

Interactive Digital Storytelling and HCI Techniques Applied for Edutainment in Interactive Health Projects: Analysis of Two USC's Labyrinth Projects

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Abstract. The interactive narratives for developing interactive & educational documentaries have served for developing interactive installations & products in galleries, exhibitions, museums, universities, webs & videogames. During the last years, these previous experiences of applying interactive narrative techniques in digital historical or educational products have served to developed interactive narratives applied to health education, treatment or recovery. Two of the projects developed by the USC's Labyrinth Project, directed by Marsha Kinder, are examples of the application of experiences in other narrative genres to health edutainment. This paper analyzes the interactive narrative elements integrated on the interfaces of the projects: *A Tale of Two MAO Genes & Interacting with Autism*. This analysis develops a model that describes the interactive immersive narrative elements integrated on their interfaces. It serves to identify the interactive narrative elements that create immersion in edutainment health projects so they can be applied on new narratives about recovering from addiction.

Keywords: HCI analysis · Edutainment · Health · Interactive Digital Storytelling · Immersion · Agency · Narrative paradox · Narrative closure · Narrative intelligibility · Transmedia · Hipermedia · Interactive documentary · Interface design

1 Introduction

Human Computer Interface, HCI, design & Interactive digital storytelling, IDS, techniques have been applied to the production of interaction design for edutainment interactive media projects since the beginning of the existence of the digital medium, as Janet Murray describes it [1]. However, is only during the last years that those immersive IDS & HCI techniques have been applied for communicating about health. The processes of developing edutainment through the creation of interactive database

narratives, first for fictional, artistic & historical contents, & lately for health contents, have been experienced by the USC’s Labyrinth Project, a research initiative on interactive narrative & digital scholarship. Thus, after a scientific visit & an interview with its director, Marsha Kinder; about how to apply her IDS & HCI design experiences in the interactive narrative media project focus on recovering from addiction, that the Group I+D+C CICNETART is designing, it was clear the need to deeply analyze the interaction designs applied on the following Labyrinth’s health projects. This research served to collect the HCI, Human Computer Interface, affordances ([1], p. 409) that develop immersion & agency of the users in two health projects: *A Tale of Two MAO Genes: Exploring the Biology & Culture of Aggression & Anxiety* [2], Fig. 1, & *Interacting with Autism, a video based resource* [3], Fig. 2.

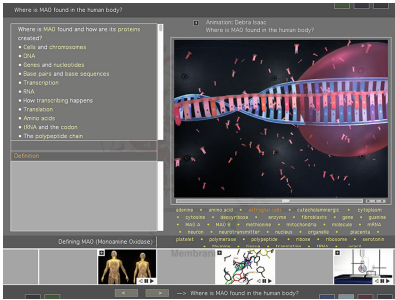


Fig. 1. Interactive DVD: A tale of two MAO genes: exploring the biology & culture of aggression & anxiety by Marsha Kinder.



Fig. 2. Interacting with Autism by Marsha Kinder, director of Labyrinth’s Project.

The first project is “an interactive science education project on a DVD that contains six hours of compelling multimedia material designed for diverse audiences – from K-12 to Graduate School, from science majors to the general public. It focuses on Dr. Jean Chen Shih’s thirty years of pioneering molecular research on a crucial pair of brain enzymes, known as the MAO A & MAO B genes (monamine oxidase) that help control aggression & anxiety.” [2]. *Interacting with Autism* combines scientific & personal documentaries with animation on a video-based website, “...that presents the most reliable evidence-based information currently available on Autism Spectrum Disorder (ASD). This website is designed primarily for those on the autism spectrum & their families, as well as educators & healthcare workers, to help them make informed choices about what approaches might be most effective for any specific individual diagnosed with autism. We are especially interested in reaching families from ethnic communities & economic groups who are usually under-served & whose children typically do not receive early diagnosis. For that reason, the website is bilingual—accessible both in English & Spanish.” [3]. These interactive health projects are analyzed through an original & detailed model of analysis to study the integration of IDS [4] techniques, Interactive Digital Storytelling, within the HCI & the interaction design. With all, the conclusions of the interaction design analysis serve to be applied on the

HCI & IDS designs of a health project about recovery from addiction, at the Group I+D +C CICNETART, www.cicnetart.org.

