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EDUTAINMENT GAMES – HOMO CULTURALIS VS HOMO LUDENS

Abstract. Cultural heritage has to be preserved for the future generations. This often repeated need seems obvious for every educated and self-respected citizen of our unifying world. But we are not born as “man of culture (civilization)”. We are Homo Culturalis “in becoming”, which means “in constant educational process”. One of the most actual questions, staying in front of the educational institutions and cultural heritage holders in digital age, is how more efficiently the historical heritage of human thought and actions to be made known for widest audience possible. The accent is put on searching new tools for this, tools, which have to provide not only content, but joy. Attractiveness is of importance especially for young generation, whose literacy level is decreasing progressively.

Edutainment games (combination between education and entertainment), which have been becoming popular in Europe, could be good tool for such a goal. These games were born in big competition with most popular recently “fun and cruel” games. They combine two functions: entertainment and education, from which the definition of ‘edutainment games’ is obtained. Through this good combination Information Technology strikes the mass culture of illiteration and serves for popularization of collections of libraries, archives and museums. Edutainment games are ‘the fruit’ of scientific and industrial search for bigger patterns of understanding, so that one can ‘see’ and use all the benefits games are proposing to Homo Sapiens-Ludens.

Ludology (from “ludus”, the Latin word for “game”) is a new discipline that studies games in general and computer games in particular. But the truth is that a ‘unified theory of game play’ does not exist yet. The existing historical, psychological, and anthropological studies on games and even mathematical “game theory” are limited because of their narrow focus on specific parts of the puzzle we call “game”. To some extent ludology could be thought as a synonym of “game studies”, but it necessarily has interdisciplinary character.

Appearance of ludology in educational, industrial and research areas showed the important fact that digital culture is not a strange phenomenon already. It became part of curricula on different university subjects: Computer Science, History and Theory of Culture, Psychology, Library science, Multimedia, Artificial Intelligence and even Management and Marketing. Ludology has been developing in three main axes: curriculum, theory and research and application. Since the first two have to be covered on University level, this paper puts the accent on the third one: research and practical application in the field of culture.

This paper will try to answer to the following questions:

(1) What are computer games (modus vivendi of XXI c. as Huizinga predicted)?

There are different definitions of what a (computer) game is, but here we use one that is fairly suitable for the scope of this article: “Form of computer art with built-in and quantitative definitions of success and failure, in which participants (players), put up with formal and predefined set of rules for the progression of a game session, make decisions in the pursuit of a clear and meaningful goal.”.

(2) Which type of games is preferred recently in the market?

Edutainment games are presented as an alternative to the brain-washing game types. Examples are given in the Appendix (Versailles I and II, Virtual Renaissance Court, etc.).

(3) How answers of (1) and (2) could be used in favour of contemporary attempts of preserving cultural heritage?

The difficult dialogue between industry and academia – let’s find a common language.

Final part of the paper presents brief Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis and conclusion.

Key words: cultural heritage, digitization, computer game, game research, edutainment

The future is like a strategic game. Success belongs not to the biggest, but to the smartest... Those who bet on a strategy rather than pure power.
INFORUM 2003, 9th Conference on Professional Information Resources
To play is to contemplate. James Schall

“Cultural heritage has to be preserved for the future generations” is a quotation, co-existing in the intellectual background of “sensible” XXI c. with many others, incl. one of the most famous: “Know who you are”. Their common message is building communication bridges (in non-digital and digital form). This message is easy to understand having in mind that “culture and art are intended for contemplation” [1], for dialogue. Cultural artefacts bring delight through contemplation, which means that Homo Sapiens inevitably is Homo Culturalis.

Playing different games (social and electronic ones) and *meditating* (schematisation, philosophizing) complement each other. As culture-creating factors they are intended to bring *delight* by default. Delight and entertainment are different concepts, or at least in this text they will differ qualitatively. Its subject, Edutainment Games is chosen to combine delight and entertainment, giving accent to the first as an essence of the latter. Edutainment game appeared a decade ago, as a creative computerized form for *delightful learning*. It appeared as a kind of an alternative of the process of idolizing entertainment by contemporary game-culture. The scientific frame in which Edutainment (Games) are discussed here is *Digital Preservation of Cultural Heritage*. The accent is put on two main questions: question of the (appropriate) *CONTENT* and of the (attractive) *FORM*, both bringing delight and knowledge.

I. THE CONTENT

1. Homo Culturalis and Homo Ludens. The beginning of consideration of culture creating process as a gameplay we can see in the philosophy and aesthetics of XVIII and XIX c. (Kant, Schiller, Nietzsche). Romantic aesthetics describes "game" and "play" as *highest form of art*, an activity that is its own goal, something without crass practical motives. The major socio–historical work in this field, *Homo Ludens* (1938) by the Dutchman Johan Huizinga (1872–1945), examines play(ing) as main culture creating factor through the ages. Huizinga treats games with social character only. He predicted the coming of a new specimen of humanity: Homo Ludens, *the playful human* [2].

