I'll be/ with my darling, my baby, my Carmen." and the inevitable echoes of lynchings and other forms of racial violence would have resonated with the U.S. audience at the turn of the century (Hutcheon 2006: 162).

The choice of actors of mixed descent for the main roles signifies an intention on the part of the director to make the play as identifiable and acceptable as possible to white American audiences. Dorothy Dandridge, with her light skin, European-like features, fashionable contemporary hairstyle, and the distinctive beauty spot on her upper lip, appears to be a black version of the very popular Marilyn Monroe. Likewise, her co-star, Harry Belafonte, an American of Caribbean descent, is characterized by his light brown skin and delicate features, which contrast with the deep dark colour of skin, broad structure of nose and full lips, stereotypical characteristics of the African-descent. Ellis in his "Studies in the Psychology of Sex" (1921), provides a very interesting insight into the Western perception of the sexuality of the Other. He states that it is difficult to evoke sexual attraction between two people structurally different on a racial basis (Gilman 1985: 237). He also argues that "inferior" races admire Western women more than women of their own class and race (Gilman 1985: 218). Thus, it can be said that the director Otto Preminger intended to make his "exotic" characters more appealing to a white audience and to tone down the otherness of his "Afro-American" protagonists, thus creating the illusion of a relative closeness of the Other.

Carmen Jones in an all-black cast movie loses her alternity as a Gypsy. Both Carmen and Joe are African Americans, at a time when in America they are as much Others as the Gypsies in Spain. The transformation of Carmen into an "Afro-American" story subtracted the internal relation of otherness between the two main characters. It is transposed to the relationship between characters and audience. As the figure (Figure 6) demonstrates, the white American audience, as well as the filmmakers, identify with Ego and Culture and classify the subjects of the story as their oppositional Others, as Nature. A different system of oppositions is constructed between the main characters, Carmen, Joe and Cindy Lou. Both Cindy Lou and Carmen are Alter to Joe, by gender, but Carmen is a double alien, due to gender and class, an Allius. Her liberated sexuality, the idea of the fallen woman, places her on the level of Nature, Chaos and thus Non-Culture. Cindy Lou, the translated character of Bizet's Micaëla, is a woman of similar class, race and ideology and moves in the semiotic scale between Extra-Culture and Non-Culture, when compared to Joe's Ego. Carmen's place in the semiotic system is not shifted: it is Joe who moves to the domain of Non-Culture and is being identified as Nature (the stereotypically perceived Nature of the Afro-American), governed by lawlessness, disorder and brutality. As the plot evolves, Joe moves from Culture to Nature, due to his animalistic display of violence. The focus is shifted from the Orien-

talistic view of race (and post-colonial racial politics) to sexual liberation. From Bizet's and Mérimée's bourgeois ideology - racial and class politics of the mid 19th century - the adaptation travels in time and space imbued by post-war middle class American ideology, were both Afro-Americans and women are equally Culture's inner Others. As clearly stated by Leicester (1994: 250), *Carmen Jones* is a film that highlights "[…] war time and postwar anxieties about the decay of masculine power and authority when women are allowed to work".]

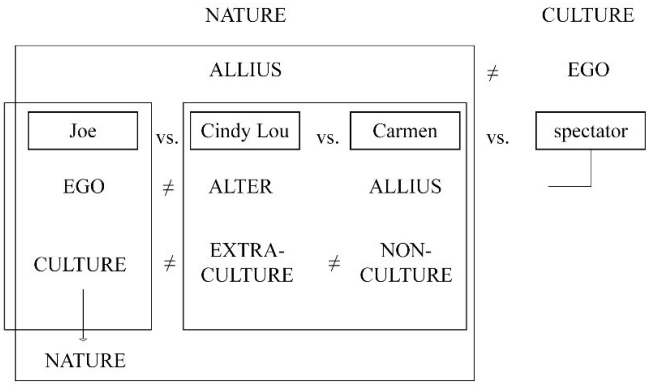

Figure 6: Cultural semiotic analysis: Carmen Jones.

The Wild, Wild Rose (1960) Wong Tin-Lam, film.

(Other by gender and culture)

The Wild, Wild Rose (original *Yeh-mei-kui chih-lien*), is a Hong Kong film directed by Wong Tin-Lam, released in 1960. This movie can be examined as another case of *dehistoricization and indigenization* of "Carmen". It is mainly based on Carmen's American adaptation, *Carmen Jones*. It is also a case of what Sonesson (2004: 169) calls the Americanization (instead of globalization) of culture. According to Sonesson (2004: 169), "this concept of sender culture is different from what the Tartu school calls sender versus receiver orientation: a culture with the former is one in which the sender adapts to the level of understanding and knowledge of the receiver. In the latter kind of culture, the receiver has to adapt". He adds that "what the North Americans distribute are 'deformed texts' extracted from other cultures" and none of these texts would have reached the other cultures if haven't formerly been made popular by North-American culture. The by now popular story of *Carmen* gets a postmodern reading when transposed to the noir-like setting of Hong Kong's Wanchai district. All cast and language is Mandarin.

The movie belongs to the genre of the romantic musical. The main characters are Hanhua, Sijia and Suxie. Hanhua is a pianist, he is moral and faithful. He is betrothed to a simple Chinese lady (Suxie) and is a good son to his mother (an important attribute for Chinese culture). His counterpart is Sijia or The Wild Rose. She is a cabaret singer not a thief, a smuggler or a prostitute. She is also not as wild as her western versions. She does not sell herself to the cabaret's customers like her coworkers do, and she is very compassionate and proud. She is a liberated, independent woman with a strong temperament, until she falls in love with the male main character. After she becomes "engaged" to Hanhua, Sijia neglects herself, she renounces her work as a cabaret singer and her independence. She becomes a wife and a householder. Sijia is forced to live in poverty, while patiently and faithfully waiting for Hanhua to be released from prison. It is a time when love still signifies women's submission to legal and moral control and definition of their sexuality by men (Pollock 2003: 197). Hanhua from the other hand starts off as a virtuous, hardworking man, engaged to the lady-like Suxie, but as he gets involved with the liberated Sijia, evolves into a drunk, becomes violent, a murderer, a thief and a liar.

Sijia wears western clothes and sings famous opera songs adapted with mandarin lyrics. She metonymically signifies Western Culture. The director uses not only the *Habanera*, but other famous western opera songs, like *La donna é mobile*, *The Merry Widow* and *Madame Butterfly*. In order to maintain some of the original's Spanish essence, the director employs a scene of flamenco dancing. The indigenized "Carmens" with same race characters are appropriations which in effect deracialize some of the play's tensions, but the changes in time and place have other political repercussions. It is the time before Mao's Cultural Revolution (1966), when the West still exercised a significant influence on Asia's culture but at the same time was considered to pose a threat on Chinese culture's traditional values and morality.

The cultural semiotic relations between the characters are demonstrated in figure 7. Hanhua is identified at the beginning of the plot with Ego and Culture, which is the modern Chinese culture. Later on, corrupted through his exposure to western culture, nightlife and illegality, Hanhua moves to the Sphere of Nature and Non-Culture. Suxie, just like Micaëla is an Other to Ego as a female, and is identified along with Hanhua's mother as Extra-Culture. They metonymically stand for traditional Chinese culture. Sijia, is an Allius, an exotic, dangerous female that belongs to Nature, Chaos and thus Non-Culture. Sijia signifies for western modern Culture. Through contact of the two worlds, Hanhua and Sijia, the East and the West, the

virtuous and the morally fallen, the Traditional Chinese Culture and the Culture of the West, the ideality of masculinity and femininity is demonstrated, and the ideas of culture are contextualized. In this way, the movie cautions the viewer that the western Culture although appealing may be dangerously corruptive for its Culture, for the moral, ethical values that constitute Chinese tradition.

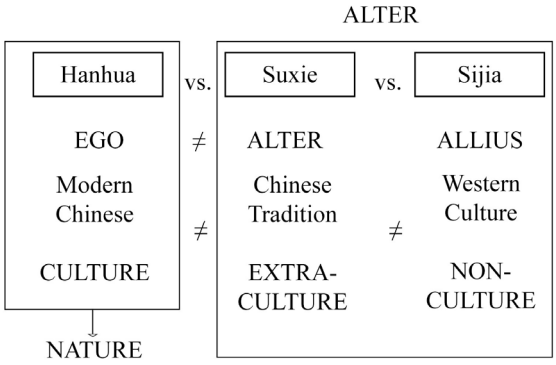

Figure 7: Cultural semiotic analysis: The wild, wild Rose.

Globalized adaptation:

Carmen Sandiego (2019) Houghton Mifflin Harcourt
(Other by individuality)

"Carmen Sandiego" is a very distinctive case of transmedial transfer. It started off as a series of computer games created by the American software company Broderbund in 1985, entitled "Where on earth is Carmen Sandiego". In the 1990s, the franchise was extended into three television shows, books and comics, board games, a concert series, two planetarium shows, and two music albums. In 2019, HMH Productions co-produced the animated Netflix TV series Carmen Sandiego which ran for four seasons up to 2021.

This media franchise is classified as "mystery exploration". Carmen Sandiego began as a thief of Latino origins and the ringleader of the criminal organization, V.I.L.E.. The protagonists which included the in-game character controlled by the computer user, are agents of the ACME Detective Agency who try to thwart the crooks' plans to steal treasures from around the world, while the ultimate goal is to capture Carmen Sandiego herself. In HMH's transfer into an animated TV series, Carmen Sandiego is not a villain or an antihero, but the heroine. She is recruited to V.I.L.E. in infancy and trained as a master thief, only to turn against them and seek to

undo their thievery. The story is told (for the first time) from the perspective of Carmen. Carmen, the Femme Rouge, steals valuable artifacts from the crooked company and donates them to humanitarian causes. She is a modern female version of Robin Hood[5]. The third party in this conflict is the ACME Detective Agency. The head of the agency and a foil to Carmen is an Interpol Officer acting together with his assistant, a female Other to Carmen.

Carmen moves between continents like a female James Bond and belongs to no country or nation, although her Latino identity is strongly suggested. Like immigrants, Carmen Sandiego is non-territorial, she is a radical Alterity, an extra-text. The globalization of culture has diminished the boundaries between cultures, nations, races and intertexts. In the globalization of Ego, Carmen as an Allius, a nomad, a non-person, moves in the shadows, in the cracks of time, and between the urban gaps. Her counterparts, the Interpol officer and his assistant, are signs for Order, Ego and territorial Culture. While the crooked global Company of thieves V.I.L.E., stands for the Globalization of corporate capitalism, a non-territorial Culture, an ultra-Ego (see Figure 8). According to Sonesson (2004: 171) "[…] it is conceivable that we are now living in a phase of history in which the Nation model of Culture continues to exist, but a new model that already identifies it with the Big Company begins to prevail".