2 HCI & IDS Descriptions and Techniques to Include on the Analysis

Firstly, the goals, hypothesis & the concepts of the HCI & IDS study are described in order to develop an accurate model of analysis of the narrative interaction design integrated on the HCI. To include on the model & analyze the different interactive narratives & aesthetic elements, used by the mentioned projects of the Labyrinth group, is necessary to clarify some important practical & conceptual descriptions involved in the interactive narratives & interaction designs. Some of the most important to observe are: digital media affordances, immersion, agency & types of interaction, emergent narrative, hypermedia interface, hypermedia narrative cinema, narrative paradox, author-audience distance (AAD), narrative intelligibility, narrative closure.

2.1 Goals and Hypothesis

The goals of this research are to study how the interaction design & the narrative techniques were integrated successfully¹ to obtain the necessary interactor immersion & agency on the health edutainment contents. The model focuses on identifying the narrative & expressive techniques used on edutainment & on the interaction design that present, between others, good narrative intelligibility & closure [5]. The goal is looking for the pertinent interactive narrative concepts that serve to design effective interactive communications for health edutainment & behavioral change. In words of Ben Shaul ([6], p. 84) "...the complimentary lures that reinforce rather than dismantle the interactor's engagement when transitioning back & forth from cognitively constructing the hyper-narrative in her mind to behaviorally intervening in order to change its course". In brief, the final objective is to determine how the agency & immersion are obtained on interactive health edutainment projects through the "behaviorally intervention", with the HCI, "to change the course" of information organization, while keeping narrative intelligibility & closure.

The hypothesis of the research is that through the analysis of the HCI design on successful health projects is possible to describe how the four affordances of digital media ([1], p. 51): encyclopedic, spatial, procedural & participatory, are developed & integrated to obtain effective immersion & agency on new health edutainment projects. An effective HCI design allows the user to identify with the interactive narratives presented & transparently participate with: the values, the characters' situations, the actions, the spaces & the times narrated. Interactive health documentaries can present close ADD, good narrative intelligibility & closure as well as satisfactory immersion & agency.

¹ Here success is understood as the effective narrative communication between a user and a HCI system ([5], pp. 13, 22), through close ADD, narrative intelligibility and closure.

2.2 Immersion, Agency, Hypermedia Interface, Hypermedia Narrative Cinema and System Goal

According with Mateas and Murray ([7], p. 21): “Immersion is the feeling of being present in another place & engaged in the action therein. Immersion is related to Coleridge’s “willing suspension of disbelief” when a participant is immersed in an experience, they are willing to accept the internal logic of the experience, even though this logic deviates from the logic of the real world.” Integrating the previous concept with the types of interaction, Mora ([8], pp. 191, 509) describes immersion as: “...the identification & responsibility that the user feels about the development of the narrative actions & the processes that the character lives when he can mediate through the interface with the narrative forms & structures, thanks to the different types of interaction (selective, transformative & constructive) that the hypermedia expressions offer.” In relationship with the concept of agency, Murray, J. ([7], p. 10): “Agency is the term I use to distinguish the pleasure of interactivity, which arises from the two properties of the procedural & the participatory. When the world responds expressively & coherently to our engagement with it, then we experience agency.” “...agency can be intensify through the dramatic effect.”