Neither play, nor contemplation can be, strictly speaking, necessary. “This mysterious "unnecessity" more than anything else is what makes play like contemplation and contemplation is highest act one could engage in. This unnecessity is also characteristic of beautiful things, things to be made not for use, or not only for use, but to be seen or to be heard. Beauty, as such, is not useful; yet, without it, we would not be what we are” [3].

Since we are creating our culture *in* a gameplay [2], where genes and memes work together, human creativity and imagination should have appropriate *tools*. Edutainment game is considered as attractive representation tool as LOGO language for example, but working in the area of cultural heritage. Edutainment Game (EG) is a new type of computer game, which could become an alternative to the mass brain–washing computer games, which plays unseriously with the serious and thus kills individual creativity.

Who is Homo Ludens? First and foremost he is a man of his culture (Homo Culturalis), awakened Homo Faber (man of action) [4] and thus – creator of memes. Memes (“viruses of mind” such as ideas, phrases, which are spreading through communication networks and face-to-face contact) are basic element of cultural development through the ages [5]. All transmitted knowledge is memetic (and mimetic also) and has enormous power over human mind and actions. Therefore one is responsible for the content of the cultural model he (she) spreads, teaches and lives in.

2. Why to Preserve Cultural Heritage? Reason #1. Responsibility for qualitative (permanent) transmitting the knowledge for keeping world memory, history and cultural diversity. Kept digitally cultural artefacts without location and access restrictions.

Reason #2. *Development of mind* (in the sense of practical philosophizing [5]); scientific research potential. The strongest of the current theories on game play are based on findings on psychology, cognitive sciences, and even philosophy of mind. The basic tenet is that when we are playing computer games we are using the same skills and cognitive processes as when we are dealing with our normal environment. In some cases studying the playing of games can even help us to understand better how the human mind works [4].

Reason #3. By new–old forms of (computer) art, *human imagination can be “educated” (developed)*. Theory and applications of Computer Science and IT vest with “power” these new forms. Computer game (all types of it) is only one of the numerous applications. Another form, which shows the educational potential of computer micro-worlds, is NET Logo [6,7]. One of the benefits is *encouraging creativity* and entertaining at once.

Reason#4. Every man should know the different Other, different cultures and ways of thinking, so that a *respect* be cultivated and civilization mistakes of the past do not be repeated so often.

3. How to Preserve Cultural Heritage? *From pen and printing press to digital “library” and computer games.* There are many traditional (non–digital) tools for transmitting knowledge (culture). The most widespread way was and still is *the Book* (hand–written, illustrated and after XV c. – printed). After a Bulgarian John Atanassoff made the prototype of the personal computer and after appearance of Internet¹ we already have *digital* way not just for temporally preserving, but for *permanent* preserving and spreading worldwide of cultural artefacts. Furthermore there are no limitations of location, or of type (manuscripts, books, audio, video or art).

Because “all transmitted knowledge is mimetic” no matter of location and time, the only that differs the age of “digits” is the *form*. Tradition and innovation in this case co-exist. Each of them has own audience, specific accent, goal and effect.

II. THE FORM

1. Transmission of knowledge in XXI c. Here is the place for wide scaled applications of *Artificial Intelligence, Computer modelling, Information Technologies*. With the growth of modern science, the search for Artificial Intelligence has taken direction to

¹ Statistics shows that now only 2% of world population uses Internet, so we should not exaggerate the meaning of the newest and the most fast developing information media.

technological development of increasingly sophisticated computing systems, psychological and physiological research of the nature of human thought. The most important fields of research in the area are information processing, pattern recognition, neural networks (voice recognition and natural-language processing), medical diagnosis, but the greatest advances have occurred in the field of expert systems (which are very expensive to produce) and *game playing*.

As artificial interactive environment created with computer hardware and software, *virtual reality* generally could refer to any virtual world represented in a computer, from text-oriented online forums and multiplayer games to complex simulations that combine audio, video, animation, three-dimensional graphics, and scent. By using special gloves, earphones, and goggles, all of which receive their input from the computer system, in some electronic games, military exercises, simulations at least three of the five senses of the user are controlled by the computer. Experimental use of virtual reality nowadays is in the area of *cultural heritage presentation, education, art* and surgical training.

According to a well-known philosophical principle, people are born as originals but die as copies; in the age of mass-media, stories are born as literature, grow up as films and finish as computer games [8]. This standard model could be modified in the multimedia world in all possible combinations. The pattern is seen in latter-day successes such as Harry Potter.

