



Game-On

GAME-ON[®] 2010

11TH INTERNATIONAL CONFERENCE ON
INTELLIGENT GAMES AND SIMULATION

NOVEMBER 17-19, 2010

HOLIDAY INN
LEICESTER,
UNITED KINGDOM

EDITED BY

ALADDIN AYESH

ORGANIZED BY



A PUBLICATION OF

eurosis

NARRATIVE MEMORY IN HYPERFICTION AND GAMES

Helena Barbas

IEMo and DEP/FCSH and CENTRIA
Universidade Nova de Lisboa, Portugal,
e-mail: {hebarbas}@fcsh.unl.pt

KEYWORDS

Storytelling; narratology; memory; hyperfiction; serious games; digital humanities;

ABSTRACT

The aim of this paper is to address some theoretical issues concerning the narrative practice in cyberspace. From a narratological perspective it intends to clarify the functioning of time and space in storytelling. For that purpose it traces the concept(s) of memory inherited from rhetoric; the use of memory as a narrative device in traditional accounts; the adaptations imposed by hyperfiction. Using practical examples (including two Portuguese case studies - *InStory* 2006, and *Noon* 2007) it will show how narrative memory strategies can be helpful in game literacy. The main purpose is to contribute to serious game research and (trans)literary studies.

INTRODUCTION

The narrative-memory relationship is bidirectional. Memory is the precondition for engendering a narrative as well as narrative is crucial for the agility of the faculty of memory (Rose 2003). All narratives are inherently put together through the use of recollection: «As already observed, there is no such thing as memory of the present while present, for the present is object only of perception, and the future, of expectation, but the object of memory is the past. All memory, therefore, implies a time elapsed» says Aristotle *On Memory and Reminiscence* (449b24).

Narration is intrinsic to the human condition. We do tell ourselves our everyday stories, daily fabulating our lives - transforming the events experienced into our own personal novel. From a psychoanalytical point of view, all (auto)biographies are self told stories (Robert 1972).

The present concepts of memory are inherited from Antiquity, namely the ones registered in the *Rhetoric Ad Herennium* (Caplan 1964). In Classical Rhetoric Memory is a discipline and an art. The system it uses - the «method of *loci* [places]» - has been overestimated or under-rated. The renaissance re-interpretations of *ad Herennium* transform the «*loci* method» either in a encyclopedic scheme to arrive to the knowledge of God; or in a mere technique for learning «by rote» poems, lists of events, names. The modern contemporary approaches are interested in its architectural patterns or in its visual splendour that allows to play with images and text. None explored its inherent narrative features.

Presently, the notion of memory is recovering its theatrical dimension, and the notional frame of the concept has been

enlarged to a never imagined scope in the mediatised sphere. The «method of *loci*» can become useful if up-dated with the new proposals from the cognitive sciences, and Digital Games Based Learning (DGBL) lessons (Blunt 2005). The narrative-memory relationship becomes fundamental when research proves that people do remember better when content is furnished through storytelling (Furman 2007) - or a gameplay (Blunt 2010).

A SHORT HISTORY OF MEMORY

In Hesiod's (c.700 b.C.) *Theogony* (vv. 53-62) Mnemosyne was the personification of Memory. She was a titaness, daughter of Gaia and Uranus. During nine nights Zeus fathered in her the nine Muses - all twins and born at the same time (Evelyn-White 1914). These muses were multitasking and globalized - inspiring all men and all possible kinds of human activities.

From Antiquity through the Middle Ages, Memory was a major discipline of Rhetoric. Had as its first syllabus the *Rhetorica ad Herennium* (c. 86-82 b.C.) falsely attributed to Cicero (106-43 b.C). Its four books on the «theory of public speaking», an aide to lawyers and orators (in an illiterate society), were the source for all posterior treatises antique and medieval, up to our modern «5 point essay».

Memory as an «Art»

The invention of the «Art of Memory» was attributed to the poet Simonides of Ceos (556-486 b. C.), the first to use the association of images with mental places (*loci*) as a mnemonic device (Edmonds 1924). Its initial structure and principles are registered for the first time in *ad Herennium* (Book III, 16-24).

By the «method of *loci*» the practitioner devises the matter (a topic, facts, a narration); chooses an architectural layout of some physical space (his house, a building, a desert - or his own body) and distributes his information/images by those discrete *loci*. When desiring to remember, he can mentally walk through these *loci*, and reclaim the items as necessary.