For the interface the synthetic definition of Moreno, I. ([9], p. 114) is: “the mix of hardware & software through the ones the reader-author communicates with the hypermedia program”. It is complemented by the more extensive description of Mora, ([8], pp. 222, 511): “The interface is configured by a set of interactive expressions that serve to attract the spectator’s attention, his receptive & participatory position in the communicative moment, & to invite him in becoming a reader-author through the different type of interactions with the narrative forms.” “It is the physical & functional connection between the hypermedia system & the perceptual & communicative human systems.” Another important concept is the hypermedia or interactive multimedia. Moreno I. ([9], p. 27) describes it as: “Hypermedia describes all the spectrum of interactive media from telecommunications, high-definition TV, videogame & the multimedia.” The hypermedia interface concept is integrated by Mora ([8] p. 222) on the following description: “the organized set of interactive & multi-sensorial expressions organized under the representations that are allowed by the information technologies.” Moreover, since the analyzed projects can be considered hypermedia narrative cinema, on this research the words of Ben Saul ([6], p. 7) are used to describe this concept: “a variety of hypotheses & actual works whose common denominator is their focus upon a computer-mediated interaction between users or “interactors” & moving audio-visual texts that strives, through the use cinematic strategies, to offer the interactor an option to change at predetermined points the course of action by shifting to other predetermined options”. On that sense, the model of analysis integrates what are the types of narrative structures that are presented through the HCI from the health projects. This serves to observe how the hyper-narrative is balanced with the system goal. The hypermedia narrative structure [8] is materialized in the multimedia expressions that are articulated on the HCI design. The relationships between the hyper-narratives to the system goal of immersive-interactive media are considered from Bruni, L.E. ([5], p. 13) perspective as: “...experiences... ..are also related to the success of narrative communication between a user system & a system, which

determines the degree to which the goals of that system have been accomplished. We see thereby a close relation between (1) the various aspects of narrative communication, (2) the interaction between user & the system, & (3) the achievements of the goals of the system.”

2.3 HCI’s Interactions, Types of Interactivity and Productive Interactivity

The concept of interaction used here is the one describes by Mora ([8], p. 171, 510): “To act interdependently or reciprocally in response to action coming from an interface, person, agent, force, function or object interdependently or reciprocally. It is specially applied to the communicative multi-sensorial dialog between human-machine or human/s-machine/s-human/s through the use of the hypermedia interface.” It is also complemented with Murray’s description of ([1], p. 426): “In digital media, human actions & computer responses are shaped into discrete interactions, which, if well formed, elicit the experience of agency in the interactor. Digital environments can also represent complex systems of interaction in simulations”. In that sense, the complexity is formed thanks to the different types of interactivity that digital media projects can offer. The concept of interactivity used here is also the one described by Murray ([1], p. 426): “A design term that is... ..Composed of three separate entities: the procedural & participatory affordances of the digital medium, & the associated aesthetic pleasure of agency that results when the interactor is appropriately scripted to perform actions that the computer code can respond to appropriately.” The types of interactivity that the interactor can developed within the HCI are referred by Mora and Moreno’s concepts ([8], pp. 173–174) & summarized here: “...Three types of participation selective, transformative & constructive... ..Selective: the user interacts only selecting the options that the program offers... ..Transformative: the user no only can select the options proposed by the author, he can also transform them... ..Constructive: The system allows the user to select, transform even to build new proposals or recombination of possibilities that were not previewed by the original author. In that sense it allows to interact to create emergent narratives.” Another important concept to be included in the model of analysis, due to its relationship with the constructive type of interaction with the system, is productive interactivity. Hurup Bevensee ([10], p. 62) describes it as: “To participate in the process of modifying narrative material through writing, navigating & interacting with objects embodied in an open world computer game, resulting in dramatic elements to the “next” player.” Ryan [11] complements the description of productive interactivity as: “[participating] in the writing of text by contributing permanent documents to a database or a collective literary project”.

2.4 Concepts Related with the “Narrative Paradox”: ADD, Narrative Intelligibility and Narrative Closure

All these described concepts are included on the HCI model of analysis so it can be observed & study how the “narrative paradox” is resolved on the interaction design of the health projects. The “narrative paradox” is considered through Bruni, L.E. ([5],

p. 14) perspective: “With the advent of new media & its possibilities for interactivity in the generation & reception of narrative structures, the issue of “narrative paradox” arises, in which the relationship between authorship & interactivity is seen as being inversely proportional i.e.: the problem of having free-roaming interactive world & an author-controlled narrative at the same time... ..The paradox arises in all its implications with the “empowering” possibilities of digital media & presupposes an ideal of “emancipating” the audience from the “tyranny” of the author.”

There are some other concepts that are necessary to describe & to observe to understand how the projects try to resolve the “narrative paradox”, one of them is the ADD. According to Bruni ([5], pp. 14–15): “The Author-Audience Distance (ADD) is a function of “narrative intelligibility”... ..Eco introduces the concept of “aberrant decoding” in order to explain how messages can be interpreted differently... ..We refer here to this interpretation gap as the ADD which thereby illustrates the continuum that goes from complete aberrant decoding to perfect reception of the preferred decoding, depending on how defective is the sharing of the coding & system between author & audience.”