2. Educational Potential of Computer Games and other Micro-worlds. Nowadays whole personal computer industry is run by and for gaming. All hardware advances are games-driven. All desktop personal computers are sold with graphics capabilities and sound cards as standard. According to Digiplay Initiative website² 47.6% of 7–29 year olds play computer games most days.

Thanks to constantly improving software and hardware, connected with fast growing Information Technologies sector, technically “everything” could be digitised. The benefit for cultural heritage holders worldwide could be great if they use Information Technologies for practically “eternal” preserving of their holdings, widening the access to them, advertising, cultural tourism, and esp. for e-learning purposes.

Example: Educational Micro-world of NET Logo. Turtle Geometry of LOGO is the most popular (computational) micro-world, which creates learning environment using educational potential of different disciplines such as mathematics, music, poetry, arts. Net Logo is a programmable modelling environment for simulating natural and social phenomena aimed at facilitating learning process. It is written in Java so it can run on any operating system as a standalone application. Net Logo software, models and documentation are distributed free of charge for use by the public to explore and construct models [6, 7]. The most attractive challenging principle of Logo is “learning by doing (making)” and “learning by discovery” method, used in cognitive psychology and realized by AI. In real time the user is learning by defining all the “objects”, which to be created and modified.

3. Institutional Frame of Digital Preservation of Cultural Heritage. In most of the cases (digital) preservation of cultural heritage is centralized process governed by the State (although some preservation institutions such as museums, libraries have their

² [<http://digiplay.org.uk/>]

own policy). The question staying before educational institutions and cultural heritage holders in Central and East Europe (except for working policy) is how more efficiently culture and history to be made known to young generation. This is a generation, who builds big part of its view to the world by computer games and Internet. According statistics the most visited web sites are those selling, advertising and showing demo versions of computer games [9].

4. Computer Game. 4.1. Definition There are different definitions of what a computer game is, but here we use one that is fairly suitable for the scope of this paper:

Form of computer art with built-in and quantitative definitions of success and failure, in which participants (players), put up with formal and predefined set of rules for the progression of a game session, make decisions in the pursuit of a clear and meaningful goal.

One of the first scientific studies of computer games is Thomas Malone's "What makes things fun to learn?" [10] Malone tried to identify the crucial features of computer games by modifying the same game – feature by feature – and then rating the features on how long people choose to play each of the versions within a certain amount of time. The people playing the game were also asked to identify what they liked about the games. Curiously enough, even though the fantasy element of the games (visuals and sounds) was often mentioned in verbal ratings, the games which were played the most did not necessarily have a high fantasy element. According to the study, the most important feature of the game is that it should have a *clear and meaningful goal* [4].

The term *electronic games* covers all sorts of games played on TV consoles, personal computers, mobile phones, handheld game units and public game machines. The term *computer game* is in sharp competition with *video games*³, *console games*, and *arcade games*. Video games and console games usually mean games connected to a TV, whereas arcade games means games placed in public spaces. Because of its specifics cultural heritage sector could use more efficiently console and computer games [11].

4.2. Specifics. In comparison with non-computerised game computer game (CG) differs by [12]:

Time: Computer can keep pace, and thus real-time games do not have to rely on laws of physics. This opens up possibilities for action games, speed, and is basically what makes the first person shooter possible.

Automation/complexity: Computer games also automate the rules of games. And this means that one can have real time games with thousands of units being moved on each side. This leads to the real time strategy genre.

Replay: The option of returning to the same game allows going back to exactly the same challenge, re-playing the same level, saving position. The single-player card games that you can replay have a large amount of chance in them. Some puzzles possibly share this trait.

³ Electronic games played on a video screen, with the game program emanating from a computer's floppy disk or hard drive or from a special game cartridge. Other versions of video games include hand-held units, some as small as a wristwatch. The spectacular popularity of these games sparked a new industry starting in the late 1970s. After its phenomenal growth in the early 1980s in the United States, Europe, and Australia with the advent of Pong and other simple games, the video games industry was further developed by Nintendo Corporation and Sega Genesis, which nowadays continue to dominate the market worldwide.

Levels. In the earliest forms, the gameplay simply got harder at each level, later games like PacMan introduced new colours for each level, later on came new graphics and level designs. Level progressions in the game. The current rise of the Multi Player Online Games (MPOGs) shows that computer game to some extent is partly returning to its roots in the non-electronic game (which are dropping replay and level progression). You can't replay an identical multi player game, as your opponents will react differently. So it is with level progression.

