A study of interactive communication can help to improve the understanding among people. In fact, the values and private principles, can be efficiently shared and transmitted when they are expressed using multi-senses. This book emerges out of the idea to make some research models in order to produce video games and other interactive multimedia that can be efficient in their social and interactive immersion.

The work that we are presenting here, describes how the hypermedia interfaces integrate with the main aesthetic, narratives, emotional forms and the emotions that create interactive communication. At the same time, its author presents a wide range of interactive multimedia projects that show how to develop the highest communication potential of hypermedia interface. The text combines references and different suggestions in the area of video game design and interactive narratives, it is fully illustrated with pictures and expert projects and new media artist, such as Janet Murray, Celia Pearce, Marsha Kinder, Lev Manovich, Sheldon Brown, Michael Mateas, Andreas Kratky, Isidro Moreno, Francisco Garcia, Andrew Sacher o Henry Jenkins, among others.

Jorge Mora’s effort to bring together with detail descriptions of the main concepts which are peculiar to the language of new media, along with his proposals of models of analysis of hypermedia interface for the development of more immersed interactive multimedia projects. These analysis models make this work a very enriching and of great usefulness for researchers, professionals and scholars on the subject.

It is recommended that you begin your enquiry by seeing the DVD in order to get a better idea of the work.

Author Publications Author Foundation
La interfaz hipermedia: el paradigma de la comunicación interactiva

Modelos para implementar la inmersión juvenil en multimedia interactivos culturales

(Videoguegos, cine, realidad aumentada, museos y webs)

Jorge Mora Fernández
El estudio de la comunicación interactiva puede ayudar a mejorar la comprensión entre personas. De hecho, los valores y principios íntimos pueden ser compartidos y transmitidos de forma eficiente al expresarlos multisensorialmente. Este libro surge con la idea de realizar unos modelos de investigación e innovación para producir videojuegos y otros multimedia interactivos que sean eficientes en su inmersión social e interactiva.

La obra que aquí presentamos, describe cómo integran las interfaces hipermedia las principales formas estéticas, narrativas, emocionales y de valores que crean la comunicación interactiva. Al mismo tiempo, su autor nos presenta un amplio abanico de proyectos multimedia interactivos que muestran cómo desarrollar el máximo potencial comunicativo de la interfaz hipermedia. El texto combina referencias y diferentes sugerencias en el área del diseño de videojuegos y las narrativas interactivas, ampliamente ilustradas con imágenes y proyectos de expertos y artistas de los nuevos media, tales como Janet Murray, Celia Pearce, Marsha Kinder, Lev Manovich, Sheldon Brown, Michael Mateas, Andreas Kratky, Isidro Moreno, Francisco García, Andrew Sacher o Henry Jenkins, entre otros.

El esfuerzo de Jorge Mora por reunir con detalladas descripciones los principales conceptos propios del lenguaje de los nuevos media, junto con su propuesta de modelos de análisis de la interfaz hipermedia para el desarrollo de proyectos multimedia interactivos más inmersivos, hacen de esta obra un material muy enriquecedor y de gran utilidad para investigadores, profesionales y estudiosos en la materia.

SE RECOMIENDA INICIAR LA CONSULTA VIENDO EL DVD PARA TENER UNA MEJOR VISIÓN DE CONJUNTO DE LA OBRA

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ABSTRACT:
This paper presents a synthesis of how the use of interactive multimedia, hypermedia, interfaces has changed the classical dynamics of human communications creating a new paradigm. Moreover, it describes the different aesthetic, narrative, emotional and value elements that compound the hypermedia interface. These hypermedia elements are necessary to take into account when designing and producing educational interactive media products. These components are described and presented on a model of analysis for designing interactive media products. The application of this model will help to design interfaces of cultural interactive media products, allowing not only good educational contents but also a quality multi-sensorial immersive communication that will also offer entertainment, since fun is the better-proven way to learn.

KEYWORDS: interactive communications, hypermedia, interface, e learning, multi-sensorial, immersion, educational videogames, new media design.

1. THE HYPERMEDIA INTERFACE DESCRIPTION AND THE NEW PARADIGM OF COMMUNICATION.

The hypermedia interface is considered of this paper as the main channel that give access to the interactive and multidirectional communication. Each hypermedia element that compounds the interface is located

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1 MAEC states for Spanish Ministry of External Affairs and Cooperation
AECID states for Spanish Agency of International Cooperation and Development

between the information contained and generated by several communicative agents, the original author of the interactive media product and their users, players or reader-authors.