This art attained its excellence with Giulio Camillo (ca. 1480-1544) who, in his book *L'Idea del Teatro* (inspired by Vitruvius *De Architectura*, 25 b.C.), transformed the whole cosmos into a huge mythological *locus*, from where all the knowledge could be retrieved: «this high and incomparable distribution not only keeps hold of the entrusted things, words and arts, but also shelters the information for our own needs so that we can easily find it; and so, it will even provide true wisdom» (Camillo 1554). This was adapted by several scholars to their disciplines - Ramon Lull (1232-1315), Leon Batista Alberti (1404-1472), Paolo Lomazzo

(1538-1600), Giordano Bruno (1548-1600), Tomaso Campanella (1568-1639) - each of them contributing to enrich the several steps of the process. Ignatius Loyola (1491-1556) made it the source of his catholic *Spiritual Exercises* (1521-3), and it became fundamental to the Jesuitical pedagogy model (i.e., Claudio Acquaviva's *Ratio Studiorum*, 1599).

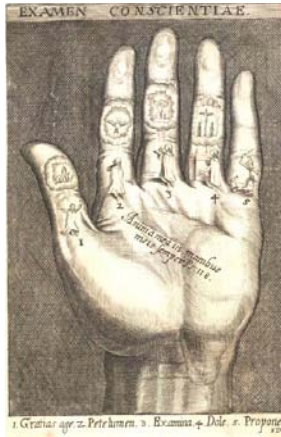


Figure 1. Engraving of a Jesuitical mnemonic for the daily conscience exam (c.1588).

At the same time, this scholastic form of knowledge is associated with less orthodox subjects such as Astrology, Alchemy and Kabala. The image engraved for Robert Fludd's (1574-1637) "*Ars memoriae*" (1619), is said to have inspired the project of Shakespeare's Globe Theatre.



Figure 2. Robert Fludd - *Theatrum Orbi*, "*Ars memoriae*", engr. John Theodore De Bry, 1619;

Besides architects and philosophers, the «Art of Memory» was also practiced by painters and sculptors. Its very last rules are encoded in Cesare Ripa's *Iconologia* (Ripa 1593). These figures were used as ready-made «*topoi*»/images to express emotions, or concepts:



and were accompanied by a caption:

FIG. 51. *Cognitione: KNOWLEDGE.*
 She holds a Flambeau in one Hand, and a Book, open, in the other, on which she feeds very intent, by pointing at it.
 The Flambeau shows, that as the corporeal Eyes have need of Light, so have the Eyes of the Soul to attain Knowledge, which the Book denotes; because, by looking into it ourselves, or hearing it read, the Knowledge of Things are produced in us.

Figure 4. Cesare Ripa - *Knowledge*-1593;

The «art of memory» in cyberspace

The historical studies of Paolo Rossi (1960) and Frances Yates (1966) were responsible for a renewed interest in the rhetorical Art of Memory. The theme, plus the visual impact and architectural potential of the memory theatres were most propitious to seduce cyber artists and theorists.

The «Simonides Effect» was explored at M.I.T.: «a study recalling the ancient principle of using spatial cueing as an aid to performance and memory» (Bolt 1979); computers were addressed as "Theatre" (Laurel 1991); Camillo's theories fundament the project «Computers as Theatre of Memory» (Matussek 1999-2004). More recently the account of the evolution of these practices is given concerning contemporary cyber performances (La Rocca 2008).

The above approaches are focused either on understanding architectural patterns, using the «Art» as a model for data mining (in its prosthetic dimension); or on its optical magnificence, playing with images and text. Although it is recognized that these «architectural mnemonics» are based on the use of narrative structures for the improvement of the ability to memorise (Sapir 2006), and that (again from an architectural perspective) the 'images' to be memorized can be events (Yilmaz 2010), none explores its intrinsic narrative quality.

MEMORY IMAGES AND WORDS AS NARRATIVES

It is said in *Ad Herennium* (III, 20-34): «Since, then, images must resemble objects, we ought ourselves to choose from all objects likenesses for our use. [...] Likenesses of matter are formed when we enlist images that present a general view of the matter with which we are dealing; likenesses of words are established when the record of each single noun or appellative is kept by an image. Often we encompass the record of an entire matter by one notation, a single image.» (Caplan 1954). The «subject-matter» has «narration» for synonym (A.H. I,8). Images or words, attributed to each *locus*/place correspond to an idea or an event - a 'historia' as proposed by Alberti (Spencer 1970): a narrative sequence to be individually organized within a scenario, in order to re-build a larger story/discourse.

In cyberspace information is not just stored but produced. Words and images are mnemonic devices, stimuli, and traces of events. New media (Aczél 2010): «necessarily introduces a grammar upon which a writing becomes the self (mystory), a new function of creation and storage (algorithms and databases), an alternative to the narrative (periautography, data-autography) and spaces where all other real places may intersect in 'another time', heterochrony».

Independently of the new divisions and classifications proposed for memory - subjective, individual, public, collective (Rose 2003); sensorial, short or long-term (Rossi 2000); relying on new technologies and practices (Van

House and Churchill 2008) resorting to a globalized database, shared worldwide (MySpace, Facebook, Blogs, Twitter), all and each of these exercises have to be referred to what has just happened - Aristotle (384-322b.C.) is still right: all memories are of things past.