Another important concept related with the “narrative paradox” & to the ADD is the narrative intelligibility. Bruni and Baceviciute ([5], p. 18) describe it on his study as “...the process in which the audience receives or generate meaning in a way that is close to what is intended, desired or expected by the author... .. i.e. the fidelity of the transmission, or how close the AAD is... ..this distance then depends on the alignment between the author’s intended meaning & the one comprehended by the user.” Another important concept is the narrative closure described by Bruni and Baceviciute ([6] p. 18) as: “...the process where the audience may construct its own meaning out of what is being mediated, independent on whether that meaning corresponds or gets close to what is intended by the author...”

In order to include a clear understanding & provide this research with a narrative intelligibility & closure the concept of emergent narratives is taken from Jenkins [12] definitions described on Bevensee and Schoenay-Fog words ([10], p. 61) as: “... narrative material through a rich environment & intelligent characters, with which the user is able to associate, interpret, & ultimately construct his/her own understanding of the story.” This description is complemented with Truesdale et al. ([13], p. 65) perspective on emergent narratives (EN): “...the conceptual approach is to place an interactor within an interactive environment from which the narrative dynamically alters based on individual actions of both the interactor & any involved agents.”

3 Model of Analysis

The following model of analysis, see Table 1, is designed focused on analyzing the IDS elements presented on the HCI & how the combinations of those elements on the interface serve to the activation & the existence of the practical concepts such as: immersion, agency, types of interaction, productive interactivity, emergent narrative, hypermedia narrative cinema, narrative paradox, author-audience distance, AAD, narrative intelligibility & narrative closure. This model of analysis of the interactive communicative & narrative dynamics is applied to the analysis of the selected Health

Labyrinths Projects: *A Tale of Two MAO Genes & Interacting with Autism*. The model goal is to analyze how the interface design generates immersion & agency through the different combination of interactive narrative elements & techniques. The first versions of the model were effectively used in doctoral & postdoctoral researches at the Visual Arts Department, UCSD, University of California San Diego, & the Interactive Media Division, at USC, University of Southern California, to analyze hypermedia HCI in interactive design & digital storytelling projects.

Table 1. Model of analysis of the interactive design, aesthetic, narrative elements & concepts, applied on HCI of IDS projects. (Source: Self-design).

1. Project Name & description of the interfaces & the conjunction of hypermedia expressions
1.1. Identifiable denomination of the hypermedia interface.
2. General characteristics of the interface & detailed description of the multimedia characteristics of the expressions that can allow interaction with any of the narrative elements.
2.1. Software. 2.2. Types of image or perceptive representations. 2.3. Hardware. 2.4. Typographic, Iconic & Symbolic descriptions
3. Features of the characters represented on the interface & general description of the potential interactions with the characters. 3.1. Character or avatar of 1st, 2d or 3rd Person. 3.2. Physical characteristics. 3.3. Sociological characteristics. 3.4. Psychological characteristics
4. Characteristics of the actions represented on the interface & general description of the potential interactions with the actions. 4.1. Type of structure. 4.2. Secondary theme or subplot. 4.3. Changing hierarchy
5. Characteristics of the spaces represented on the interface & general description of the potential interactions with the spaces. 5.1. Natural, constructed, mimetic-natural or mimetic-infographic. 5.2. Senses implied in the spatial perception. 5.3. Implicit space &/or explicit. 5.4. 2D/3D or 4D space. 5.5. Perspective 5.6. Focus or defocus. 5.7. Illumination & color temperature. 5.8. Props. 5.9. Space protagonist &/or hyperspace. 5.10. Absent space or suggested space, 5.11. Selection space with representation: coincident or different, & 5.12. Hyperspace
6. Characteristics of the time represented in the interface & general description of the potential interactions with the time. 6.1. Order. 6.2. Duration. 6.3. Frequency. 6.4. Temporal localization. & 6.5. Iteration
7. Aspects of the interactive narrative elements: characters, actions, spaces & times that have a type of interaction available: selective, transformative or constructive, which allow productive interactivity with emergent narratives
8. Values or spiritual principles, & unscrupulous values, available to be activated through the interaction with the narrative elements
9. Description how the immersion is achieved
10. Description how the agency is achieved
11. Description how the hypermedia narrative cinema structure & the relationship with the system is achieved
12. Description of how the “narrative paradox” is resolved integrating the ADD, with the narrative intelligibility & the narrative closure