The interface is defined by the RAE\(^2\) as the physical and functional connection between two devices or independent systems. In this sense, it is the physical and functional connection between the hypermedia interface system, its interactive aesthetic and narratives expressions and the human system of perception and communication. However, it is Dr. Isidro Moreno’s definition (2003, p. 114) the one that integrates the previous one but with a better terminology for this paper. Dr. Isidro Moreno described the interface as: “The mixture of hardware and software the reader-author uses to communicate with the hypermedia program”.

It is important now to describe briefly how the hypermedia interface has become the new paradigm of study that has changed the human communication system in order to understand the concept of reader-author. We can see and contrast the traditional dialectic model of communication presented on the Figure 1, developed by Dr. Martin Serrano (1982, pp.159-174) with the model of the Figure 2, which includes the new elements that the hypermedia communication system integrates.

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2 RAE states for Real Academia de la Lengua Española, the Royal Academy of the Spanish Language.

These models take into account that human communication is a closed system (M. Serrano, 1982, p. 159) due to: 1) Intervention of components which relationships are organized, 2) those components are heterogeneous and they assume differentiated functions in the communication process and 3) the human communication pursue some goal.

When the conditions 1 and 2 are manifested on the hypermedia communication system we find some differential characteristics in relationship with the previous communication systems. These different characteristics are the dynamics relations between the expressions and the narrative forms that carry the representations, and the multifunctional relations that are developed between the communication actors thanks to the multidirectional flow of information, the constant exchange and generation of expressions that the new technology tools allow.

The communicative moment more characteristic on the hypermedia system it is the initial moment when the exchange of roles between actors occurs. During this moment, the receptor actor can change his function or role in the communication system and become the emitter of the communication, becoming a reader-author, and vice versa, the initial emitter of information, or author, become the receptor of the previous author, so he is an author-reader. From this moment on that exits interaction with some of the initial interactive expressions, the actor looks forward to communicate his own representations, either way if he is communicating with an artificial intelligence (AI) system, such as a one-player videogame, or with other human actors of the communications, such as playing in an MMOG, massive multiplayer online game. In other words, the receptor actor decodes mentally and emotionally the representations contained on the multimedia expressions presented through the interface. Then, the differential moment is when the actor decides to activate the multi-directional system of communication using his interactions over the hypermedia interface and coding his own representations to communicate them to a new receptor, reader-author too, or to the first emitter, the author-reader. In other words, the moment when the actor decides to transmit his interactive expressions through the hypermedia interface to communicate his decisions and narrative proposals –or representations- to the AI system and/or to another reader-author, player, or author-reader, first emitter of the communication. If this main characteristic of the hypermedia system is considered into the new ways of developing pedagogical interactive media materials, classes and courses the new generations will be more participatory on their own learning process. For instance, this interactive strategy was applied in one recent international experience. The goal was the capacitation of Peruvian and...
Bolivian artists on audiovisual and multimedia communications, so they could develop videos on Internet for conserving and promoting the Andean traditional, Quechua and Aymara, and contemporary cultures. In order to obtain that goal several video editing programs, such as Final Cut, Adobe Premiere or Sony Vegas, were offered to the students installed on their own computer station or on those brought by the cooperation organization. These software were the last versions and compatible with PC or Mac system so every student could find a familiar way to interact and learn through the process. Moreover, we brought the most update and/or expressive versions so the students could have hypermedia interfaces that would allow to materialize the representations and contents they wanted through easy interactions. The classes were designed also on an interactive way, so after a brief and synthesize explanation about writing a script, about organizing technical equipment for recording or about capturing and editing the recorded images, the students could interact with the equipments and the software, the interfaces. Finally, they were able of applying the lessons, expressing and materializing their representations right away, using the hypermedia interfaces. That way they could fix the teachings with the experience easier but also they compromise themselves with the content they were creating. The results were surprising, 10 videos, of 10 minutes each, produced in a week, made by groups of three to seven members, in a class of 60-70 students. A remarkable total of 45 videos produced on 4 workshops of one week each created through the interaction of both first time and initiate audiovisual and multimedia practitioners. This is a good example were the interactive communication system and the new technologies influence new ways of education and how the integration of interactive pedagogical strategies with interactive hypermedia interfaces generate very good cultural interactive media products.