Game designer Chris Crawford [13] points at four more characteristics of CG: *representation* (subjectively, not necessarily, the game represents reality), *interaction* (acknowledges and reacts to the player), *conflict* (game always presupposes a conflict. This can be either between several players or between the player's goal and whatever prevents the player from reaching that goal) and *safety* (in a literal sense; gambling is a special case).

4.3. Brief History⁴. The computer game is somewhere between 39 and 42 years old; it did not appear in a void, it borrows from games. When playing a game, the rest of the world is ignored. This explains the difference between computer games and children's play (children's play is not based on formally defined rules, rather the rules are under constant renegotiation, and play does not necessarily entail an evaluation of the player), between formal games and play (play is not based on formal and pre-defined rules, but their rules are rather under constant negotiation), between games and narratives (narratives do not evaluate the reader, and are hardly formally defined).

Games differ from literature, movies, cooking, theatre, ballet or other culture forms because they can be played not only on, but *by* computers. The first computer game is generally assumed to be the game *Spacewar*, developed in 1962 at Massachusetts Institute of Technology. The goal is to hit the other player before being hit yourself. Unfortunately this stays the main goal of the most popular games till now. Games are not restricted to the entertainment sector only. Business, military, health/medical sectors and aircraft are increasingly using similar technologies [11]. Unfortunately cultural heritage sector is most poorly presented in this wide game application area, especially in sense of investing.

4.4. Game Types. The most general thing to say of the evolution of the computer game is probably that it has become gradually more based on genres. The most popular between them are: *3D Action/Adventure* (Tomb Raider, Portal Runner, Army Men) and shooter games; *Strategy games* (Zelda, Final Fantasy, Heroes of Might and Magic); *Simulation* (Air Combat, Aero Fighters' Assault, Maestro Music); *God Games* (The Sims); *Fighting* (Mortal Combat, Soul Fighter), *Puzzle* (Tetris), *Fantasy Games* (Ever Quest, Ultima Online, Dark Age of Camelot); *Racing* (Mario Kart, Tokyo Xtreme Racer); *Role-Playing Games (RPG)*; *Sports* [11]. Games may be classified according to the *number of players* and the use of *networking technologies* to: *One-Person Games* (no real conflict of interest exists; this game type is not rewarding from a game-theory perspective, for no adversary is making independent strategic choices with which

⁴ Some of the institutions, working on preserving Game History are: Computerspiele Museum [<http://www.computerspielemuseum.de/>], Lowood @ Stanford [<http://www-sul.stanford.edu/depts/hasrg/histsci/index.htm>], Moby Games [<http://www.mobygames.com/>], Abandonware Ring [<http://www.abandonwarering.com/>], Digital Game Archive [<http://www.digitalgamearchive.org/home.php>], Electronics Conservancy [<http://www.videotopia.com/>]

another must contend); *Two-Person Games* (include the largest category of familiar games such as chess, backgammon, and draughts or two-team games such as bridge); *Multiplayer games* (online and offline) refer to games played at home, schools, offices or virtual cafes connecting players; *offline* and *online games* (online games could be single-player, team-play games, Massive Multiplayer Online Games. *MMOGs* exploit vast virtual territories supported by server networks letting thousands players interact simultaneously. Most popular amidst them are fantasy and science-fiction role-playing games, strategies and god games)

5. Edutainment Game. On 16th October 2003 for “edutainment game” Google found 572 results. For “edutainment” results are 319 000, for “computer game” – 2 240 000. These numbers are indicative for the share of computer game phenomena in contemporary mass culture.

5.1. Definition. Edutainment games (combination of educational function and content with entertainment form) are aimed at creating attractive learning environment. Johan Huizinga, the author of *Homo Ludens*, gives a kind of open *definition of edutainment games*: presenting under someone’s vision of a struggle (for something) or a struggle for the best performance (of something). This coincides with my understanding of the essence of edutainment games (EG) as a mind challenge: combination between *presentation* of cultural model of the player himself (or of the different Other, who have been lived once) and *contemplation* in competition (struggle) conditions. Competition here is understood as a way for achieving the best possible performance (play), i.e. learning. “And not only will the learner absorb and retain the knowledge, he will do so *without even realizing* (consciously) that he is learning at all – learning is implicit in play ... education-focused games have a responsibility to be well-researched and correct. For those developers who wish to experiment with making learning fun the technology has long since been validated” [14].

In September issue of *Game Developer* magazine (2003) cognitive scientist James Gee threshes out games as “learning machines”. Games, according to Gee, possess many of the ingredients of good learning tools: ingredients which “reflect what cutting-edge cognitive research has discovered about what causes deep human learning”. Current tendency is experience of the video game in general, not only EG, as an ideal environment not for learning only, but for teaching. The fact that mainstream, top-shelf games – especially story-driven games generally teach us about fictional worlds or non-academic issues is secondary to the fact that history, literature, geography, art, and pretty much anything else can be taught effectively in a game environment. Thus busy citizen of our world could re-discover cultural artefacts of different civilizations.