Sonesson (2004: 166) underlines that, "globalization, then, is, among other things, the hypertrophy of the inner Other". In the second scenario of globalization, he explains, a significant part of the population, for example the immigrants (like the Latinos in North America), are inner Others for the state-nation Ego and live "in a territory that others define for them as being not-textual" (Sonesson 2004: 167). The inner Others appear as being members of Non-Culture or Extra-Culture, deprived of territory. This deprivation is what constitutes, inter alia, the Alterity of the inner Other. In Sonesson's third scenario of globalization, territory loses its significance as a definition of culture. The cultural semiosphere is no more defined by its territorial borders. "Now we are confronted with a case in which a culture does not relate to the state-nation at all. That is what happens in the third scenario of globalization […]" (Sonesson 2004: 170). He adds that […] in the long run, this may turn out to be the most dramatic model of globalization: when what defines the Culture, within the dialectics of cultural semiotics, it is no longer a state-nation with its territory, but something else, such as a company" (Sonesson 2004: 170).

[5] "The little Red Robin Hood.", 1 (1) [09:20].

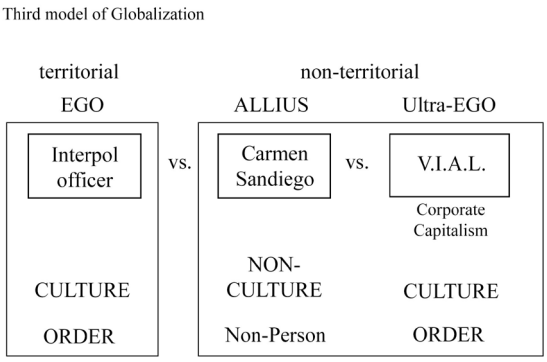

Figure 8: Cultural semiotic analysis: Carmen Sandiego.

Conclusion

In this paper, the author has attempted to demonstrate the way in which "Carmen" as a woman-sign has acted as a vehicle of cultural signification through two centuries of adaptations. Cultural semiotics has been employed to examine how "Carmen" as an alterity signifies the way in which Cultures see their inner Others. The research followed "Carmen" since her making, during the era of mid 19th century European bourgeois ideology, along the early 20th century mid and post war anxieties of the North-American and Chinese cultures. Two examples of Americanized texts of the 20th century were examined, followed by an analyses of a contemporary 21st century example of corporate capitalism as a scenario of globalization.

It has been noted that as *Carmen* is transmedially transferred through time and space, her Otherness is decreased. In her making, Carmen is an Other because of her gender, her class and her race. In 19th century colonial politics, the inner Other is constructed through signification practices, such as literature and representation, in order to serve the ideology of cultural/racial inferiority and legitimize white supremacy and exertion of power. As her story gets indigenized, Carmen loses her Alterity as a story of mixed-race love and becomes an Afro-American, an inner Other for the white American audience. Carmen Jones is an Other by gender, class and race, only to the white American audience. Her character, along with Joes, is constructed mediated by north-American ideology regarding the Orientalistic and colonial viewing of the Afro-Americans. As claimed by Said ([1978] 1996: 14), the European and thus western culture gained its strength and identity by contrasting itself with the East as a kind of substitute or even subliminal self. East is constructed as the Other of the West, through which European civilizations were defined "as its oppositional im-

age". Carmen Jones though is a two leveled signification system. The first concerns the way in which the white audience views the "Afro-American" culture and the second is about the relationships constructed between the all-black protagonists. Analyzing the second system of relationships, Carmen is an Other only by gender, giving room for discourse about the gender politics of the mid war era and male anxieties about the decay of masculine power and authority.

This schema is inverted when Carmen moves to the East and is adapted as a romantic film in late 20th century China. The model which the members of the Chinese culture make of themselves can be illustrated through "The Wild, Wild Rose". Carmen, or Sijia, sheds her racial identity to be metonymically constructed as the exotic, this time coming from the West, inner Other. She is still an Other due to her gender. Women in Chinese culture in the 1960's, before Mao's Cultural Revolution, were still considered to be inferior then men and bound to submission. Ethics and sexual morality were considered to be the highest of virtues within Chinese culture. The sexually liberated West of the 1960's thus posed a great threat to modern Chinese culture through their cultural interface. "The Wild, Wild Rose" was a warning of moral and cultural decay. It is also a suggestion to eliminate all corruptive contacts with the globalizing West, while regaining the lost identity by re-connecting with the traditional Chinese culture.

The last case study of this paper is an extreme leap in space and time. *Carmen*, through two centuries of several adaptations in all kinds of mediums, has become a myth, a cultural sign. In *Carmen Sandiego*, Carmen retains some of Mérimée's original inspiration, which are her Latin origins, lawlessness, fearlessness and independence. Carmen Sandiego is a "non-territorial text", she has no ethnic identity and neither do her narrative counterparts. Carmen Sandiego can be read as a modern example of the extreme scenario of Globalization, which is that of corporate capitalism.

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EVALUATING THE IMPACT OF INTERACTIVE CINEMA IN AUDIOVISUAL LITERACY AND EDUCATION: AN EYE-TRACKING STUDY[1]

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Abstract

The present paper explores the use of interactive cinema in education from the perspective of young students' responsiveness. With the use of an eye-tracker, gaze data was collected from students aged between 10-13 years who watched a short film extract, enhanced with a number of interactive elements or "hotspots" that appeared during playback. During the experiment, the eye-tracker collected data on the behavioral patterns of

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student participants with regard to their willingness to access the interactive elements on screen, the time they devoted to reading them, possible optimal positions of those elements, etc., also studied in relation to demographic information concerning age group, area of living, and gender of the participants. The aim of the experiment was to assess students' responses in the context of exploring the prospects for using interactive cinema in education in order to teach elements of audiovisual literacy as well as any other cross-curricular content.

Keywords: Film, interactivity, multimedia learning, eye-tracking, audiovisual literacy.

1. Introduction

The integration of film in the teaching and learning (T-L) process is a practice with a generally positive impact. As such, combining it with new technologies of interactivity and immersion within the context of multimedia learning should be aimed at further improving and facilitating learners' experience, always in relation to the desired learning outcomes. Nevertheless, considerations arise in relation to the introduction of new tools in T-L, as well as the effective use of existing ones. One might consider the integration of films in education as being somewhere in between: on one hand, films are already being used in T-L in several ways by instructors of all levels specializing in various teaching subjects; but on the other, films do not seem to enjoy the established status other teaching aids do, such as literature for instance. Despite its dominance in entertainment, film has been struggling with securing a permanent place in T-L for quite some time now, at the same time that interactivity is gaining ground in people's everyday routine. Taking that as a starting point, the present paper addresses the role that film can indeed play in T-L: based on an experiment that tests the use of interactive narrative film in a learning activity, the project utilizes eye-tracking to monitor and assess student response, and, by extension, the viability of using this form of interactive cinema as the basis of educational resources.

There was a conscious attempt in the project both to test a form of film that matches the increasingly haptic way of interacting with visual texts today, and to support it with the level of reliability that eye-tracking data can provide. The fact that audiovisual content is delivered to viewers today to a large extent with the use of devices such as computers, smartphones, tablets or smart TVs involves accessing audiovisual texts through touch screens or mouse clicks that require interaction with some form of user interface. This condition creates new possibilities for using such texts in

education, but also poses research challenges, since a better understanding of the cognitive operations involved in such an interaction is required. Eye-tracking was deemed to be the proper tool to address those challenges; because of its ability to monitor viewers' visual attention, eye-tracking is "very suited to study differences in attentional processes evoked by different types of multimedia and multi-representational learning materials" which usually involve the use of computers (Van Gog & Scheiter 2010: 95).

The form and interface of an interactive form of cinema in the project was based on the communicative and informative potential of an audiovisual text in the context of multimedia learning. It was also driven by relevant research indicating that "it is not the media that matter, but how they are used" (Fletcher & Tobias 2005: 118), and that a lot of care is required in the "design, format and configuration of the content shown" in multimedia learning (Molina et al. 2018: 45). That way, teaching materials may benefit from a form of audiovisual narrative text that is not only entertaining but also open to an array of possibilities. Such possibilities include the integration of additional, external information that is combined with the audiovisual text to significantly expand the quality and quantity of information it can provide: interactive films of this kind are enhanced with multimodal[2] connections to other audiovisual content or texts, that build on the knowledge that those films can offer. The element of interactivity also enriches the functionality and appeal of such films: the success of a properly designed interactive audiovisual text lies in its ability to invite engagement with it, which is a strongly desired feature in T-L activities as well. At the same time, interactivity respects students' learning pace by allowing them to access that extra information at will. In other words, interactive cinema that has been successfully integrated in an educational activity can render it an appealing source of information worth exploring through multimedia learning.

2. Foundations of the present study

a. Film and Multimedia Learning

The impetus behind this project has been the increasing exposure of people, especially of younger ages, to multimedia of all sorts, and the con-

[2] The terms "multimodal" and "multimedia" are strongly related to each other in T-L. In fact, Moreno & Mayer (2007) have used them interchangeably (p. 309), referring to a definition of "multimodal learning environments as learning environments that use two different modes to represent the content knowledge: verbal and non-verbal" (Paivio, 1986, as cited in Moreno & Mayer 2007: 310). In the latter mode, the authors include both static graphics such as photos, images, maps, etc., as well as dynamic graphics such as video (p. 310).

sequent need for further research on how this can be put to good use. Relevant studies make this need obvious; in Sweden, for instance, a significant increase has been observed in children's use of various types of digital media since the early 2010s, with children aged between 9-14 years spending an average of 87' per day online (Gidlöf et al. 2012: 330), an age group which includes the one that the present study focuses on. This observation directs attention to the possible ways of enabling a better interaction with the content of that media. Specifically concerning the comprehension of film within the present context, several definitions have been suggested for the concept of visual literacy, for instance the one offered by Nöth (2003) as "the ability to decode the pictorial repertoire of the media without indexical or iconic support;" or Messaris's (1994) multi-levelled understanding of visual literacy as ranging between comprehending the content of visual media, to developing skills for recognizing their aesthetic qualities (as cited in Scheiter et al. 2009: 78). Considering the lack of tools to accurately determine students' visual literacy (Scheiter et al. 2009: 78), as well as the general observation that today people's processing capabilities are under increasing strain (Lajoie & Nakamura 2005: 489), it seems very reasonable to steer research attention towards exploring the ways this added information is, or can be, handled more efficiently. Acquiring more insight into processes of visual literacy and multimedia learning would enable students to respond better to material such as film within T-L conditions.