The main focus of this model is to observe, describe & identify the elements & concepts that converge during the interaction with the HCI, which implement the

described narrative concepts & combined them on a way that creates a better agency & immersion. Thus, some technological-aesthetic-narrative interfacial algorithms, or combinations, are found so they can be integrated in designing future health projects.

4 Discussion: Application of the HCI & IDS Model of Analysis, and the HCI & IDS Common Denominators

After applying the detailed model in both projects, *A Tale of Two MAO Genes & Interacting with Autism*, the common denominators on the HCI & IDS design are found. In relationship with the design of software both projects have a combination of iconic & symbolic intermediation with attractive typographic design, dynamic, push, sound & iteration on their HCI. The type of images or perceptive representations used on both projects are cine-mimetic & infographic audiovisual images. The hardware used on both projects allows mouse & touch pad intermediation. The typography used is bigger than 14 letters size, with cold colors for physical health descriptions, & warm colors for the psychological descriptions. Both projects use clear icons, & attractive symbols with complementary letters for developing pushing interactions.

The narrative characters presented on both health projects are real people presented from a 2^d & 3rd person perspectives to keep the objectivity. The protagonists are choral or collective, people involved in genetic research or within the autism context; thus, the themes become the main characters. Its multicultural approach includes people from all type of educational & economical levels. The narrative actions are structure on circular, basted & parallel encyclopedic narratives, with a main theme & several subplots that enrich & reinforce the main one, going deeper on the information provided. It presents a changing narrative with relationships between main & secondary actions. The narrative spaces presented on both health projects are natural, mimetic-natural, or mimetic-infographic when is necessary to describe spaces microscopically or psychologically. These are represented on 2D & 3D. The presented spaces give priority to the people, within medium shots & frontal positions, talking heads. The HCI sizes are computer based, 1440 × 852 & 1680 × 1050. The senses implied in the spatial perception are: view, ear & touch. The props used are clinical & scientific tools, on one project, & educational & therapeutic toys, on the other. The narrative times have the orders of flashback, flash-forward, meta-retrospective or meta-prospective related with the different secondary narratives, on the *MAO A&B project*, & meta-retrospective & meta-prospective during the secondary narratives on *Interacting with Autism*. They are pure diegesis, open. The temporal localization on the first project is changing, letting us to observe the research beginnings until its present & potential future, & on *Interacting with Autism* is the present, both let time iterations. In terms of the values, they have in common the following ones: honesty, hope, faith, courage, integrity, good-will, humility, fraternal love, justice, perseverance, service, responsibility, self-acceptance, patience, spiritual awakening. In the case of *A Tale of Two MAO Genes* presents also some unscrupulous values: animal brutality, greediness, and lack of integrity with nature.

On both projects the immersion effect on the interactive narrative is achieved not as on a spatial sense but on an intellectual, emotional & moral levels. The interface design

presents the contents with enough textual questions, images & videos; representing several scientific & ethical subplots that invite the user to develop “the suspension of disbelief” & immerse in the well-documented multimedia & multi-perspective information. The multi-narrative access, the circular structure & the changing hierarchy provides the participant with enough interactions to satisfy his/her intellectual questions & to see the benefits, limits & difficulties of researching about genetics. The fact of being able to do transformative interaction to go deeper on the understanding of the concepts related with genetic research provides the sensation of navigating freely through the database. On *Interacting With Autism*, its theme, the real dramatic & hopeful personal stories provide the proper emotional immersion for the user to feel the responsibility to continue interacting within the encyclopedic, or database narrative, generating his/her own narrative structure experience, through selective & transformative interactions. Immersion is also helped through the constructive, or productive interaction, where an extra video or multimedia info about a theme related with autism can be requested or provided. The cine-mimetic documentaries serve to generate emotional agency through dramatic identification with real characters, in real situations, that invites the user to go deeper on a subject or change according with his/her mood or interest.