The “share” of EG, presented virtually still is comparatively small. But “the innovative games are often those that find interest in what has hitherto been considered unimportant. And that's part of what pushes computer games forward, making them different, making them appealing in new ways” [15].

5.2. Goal. The main *goal* of EG is digital preserving of cultural heritage in attractive form. Additional goal is (motivating) enhancing learning, producing useful learning software in all educational institutions.

5.3. Requirements. EG require a large amount of contextual knowledge to be played and an interdisciplinary team to be made professionally. These requirements are not always taken into account and as a result the smaller part of the market presented EG satisfy them. In order to be made qualitative and playable for everyone interested, there

is a lot additional hard work to be done, especially on strategy, policy, and funding and legislation level.

5.4. Growth potential in educational and cultural heritage area. The Edutainment area has been ignored among games long time. Recently it gains much deserved attention, which has obtained an extensive market and status. When weighing the potential of its market growth in relation to the educational, culture heritage institutions and game industry, we could assume that feasibility of growth outstrips that of the purely game's market, already filled with heated competition and saturation. Confirming such a conclusion is the fact that user community is familiar to the multimedia digital environment [16].

Pioneers in *e-learning* field are looking very closely at the potential of what the business is calling "games-based education". It is not appropriate for every training need, but neither is e-learning itself. Corporations, schools interested in educating through games naturally look at the price tag and project length.

Edutainment games could be helpful in preserving and widening the access to the written cultural heritage and archaeology monuments. These games were born and continue surviving in big competition with most popular "fun and cruel" games. Thus they strike the mass culture of illiteration and serve for popularization of collections of libraries, archives and museums.

5.5. Examples. *(for detailed information please see the Appendix).*

97 Digital Heritage and Cultural Content projects in the frames of Information Society Technologies Program of European Commission

Game Culture project, aimed at research and information exchange

Edutainment games package of Kids Desktop Environment Entertainment Project

Experience of the Assembly of National Museums in France

6. Industry and Academia

6.1. Defining the Problem. The constant theme in discussions about the future of games is that the innovativeness of game play has lost to graphical appeal, which hurts the industry. Hiroshi Yamauchi, the ex-president of the Japanese game giant Nintendo, stated in an interview that the game industry should be making games, not movies, and that the development of truly new games has all but stopped [17].

Microsoft and *Electronic Arts* are the only ones putting serious money into creating working dynamic social experiments⁵. Software giant like EA has proven that you can sell an "experience" rather than a "game" (i.e. Sims), but they have a marketing juggernaut to get the word out. Smaller, experimental companies don't have that chance.

Serious problem of the industry is that the creative aspect of game development *lacks vocabulary*. As a result creatively ingenious offerings are ignored by the press consequentially by the gamers. Focusing entirely on technological advancements leads to creative stagnation and producing flood of follow-the-leader titles in form of real-time strategy after real-time strategy, shooter after shooter [18].

"Entertainment is foremost a field in flux, and an industry that cannot support experimentation in an organized fashion is a dead industry. Such is the case with computer games. The entire distribution process has become so tightly managed

⁵ For the latest news about electronic games [<http://www.gaming-age.com/cgi-bin/front/index.pl>]. Here one can be not only very well informed for all the tendencies in Game playing and industry and comment them in the Forum, but also he could filter the news presented by choosing a system, on which the game, he is interested in, is played on (playstation, handheld, GameCube, Dreamcast, Xbox or PC)

business, that there is no longer any room for experimentation...by shifting from a creator-driven organism to a market-driven organism, we have transformed computer games from a medium to a commodity [17]”.

An example from cinema industry confirms this state: if Hollywood's marketing and distribution system of mid-1970's (when all were convinced that science-fiction movies didn't attract large audiences) had been as closed as the computer games distribution system now, Star Wars would never have been fact. “There are three reasons for the apparent levitation of the computer games industry: *easy money* (we build million-dollar products that return ten cents on the dollar for their development costs, and we just keep reminding our investors of Myst and Doom...much of that income is investment, not earnings), *supply of cheap labour* (there are always young talents willing to work for next to nothing to get their big break) and *false basis of most of our sales* (we are riding on the backs of the hardware manufacturers, who have performed economic miracles in lowering the price of personal computers, while raising its performance. Ignorant games purchases of initial computer buyers have been a major component of our industry's financial success in the last five years). If the *factor Internet* settles down to an online manifestation of the techie-nerd universe, then its entertainment will be a clone of the existing techie-nerd world of computer games. If the Internet becomes mainstream rather than techie-nerd, then conventional computer games will fail on the Internet just as surely as they have failed to penetrate society at large. Availability of fine multi-player games will not attract large numbers of "normal" people to join an otherwise ‘techie-nerd’ culture” [17].