This need for further research should be geared towards the nature of multimedia content and its connection to film in particular. Although a final definition for multimedia still seems rather elusive, film seems to be an integral part of its various versions. Collins et al. (1997) refer to this difficulty and opt for a definition that includes at least three out of a list of six audiovisual components presented on a computer, such as video, sound and text (pp. 3–4). Another early definition describes multimedia as "the combination of various digital media types such as text, images, sound and video, into an integrated multi-sensory interactive application or presentation to convey a message or information to an audience" (Neo & Neo 2001: 20). A simpler, more versatile, and presently more relevant definition is the one by Mayer (2005b) who defines multimedia as "presenting both words (such as spoken text or printed text) and pictures (such as illustrations, photos, animation, or video)" (p. 2). Although the term remains distinct from that of *hypermedia*, the two concepts have been associated with each other (Collins et al. 1997: 5; Dillon & Jobst 2005: 569), especially when "the interactive aspects of multimedia" come into play (Lajoie & Nakamura 2005: 490).

The incorporation of our version of interactive film in T-L, therefore, falls well within the scope of *multimedia learning* and *instruction*, that is, the process by which learners are exposed to a combination of material presented in both words and images, which is based on Mayer's *multimedia principle*: this simultaneous exposure to words and images is believed to significantly facilitate learning (Fletcher & Tobias 2005: 117–118; Mayer 2005a: 31–32, 2005b: 3, 2009: 4–5, 2014: 385). Mayer's theory is based on the assumption that "learners are limited-capacity dual encoders who actively process information in order to integrate it meaningfully with their existing knowledge" (Dillon & Jobst 2005: 570). There are some additional parameters in the present project related to multimedia learning. First, there are debatable indications that the use of video or animation is actually more attractive than still pictures as one of the types of media used in education (Fletcher & Tobias 2005: 123; Takacs & Bus 2016); and second, with regard to the form of the material, studies reveal the importance of presenting the diverse sources of information in multimedia in a contiguous manner; Mayer's principles of *temporal contiguity* and *spatial contiguity* stress the increased effectiveness for learning when words and pictures are presented simultaneously, as well as close to one another on a page or screen (Ayres & Sweller 2014: 140–143; Fletcher & Tobias 2005: 121; Mayer 2005c: 184). In fact, one of these two channels of information has also been found to be effective when it is aural, which directly relates to the perception of film texts (Ayres & Sweller 2014: 143). In the present study, the film extract that incorporated the added interactive elements is in line with these principles: all the interactive elements that were used contained text as well as, in some cases, an explanatory image; they were also placed within the film borders during playback and thus coincided with the film features that they explained.

b. Advancing technologies in education: interactivity and the role of eye-tracking

The degree to which films and other audiovisual material can be used for educational purposes is also affected by changes in available technologies. The rapidly spreading availability of streaming services and online content creates the conditions for reconsidering the use of films in T-L. The increasing commercially available speed of internet connections, technological innovations, and wide availability and affordability of computers have also gradually allowed audiovisual content to be incorporated in T-L activities (Lajoie & Nakamura 2005: 490). Technology can be beneficial for students, allowing the use of "attractive and versatile teaching electronic

materials providing information in the form of text and images, moving graphic elements as well as synchronized verbal information" (Molina et al. 2018: 45). Precisely within these conditions, research is shifted towards learners' interaction with multimodal material as a way of learning through active engagement rather than simple observation (Lajoie & Nakamura 2005: 490; Renkl & Atkinson 2007: 235).

It becomes obvious that the concepts of interactivity and multimodality lie at the heart of these research considerations. The commercial shift towards interactive forms of entertainment[3] is the technological outcome of abundance and availability of content, as much as it is an opportunity for novelty in T-L. In an early account of using interactive videos in T-L, Norris et al (1990) had highlighted the need for more "reliable experimental evidence" on the use of IT in education, while stressing the positive effects of interactive video on students' learning pace, enjoyment and motivation (cited in Collins et al. 1997: 21). In the early 2000s non-interactive videos were considered "much less effective for creating contexts that students can explore and reexamine, both individually and collaboratively" (Bransford et al. 2000: 209) and studies in interactivity and learning were considered insufficient (Kettanurak et al. 2001: 542). Despite the fact that interactivity still also lacks a fixed definition (Domagk et al. 2010: 1024–1025; Moreno & Mayer 2007: 310; Renkl & Atkinson 2007: 235), it is considered today by many as the most promising form of educational technology (Domagk et al. 2010: 1024). With the changing technological landscape allowing interactive forms of multimedia to increase dramatically, and with a wealth of digital tools and film content also readily available for individual and educational use, the same need for more targeted research still persists, probably more than ever before.

The significance of using eye-tracking in a project such as this lies not only in the kind of knowledge that it can provide, but also in the fact that relevant eye-tracking research still seems to be relatively limited. In contrast to the prominent use of traditional research tools[4] to comprehend the cognitive impact of multimedia learning, methods that directly study "the cognitive and perceptual processes underlying these effects are relatively rare" (Van Gog & Scheiter 2010: 95). Eye-tracking can facilitate the study

[3] Gaming is probably the spearhead of interactive technologies, but even something as common today as video-on-demand (VoD) constantly engages viewers with forms of interactivity, enabling them to control their entertainment experience.

[4] Van Gog & Scheiter (2010) note that research on the cognitive impact of multimedia learning has generally been "based on (transfer test) performance measures, sometimes combined with measures of cognitive load and/or time-on-task" (p. 95).

of those processes by enabling researchers to obtain immediate, raw data about the visual behavior of participants. Within the wider benefits of using it for studying human-computer interfaces (Sungkur et al. 2015: 1786), especially when working with younger participants, eye-tracking "provides information not consciously controlled by the students," offering an insight into "their interests and preferences, which is more difficult to obtain using traditional techniques" (Molina et al. 2018: 45), and more specifically into the "cognitive process of learning" (Lai et al. 2013: 91). Responding to the current need for obtaining data on the way multimedia learning is cognitively processed, eye-tracking can be particularly helpful in studies that include "multimedia multi-representational learning materials" as it can "provide unique information concerning what medium or representations are visually attended to, in what order, and for how long" (Van Gog & Scheiter 2010: 95); this, in turn, can help research on multimedia learning "overcome the limitations of self-reporting measurements" (Alemdag & Cagiltay 2018: 413). Despite the fact that the need for more eye-tracking research on the combination of text and images in education has been repeatedly pointed out (Jacob & Karn 2003: 587; Schmidt-Weigand 2009: 92), relevant work on this field still remains inadequate and in need of further contributions (Alemdag & Cagiltay 2018: 415).[5] We believe that the present work addresses several of the underrepresented characteristics in relevant studies, specifically with regard to the researched school subject, the age groups of participants and the country of origin.[6]

3. Description and process of data collection

a. Target group

The participant sample selected for the project included 82 students attending the last two grades of Primary school and the first two grades of

[5] Dogusoy and Cagiltay (2009) provide an account of educational research that has been carried out with the use of eye-tracking. The studies that they present in their work include, but are not limited to, multimedia learning.

[6] Alemdag and Cagiltay (2018) provide an overview of available literature in English on eye-tracking and multimedia learning published in the period 2010-2016. First, film was not researched in any of the considered studies as it does not appear in the table presenting the various researched subjects provided by the authors. Second, the percentage of studies with Secondary education participants (Middle school in particular) amounted to 5.8%, with Primary education participants (mentioned as Elementary students) constituting 1.2%, and mixed students – without mentioning specific age groups – a mere 1.2%. Finally, the country of origin for published papers also showed relatively little diversity: 65% were from Europe, with 25 out of 39 being from Germany (pp. 417–418).

Secondary school, which, in the Greek educational system, generally include the ages between 10 and 13. This selection was based on the cognitive abilities of students in relation to both the material used in the activity and their familiarity with computers: further widening the age gap between the two educational levels (recruiting students of e.g. 12 and 16 year of age) would probably and quite predictably produce unequal results given the nature of the present experiment. More specifically, such a selection may have been more straightforward in terms of the comparison of the two levels; it might also have been more applicable internationally, given the fact that the separation between Primary and Secondary education at the age of 10-13 reflects specifically the Greek educational system. Nevertheless, considering a wider age gap such as this would be more appropriate once the purposes of the present experiment have been explored: first a basic understanding of student engagement with interactive film needs to be established, before a subsequent, more fine-grain research can place more emphasis on specific age groups. Such follow-up research could also focus on additional parameters, making use of material that is e.g. more grade-appropriate, or differentiated in other ways as well.[7] Taking all this into consideration, separating participants into groups of Primary and Secondary school students but remaining within student groups of comparable skills also reflects a more practical scope: if a specific form of interactive film such as this one is to be implemented in only one level of education, this experiment can contribute to making that choice a more informed one.

In addition to the first demographic parameter, two additional ones were considered. The second one reflects the gender of participants: a balanced ratio of male (40) to female (42) participants was maintained. Finally, a third parameter of selection considered the area of residence based on population; a simple separation into urban, semi-urban and rural areas was deemed preferable, based on the geographical distribution of population in Greece.[8] The overlapping of all three parameters (age, gender and area of residence) in different groups within the same pool of participants allows the sample to serve the study of several demographic profiles at the same time. A balanced representation of each demographic group within the same parameter was maintained during the selection of participants, and

[7] The findings presented at the end of this paper indicate such possible directions that could be subsequently explored.