«New» concepts of Narrative

The ambiguity of the concept narrative has already been discussed (Barbas and Correia 2009). Here - for future purposes - the opposition between «story» (content plane) and «discourse» (expression plane) will be summoned, as theorized by the French structuralists (Genette 1996) and linguists (Benveniste 1974); it was also explored by the Russian formalists (Todorov 1983), American scholars (Prince 1988) and game theorists (Crawford 2004, Montfort 2007).

The similarity between *Ad Herennium* (III, 20-34) and the definition proposed by Marie Laure Ryan is very interesting: «Narrative is defined as a mental image, or cognitive construct, which can be activated by various types of signs. This image consists of a world (setting) populated by intelligent agents (characters). These agents participate in actions and happenings (events, plot), which cause global changes in the narrative world.» (Ryan 1994).

TIME AND SPACE DETERMINANTS

Memory and narrative rest on two vectors - time and space. Causal and chronological dimensions are essential to all kinds of fiction. A narrative corresponds to the representation of at least one event; each event is given under the form of two propositions (sentences). The story results from the relationship established between those two sentences (by contiguity and consecution).

The temporal junction is crucial, because a shift in the order of the sentences can modify or falsify the meaning of the story (i.e.: «The baby cried. The father took the baby in his arms» vs. «The father took the baby in his arms. The baby cried.»). For this reason, in spite of some oppositions (Eskelinen 2008), order is quite relevant. With another example, Nick Montfort states that: «changing the order in which events in a given temporal sequence are related — is important to the aesthetic and rhetorical effect of more complex narratives and to ones of more literary interest.» (Montfort 2007). Yet, this goes beyond the mere literary aesthetics: it is close to the *cataphora* with its binding effect that the old rhetoric masters knew so well; it is related to the way our brain accepts (any kind of) information - the last data received being seen as the most important, and giving the tone to the previous discourse (retroaction effect); it results from a cultural practice in which all logical discourse formulations (rhetorical, philosophical, mathematical) present their conclusions/ demonstrations in the last line.

Any association of ideas or of events, besides the chronological factor, needs some kind of physical support/space. In the last instance it resorts to the adverbs «here» and «now». These are deictic (empty) words, because although their semantic meaning is fixed, their denotation varies accordingly to the moment and/or location of the enunciation. And time and space are the two fundamental categories we use to structure the world around us - being it

real, imaginary or virtual.

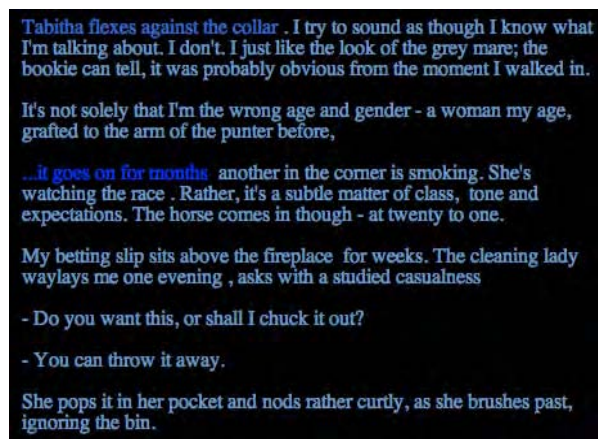
Transposing these principles to the world of fiction, and considering memory in its first variant as history, it is necessary to differentiate the several layers operating extra and intra-textually. The distinction between «textual time and text time may be one of the crucial differences between spatial hypertext and cybertext, since the latter often aims at conflating these into one temporal dimension» (Kosima 2009). Narratological studies can still offer the means to discriminate several of the time/memory planes.

NARRATIVE EXTRINSIC TIME - READING

Although the textual worlds/settings may get fixed or objectivised through the use of formalization, their meaning is never autonomous, as signification depends on the reader/user experience - in real time and space. For measuring the speed of narration from the reader perspective, Genette invented a (much criticized) hypothetical ratio between the chronology of events and the number of pages necessary to describe them. This «time of reading» by an «imaginary reader» is exterior to the story itself. It concerns the reception of all kinds of works (Jauss 1982). And it is under this scope that all the research concerning the reader/user experience should be included: interactivity, immersion, evaluation of the affective states. Even when it correlates to the 'narrative pact'/the player's suspension of disbelief, it is always external to storytelling.

Reading time in cyberworks

As an exception, there is a reading time that can be controlled from the interior of the narrative, which is particular and exclusive to cybertexts. Hypermedia artists have been playing with this process, trying to control the user's experience in various ways, restraining or delaying her reading. The text can appear on the screen only for a limited period of time, as in *Hegirascope 1* or *2* (Moulthrop 1995). If the reader doesn't open any link, the browser auto-refreshes the active window every 30 seconds. Something similar occurs in *Grammatron* (Amerika 1997), but here the aim is to play with the speed of the exhibited lexias. In *Blue Hyacinth* (Masurel and Andrews 2007) the work does have a stronger literary purpose; the text(s) change every time it/they is/are crossed (even unintentionally) by a movement of the mouse.