Another example and success on using this interactive communicative moment, is the use of hypermedia interfaces for multimedia chatting, video or in software such as Messenger, Facebook, Myspace or Skype. If a research on the exchange of communicative roles between actors would be focus on the hypermedia interfaces used by one of the previous software, the research would study the different interactive aesthetic, narrative, emotional and other expressive materials that the receptor-emitter would have on the interface to code and decode the message on a narrative and multi-sensorial fashion. Through the interface the communicative roles are exchange and I can act as a emitter in a moment right after receiving a series of information signs from my friends through Messenger or Skype. That way the characteristics of the multimedia expressions available on the interface to generate an answer would be analyzed. If the textual expressions would be analyzed we would take into account the number of words that you can send on each chat turn, the type of fonts, the different icons or emoticons that are offered by the software interface of that
chat, video or teleconference, see Figure 3. It would be analyzed the software and hardware interfaces, if you can interact with sounds, through a microphone, or to activate a video camera. In fact, it includes all the different types of hypermedia expressions that the reader-author can use to build his multi-sensorial multimedia message.

Figure 3. The Skype interface allows audiovisual communication, non verbal emotions through icons and the abstract level of the writing language, all these communication tools makes Skype a very versatile hypermedia interface.

The use of one or another expressions allow the codification of one type of representations or another that serve to build a communication more or less complete about a reference object, describing with more or less multi-sensorial detail the original idea or object.

The last important differential aspect that characterize the classic media communication system, related with the 3rd condition and that M. Serrano underlined, was that the system is closed and finalized because the components are constrained to occupied the functions and positions that the communicators assign to the communicative goal. In the hypermedia communicative system, the positions and the functions of the communicators change through the time when the communicative phenomenon is produced through interactivity.

The interactive media systems offer several possibilities or ways to construct a message, even on a same interactive media product, this means that there is no a single mandatory way for communicating a message, but several interactive options that allow certain functional exchange between the roles of author-reader and reader-author, in order for the emitter and receptor to exchange their roles. This is possible
because the hypermedia systems provide interactive expressions that facilitate the exchange of communicative functions and can limit the constrictions to very specific moments. On that sense those systems are ideal for the construction of culture, and for that reasons, can be open systems for the exchange of ideas.

On this paper, it is considered that to serve to the human evolution in the construction of the knowledge of practical values materialized in improving physical, mental or spiritual-emotional situations, when applied through interactions, is the ideal a final objective of the communication. The description and model of hypermedia elements presented here, as well as the conscious design of structural constrictions and limitations that can be applied on virtual realities and their hypermedia interfaces, are to study and to try to serve to these purposes.

The focus of this study is centered in manageable elements – and its order- of the hypermedia interface: the multimedia expressions, the types of interaction and the narrative forms. This research procures the methodological analysis of the expressions and the narrative multimedia forms that motivates the exchange of communicative functions, generating the new concepts of reader-author and author-reader. In the analytical methodology is important to take into account that there are elements on the system that facilitate the openness and the relations with other elements of the system of communication and other contextual elements, such as the system of representation and the social system, that Martín Serrano mentions (1982, pp 170-172) or the ecological system, as it is referred by F. Parra Luna.

The potential of the multidirectional communication of the functional exchange of author and reader-author, through the interactive multimedia expressions in the interfaces is one of the proper characteristics of the hypermedia communication system. Before the existence of this system of communication that multidirectional communicative characteristic is was only produced in communicative situations were where the environment allowed the dialogue.

The differential characteristic of the hypermedia communication is not only the exchange of functions of the actors of communication thanks to the technological tools, but also the fusion between the traditional media of communication and the digital informatics technology, that allows a new communicative system that is interactive and multimedia.

Any type of expression is, potentially, susceptible of being used. That is why the multimedia aspect the one that, with the interactivity, the one that better define the hypermedia communication system. That is why not only the dialogue based on the textual language is the code to generate expressions to transmit representations, but there are different codes, expressive media and all kind of symbols and metaphorical icons from the functions and the real objects, to the service of the information exchange and the construction of representations.

We can, with the interactive multimedia, to use from the picture code until the sound, passing through the audiovisual and even the sculptural thanks to tactile interfaces. Because with a data gloves it is possible to molding a 3D object-or even real- when it is situated from large distances, if this is controlled through mechanical arms controlled by a computer that process the movements of the hands through the data gloves. Something similar happen with the clinic operations through the online networks. The doctors use the video and tele-presence to develop their practice and didactics even at thousands of kilometers of distance. Through this way the communicative actors count with a new conjunction of expressive codes more open and broad to be able of building their representations. Moreover, the interactivity also allows you that the representations exchange will be more fluid; so the communicative constrictions are no so rigid and close anymore to become more flexible. Because all of those reasons, we talked about multimedia dialog and the hypermedia communication interface.