[8] For the urban area, a city of >1 million inhabitants was selected; the semi-urban and rural areas were a town of approximately 20000 inhabitants and two villages of approximately 1000 inhabitants respectively, both of which are fairly common sizes in the geographical distribution of population in Greece.

the responses of students across all demographic groups were tested with the same visual material and under the exact same conditions. Considering this co-existence of different demographic characteristics in each student, the final number of participant groups for each demographic parameter from the entire sample of 82 participants is presented in Figure 1:

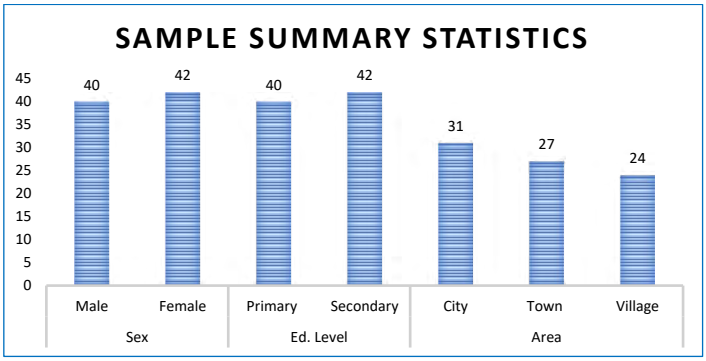

Figure 1: Breakdown of participant sample

b. Technical considerations

With regard to the interactive film that was used, an age-appropriate 4min. 24sec. film extract was selected from a mainstream narrative movie that participants had not seen before.[9] The extract featured some essential cinematic qualities, such as over-the-shoulder shots of characters in dialogue, camera movement, non-diegetic music, CGI effects, contrast between light and shadow, and location shooting. The extract comprised a long tracking shot and a dialogue scene. Interactive elements were spread equally over both these parts and their content included text and pictures. That content was kept very simple, so that participants would be able to go through each one of them in a few seconds at a normal reading rate. The entire content, i.e. both the film extract itself and the interactive elements, was in Greek so that language would not pose an additional barrier while interacting with the activity and was dissociated from any specific class material taught at school. The reasons for the latter choice were based on the fact that the study, in this particular stage, explores the students' level of engagement with interactive film in general; the feasibility of specific learning objectives within individual subjects can subsequently be ex-

[9] Before engaging with the activity, participants were asked if they had seen the specific film or had any recollection of it, and all of them replied negatively.

plored, once the conditions for optimal interactivity in a T-L environment have been better understood. In other words, relating the content of the film to a specific school subject would be irrelevant before establishing first the potential prospects of this T-L method. It would probably also create impractical complexities, as even the same or similar school subjects are taught differently in each educational level. Finally, there could even be interference with the results themselves: with material tied to a specific school subject, the preference that some students may have for that subject might affect their level of engagement with the activity, thus compromising the collected data.

With regard to the equipment, setup, and software, the conditions aimed to replicate as closely as possible a real-life T-L scenario, in which computers featuring interactive video would probably be used individually by students inside their schools. For this reason, the experiment was conducted entirely inside the participants' schools. Apart from the convenience of bringing researchers to schools rather than student participants to the researchers' lab, the "ecological validity" of a real-life environment (Duchowski 2007: 160) was deemed a desired feature, while still maintaining adequate control of the experiment conditions, for instance the importance of calibrating the eye-tracker (Bojko 2013: 178; Majaranta & Bulling 2014: 46–47). A *Tobii X2-60* portable eye-tracker was used, along with a commercially popular and industry-standard 15.6" screen laptop. The film extract was made interactive in the online platform *Wirewax*:[10] a set of 8 clickable objects, or "hotspots,"[11] were placed on the film, appearing during playback with approximately 10 to 35sec. intervals (Table 1). For each hotspot, first a neutral image appeared on screen, resembling an animated countdown clock (Fig. 2a),[12] prompting participants to click on it so that the educational content would open (Figs. 2b-2d); if participants did not click on the animated clock within 10 seconds, the hotspot would disappear permanently. The reason for this was the fact that the content of each hotspot explained the exact part of the film extract where it appeared, with

[10] See https://wirewax.app/.

[11] The term "hotspots" is used by *Wirewax* for the interactive elements that can be used with clips in the platform.

[12] Although the specific design that was used was selected from a pre-determined library within *Wirewax*, our selection considered the hotspot size, non-intrusiveness and informativity: the selected hotspots were large enough to notice but without covering too much of the film action on the screen; they were also of a non-overtly conspicuous white & grey color, and resembled a counter-clockwise index motion to signal the ten-second availability of each hotspot.

the latter functioning at the same time as a form of visual example; therefore, hotspots lingering on the screen for more time during playback would not only disconnect their content from their examples but would also start overlapping each other on screen. These timings and durations provide participants with ample time to notice and read each hotspot respectively. Table 1 breaks down the grouping of hotspots with regard to their timestamp (i.e. their time of appearance/availability inside the film extract):

Table 1: Timestamps and grouping of hotspots

Timestamp in the film extract (min:sec)	**Hotspot No.**	**Hotspot Groupings in Tobii Studio**	
00:03 – 00:13	01	Group 01	Group 09 - Tracking
00:35 – 00:45	02	Group 02	
01:15 – 01:25	03	Group 03	
01:45 – 01:55	04	Group 04	
02:30 – 02:40	05	Group 05	Group 10 - Dialogue
03:05 – 03:15	06	Group 06	
04:03 – 04:13	07 08	Group 07 Group 08	

Figure 2a: The selected design for the hotspot (magnified), featuring an imitation of clock indexes in countdown motion.

Figure 2b: A hotspot as it first appeared on the screen; the image shows its actual size relative to that of the film playback (grey area) and controls underneath it.

Figure 2c: The small change in the appearance of a hotspot when the mouse pointer hovered over it (i.e. before clicking on it).

Figure 2d: The appearance of an average open hotspot content, after participants clicked on it.

The interactive video was subsequently inserted in Tobii Studio,[13] the eye-tracker software, so that AOIs (Areas of Interest) would be placed over each hotspot in order for the eye-tracker to collect gaze data only from the hotspots rather than the entire screen. In order to combine data from the same hotspots across all individual participant recordings, AOIs were combined in groups: for example, Hotspot Group 01 included the gaze data of Hotspot 01 collected from all participant recordings combined. Moreover, hotspots 01-04 appeared during the tracking shot that contained no characters or dialogue, whereas hotspots 05-08 appeared during the dialogue scene which mostly comprised over-the-shoulder shots and close-ups. Consequently, in order to consider potential differences in the participants' responses between these two parts of the video, each of these two sets of hotspots was also assigned to additional groups, Group 09 (Tracking) and Group 10 (Dialogue) respectively. Finally, hotspots 07 & 08 were set to appear and disappear simultaneously. Although they were a single item on

[13] See https://www.tobii.com/.

screen, an additional option was presented to participants after the hotspot was accessed, leading to content outside the film extract; therefore, a separate AOI was used for that option so that the eye-tracker would be able to check the responsiveness of participants to it.

4. Evaluation of data

a. Types of Data Considered

The specific data parameters studied are the following: (i) *time to first fixation*, (ii) *total visit duration*, and (iii) *time to first mouse click*. Specifically, *time to first fixation* generally indicates how quickly students responded visually to the AOIs thus also revealing their readiness to shift their attention to the hotspots.[14] The second parameter, *total visit duration*, measures the total time that participants spent looking inside the hotspots, which indicates an overall willingness of participants to maintain visual interaction with them[15] as a marker of sustained interest in the interactive parts of the project. Finally, *time to first mouse click* measures not only the swiftness but also the conscious willingness of participants to access the interactive parts of the film, and, as such, it was a key factor in evaluating the overall results in relation to the main focus of the project, which is to approach the educational viability of interactive narrative films of this form. Mouse clicks are normally expected to be more task-driven and voluntary; in other words, whereas participants' eyes may be involuntarily attracted by the sudden appearance of the hotspot as a "bottom-up" change in the salient features of the image, which can thus cause a more reflexive saccadic behavior, controlling the mouse and clicking on specific visual prompts is a much more voluntary action, thus also easier to understand as a conscious, task-related decision. Figures 3-5 present the mean *time to first fixation* – TFF (Fig. 3), *total visit duration* – TVD (Fig. 4), and *time to first mouse click* – TFMC (Fig. 5) in seconds, for all participant groups, as well as a comparison between TFF and TFMC (Fig 6). The following two sections break down the findings based on the content of the film and the demographic profile or participants respectively.

[14] This could also provide an indication of the successful (or not) design of the hotspots.

[15] *Total visit duration* differs from *total fixation duration* as it includes the total time of fixations as well as the total time of saccadic activity inside each AOI (Kim et al. 2012: 2423). Despite our temporary blindness during saccades (Gidlöf et al. 2012: 332), the total time of engaging visually with hotspots combining both fixations and saccades is more pertinent here, as the experiment presently focuses on the total time participants spent inside hotspots.

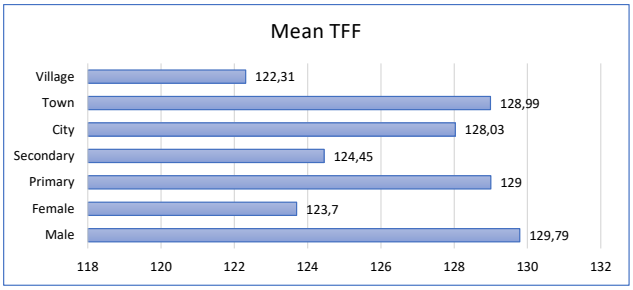

Figure 3: Mean Time to First Fixation.

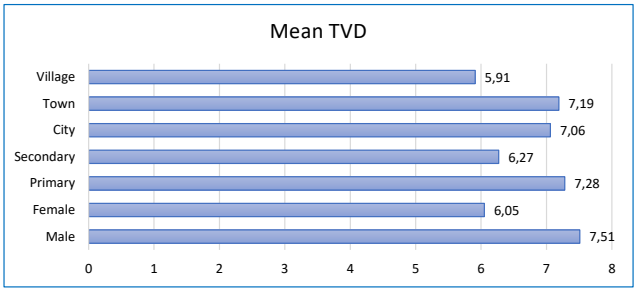

Figure 4: Mean Total Visit Duration.

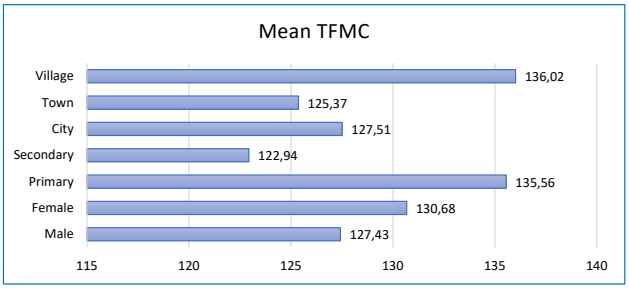

Figure 5: Mean Time to First Mouse Click.