Tabitha flexes against the collar . I try to sound as though I know what I'm talking about. I don't. I just like the look of the grey mare; the bookie can tell, it was probably obvious from the moment I walked in.

It's not solely that I'm the wrong age and gender - a woman my age, grafted to the arm of the punter before,

...it goes on for months another in the corner is smoking. She's watching the race . Rather, it's a subtle matter of class, tone and expectations. The horse comes in though - at twenty to one.

My betting slip sits above the fireplace for weeks. The cleaning lady waylays me one evening , asks with a studied casualness

- Do you want this, or shall I chuck it out?

- You can throw it away.

She pops it in her pocket and nods rather curtly, as she brushes past, ignoring the bin.

Figure 5. Pauline Masurel and Jim Andrews - *Blue Hyacinth*, 2007;

In these dynamic cybertexts the duration for each node can be pre-determined by their authors. They may intend the act of reading to always be new, as it will not be easy to return to the exact same window/story episode. This fuses real reading time with fiction time, but also destroys the performance of memory, and the possibility of recollection. Each narrative becomes a «happening» or a lonely labyrinth that cannot be shared.

NARRATIVE INTRINSIC TIME(S)

Inside any account there are two levels of historical time: context and co-text (Halliday 2002). The first allows the user to engraft the narrative in her experience of the real world; it is fundamental for any historical novel, or biographies; not so imperative for psychological fictions. The latter corresponds to the historical time intrinsic to the story itself; it entails the (re)making of a fictional verisimilar microcosm that offers referents for the legibility of the plot; its limits are science-fiction experiences (or Tolkien novels - demanding a translation, a mediatization through maps, dictionaries, encyclopaedias). Both of these spheres, corresponding to the creation of virtual worlds/scenarios (rhetorical mnemonic 'backgrounds'), are subject to verisimilitude laws, and fit within the author's responsibility.

Narratology and the use of time

Consequent from the above mentioned distinction between «story» and «discourse» the concept of «anachronies» becomes operational. This term, coined by Genette, defines the rupture of the temporal order used as a stylistic tool inside traditional fiction; it refers to the workings of history/memory inside the narrative *per se*.

Under «anachronies» the more significant are «analepsis» and «prolepsis». As we have seen (Barbas and Correia 2009), both are essential instruments for playing with time inside a narrative. The first - flashback - in order to delay the outcome of any episode, to postpone the resolution of the bifurcation, to reiterate any event already told - is the memory internal to the narrative. The latter - flash-forward - has a prophetic function that can be ominous, is the memory of the *future* inside the narrative.

In what concerns duration - «anisochronies» - they result from the hypothetical comparison between the story's chronological time and an ideal duration of the reading. This farfetched notion has been criticized and, as above mentioned, belongs to the sphere of reception.

Yet, this cannot obliterate Genette's subsequent considerations in what concerns the aspects of «duration» that affect time inside the narrative (some of them also rhetorical tropes): «ellipsis» and «parallipsis» (omission of diegetic events); «summary» (a concise digest of events); «scene» (equal time between story and discourse, equivalent to dialogues); and «pause» (the descriptions, or the Barthesian catalysis). All these are narrative strategies that can interfere with the plot, accelerate or delay the final outcome, which makes them meaningful and useful tools for storytelling.

Nevertheless, *prolepsis* and duration are print-oriented approaches that fail when applied to hyperfiction and games.

Narratives without memory

InStory (Interactive Media Group 2006). This project had the goal of implementing a platform for mobile and cinematic storytelling, information access, and gaming activities using a PDA, in «Quinta da Regaleira» (World Heritage) in Sintra, Portugal (Correia and Alves 2005). The script creation was mainly based on a linear structural narrative sequence scheme (Greimas 1996). However, as each sequence needed to be reproduced in each different spot/context, it became necessary to resort to Steve Holzman's aesthetical proposals for virtual space. This inspired the elaboration of a fractal narrative model (Holzman 1997). De par, as muses for scriptwriting were used *The Game of the Goose*, and the *Rhetorica Ad Herennium*.

The development of basic interactive content was predetermined by the environment. The user is immersed in the story - as a character/narrator/avatar - inhabits the diegesis, and can decide which way to go. The real time and space become a theatrical setting, projecting all actions to the present. *Analepsis/prolepsis* were not supported by a narrative of this kind. They could be recovered only when the user had access to her experiences recorded in the server. The user's wanderings and later recollection of the visit reproduced the procedures recommended by *Ad Herennium* for the creation of backgrounds (III,19) in a inverted order; here the *loci* were the places visited. This was a cultural heritage project (Barbas and Correia 2006), and its main objective was the conservation/promotion of a historical site in which cyberspace was used as a new alternative for a curatorial action.