The figure 4. of the next page synthesizes in a general, iconographic and schematic way all the elements and systems that compound and interact with the hypermedia communication system. It gives us a clear overview of the originality of the hypermedia communication system and how it configures a new model of communication and systems interactions.

Figure 4. The schema represents the different elements and relationships that are integrated on the hypermedia communication.

The Hypermedia Interface: The new Paradigm of the Interactive Communications. Models of Analysis of Interfaces for the Implementation of Educational and Multicultural Interactive Media. © By Dr. Jorge Mora Fernández


The following model of analysis has been developed in order to focus on the hypermedia elements that can be designed and manage during the production of an interactive cultural media creation. The goal of this classification of the hypermedia elements found and integrated on the interface was the one of creating different models of descriptive analysis that can be applied to the analysis of any hypermedia communicative product. The model is focused on describing in detail the expressive and narrative characteristics that are produced in the hypermedia interface. That way is possible to analyze what type of interactive expressions, organized in the interfaces, can develop different types of interaction over each of the different narrative elements: space, time, characters and actions.

There is a new dramatic theory for interactive systems developed on several schemas by Michael Mateas, see Figure 6. The immersion or the mediatory identification is generated on the hypermedia communication through the interaction with the character or created through the actions of the reader-author. All the following expressive elements can be interactional; it is possible to do an expressive communicative interaction over them. However, it is at the level of the character and the actions that the character and/or the reader-author, or player, materialize where is produced the expressive interaction, the immersion or the mediatory identification within the hypermedia communication systems. That is why the expressive elements that appear in the interface are described as elements that serve for the interaction and construction of the character or the user.

Now it will be shown on two schemas the differences between the dramatic theory from Aristotle and the update schema purposed by Michael Mateas.

Figure 5. Classic schema of Aristotle’s theory for creating dramatic narratives.

ACTION (PLOT)
CHARACTER
THOUGH
PATH
LANGUAGE (DICTION)
REPRESENTATION (SPECTACLE)

The explanation of the traditional schema according to Mateas (2004, pag.22) is:

Aristotle analyzes the works in hierarchical categories, in the center of the schema, that correspond with the different parts of the creation. Those categories are related through formal and material causes. The material cause of something is the material from which is created. The expressive material, from the perspective of the communication theory, is the multimedia expressions and the characteristics of the expressive forms in the hypermedia narrative. And the formal cause is the abstract plan, the goal or the ideal through which something is directed. The goal that is looking for by the communication and the logical organized structures and from which the proper narrative forms are created to transmit a plot or theme, with some associated values.

On the new model of the interactive drama Mateas explains: “The player has been add to the model as a character who can choose his own actions. This has a consequence the introduction of two new chains. The player intentions become a new resource to the formal cause”.

The player, reader-author, participate in the organization of an abstract plan and he directs it through the character category. The player collaborate or can collaborate in the construction of the logic structures that organize and creates the proper narrative forms to communicate a plot or theme, with their correspondent values, now from both the author and the player of the game. And continues describing the function of the interactive drama in the game on the following form: “But this ability of taking action is not completely free; it is limited from behind by the material resources…” The interactive multimedia expressions as well as the special and temporal limitations become the constrictions that the game offer, “…and from over it by the formal authorial cause originate at the level of the plot”. The author directs the theme of the game and the main actions of the plot. The English term “affordance”, that applied to the hypermedia can be translated by the availability of interactive multimedia expressions; it is also a constriction to the interactions. Although this constriction can be make up through the interface design, within a broad variety of hypermedia expressions, when the interaction is attracted with some expression and development of the dramatic plot, as it would be the most appropriate next interaction. From a perspective of communicative efficiency, the fact that the forms of interaction can be developed through some perceptual senses of the player or another, or all of them, it means also a level of


constriction or freedom, of the adaptation of the technological tools of the game to the biological perceptual tools of the player.

In summary, in the hypermedia narrative the player is situated interactively at the level of characters. All those interactions that he could do for the development of the hypermedia narrative structure and for the resolution of the plot and the theme, the only element completely manage by the author, will constitute the user intention, the formal cause, his mediatory identification or immersion. On the other hand, all the expressions and interactive narrative forms that the hypermedia interface would offer become in the material resource for the player’s actions, the material cause that he counts with for developing his interactions. In a few words, the intention of the user is manifested through his interactions, and the material for the actions is manifested by the interface, the interactive expressions and narrative forms.