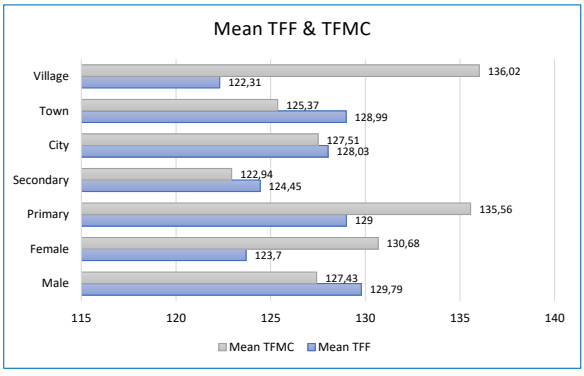

Figure 6: Comparison between mean Time to First Fixation and mean Time to First Mouse Click.

b. Findings I: Interactive Content

The first set of findings is related to the characteristics of the material used, both with regard to the features of the film extract and the way hotspots were inserted in order to enhance it. The research hypotheses related to these factors were the following:

H1. The interaction of participants with hotspots may be affected by the content featured in the underlying film.

H2. The engagement of participants may be affected by the positioning of hotspots on the film frame.

H3. An interactive movie can increase participants' willingness to delve deeper in the material taught.

The following paragraphs present the findings related to these specific hypotheses.

As described earlier, the appearance of hotspots occurred in a sequence with approx. 10 to 35sec. intervals, and identical hotspots were grouped together across all participant recordings. The fact that they appeared in a sequence obviously means that no direct comparison among them can be exported based on statistical analyses. However, comparing the time between the participants fixating on a hotspot and clicking on it can provide valuable information. In Figure 7, the curves for the average *time to first fixation* and the average *time to first mouse click* as marked in the left Y-axis are presented in conjunction with their difference (*Δ*) in the right Y-axis:

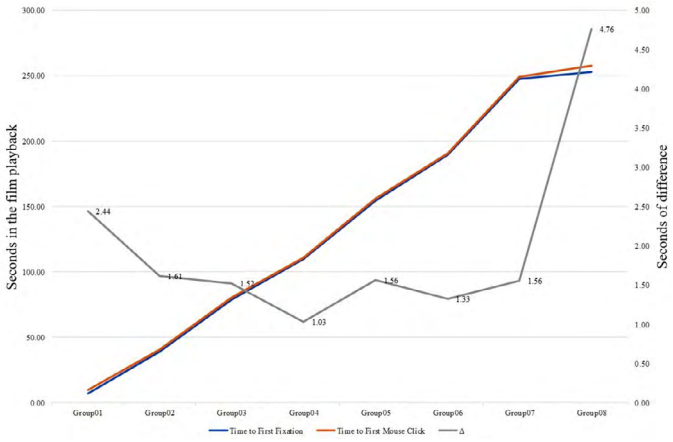

Figure 7: Comparison of the average time between Time to First Fixation and Time to First Mouse Click in the left Y-axis, with their difference (Δ) in the right Y-axis. Numbered "Groups" in the graph refer to the grouping of equivalent hotspots across recordings (see end of section 3b). Also, since the graph refers to separate hotspots, it does not include Groups 09 & 10 which combine data for sets of hotspots (See Table 1).

It can be observed that on average, this difference is decreasing until hotspot 04, and generally stabilizes between hotspots 05 and 07, implying that, on average, participants were progressively quicker in their reactions to the hotspots possibly due to their increasing learning curve. The lowest average difference of 1.03" is marked at the end of the tracking shot (hotspot 04), and the second lowest difference is reported in hotspot 06. The biggest difference is found in hotspot 08 where the gap between the average *time to first fixation* and the average *time to first mouse click* is 4.76", representing the time that participants needed for considering the additional option they were presented with after the hotspot was accessed.

Figure 7 demonstrates that there was a gradually faster tendency in the first part of the extract (hotspots 01-04, tracking shot) to use the mouse right after the first fixation. That tendency was partly restrained and stabilized when the underlying film changed form in the second part (hotspots 05-07, dialogue). It is obvious that, after the compositional features of the film extract changed, participants required some time to get accustomed to the new form. More specifically, without the speed of using the mouse regressing to the normally anticipated low levels of hotspot 01, the dialogue scene, being significantly different from the preceding tracking shot which had no visible editing, no words spoken and no specific characters participating, required participants to re-adjust the way they would perceive the new scene which contained characters conversing.

There is one additional important element that needs to be mentioned here and will provide further insight into the present research questions. Although participants experienced hotspots 07 and 08 as one, they were analyzed separately (using separate AOIs) because hotspot 08 provided participants with the option to freely access additional online material at will. This provides important information about the behavior of participants when given an option that would take them outside the material contained in the activity: selecting one of the two virtual buttons included inside hotspot 08 opened a normal internet browser outside the film extract, with information on the plot and music score of the film. It is noteworthy that only 8 out of the 82 participants clicked on this option at all; the sample therefore clearly exhibited an extremely low interest in accessing anything beyond the confines of the given material.

c. Findings II: Demographic Considerations

The other important aspect concerning the findings relates to the demographic profile of participants, specifically their level of education (primary, secondary), gender (male, female), and area of living (rural, semi-ur-

ban, urban). This particular part of the experiment extracted conclusions regarding the overall visual behavior of participant groups rather than focusing on individual hotspots. The research hypotheses associated with these parameters were the following:

H4. Primary school students are expected to have slower and, overall, less interaction with the video content compared to Secondary school students.

H5. Male and female students are expected to have similar levels of interaction with the content.

H6. The geographical factor (area of living) may have some connection to the participants' degree of interaction with the content.

Before going into the findings, it is important to stress that some difference in gaze behavior can be expected between children and adults. As a general observation, differences in the demographic profile of viewers may be among the factors that affect whether bottom-up or top-down cognitive mechanisms prevail during film watching (Dyer & Pink 2015). Specifically about age, Cohen refers to Day's (1975) observations that children differ from adults "in the speed, efficiency, systematicity, and exhaustiveness of visual scanning," as well as Mackworth and Bruner's (1970) findings that "children do not fixate the most informative areas of a picture as frequently as adults" (as cited in Cohen 2017: 273). Based on that, the level of attention of young students to the most informative areas of the screen is expected to be different compared to that of adults.

Returning to the investigation of the hypotheses themselves, the data generally support H4 (Table 2). Specifically, the data on *time to first fixation* revealed a noticeable difference between Primary and Secondary education students. Secondary education participants established their first fixation by an average of 4.55" earlier than Primary education participants. The second parameter, *total visit duration*, on the other hand, demonstrates less interaction with hotspots by Secondary education participants, at an average of 6.27" in contrast to 7.28" of Primary education participants. Given the intentional choice of using small-sized hotspots, both these visit durations are sufficient to read their content under normal circumstances, but this relatively small difference in seconds still translates to Secondary education participants devoting approximately 13.8% less time to the hotspots. Finally, *time to first mouse click* reveals the most significant difference so far: Secondary education participants interacted with hotspots by clicking on them for the first time by an average of 12.62" faster than Primary education participants. Any interaction with the film was an optional task for

all participants, and both groups were almost equally represented in the 73 out of 82 participants that used the mouse: 38 out of 73 (approx. 52.05%) were from Secondary education, whereas 35 out of 73 (approx. 47.95%) were from Primary education. These observations certainly reveal a higher level of interaction by Secondary education students, which supports H4 and thus draws attention to either the extent of applicability of such material in Primary education or, at least, to the type of interactivity or material that can be used at that level of education.

Table 2: Data comparison between Primary & Secondary education participants

Grade	mean(tff_al~n)	mean(tvd_al~n)	mean(tfmc_a~n)
Primary	129.00	7.28	135.56
Secondary	124.45	6.27	122.94

→ Ed. Level = Primary

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	40	128.99	9.67	97.83	145.03
TVD	~n	40	7.28	3.93	.64	15.37
TFMC	~n	35	135.56	32.72	96.6	253.96

→ Ed. Level = Secondary

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	42	124.45	19.20	59.33	153.02
TVD	~n	42	6.27	3.12	.61	19.32
TFMC	~n	38	122.93	26.37	27.12	169.73

Moving on to H5, the gender of participants produced relatively mixed results (Table 3). The *time to first fixation* revealed a wide gap, as female participants fixated on hotspots by an average of 6.09" earlier than male participants. This observed speed in female students accessing the interactive content of the film can be correlated with the findings from the *total visit duration*: in a combined average of 6.78" between male (7.51") and female participants (6.05"), the latter were found to spend less time seeing interactive hotspots by 1.46". In other words, whereas female participants visually accessed interactive hotspots much faster than male participants, they spent approximately 19.3% less time on them throughout the project.

The last parameter, *time to first mouse click*, produced the same considerations as in the Primary-Secondary education set of participants, with regard to the adequate representation of both male and female participants in the sample of those who indeed used the mouse to open the interactive hotspots. In this case as well, the two groups were represented almost equally (35 female over 38 male). With regard to the way they performed, male participants interacted with the film generally earlier by average, making their earliest and latest first mouse clicks, respectively, 23.89" earlier and only 4.22" later compared to female participants.

Table 3: Data comparison between male & female participants

Gender	mean(tff_al~n)	mean(tvd_al~n)	mean(tfmc_a~n)
Male	129.79	7.51	127.43
Female	123.70	6.05	130.68

→ gender = Male

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	40	129.79	9.68	97.36	142.43
TVD	~n	40	7.51	3.73	1.44	19.32
TFMC	~n	38	127.43	29.61	27.12	253.96

→ gender = Female

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	42	123.69	18.97	59.33	153.02
TVD	~n	42	6.05	3.26	.61	14.45
TFMC	~n	35	130.68	30.87	51.01	249.74

Finally, H6 assumed a level of connection between the area of residence and the participants' engagement with the material (Table 4).[16] It appears that all three parameters yielded similar results for the city and town residents, which were markedly different from those for village residents:

[16] This specific hypothesis (H6) considers possible connections between the participants' areas of residence and their interaction with film-based multimedia learning activities, but the inherent complexity of explaining the various possible factors related to it (location, infrastructure, etc.) exceeds the purposes of the present study.