In what concerns duration - «anisochronies» - all narrated episodes became «scenes» (equal time between story and discourse).

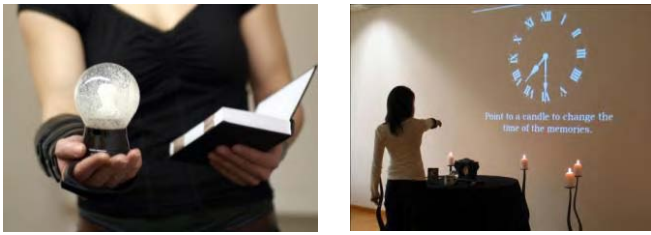
The theoretical outcome was that memory of the *future* works only inside traditional narratives. It corresponds to the existence of actions in a closed linear world (the book) that are naturally implied in and by the story - by logic or verisimilitude. Even in the case of «open narratives» (Eco 1979) there is a chronological order of events and it is possible to know where and when the story is going to finish (the last page). But not so in hyperfiction.

RESURGENCE OF MEMORY IN HYPERFICTION

Cyberart practitioners have not abdicated from the use of memory as a narrative device. They resort to it, adapting it to conform with the novel ways of storytelling, to the instruments they develop, and the stories they want to tell. Poles apart - ubiquitous computing/ ambient intelligence versus cybertext - two examples of fictional strategies that reinstate memory in the plot are shown below.

Noon - a secret told by objects (Heidecker and Martins 2007) is an interactive installation where common objects are repurposed as interfaces for telling a story. The plot is quite linear. Four members of the Novak household (father, two children, and a maid) perished in a tragic fire; Mrs. Novak survived, but had to be institutionalized. The police have no means or will to proceed with the investigation, and the case is closed. «Oddly enough, some objects were

recovered unscathed from the wreckage. It's as if Fate itself meant them to survive so they could one day tell their stories. That day is here.». The six salvaged objects are repositories of the Novak's recent past: «these hold the key to the mystery, in the form of memories».



Figures 6-7. Christina Heidecker and Tiago Martins
- *Noon - A Secret told by objects*, 2007;

These physical objects are displayed on a table surrounded by five candles. The user can touch them wearing a special glove (the Gauntlet). By performing different gestures, she recalls the events previous to the arson: «Displaying of a memory is triggered when the Gauntlet detects an RFID tag, and the haptic actuator is activated to both signal a reading and suggest a flow of energy between player and object» (Heidecker and Martins 2007). The information retrieved is projected on a screen, accompanied with noises/music, so that the player «pieces together a puzzling narrative, at times actively confronting a physical manifestation of the most painful impressions in the form of poltergeist».

Although this story-game is still enacted in a dramatic present, the narrative elements are events of the past, and the plot is structured upon the existence and recovery of memories. In terms of the «Art of Memory» this project physically recreates the images supporting the «subject-matter» (A.H., III, 16); and the girl with the objects (lights, tome) could be read as an update of Ripa's icon for Knowledge (Fig.4).

Dim O Gauble (Campbell 2006). This is one of the works presented in *Dreaming Methods*. The group aims at «a fusion of writing and new media exploring imaginary memories and dream-inspired states». These cyberfictions refuse labels: «to be classed as “literature” or not has ceased to be of much interest to both author(s) and reader(s)» (Campbell 2006). Each project combines all the media and one of the most interesting is *Dim O'Gauble* by Campbell himself.

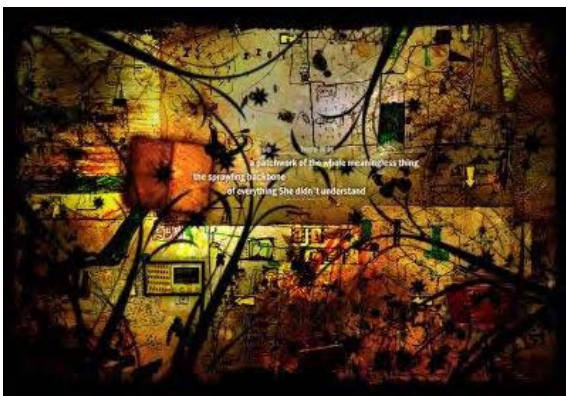


Figure 8. Andy Campbell - *Dim O'Gauble*, 2006;

It is: «based on a series of the author's childhood drawings» and presents the user/reader with an intricate collection of intertwined colours and shapes, music, and several layers of perspective suggesting depth (3D).

Navigation is easy. Yellow arrows send the user to a new "scene", yet always inside the same window. There are text fragments with hyperlinks showing dates, details. Animated cut-sequences reveal additional narrative elements: «the generation of a piece may begin with one particular “scene” that is programmed/ designed/written/assembled together to a high degree, and which then acts as a gateway into a larger and more complicated narrative» (Campbell 2006). The critics/readers have tried to classify it as interactive fiction, dynamic narrative, mobile text, game, (nobody called it an 'opera'). The project has been widely acclaimed: «The text *Dim O'Gauble* is about memories, how spaces and places are so often the sites of memory. The theme of memory gives rise to the image of the failure of communication and how understanding often emerges 'after the event', when a stronger sense of (dialogic) context is available» (Barrett 2010). In rhetorical terms this could represent a not very suitable «background» (A.H. III, 19, 32).