The *Two MAO Genes* project obtains agency thanks to the generous offer of cine-mimetic & infographic documentaries, text & info-graphic descriptions, its great procedural properties thanks to meaningful documents, & its participatory properties of letting navigate, through a simple but functional interactive design, a huge database of genetic researches. Thus, interactors feel the freedom of navigating & building coherence according with their own psychological & emotional perspectives. The treatment of the narrative time, with openness, lets the users to review different historical moments of the genetic research &, in parallel, the scientific evolution & health applications, generating a dramatic identification with the subject. The fact of the participant being able, through the info-graphic clips, of traveling inside the human body, to understand processes that determine the emotional & mental human states, generates also dramatic identifications. On *Interactive with Autism* the effect of agency is built up based on the navigation & interaction with the plots & subplots of its open structures. Thanks to its interaction design, which provides easy access through menus, a basted narrative with parallel lines can be accessed & the structure is built on a great database of videos. The autism world responds with coherence since the great offer of subplots & characters, organized on the submenus of understanding, treating & living with autism, provide a detailed description of each video of the subplots, allowing the user to search & review the experiences he relates with.

The narrative structure of *A Tale of Two Mao Genes* is circular, since the subplots or subthemes can be navigated circularly through arrows, & accessed to deeper or more general levels, in any moment, through square buttons. This is a simply way of presenting a database narrative full of scientific details & concepts, specially since the system goal is to educate to a huge variety of audiences [2] “from K-12, to Graduate school, from science major’s to general public”. The edutainment goal of a complex theme as genetics, the tale of how the MAO genes were discover, & their consequences on the biology & culture of aggression & anxiety, is achieved through an hypermedia HCI that allows multilevel access. These various aspects of narrative communication,

the transformative structure interaction, & the selective interaction, of managing the level of content detail that the user wants to navigate on the system, are aspect that guaranties the achievement of the system of “edutainment” several audiences. Observing the hypermedia structure presented on the interface of *Interacting With Autism* it can be concluded that the simple use of well design icons & symbols, & the text clear descriptions in the submenus & the video menus, allows a transparent participation thanks to provide a clear narrative communication between the user & the system. The types of interaction: selective, transformative & constructive, which the user can develop, are clear for the user since he can select between video themes related with understanding, treating & living with autism. The shortness of the videos, as average around 4 min, & as maximum around 15 min, provides a dynamic experience from a complex subject. The system goal is achieved through providing a multilevel structure to an encyclopedic video source of the daily situation & the state-of-the-art research in autism.

The “narrative paradox” of *A Tale of Two MAO Genes* is resolved integrating a close ADD, with the narrative intelligibility & the narrative closure. The complex dynamics of procedural & participatory affordances allow the “all ages”, attractive & functional interaction design, to access the encyclopedic multimedia contents. This makes the author-audience distance very close & receptive. Although the scientific coding between author & audience can be far, the system is presented on an immersive hypermedia HCI that allows the gap to be navigated on a simple & educative way, breaking the user’s fear of the unknown. The narrative intelligibility is also diverse & with an attractive design, with infographic & audiovisual colorful designs, since the authors are very conscience that are presenting complex contents. This allows the user to comprehended better small clear pieces of information. The narrative closure is let to the user choice of interacting with the system, & of how deep on the database narrative he wants to go to complete his education. The circular & multi-access structures give the user the agency to generate his own narrative closure, his right structure & organization of the multimedia contents. However, there is not allowed any emergent narrative, this can make an interactive edutainment project boring after exploring it several times. In *Interacting with Autism* the narrative paradox is resolved very efficiently. The brief presentation & the video summaries, presenting the subthemes: understanding, treating & living with autism, helps to break a long initial ADD, for a complex theme as autism, in a short period of time. Through the professional & family video descriptions of the solutions, situations & difficulties of autism, complemented with the interaction of autistic children & adults, the user can have a clear overview & direct contact with autism, which otherwise would require a lot of time to understand, because a lot of the technicalities of the autism spectrum. This creates a “preferred decoding” & narrative intelligibility, since the language used by the real characters is common language explaining complex processes, rather than using technical languages. These facts, & the cine-mimetic-infographic videos presenting how an autistic person can perceive overwhelming multi-sensorial inputs on his daily living, help a lot to approach the coding distance between the authors & the audiences. That way the author intention of approaching the world of autism to the general audiences is obtained. Thus, the narrative closure is achieved thanks to this open narrative structure, where the interactor may construct its own experience.