Table 4: Data comparison for participants from different areas of residence:

Area	mean(tff_al~n)	mean(tvd_al~n)	mean(tfmc_a~n)
City	128.03	7.06	127.51
Town	128.99	7.19	125.37
Village	122.31	5.91	136.02

→ area = City

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	31	128.02	12.14	79.32	142.43
TVD	~n	31	7.05	3.06	1.84	12.88
TFMC	~n	29	127.51	16.75	86.86	154.86

→ area = Town

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	27	128.99	14.86	84.9	153.02
TVD	~n	27	7.19	3.97	.64	19.32
TFMC	~n	25	125.36	27.61	27.12	169.73

→ area = Village

Variable		Obs	Mean	Std. Dev.	Min	Max
TFF	~n	24	122.30	19.06	59.33	141.88
TVD	~n	24	5.91	3.66	.61	14.45
TFMC	~n	19	136.01	45.68	51.01	253.96

Although the latter exhibit a significantly faster *time to first fixation*, their *total visit duration* was much smaller, and their *time to first mouse click* occurred much later than residents of both the other areas. In other words, rural participants' attention was captured by hotspots much faster, but they spent a lot less time looking at them and were much slower to interact with them. The parameter *time to first fixation* can more easily be attributed to bottom-up factors (i.e. related to the change in the stimulus caused by the sudden appearance of the hotspots), whereas *total visit duration* and *time to first mouse click* can be more directly associated with the given task, thus revealing a more conscious, top-down engagement with the material. As such, it appears that the findings support H6: the attention of participants from rural areas was more quickly attracted by the appearing stimulus only by 4.82% compared to the combined average of urban and semi-urban areas, but their haptic engagement with the interactive film was more noticeably smaller, by 7.57%.

5. Discussion

It was assumed in H1 that there are optimal conditions that facilitate engagement with the interactive material, related to the content of the underlying film extract. It was also revealed (Fig. 7) that participants gradually interacted faster and generally maintained that interaction with the hotspots as the film extract progressed (with the exception of the special case of hotspot 08); this demonstrates a desired increasing learning curve that is very encouraging with regard to the potential applicability of interactive films of this form and length in teaching scenarios, as participants generally appeared to grow increasingly comfortable with an interface and a film they had not seen before. Overall, considering the possibility that dialogue scenes in film could be a less compelling spectacle for these age groups in visual terms compared to the visually elaborate tracking shot, the dialogue scene seems to generally lend itself better to being used with interactive hotspots.

Given the above findings, the assumption in H2 of an optimal positioning of hotspots on screen could not be conclusively verified. Still, it is important to note that, unlike the way the first half of the film extract was modified for the experiment (hotspot set 01-04), in the second half (hotspot set 05-08) all hotspots were placed in the lower part of the screen, where subtitles usually appear; the fact that participants should normally have had some visual experience with subtitles, since foreign audiovisual material in Greece is commonly subtitled, could have made hotspots seem more naturally placed. Therefore, maintaining interaction with them was probably also facilitated by their position.

Hotspot 08 was specifically used in order to test H3, which assumed that participants would demonstrate willingness to learn more about the film by exiting the playback of the given extract and accessing other related material. It became clear from the results that this hypothesis cannot be verified, considering the sharp drop in the *total visit duration* in hotspot 08 (the dual option hotspot), as well as the fact that only 8 out of 82 participants clicked on any of the two options it provided. Although we believe that this particular hypothesis deserves to be further explored in a more specialized experiment, the participants' unwillingness to access content outside the film extract directs our attention to the probability that film extracts that use only local resources would be more effective and appealing to students. Finally, these findings, in conjunction with the fact that the difference (Δ) between *time to first fixation* and the average *time to first mouse click* (Fig. 7) gradually decreased and remained relatively stable between hotspots 01-

07 only to spike again in hotspot 08, supports both the assumed learning curve described earlier in H1, as well as the fact that clicks were not made randomly. This further enhances the observation that H3 cannot be verified: in a generally increasing and stable level of interest between hotspots 01-07, when hotspot 08 ceased to be interesting the time to first mouse click plummeted.

The demographic profile of the participants also offered valuable information. Indeed, correlating all three parameters reveals that Primary education participants demonstrated less readiness and haptic interaction with the interactive film, as predicted in H4. Nevertheless, the fact that Secondary education participants were quicker to fixate and click on hotspots, but spent less time on them, does not necessarily also mean better or faster learning of the material included in the hotspots; it simply reinforces the assumption that Secondary education participants are more swift when engaging with interactive material, and that they can go through the content faster, which can be related to their age difference. Given the fact that the film extract was the same for all participants, this could be an indication that the parameters of design and appearance of the hotspots (time, size, pacing of film extract, etc.) may need to vary even between groups of such relatively small age difference. After all, the higher average *total visit duration* observed in Primary education participants is an indication that they were indeed willing to interact with the material; instead, factors such as content or less familiarity with computers may have caused the difference, which nonetheless remains a thing to consider.

The gender and area of residence of participants were probably the most challenging sets of groups to compare, also delivering comparable results. First of all, despite the fact that H5 predicted similar levels of engagement between male and female participants, the findings are mixed: the attention of male participants was slower to capture initially, but both their gaze retention by hotspots and their physical response were higher than that of female participants. Based on these findings, H5 remains inconclusive albeit intriguing; it is one of the main parameters that should be addressed in a more specialized experiment, as it could relate to broader social factors of accessibility and educational or entertainment opportunities.

With regard to the findings related to H6 and the area of residence, the fact that the *village* group showed faster initial engagement but less gaze retention and slower physical response than both the *city* and *town* groups is not a straightforwardly explicable finding. Even if one assumes variations in the amount or even the type of technological stimuli available in the everyday activities of each group of participants, the rural areas (*villages*)

where the study took place are in very close geographical proximity to the semi-urban ones (*town*); any assumed technological or entertainment facilities in the latter are fairly accessible to the former as well. Adding to the fact that both these areas are relatively farther than the urban area (*city*), one might expect similar findings in the *village* and *town* groups, in contrast to the *city* group, which was not the case, as the *village* group was the one that exhibited less interaction with the material in relation to the other two. Overall, regardless of any assumptions assigned to a relative geographical proximity, the marked differences in the data may point to an increased familiarity with using computers and interactive audiovisual interfaces as well as with movie watching. This, in turn, may translate to better skills in engaging with interactive technology, especially while watching a narrative movie. Therefore, the differences in the parameters of *total visit duration* and *time to first mouse click*, which can be associated with such learned skills, are much larger than those of *time to first fixation*, since the latter relates to a bottom-up response which is more commonly shared by all participants.

Following the last two sets of findings, that pertain to H5 and H6 specifically, there are two notable implications to consider in relation to the area of residence and the gender of participants. With regard to the former implication, geographical location seems to be a factor that affects the participants' willingness to interact with the material, but whether it is a matter of population or one of distance from larger towns and cities is yet to be revealed with a more focused study. About the latter implication, nevertheless, the question remains as to why similar differences are also demonstrated in the male-female difference. In both these cases, if the observations on demographic parameters are preliminary evidence of rural and female students receiving less exposure to technology and film watching at a young age, this is certainly a matter that requires further and more specialized research and, if found to be true, remedying.

6. Limitations, conclusion and future prospects

Despite the interesting insights that the present data offer, it is obvious that there is significant research ground that needs to be covered before we are able to discuss optimal ways of using interactive film in T-L. With regard to content, for instance, there are considerations on the degree of superiority of dynamic visuals compared to static ones in multimedia learning (Lewalter 2003, as cited in Lajoie & Nakamura 2005: 493); or the fact that background music or other irrelevant sounds may inhibit the learning process (Fletcher & Tobias 2005: 122), features that are natural components

of film and are therefore in need of more targeted and focused study, in addition to testing a larger variety in the types of selected films. With regard to the type and form of the interactive material, care was taken to treat hotspots and their content in a way that would make them seem as naturally integrated in the film extract as possible; still, the practically unlimited options offered by hypermedia, interface design, the internet, and the digitization and integration of various streams of knowledge into one another create potentially endless combinations, the individual efficiency of which is yet to be explored. Regarding eye-tracking specifically, though invaluable in research such as this one, its limitations in the present context relate to the fact that observing a stimulus does not necessarily also mean comprehending it, the study of which requires complementary tools (Hyönä 2010: 173). Finally, additional uses of eye tracking are still being explored. For instance, learners may get performance feedback from the playback of their own or others' eye-tracking recordings; this means that eye-tracking can become itself a possible component of multimedia learning materials rather than merely a tool to design and develop such materials (Van Gog & Scheiter 2010: 98).

It is obvious that these are only a few of the possible directions that can be further explored in this field. The present study aspires to be the springboard for additional research which will eventually lead to a more solid and comprehensive integration of film into education, whether it is for purposes of audiovisual literacy specifically, or in support of any other teaching subject. The overall findings suggest that the field is quite promising, especially given the positive collaboration of the participating students. The more detailed relevant studies become, i.e. exploring the parameters addressed in the present study at a finer grain, the more informed the design of teaching material that incorporates film in T-L will be.

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LANGUAGE EDUCATION, DIGITAL CITIZENSHIP, AND JURI LOTMAN'S SEMIOSPHERE

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Abstract

The present paper explores the use of language teaching for educating students into becoming digitally-literate citizens, as well as conscious, active members of the digital universe. The material discussed derives from the eLang project, a flagship project of the European Centre for Modern Languages. The guidelines, and real-world and reflexive tasks put together by the eLang team of experts, along with the theoretical framework employed are examined with respect to the notion of semiosphere by Juri M. Lotman, and the way this endorses digital transformation in language education. Seen, thus, as partaking in the digital semiosphere, and at the same time in the multiplicity of the semiotic systems ingrained in it, the current

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language student and future citizen assumes different roles, interacts with distinct as well as overlapping communities, is asked to make sense of multimodal resources, so as to eventually acquire far more than the skills of a digital user. The eLang material addresses, in this way, the demand for training language students in the multifarious literacies that digital literacy has come to encompass. The language student overrides, thus, classroom topography and the boundaries of conventional language education, and traces those of the globalised digital semiosphere, within which it cannot but soar.