When a reading of the user’s intention chain is done, following the sequence in which Gandhi describes the origin and practice from the values to their materialization in reality: “Take care of your ideas, because your ideas become your words. Take care of your words because your words become your actions. Take care of your actions because your actions become your habits. Take care of your habits because your habits become your life”; it can be said that the interactions that will provide with information the practice of values will be:

- The selection and construction that the user does of one character or another, for the resolution of one plot or given conflict.
- The expression of his representations through the conjunction of expressive interactions.
- The strategy and the behavior path that is repeated to resolve situations or secondary actions.
- And finally, the observation of the play on its conjunction and the type of values that prevailed on his interactions. In this sense, the options that some current games offer, as well as the option of replying on the videogames of the recreational centers, like on the sports games, specifically in soccer games, or in the case of the PC, in the Sims 2, are useful tools for the


observation of the interacted values. Equally, the expressive and narrative limitations that the interface offer, and that can limit the interactions with some values or others, should be taking into account in any research of this type.

The following Figure 7, shows with more detail, the communicative elements and from the hypermedia narrative which intervene during the interactual communicative moments, when the functional roles are change from emitter to receptor and vice versa. These are the moments to observe during a research about how to improve the immersion or the identification on interactive media products.

Figure 7. Interactions on different levels between the reader-author, or user, and the hypermedia interface. (Resource: self-creation)

On this schema we can see the elements that compound the hypermedia interface: expressions, The Hypermedia Interface: The new Paradigm of the Interactive Communications. Models of Analysis of Interfaces for the Implementation of Educational and Multicultural Interactive Media. © By Dr. Jorge Mora Fernandez.

narrative forms, emotions and values; these configure the information transferred during the communication human-interface. The superior symbol on the right represents another similar hypermedia communication system, reader-author, who generates another communication system human-interface-human when gets connected.

The following Figure 8 describes the interactive elements and the dramatic narrative process generated by the player, reader-author through the interface, the communicative moment when the change of roles emitter-receptor happens. It shows the hypermedia narrative that happens on the interface during those moments.

![Figure 8](image_url)

Figure 8. How i.e. interactive elements and the dramatic narrative process is generated by the player or reader-author.

On a simplify way this schema describes the moments when the interface communicate expressions of the different narrative forms. It also illustrates the dramatic narrative structure and how it is organized in the communication between the reader-author and the hypermedia interface. The Figure 9 shows the generation and process of the hypermedia narrative the moment


of the interaction.

Figure 9. Through this schema it is shown how the player, reader-author, interacts with the different forms and levels of the dramatic narrative through the hypermedia materials offered by the interface…

Through the exhaustive identification of these elements, communicative moments and processes that compound and that are active with the interface elements and with the interactive dramatic organization, is possible to develop researches to observe methodologically the interactive expressions on the different moments of the hypermedia communication. This observation allows identifying what are the elements of the interface that are more attractive and that motivate the immersion and identification. Those combinations of expressions, narratives, emotions and values that are more activate and use will represent the most attractive interfaces.

With all, and after having conceptually explained when and how the previous elements are interacted during the hypermedia communication process, the model of analysis of the different elements that compound the hypermedia interface is presented.


The following epigraphs 4, type of interactions, and 5, values and unscrupulous values, that appear on each section of the aesthetic elements and on each of the narrative forms are to be able of observing more analytically the interactions between them. This will serve later to observe what are the elements and the relationships between the expressions, each narrative form: action, characters, spaces and times; the types of interaction and the values so it can be discovered what are the most efficient and interacted to motivate some interactions or to transmit some educational and cultural values.

Through the application of the following model to any hypermedia product, it can be observed in detail the characteristics of all the expressive, narrative, interactive and values elements that compound it. On each subsection a blank space is added for describing the qualities of the different characteristics so it will be a practical model to be complete filling the blanks. The characteristics of each element that are not applicable can just be deleted and the ones that are pertinent can be described further. This model will serve to implement and increase the multsensorial immersion and the level of entertainment on educational interactive media through the right selection of the interface elements, interactive narrative contents and emotions and the type of interactions that the hypermedia communication system facilitate. Within the model a description of the special elements and concepts that were not easily found on a good dictionary has been included.