The novelty in *O'Gauble* is its oniric aura, which gives it an unsuspected psychological dimension. Its reading demands the knowledge of narrative strategies, but also of several other vocabularies - painting, dramaturgy, theatre, scenarios, music. This experience also confirms the need for a new info-aesthetics (Manovich 2008).

TRANSLITERATURE, TRANSLITERACY, GAMESLITERACY

Litera is the radical inspiring these new terminologies. «Transliteration» names a «new universal genre intended to unify electronic documents and media, erasing format boundaries and easing the copyright problem.» (Nelson 1960) - a genre and a software. «Transliteracy» is «the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks» (Thomas 2007); the examples come from history, orality, philosophy, literature, and ethnography. «Gamesliteracy» refers «one approach to addressing these new sorts of literacies that will become increasingly crucial for work, play, education, and citizenship in the coming century» (Zimmerman 2007).

Our friend from *Ad Herennium* states that: «Those who know the letters of the alphabet can thereby write out what is dictated to them and read aloud what they have written. Likewise, those who have learned mnemonics can set in backgrounds what they have heard, and from these backgrounds deliver it by memory. For the backgrounds are very much like wax tablets or papyrus, the images like letters, the arrangement and disposition of the images like the script, and the delivery is like the reading.» (III, 17). There is an apparently easy similarity in decoding words and images that has to be regained.

Humans are natural born storytellers who interlace mental tales to fit structures and shore up recollection. The research on memory (Furman 2007) attests that, although subjects may keep the meaning for short stories but tamper with the structure, people memorize information much better when it

is presented as narrative; that they do remember the content of novels, plays, and movies well. Narrative becomes essential for learning.

Conversely: «Learning to read a game system [...] points toward a specific kind of literacy connected, in part, to the ability of a player to understand how systems operate, and how they can be transformed» (Salen 2007). Game design is the planning of systems of meaning, and: «Like letters in the alphabet, objects and actions within a game gain meaning through rules that determine how all of the parts relate. A game designer is responsible for designing the rules that gives these objects meaning.» (Salen 2007).

The problem of meaning is far from being clear. From Cognitive Sciences we know that our brain works with memory, but it does not process information like a computer (Rose 2003); and that the use of memory - as well as other functions - physically alters the brain and also transforms the memories. The creation of meaning is individual and hardly sharable. It can be seen as an historical and cultural process articulated by humans in interaction with their natural, social and educational environments. These processes - or problems - call for extra responsibilities in what concerns the creation of games, and even more so for content. Even if just for play, game design cannot be haphazardly prepared, nor be subject to market single party rule, and should respect memories and tradition.

CONCLUSION

Memory and narrative are closely interrelated in recollection, and storytelling. Research in cognitive sciences and DGBLearning proves that people do remember better when content is furnished through a narrative medium - or a game. Trans-literacy is already in order and will soon be the norm.

This urgency oriented these reflexions on the functioning of memory and time in, and out, of traditional narratives. Memory, like history, operates on several levels - exterior or interior to the narrative act. The tools of traditional fiction suffer changes in cyberspace - such as the user's reading time and *prolepsis*. Other forms of cyberworks resort to technology to reinstate memory in their plots. Narratological concepts are no longer able to fully encompass the procedures and practices of hyperfiction. The assessment of narrative bifurcation and suspense is being prepared as future work.

The difficulty of finding a (trans)language to define the new practices is aggravated by the need for a terminology, and for new reading instruments. The main problem becomes one of significance. E-literacy has to go beyond the *litera*, and allow the naming of all the relationships arising from the combination of every imaginable media. Hyperfiction, games, DGBLearning are pervading our world with new systems that have to be decoded, have to be learned, have to teach and be taught. Content development is becoming crucial, and cannot be arbitrarily prepared. The Humanities, with a long term experience in these areas, can unquestionably contribute to help meet these new challenges.