In both cases (the nature of) computer gaming and customer base will not be changed by the Internet. The more so as we have an indicative example of increasing negative threatening of CG in general. For example Greek law, enacted at the end of July 2003, decreed all electronic games to be illegal, incl. Solitaire. If a customer is found to be running any sort of game, including online chess, the Internet cafe owner will be fined and the place closed. The Greek government introduced this law in an attempt to prevent illegal gambling [18].

In the light of the reality above it seems justified to ask – *how to address computer games?* Is it more important to study them technically or culturally? What concepts or ideologies does the game bring into play? Can lessons learned in games be used in everyday life? There is a multitude of important questions before researchers, concerning not the game theory only, but the historical study of Homo Ludens.

One thing that could change the negative impact of computer gaming is edutainment and its different forms (presented in learning environment), included in educational system. Here is the place of EG tool. Such a goal could unify in practice academic discourse and the discourse of the game development community.

6.2 Role of the Academia. The deficiencies to be made up are intelligent game criticism, shared vocabulary and more interdisciplinary collaboration. Game industry needs academics (non-profit research is one of the best ways to enhance technology and increase appreciation), but the question to be answered is whether academia should partner with a mercenary game industry. Game industry resists open source. Academic role as outside participants and sometime partners is “to foster a healthy scepticism of the industry, as well as the kind of critical thinking absolutely necessary to drive innovation and keep some of the worst impulses of the game industry system in check; giving all users and developers the *tools to analyze, recognize, and create research labs*’,

independent from corporate interests: shared data, open research, but game companies capitalize on controlling information” [19].

6.3. Ludology Challenge. Recently term “ludology” (from “ludus”, the Latin word for “game”) has had the function of a recognition signal among researchers of digital media. To refer to it is group-binding, roughly like talking of “deconstruction” or “cultural studies.” Ludology tends to become “unified theory of game play”. Ludology necessarily has interdisciplinary character, trying to overcome limitations of existing historical, psychological and anthropological studies on games, including mathematical “game theory”. But it still stays an emerging field searching for its institutions [20]. Concerning defining the area of the new discipline the researcher Johan Svedjedal continues: “Shall ludology be limited purely to computer games (or games in computerised environments) or should it embrace all kinds of game? How does it relate to studies of play (in the Anglo-Saxon context it is formulated as the relationship between game and play)? As always, the struggle will be resolved partly through tough wrangling over the budget (where the old disciplines are unwilling to make way for a new one), partly by attempts to boost the university profile (thereby attracting new grants and students, which is often the case with new subjects)”. [8]

Ludology has been developing in three main axes: *curriculum*, *theory* and *research & application*. It became part of curricula on different university subjects – Computer Science, History and Theory of Culture, Psychology, Library science, Multimedia, Artificial Intelligence and even Management and Marketing. Appearance of ludology in educational, industrial and research areas shows the important fact that digital culture is not a strange phenomenon already.

6.4. Open dialogue type one: “Make Your Own Game”. Many companies offer specialised game environment – to assist users without programming experience and sometimes, to use their creativity potential for creating new games [11]. This business decision has double effect on game industry – from one side it offers labour-source for free and from the other is an opportunity for creating really new game types on the market. Usually such software products are free ware and offer a variety of game scenarios with hundreds of pre-made scenes. They allow adding personalised sound effects, images; importing 3D models, as well as saving games as executable files. *Game Maker*⁶ is an example of free program that allows users to create computer games without writing code.

6.5. Open dialogue type two: “Let’s contemplate together”

Digital Games Research Association [<http://www.digra.org/>]

International Game Developers Association [<http://www.igda.org/>]

Game Studies Journal [<http://www.gamestudies.org/>]

DiGRA, IGDA and the *Game Studies Journal* are game industry attempts to educate outsiders who don’t understand the medium, including those within the business who argue that there is nothing in games beyond hollow entertainment. Until these two challenges are dealt with developing a scholarship couldn’t begin [19].