Keywords: Language education, digital citizenship, semiotics, semiosphere, ECML

1. Introduction

Language education has long ago set itself free from the restrictive conception of literacy as merely the ability to read and write. Obligated to rise to the challenge of embracing the World Wide Web, of incorporating Web 2.0 tools and, more recently, of implementing distance learning, and addressing the AI technology breakthroughs, language education is constantly adapting to an ever expanding and transforming digital world. With great power comes great responsibility, and the need to train language learners to become digital citizens seems imperative. The present paper explores the use of language teaching for educating students into becoming digitally-literate citizens, as well as conscious, active members of the digital universe. More specifically, the theoretically informed teaching material created by the eLang team of experts, and the overall framework of their "Digital Citizenship though Language Education" project that was commissioned by the European Centre for Modern Languages, a body of the Council of Europe, are studied here with respect to the notion of the semiosphere by Juri M. Lotman. Such a semiotic approach underscores the theoretical groundwork, and the real-world tasks and reflective tasks proposed by the team as not only effecting digital citizenship through language education, but also attesting to the function of language learning in connection to the semiosphere(s) in the digital world.

In order to address the above, different aspects of Lotman's theory of the semiosphere will be employed, so as to shed light on the multifarious output of the eLang project. The topography that the Tartu scholar proposed will be discussed, with the organizing function of the boundary, and the collective, dynamic character of the core taking precedence. Of course, the "unified mechanism" that Lotman (2005: 208) described cannot but be

examined here in the context of the digital semiosphere, as this has been outlined by Hartley, Ibrus and Ojamaa, among others (2021: 59).

2. Lotman's semiosphere

In his introduction to Juri Lotman's *The Universe of the Mind*, Umberto Eco (1990) famously traces the evolution of thought of the prevailing figure of the Tartu school of semiotics, with specific reference to the connection between structuralism and the notion of the semiosphere. The latter, according to Eco (1990: xi), combines the synchronic, structuralist approach, on the one hand, inasmuch as it describes a culture system at a specific moment in time, with an interest in the formation of cultures and their comparison along a diachronic axis. In the same book, Lotman (1990: 123–124) himself would underline the analogy between Vladimir Vernadsky's biosphere and the semiosphere, defining the latter as "the semiotic space" outside of which "there can be neither communication nor language". Placing emphasis not on the Saussurean sign and the indivisibility of its constituent parts, but on semiosis, Lotman describes it as the "smallest functioning mechanism", and its locus, the semiosphere, is deemed as "the result and the condition for the development of culture" (125).

The aforementioned attributes of Lotman's theory offer an overview of his conception of the semiosphere, with various implications to be considered. Starting with the term, Lotman (2005) explains its affiliation with Vernadsky's own term in his "On the Semiosphere" article, where he highlights the primacy of the semiosphere over any one of its parts. In fact, though fashioned after the biosphere which "defin[es] everything […] which falls within it", the semiosphere is not regarded by Lotman as the sum of its parts, but rather as a "greater system" or an organism (Lotman 2005: 208). Whether the result of scientism or misappropriation, as Vladimir Alexandrov (2000) suggests in his critique of Lotman's reliance on biology, the semiosphere theory ventures upon a comprehensive outlook upon culture.

The above is evident in Lotman's well-known aphorism that the semiosphere is the semiotic space per se, "outside of which semiosis itself cannot exist" (2005: 208). Seen as a defining principle of culture, as well as of his theory, semiosis was placed in the limelight early on, with Lotman (1990: 123) acknowledging that this semiosphere approach presupposes that examining communication acts would "throw light on all the chief features of semiosis and that these features can then be extrapolated on to the larger semiotic processes". For Bogusław Żyłko (2015: 39), this is linked to Lotman's synthesis of structuralism and semiotics, which in the Estonian scholar's master plan would take the form of charting out the topography of the semiosphere.

2.1. The topography of the semiosphere

The semiosphere is termed by Lotman (1990: 150) as "the space of culture", and its overarching importance for describing the functions of culture is attributed to every culture's way "to get to grips with life [by means of creating] a spatial model of the universe". Thus, it is with reference to the semiotics of space that Lotman justifies both the abundance of spatial metaphors that he employs in his theory, as well as the construction of a comprehensive model for the function of culture. In his words, "spatial modelling becomes a language in which non-spatial ideas can be expressed" (Lotman 1990: 150), as space gradually shifts from its non-metaphorical use in "On the Semiosphere", on the one hand, to "real space [being defined as] an iconic image of the semiosphere" in *The Universe of the Mind* (Lotman 1990: 191; Nöth 2015: 17).

Essentially, the topography of Lotman's semiosphere adopted a triadic structure, with the study of the notion of boundary prevailing in semiotics over those of the core and the periphery. This prevalence was anticipated by Lotman (2005: 210), who stated that "[t]he border of semiotic space is the most important functional and structural position, giving substance to its semiotic mechanism". Delineating the realm of semiosis and what lies outside that, the boundary of the semiosphere appears in Lotman in a dual role. Bearing resemblance to the membrane of the living cell (Lotman 1990: 140), the boundary encompasses the given semiosphere and, at the same time, differentiates it from what is not included in it. Capitalizing on the spatial metaphor, this inward perspective that the existence of the boundary provides, has not only a delimiting, but an identifying function as well, with Lotman (2005: 212) propounding that it "serves to accentuate absolutely those features by which a given sphere is outlined" in opposition to what lies outside it.

The implications of Lotman's "spatial turn" manifest themselves in the second role that the boundary acquires. For what lies in between spaces is also a point of contact and, given the specifics of the spherical shape, the boundary can be seen as a series of points by way of which "the semiosphere is able to establish contact with non-semiotic and extra-semiotic spaces" (Lotman 2005: 210). In essence, this entails that the boundary acquires the status of a filtering "bilingual mechanism", whereby what lies outside the semiosphere may permeate it, and is "semioticized" or "translated" in the process, and, finally, incorporated (210, 208–209).

The "imperialistic" nature of the semiosphere, as this was described above, is in line with the dynamic processes that reside within it. For Lotman (2005: 213–214), this is the outcome of the semiotic irregularity in the

semiosphere, which gives rise to multiple levels, and a stream of constant movement from the periphery to the core, and vice versa. Novel semioticization, therefore, as the semiosphere comes into contact with what seems chaotic outside, is combined with constant re-appropriation of what lies in the semiosphere, and the creation of new semiotized constituent parts.

This, of course, brings to the fore the model that Lotman uses for describing the connection between the structural heterogeneity of the semiosphere – which is, however, given the status of a single mechanism – and its parts, which are characterized as in a dynamic correlation to each other. Whether Lotman's own calf metaphor is used or Eco's equivalent of the forest, the fact remains that the semiosphere is seen as a unity of dynamic elements, whose interrelations are in constant change (Lotman 2005: 208; Eco 1990: xiii). According to Peeter Torop (2005: 169), the notion of the semiosphere is one that allows semiotics of culture to reach "a holistic analysis of dynamic elements".

All of the above will be discussed with reference to the eLang project promoting digital citizenship through language education, where both strands are seen as partaking in the digital transformation of education in general.

3. The eLang projects

Established in Graz, Austria, in 1994, the European Centre for Modern languages has since then promoted quality language education and relevant reform within what has been described as "an interface between policy, research, teacher education and practice" (Council of Europe *n.d.*). One of its latest projects, the eLang project titled "Digital Literacy for the Teaching and Learning of Languages", was launched in 2016, placing communication at the heart of the digital, and vice versa. As the eLang experts state, "[d]igital literacy results from the intertwining of three main sets of competences within an ethical and critical framework: technology literacy, meaning-making literacy and interaction literacy" (Council of Europe 2019). Anticipating, thus, a semiotic approach but also keeping in mind a classification that would facilitate pedagogy, the eLang team's reference to meaning-making involves information literacy, media literacy, and visual literacy (Ollivier 2018: 10–11).

Sprung, in part, from the ethical and critical framework digital literacy was seen as partaking in, digital citizenship pedagogy became the focal point of the follow-up project by the same team of experts. The "Digital Citizenship through Language Education" project, which was launched in 2020, acknowledged the urgency of training language learners to become

"aware of the impact that technologies and digital practices may have on the environment, culture, society and people" (Ollivier 2018: 13). In fact, language education was regarded as a pathway to digital citizenship, just as active, conscious citizens of the web were considered active language learners/ users (Ollivier 2018: 66). This attested to the socio-interactional approach adopted by both eLang projects, which considered language users and digital citizens alike to be "social agents within multifaceted (online) communities ranging from speech communities to global social groups" (Caws et al. 2021a). The definition of digital citizenship offered by the eLang project would embrace this approach, which delineated the term as:

> [t]he competent and positive engagement with digital technologies (creating, working, sharing, socializing, investigating, playing, communicating and learning); participating actively and responsibly (values, skills, attitudes, knowledge) in communities (local, national, global) at all levels (political, economic, social, cultural and intercultural); being involved in a double process of lifelong learning (in formal, informal and non-formal settings) and continuously defending human dignity. (Council of Europe 2019)

The above definition also aligns with the overall objectives of the Council of Europe. Its potential for policy-making and transforming education was confirmed in the "Developing and Promoting Digital Citizenship Education" Recommendation adopted by the Committee of Ministers in 2020, as well as in a number of different publications on the same subject, funded by the Council (Council of Europe 2020a).

3.1. The digital citizen as social agent

The socio-interactional approach employed by the eLang team is central to their conceptualization of a digital user/language learner. In a fundamentally dialogical and essentialist approach, therefore, communication in the digital world is underlined as intersubjective social interaction, and adopted on the grounds that the socio-interactional framework determines communication and plays a significant role in meaning-making (Caws et al. 2021b: *v*, 99). This perspective has led the eLang team to refer to digital users as social agents, participating in multiple communities, underlining, thus, the diversity of the digital world.

Taking into account, however, that, in the case of digital users, all communication happens within a global, encompassing, and interconnecting space of semiosis, the notion of the semiosphere will prove useful in drawing further insights. In fact, with respect to the construction of meaning,

Hartley, Ibrus, and Ojamaa (2021: 60) would jump in and remind us, at this point, that in the digital world, "many of the meaning-making processes are made happen by billions of computational devices connected to each other in complex ways". For the three scholars, this is one of the reasons why exploring the notion of the digital semiosphere is mandatory, the other one being that the digital semiosphere showcases the premise that there is currently "only one self-knowing human culture of global extent" (Hartley, Ibrus, and Ojamaa 2021: 59).