REFERENCES

- Aczél, P. 2010. "Mystory in Myspace - Rhetoric of Memory". *New Media in Transforming Culture in the Digital Age*, Tartu 14/16 April. 155-59.
- Acquaviva, C. 1970. *Ratio Studiorum-1599*. Trans. Allan P. Farrell, S.J., Detroit University, Washington.
- Amerika, M. 1997. *Grammatron*.
<<http://www.grammatron.com/index2.html>> [27.Oct.2010]
- Barbas, H. and Correia, N. 2006. "Documenting InStory – Mobile Storytelling in a Cultural Heritage Environment". *First European Workshop on Intelligent Technologies for Cultural Heritage Exploitation*, L. Bordonì, M. Zancanaro, A. Krueger (eds.), ECAI 2006 - 17th European Conference on Artificial Intelligence - Riva del Garda, Italy, 28th. August.
- . 2009. "The Making of an Interactive Digital Narrative – InStory", *Euromedia'2009 - Fifteenth Annual Scientific Conference on Web Technology, New Media, Communications and Telematics Theory, Methods, Tools and Applications*, (Bruges 15-17th. April), Jeanne Schreurs (eds.), Eurosis-ETI (European Technologic Institute) and Hasselt University, Ghent, Belgium, pp.33-41
- Barrett, J. 2010. *Augmented Reality Teaching Blog*.
<<http://realmixed.blogspot.com/2009/04/digital-literature-bakhtin-and-dialogic.html>> [27.Oct.2010]
- Beare, J.I., 1994. Aristotle, *On Memory and Reminiscence*
<<http://classics.mit.edu/Aristotle/memory.html>> [27.Oct.2010]
- Benveniste, É. 1974. "L'Homme dans la Langue". *Problèmes de Linguistique Générale*, 2. Gall., Paris, France. 195-238.
- Blunt, R. 2005. *A Framework for the Pedagogical Evaluation of Video Game-Based Learning Environments*, Ph D. Diss. Walden University.
- . 2009. "Do Serious Games Work? Results from Three Studies". *e-Learn Magazine*.
<<http://www.elearnmag.org/subpage.cfm?article=9-1§ion=research>> [27.Oct.2010]
- Bolt, R. A. 1979. *Spatial Data Management*. Cambridge University Press, Cambridge, Mass. 8.
- Camillo, G. 1554. *L'Idea del Teatro*. Venice. 6.
<http://www.liberliber.it/biblioteca/c/camillo/1_idea_del_teatro/pdf/1_idea_p.pdf> [27.Oct.2010]
- Campbel, A. 2006. "Dim O'Gauble". *Dreaming Methods*
<<http://www.dreamingmethods.com/>> [27.Oct.2010]
- Caplan, H. Ed. 1954. *Rhetorica Ad Herennium*. Loeb Classical Library, London.
<http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Rhetorica_ad_Herennium/home.html> [27.Oct.2010]
- Correia, N. and Alves, L. et. al., 2005. "InStory: A System for Mobile Information Access, Storytelling and Gaming Activities in Physical Spaces", *ACE2005-ACM SIGCHI .U.* Politecnica de Valencia, Spain 15 - 17 June.
<<http://img.di.fct.unl.pt/InStory/publications/paper-ace2005.pdf>> [27.Oct.2010]
- Crawford, C. 2004. *On Interactive Storytelling*. New Riders, Indianapolis.
- Eco, U. 1979. *L'Œuvre Ouverte*. Seuil, Paris.
- Edmonds, J. M. Ed. 1924. *Lyra Graeca 2*. Harvard University Press, Cambridge, Mass. 307.
- Eskelinen, M. 2008. "(Introduction to) Cybertext Narratology". *Cybertext Yearbook Series*. University of Jyväskylä, Finland.
- Evelyn-White, H.G., 1914. *The Theogony of Hesiod*.
<<http://www.sacred-texts.com/cla/hesiod/theogony.htm>> [27.Oct.2010]
- Fludd, R. 1619. "Ars Memoriae". *Utriusque Cosmi Historia*. Lib. I, t. II, 2nd. part, Cap. X. John Theodore De Bry, Oppenheim 55.