We see that game industry begins searching qualitative feedback, which is a good sign. DiGRA and IGDA are non-profit associations, whose aim is to encourage high-level digital games relevant research and to promote its` dissemination by

⁶ Game Maker [<http://www.cs.uu.nl/people/markov/gmaker/index.html>]

commercial, policy communities, and networks. 2001 was the year when game research really established itself as a separate subject. *Game Studies Journal*, dedicated, purely to computer games, was born that year as an attempt to satisfy the need of forum for game researchers and scholars. For the present it is published only on the Internet and defines its *goal* as: “to conceptualise a new academic field (Ludology) focused on the aesthetics, cultures and technologies of CGs. Not just as part of educational technology, media studies or a freaky corner of computer science, but as an autonomous discipline of teaching and research, with an agenda not subjected to the rules of a condescending established academic field” [21]

7. SWOT Analysis of EG. SWOT analysis is effective way of identifying *Strengths, Weaknesses, Opportunities and Threats* in a business product. It is used in management and marketing researches for estimating growth level and economic potential. In this paper SWOT analysis is used to: show opportunities offered by EG for presenting holdings of cultural heritage institutions; to motivate activities in areas where lie good business perspectives and thus – improving quality of EG; provoke feedback. The *strengths* are shown in relation to main competitors of EG: brain-washing and most successful recently CGs. EG *Weaknesses* show what could be changed for stronger motivation in game industry corporations. Useful *opportunities* could be opened up by changes in game technology, game market on broad scale and state policy. Potential *threats* list of EG is the smallest one, which is the best possible advertisement.

| <i>STRENGTHS</i> | <i>WEAKNESSES</i> | <i>OPPORTUNITIES</i> | <i>THREATS</i> |
|---|---|--|--|
| Alternative of invasion of illiteracy (especially in CG field) Adequate presentation of cultural heritage in CG is rarity; here the role of cultural heritage institutions is increasing Acquiring specialised knowledge in various domains Improving language skills Game industry gains without addicting danger Spreading good message (by contrast with other game categories) New way for philosophizing. Widening viewpoint, developing reasoning | Working policy do not exist yet (on governmental and cultural institution level, especially in Central and East Europe) Evaluation of entertainment web sites based on methods from the usability discipline, shows that more subtle factors such as immersion, absorption and engagement, all potentially important to both entertainment and education, are difficult to grasp with user testing method [22] Legislation details, especially in CEE region | Global computer and video game industry is generating revenues of over 20 billion Euro per year which forms a major part of the entertainment industry. Cultural heritage sector could use opportunities offered. Stable tendency to integrate CGs with other media or platforms (TV, radio, console). Chance for wider dissemination of EG offers and requires experience exchange between specialists in various disciplines – feeding into research field Requires at least average general | On physical level: Pathological Computer Use Disorder, wrist, neck and elbow pain On psychological level: many children “dedicate” their lives solely to their created profile. |

| | | | |
|---|--|--|--|
| ability Arising interest to learning in young generation Familiarizes people with computers | Time consuming Loosing the balance education- entertainment, interface and content | knowledge Raising the interest for learning, and especially in e- learning Cultural tourism | |
|---|--|--|--|

8. Conclusion

Homo Culturalis allows his right as creator of culture to be whittled away because of laziness and apathy. That laziness is the biggest obstacle to be overcome by contemporary “open source” game culture [20]. Prof. Ken Perlin, Director of the New York University Media Research Laboratory, summarizes his analysis of game culture this revolutionary way: “We are in danger of becoming passive citizens, being spoon-fed culture. Television culture is not a cause, but a symptom. Citizens who can *make* things can affect the world; if we institute programming languages as part of the general education of all, we will be helping to guide a revolution in the way people think and act. Imagine if programming, Symbolic Logic (also useful for any sort of critical thinking) became like writing, like literacy, not a technical skill learned by engineers, but a fundamental language of self-expression naturally used by writers, artists, musicians, anyone. Way beyond open source for democratizing access to cultural participation at the most basic level. That's exactly the sort of spirit, which will transform gaming culture from the ground up. [24] “

If we think in terms of universities' practice, “imagine if” suggestion of Perlin does not sound very realizable. The important key for low creativity level in our culture he explains thus: “I do believe that a large portion of the lack of creativity stems from the current educational system. Somewhere along the lines the educational system shifted from teaching people how to think to teach them what to think. I'll use myself as an example in that remark; my school career consisted almost entirely of me having to prove to my teachers, math and science specifically, that my method of doing things wasn't wrong. It was just different. The current school system make-up seems to stifle creativity with supposed fact. It is depressing to see” [24].

To this logical deduction Brenda Laurel, current chair of the Media Design Program at the Art Centre College of Design, adds: “Games of the future will be open source. They will be more distributed, more social. Individual destructive power will get boring, because there's too much of that in real life right now. Let's think about *games as art*, as important cultural and social phenomena [24]”.

Thinking of *games as art* will provoke creativity in all levels of game making and distributing – from idea through modelling and design to the playing itself. Edutainment games are “the fruit” of scientific and industrial search for bigger patterns of understanding. Their future depends not only on funding, but on active dialogue on business (Game industry) and scientific level (Game research). Starting point should be education, development of mind, again in all levels – teachers, students, constantly playing all kinds of computational and non-computational games. If thinking in perspective teaching–learning tools, such as EG, Net LOGO etc., which help thinking `creatively and logically, could become the backbone of the educational e-publishing.