Though the semiosphere appears as a unit, the dynamic element which Lotman attributed to it, as being nurtured by diversity and effecting constant reappropriation, is present in the digital semiosphere as well. In this context, and in order to facilitate the training of educators who would be interested in implementing or even producing teaching material for incorporating digital citizenship through language education, the eLang researchers have created a profile for the social agent. Assigned the gender-neutral name "Sam", the digital citizen is one that acts as a social agent, who functions as a consumer, a creator, a mediator, and, essentially, as a changemaker (Caws et al. 2021a: 7). For the eLang project members, all of the above are functions in which the sense of responsibility and action that digital citizenship requires can be channeled.

The digital citizen, though, seen as a social agent, participates, at the same time, in multiple digital communities, which may or may not have a non-digital counterpart: a social media network, a music band, a think-tank, for example, and so on and so forth. Rather than visualizing that digital citizen as a juggler, or even a magician – to use Lotman's words –, they can be considered to inhabit different cultural spaces, and act "as a kind of interpreter, settling in the territorial periphery, on the boundary" between these spaces, and within the digital semiosphere (Lotman 2005: 211). Such "interpreting" is regarded by the Estonian scholar as a dynamic, "[repeated process of traversing] internal borders", which "gives birth to meaning, generating new information" (Lotman 2005: 215). Transcribing the above to the digital semiosphere, the digital citizen is treated in the eLang project as an inhabitant of various cultural spaces, and one that generates meaning as he/she interacts within those, and traverses or renegotiates their own boundaries.

3.2. The real-world tasks

The conceptualization of the digital citizen/language user as a social agent participating in multiple communities and cultural spaces is theoretically enticing and, at the same time, paves the way for the teaching com-

ponent of the eLang project. The real-world tasks employed by the team derive from the Task-Based Language Teaching (TBLT) method, as one that, according to Rod Ellis, has sprung from the communicative approach and focuses on meaning and its connection to language structure, rather than structure alone (cited in Caws et al. 2021b: 104). Having embraced the social interactions of the digital citizen/language user, the eLang group of experts foregrounds the significance of real-world tasks for their "digital citizenship through language education" project, just like the Council of Europe officials propose that digital citizenship education should:

> use real-life situations and the diversity of opportunities as a basis for learning and teaching approaches through activities such as participation in governance, problem-solving and intercultural dialogue, promoting democratic citizenship principles while enabling learners to exercise their values, attitudes, skills and knowledge and critical understanding in meaningful situations with tangible outcomes. (Council of Europe 2020a: 15)

The real-world tasks that the eLang project fosters would, of course, include a wide range of activities, from online discussions about the personal data protection form (GDPR) to creating a vlog, or from producing and uploading content for a social media platform to recording an audio description of a video for the blind. To fulfill their pedagogical potential, though, one would assume that the real-world tasks would have to be compromised to fit classroom objectives and, consequently, acquire the features of a teaching activity, that is, be implemented "in stages with a priority on meaning making" (Caws et al. 2021b: 111).

From the point of view of digital citizenship education, the pedagogical significance of real-world tasks is self-explanatory, despite the fact that, depending on the circumstances, the question of equal access to digital technology may be raised. On the other hand, given the very nature of similar tasks, these are treated as belonging to a different cultural space – hence the need to be modified – that pedagogy can only simulate in the language classroom. This touches upon the problematics of authenticity in the classroom, and it would have been altogether beyond the scope of this paper, if the eLang scholars did not address it from a socio-interactional vantage point.

More specifically, in their proclamation of the significance of real-world tasks for digital citizenship education through language learning, the eLang team argues that, apart from traversing meaningful stages, students are not asked to act in an imaginary – as is usually the case – context so as to perform such tasks. Instead, the tasks assume a different, outward perspective,

and are embedded in a real social context that is meaningful in relation to the social context in which they are performed (Caws et al. 2021b: 117). Thus, as parts of the digital semiosphere, the meaningful communication acts bearing socio-interaction authenticity which were previously excluded from the classroom, are now incorporated in it, or, better, it is the "specific semiotic continuum" of the classroom that is incorporated and appropriated within the real world, in the unifying mode that Lotman (2005: 206) has described. Ali Pakdel's dynamic conception of learning activities would be employed here to affirm that real-world interactive tasks are not based on imaginary contextualization, but rather that it is the classroom that is contextualized within the all-encompassing social entity (cited in Caws et al. 2021b: 118).

3.3. The reflexive tasks

The notion of the boundary of the semiosphere, as this was described by Lotman, is one that constructs an "allegedly unitary 'barbarian' world", a semiotic individuality and an otherness, its definition being essentially "relational", as Sedda puts it (Lotman 2005: 212, 209; Sedda 2015: 683). For just as "the boundary unites two spheres of semiosis, […] it divides them", allowing for "self-knowledge" or "self-description on a metalevel to emerge" (Lotman 2005: 211). This introspective approach is what the eLang reflexive tasks capitalize on, with respect to digital citizenship through language education.

An important counterpart of the overall project, reflexive tasks are designed so as to provide language learners with a critical outlook upon the meaning-making workings of the digital semiosphere (Caws et al. 2021c). They, naturally, involve reflection upon the digital behavior of the language learner, with tasks that allow students to assess the use that learners make of websites and digital tools, from surveying the number of hours teenagers spend on online games to the popularity of camera filters in social media profile posts. The reflexive tasks that the eLang scholars propose, though, employ and promote CALP skills, that is Cognitive Academic Language Proficiency, in order to draw attention to the responsibility that digital citizenship comes with. Thus, language learners explore the digital semiosphere and its workings, critically assessing the language used in comments or reviews, the ways fake news are constructed and spread, or the framework within which personal data is handled and construed. Such reflexive tasks, in turn, allow for instruction as to the dangers and limitations of the digital world (Caws et al. 2021c), as well as incite active digital citizenship, fulfilling thus the objective of the eLang project.

Conclusion

Juri Lotman was clear about it: in his theory about the semiosphere, the concept of space may be abstract but it was not used as a metaphor. Instead, he envisioned "a specific sphere, possessing signs, which are assigned to the enclosed space. Only within such a space is it possible for communicative processes and the creation of new information to be realised" (Lotman 2005: 207). The reality of the language classroom upholds his words with respect to the generic notion of space, since it embodies space, hosts and shelters communicative processes taking place during teaching/learning/interaction. Although certainly not confined to the concrete reality of a four-wall room, the semiosphere realises its dynamic character in the language classroom, with new information bearing novel semiosis.

In the traditional classroom, communication is confined by way of its spatial dimension. The real world and reflexive tasks, though, which the eLang team of scholars has put together extend communication both on the spatial and the temporal axes. As the language student enters unknown cultural semiospheres and/or actively partakes in the digital semiosphere, the potential communication processes proliferate, with more novel information entering the scene. The interaction, therefore, between the infinite digital world and the spatially confined semiosis of a language classroom results in a truly open class.

By way of an epilogue, in the celebratory brochure featuring the 25th Anniversary Declaration of the European Centre for Modern Languages, the title reads: "Quality language education for the democratic, socially cohesive and peaceful Europe" (Council of Europe 2020b). The authors then proceed to list nine cornerstones of their holistic vision upon education, one of which involves language educators exploring new media "by developing digital literacy through task-based, collaborative, experiential pedagogy" (Council of Europe 2020b: 2). The present study has attempted to showcase the pertaining deliverables of the "Digital citizenship through language education" eLang programme as embracing connectedness and social inclusion, as well as targeting critical thinking and the sense of responsibility that active digital citizenship and an imperative to transform education mandate.

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- Manuscripts should be compiled in the following order: title page; author/s name/s (in Italic), abstract; keywords; main text; acknowledgments; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
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All paragraphs should start with a tabulator (g) 1 cm from the left margin.

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Full bibliographical details are given in the reference section at the end of the book or article. Brief citations are used in the text. Examples:

(Cobley 2008)	one author
(Bankov & Cobley 2017)	two authors
(Deely, Ponzio, and Petrilli 2005)	three authors
(Zlatev et al. 2006: 38)	four or more authors (but give all the authors in the reference entry)
(Leone 2004a, 2004b, 2014)	works by one author
(Zantides 2011; Kourdis 2012)	works by different authors
(Khanwalkar 2016: 60–65)	no dropped digits in inclusive numbers
(Arcagni & Santangelo 2017, 2: 110)	volume number
(Saussure [1916] 1967: 37)	reprints: with original date at first mention; in all subsequent citations "Saussure 1967: 37"
(Andacht 2014: n.p.)	an authored page on a web-site
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– Use only the simplest and most common abbreviations (i.e., etc., e.g., et al.).

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- Tables and figures should be numbered consecutively and be given titles. The title of a table should appear above the table, the title of a figure below the figure.
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Book (edited work):
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Contribution in an edited work:
Tarasti, E 2017. Culture and Transcendence – The Concept of Transcendence Through Ages. In Bankov, K., P. Cobley (eds.). 2017. *Semiotics and Its Masters*. Berlin & New York: Mouton de Gruyter, 293–325.

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Journal article:
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Journal article also published electronically:
Peng, Jia. 2017. On Imagination: From the Perspective of Semiotic Phenomenology. *Signs and Media,* No 15 Autumn 2017. Available at: http://www.semiotics.net.cn/userfiles/images/b1e92f1b45962556b7698f-342936ca3f.pdf (accessed 10 June 2018).

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Special issue of a journal (cited as a whole):
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Reprint:
Bankov, K., P. Cobley (eds.). 2020 [2017]. *Semiotics and Its Masters. Vol. 1*. 2nd ed. Berlin & New York: Mouton de Gruyter.

Thesis/dissertation:
Bankov, K. 1995. Il linguaggio come elemento positivo nell'antiintellettualismo bergsoniano. [Thesis/dissertation]. Bologna: Bologna University.

Paper presented at a meeting or conference:
Vuzharov, M. 2017. Personalization algorithms – limiting the scope of discovery? Paper presented at the 13th World Congress of the International Association for Semiotic Studies (IASS/AIS), Kaunas University of Technology, 26–30 June.

Several works by one author/editor with the same publication date:

Leone, M. 2017a. Semiótica de la reparación. In Pardo Abril, N. G. (ed.). *Materialidades, discursividades y culturas. Los retos de la semiótica Latinoamericana*. Bogotá: Istituto Caro y Cuervo. Imprenta Patriotica, 142–159.

Leone, M. 2017b. Fundamentalism, Anomie, Conspiracy: Umberto Eco's Semiotics against Interpretive Irrationality. In Thellefsen, T., B. Sørensen (eds.). 2017. *Umberto Eco in his Own Words.* Berlin & Boston: Mouton de Gruyter, 221–229.

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