- Furman, O. et al. 2007. *Learning & Memory*. Cold Spring Harbor Laboratory Press.
- Genette, G. 1966. "Fontièrres du Récit." *Communications* 8. Ed. Seuil. Paris.152-63.
- Halliday, M.A. K. 2002. *An Introduction to Functional Grammar*. Edward Arnold, London (3rd.).
- Heidecker, Ch. and Martins, T. 2007. *Noon-a Secret Told by Objects*. <<http://tiagomartins.wordpress.com/projects/noon-a-secret-told-by-objects/>> [27.Oct.2010]
- Holtzman, S. 1997. *Digital Mosaics: The Aesthetics of Cyberspace*, Simon & Schuster, N. York.
- Jauss, H. R. 1982. *Toward an Aesthetic of Reception*. Trans. Timothy Bahti. University of Minnesota Press, Minneapolis.
- Kosima, R. 2009. "The Experience of the Unique in Reading Digital Literature". *MIT6 - Media in Transition - Stone and Papyrus Storage and Transmission, International Conference*. (24-26 April). <<http://web.mit.edu/comm-forum/mit6/papers/Kosimaa.pdf>> [27.Oct.2010]
- La Rocca, R. 2007. *Da Memória e Arquitectura* [Art of Memory and Architecture]. Diss. Escola de Engenharia de São Carlos, Universidade de São Paulo. <http://www.teses.usp.br/teses/disponiveis/18/18142/tde-20032008-104738/publico/RenataLaRocca_Dissertacao.pdf>
- Laurel, B. 1991. *Computers as Theatre*. Addison-Wesley, Mass.
- Loyola, Ignatius, 1914. *Spiritual Exercises - 1521-3*. Trans. Father Elder Mullan, S.J. P.J. Kenedy & Sons, New York Christian Classics Ethereal Library. <<http://www.ccel.org/ccel/ignatius/exercises.pdf>> [27.Oct.2010]
- Manovich, L. 2008. *Info-Aesthetic Manifesto*. <<http://www.manovich.net/IA/index.html>> [27.Oct.2010]
- Masurel, P. and Andrews, J. 2007. *Blue Hyacinth*. <<http://www.vispo.com/StirFryTexts/bluehyacinth3.html>>
- Matussek, P. 1999-2004. "Computers as Theatre of Memory". <http://www.sfb-performativ.de/seiten/b7_engl.html> [27.Oct.2010]
- Montfort, N. 2007. *Generating Narrative Variation in Interactive Fiction*. Ph. D. Diss., Faculties of the University of Pennsylvania. 9. <http://nickm.com/if/Generating_Narrative_Variation_in_Interactive_Fiction.pdf> [27.Oct.2010]
- Moulthrop, S. 1995. *Hegirascope 1 and 2*. <<http://iat.ubalt.edu/moulthrop/hypertexts/hgs/>> [27.Oct.2010]
- Nelson, T. 1960. *Xanadu*. <<http://transliteration.org/>> [27.Oct.2010]
- Prince, G. 1988. *Dictionary of Narratology*. Scholar Press, Aldershot, U.K. 21.
- Ripa, C. 1593. *Iconologia or Moral Emblems*. <<http://emblem.libraries.psu.edu/Ripa/Images/ripa00i.htm>>
- Robert, M. 1972. *Roman des Origines et Origines du Roman*. Gallimard, Paris.
- Rose, S. 2003. *The Making of Memory - From Molecules to Mind*. Vintage, London.
- Rossi, P. 2000. *Logic and the Art of Memory - The Quest for a Universal Language*. Trans. Stephen Clucas. The University of Chicago Press, Chicago.
- Ryan, M. L. 2001. *Narrative as Virtual Reality – Immersion and Interactivity in Literature and New Media*. The John Hopkins U. Press, Baltimore, U.S.A.
- Salen, K. 2007. "Gaming Literacies: A Game Design Study in Action". *Jl. of Educational Multimedia and Hypermedia*, 16/3: 301-22.
- Sapir, I. et al. 2006. "Narrative, Memory and the Crisis of Mimesis: The Case of Adam Elsheimer and Giordano Bruno". *The Travelling Concept of Narrative*. Helsinki Collegium for advanced Studies, Helsinki. 84-96.
- Spencer, J. R. Ed. 1970. *Leon Battista Alberti - On Painting* (1435). Yale University Press, New Haven. <<http://www.noteaccess.com/Texts/Alberti/index.htm>> [27.Oct.2010]
- Thomas, S. et al. 2007. "Transliteracy - Crossing Divides". *First Monday*, 12/12 (3 December). <<http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2060/1908>> [27.Oct.2010]
- Todorov, T. 1983. *Introduction to Poetics*. Trans. R. Howard. Harvester, Brighton.
- Van House, N. and Churchill, E. F. 2008. "Technologies of Memory: Key Issues and Critical Perspectives". *Memory Studies*, 1/3. 295-310.
- Yates, F. 2001. *The Art of Memory*. Pimlico, London (8th.).
- Yilmaz, A. 2010. "Memorialization as The Art of Memory: A Method to Analyze Memorials". *Metu Journal of the Faculty of Architecture*. Middle East Technical University, Ankara. 267-80.
- Zimmerman, E. 2007. *Gaming Literacy - Game design as a model for literacy in the 21st century*. <<http://www.itu.dk/~malmberg/.//Zimmerman-Gaming-Literacy.doc>> [27.Oct.2010]
- VV.AA. 2006. *InStory*. Interactive media Group. <<http://img.di.fct.unl.pt/>> [27.Oct.2010]

BIOGRAPHY

HELENA BARBAS (1951) is Professor-Lecturer of the Departament of Portuguese Studies – F.C.S.H. – Universidade Nova de Lisboa; she is a researcher of IEMo and collaborator of CENTRIA. She holds a MA (1990) and a PhD (1998) in Comparative Literature – Literature and the Arts, and gained her “Habilitation” (2008) in Literature and Cyberarts.

Research interests: Digital humanities, storytelling, hyperfiction, avatars, serious games. She was a member of the *InStory Project* team. She has prepared a project on serious games, *PlatoMundi*, aiming to introduce ethical issues in game playing. <<http://www.helenabarbas.net>>