Everyone involved in the games debate should be motivated to welcome balanced studies. Concerning policy makers and culture heritage sector, they should

take the benefits of gaming seriously. The message of playful Homo Culturalis stays *keeping virtues of gaming* [23] in virtual reality of EG. Such motivation in all levels of game making process will surely provide “good” game with a “good” message, i.e. appropriate content, dressed in a qualitative, amusing, coloured form.

9. Appendix: Edutainment Games – What is Done?

Kids Desktop Environment Edutainment Project [<http://edu.kde.org/>].

The project is aimed at developing high-quality educational software for the Kids Desktop Environment (KDE). KDE is a powerful Open Source graphical desktop environment for Unix workstations. Primary focus of the developed edutainment game package is on school children aged 3 to 18, and the specialized user interface needs of young users. However, we also have programs to aid teachers in planning lessons, and others that are of interest to university students and anyone else with a desire to learn! Studying tools, programs, games in several areas such as Languages, Mathematics, and Chemistry etc.

Game Culture project, 2000 [<http://www.game-culture.com/about.html>]

Game Culture website has been developed as a central information resource for academics, developers, gamers. While the study of computer games and game culture is still a largely undeveloped field, there is a significant body of research and critical writing emerging on the topic, in both academic and mainstream publications, and gaming websites. The goals of the game-culture project are to collect the best of the current writing on computer games in a single location; to report research and news items that are of significance for the gaming community; to provide links and information on the computer game industry, and to facilitate the exchange of information and fuel the development of ideas, criticism.

97 Projects of Information Society Technologies program of European Commission: Digital Heritage and Cultural Content [<http://inf2.pira.co.uk/factsheets/inform/digicult.html>]. Some of them are: **3DMURALE**: 3-Dimensional Measurement and Virtual Reconstruction of Ancient Lost Worlds of Europe, **ACTIVATE**: New Access and Services for Cultural Content, **CHIOS**: Cultural Heritage Interchange Ontology Standardization, **COINE**: Cultural Objects in Networked Environments, **CRISATEL**: Conservation Restoration Innovation Systems for Image Capture and Digital Archiving to enhance Training Education and Lifelong Learning, **DELOS**: A Network of Excellence on Digital Libraries, **DIGICULT-FORUM**: The Digital Culture Forum, **EVAN**: Electronic Imaging and the Visual Arts Networking, **HEREIN2**: European Heritage Network **HYPERGUIDE**: Customizable hyper guide to cultural and scientific webs, **INWARDLY**: Integrated software and methodology for the restoration and conservation of the cultural heritage, **ISYREADET**: Integrated system for recovery and archiving degraded texts, **REGNET**: Cultural Heritage in Regional Networks, **RENAISSANCE**: Virtual Renaissance Court, **VRCHIP**: Virtual Reality Cultural and Heritage Information Portal
 Assembly of National Museums (France) and CRYO [http://www.museesdefrance.com/en/fiche.asp?_team_=1&code_reg=AV500064&partenaire=rmmfr]
 Assembly of National Museums is a network of 33 national museums in France. In 1993, its’ multimedia department began producing and publishing interactive products. The RMN’s catalogue of cultural CD-ROMs now numbers some fifty titles covering five major areas: museums, exhibitions, art history, games. Of special interest is the

experience of the RNM in developing cultural heritage games. For the games, RNM built a successful cooperation with CRYO Interactive Entertainment and as a result appeared: Versailles 1685, A Game of Intrigue (1996), Versailles II, Egypt, Forbidden City. The company Cryo offers also other games oriented to immersion in other historical periods and presenting the history of Egypt, Jerusalem, Pompeii, China etc. The games were developed by an impressive team including some 20 specialists of different profiles, including conservators, historians, special effects, game designers, programmers, musicians; garden and fountain experts, etc. A help file is included in each game. To answer the requirements of the market, the games are offered on CD-ROM for PC and Mac and on DVD.

ORANDIF Inc. ORANDIF Inc. is a Seoul National University (SNU) affiliated venture company. Experts from SNU and KAIST participate in the development educational content that promotes logical thinking. ORANDIF's latest product (July 2003) is *Educational Game for a Logical and Creative Mind*. It has been selected by the Korea Culture & Contents Agency as a project, "supported for making edutainment contents utilizing technology for cultural contents creation". In its development participate expert researchers from the SNU Philosophy Research Centre, Art and Culture Research Centre, Human Knowledge and Science Research Centre, KAIST. It is available also online, altogether with an adventure game for middle and high school students, and a game targeting fourth to sixth grade elementary school students.

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