5 Summary of the Discussion and Conclusions to Apply on Future HCI & IDS Projects of Edutainment in Recovery from Addiction

In summary, health edutainment HCI & IDS projects need to count with an interaction design that presents flow & transparent navigation through all the encyclopedic & database contents. Interactive webs full of short documentaries with interactive secondary narrative experiences around a main theme, like recovery from addiction, are good options for content organization. Transparent push interfaces with attractive combinations of icons, text & attractive symbols are needed to generate an initial immersion & agency within the users. There are some important problems to avoid on hypermedia narrative cinema, as described by Ben Saul ([6], p. 30): "...the major hyper-narrative split-attention stumbling blocks: non restriction of narrative threads, incoherent transitions between different narrative threads & non resolution of multi-threaded narratives." In this sense, the analyzed Labyrinth projects present effective circular, basted & parallel lines narratives that generate immersion on the main plots, genetics & autism, making complex themes attractive. The use of a variety of cases of recovery from addiction, perspectives, & techniques seems desirable for the future health project. It is also crucial on the interaction design to include all the types of interactions: selective, transformative & constructive, & productive interaction, to choose the content navigation, to transform the narrative structure & to nurture with meaningful new contents & comments the IDS. With all these techniques will be possible to create meaningful relationships, between the immersive sensorial, psychological or emotional moments & the interactive aesthetic, narrative, & values elements expressed through the HCI, on the health edutainment project about recovery from addiction.

The interaction design needs to implement as much as possible the properties of encyclopedic, special, procedural & participatory. As Murray ([1], pp. 53, 410) underlines: "In approaching interaction design as a cultural practice our aim is always to make an object that is satisfying in itself & that advances the digital medium by refining or creating the conventions that best exploit these four affordances." That is why for the health edutainment interactive narrative project about recovery from addiction we are looking into:

1. Creating encyclopedic information with optimized procedural processes, where the users can easily & fast access different multicultural experiences & techniques of recovering from addiction, archival of the history of recovering from addiction, documents & news about them, as well as to the possibility of uploading extra information.
2. Presenting several spatial & participatory options where the users can interact with the processes of recovering from addiction, on different intellectual & emotional levels, through real & virtual physical, mental & spiritual spaces. In this way, it will be procured the identification with the multidimensional & multicultural narratives, through the variety of characters & the types of interaction with them. This will activate the identification with the memories & the human imaginary of the past, present & future of the users with the people represented on the health project, & of

the participants if they have experienced similar personal, familiar or friendship situations.

Finally, the health edutainment interactive narrative project will try to serve as a digital media creation for informing about the history, current free possibilities to recover from addiction, & its current medical researches. Some embedded interactive narratives & documentaries will also serve to conduct new research, using neurocinema techniques, to determine what recovery techniques are more efficient & interactive for activating the human brain. This last research is being negotiated to be conducted at the Laboratory of Neuroscience ResearchGroup R&D&i Sinapsis, UCuenca, the Arthur C. Clarke Center for Human Imagination, directed by Sheldon Brown, at UCSD, and in collaboration with Pia Tikka, neurocinema artist & researcher at the Aalto University, in Finland.

Acknowledgements. This work was supported by the Prometheus Project, SENESCYT, Secretary of Higher Education, Science, Technology & Innovation of the Republic of Ecuador, by the DIUC, Direction of Research of the University of Cuenca, through the Research Group CICNETART R+D+C, “the Research Group SINAPSIS R&D&i, & the Schools of Medicine” & of Philosophy, Letters & Education Sciences, Careers of Social & Digital Communication & Cinema. It counts with the Collaboration of the Labyrinth’s Project, lead by Marsha Kinder Ph.D. & funded at University of Southern California.

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