<table>
<thead>
<tr>
<th>0. NAME AND DESCRIPTION OF THE HYPERMEDIA COMMUNICATIVE PRODUCT.</th>
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<tr>
<th>1. NAME AND DESCRIPTION OF THE INTERFACES AND THE CONJUNCTION OF HYPERMEDIA EXPRESSIONS.</th>
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<tbody>
<tr>
<td>2.0. Identifiable Denomination of the hypermedia Interface.</td>
</tr>
<tr>
<td>Each of the different interfaces that appear on the hypermedia product should be numbered and named.</td>
</tr>
</tbody>
</table>

2. General characteristics of the interface and detailed description of the multimedia characteristics of the expression that allow interaction over the narrative characteristics of the character.

2.1. SOFTWARE: Group of Expressions and Technological Tools that serve for the Relationship and Generation of Natural and Virtual Interactions.

- Of Intermediation.
  A) Iconic.
  B) Symbolic.
    A&B) Combination of previous both.
  C) Natural-Mimetic
    - Opened or or virtual reality.
    - Semi-opened or simulators of virtual reality.
  D) Convergent
  E) Pull or Push Interfaces
  F) Static or dynamic Interfaces.
  G) Mute or Sound Interfaces
  H) Smart Interfaces
  I) The iteration

2.2. Hardware (Group of physical expressions).

A) Of intermediation:
B) Natural Mimetic:

2.3. Typographic Description

- Size of Letter.
- Style of Type of Font.
- Characteristics or Effects of the Letter.
- Color of the letter.

2.4. Types of Image or Perceptive Representations.

A) Still Image
  A.1) Photo-mimetic


<table>
<thead>
<tr>
<th>A.2) Photo-info graphic</th>
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<tbody>
<tr>
<td>A.3) Info graphic</td>
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<tr>
<td>B) Still image with Sounded Image</td>
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<tr>
<td>C) Image in Movement</td>
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<tr>
<td>C.1) Cine-mimetic</td>
</tr>
<tr>
<td>C.2) Cine-info graphic</td>
</tr>
<tr>
<td>C.3) Cine-mimetic-info graphic</td>
</tr>
<tr>
<td>D) Visual Image in Movement with or without Sounded Image</td>
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<tr>
<td>E) Audiovisual Image</td>
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<tr>
<td>F) Sounded Image</td>
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<tr>
<td>G) Sounded Image with or without Visual Image or Extraterritorial Images</td>
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</table>

2.5. Iconic Description.

2.6. Symbolic Description.

3. CHARACTERISTS OF THE CHARACTERS REPRESENTED ON THE INTERFACE.

3.0 General Description of the Interaction with the Characters.

3.1. Character or Avatar of 1st, 2d or 3rd Person.

- 1st Person.
- 2d Person.
- 3rd Person.

3.2. Physical Characteristics.

- Sex
- Age
- Height and Weigh
- Hair, Eyes and Skin Colors


- Pose
- Corporal Appearance and Customs
- Morphological Defects
- Hereditarily Aspects

### 3.3. Sociological Characteristics.

- Economic Status
- Employment
- Type of Education
- Life and Family Relationships
- Religion
- Race, nationality
- Function on his Community
- Political Tendencies
- Hobbies

### 3.4. Psychological Characteristics.

- Sexual and Moral Life
- Personal Ambitions and Motivations
- Frustrations, Main Conflicts.
- Temper: Angry, tolerant, pessimistic, optimistic, etc.
- Vital Attitude: complacent, combative, surrendered.
- Insecurities: obsessions, inhibitions, superstitions.
- Extroverted, introverted, equilibrated.
- Capacities, aptitudes, languages.
- Qualities: imagination, criteria, taste, equilibrium.
- Intellectual Coefficient: high, regular, low.

### 4A. INTERACTIONAL ASPECTS OF THE CHARACTER AND TYPE OF INTERACTION AVAILABLE

Selective, Transformative or Constructive


### 5B. VALUES OR SPIRITUAL PRINCIPLES AND UNSCRUPULOUS VALUES THAT AVAILABLE TO ACTIVATE THROUGH THE INTERACTION WITH THE NARRATIVE CHARACTERISTICS OF THE CHARACTERS. Values and Unscrupulous Values that appear potentially related with the interaction developed.

#### 5.1 VALUES

#### 5.2 UNSCRUPULOUS VALUES

### 6. INTERACTIONAL CHARACTERISTICS OF THE ACTIONS:

6.0 General Description of the Interactions with the Actions and the Elements that can generate Action.

6.1. Main Theme or Plot.

6.2. Secondary Theme or Subplot.

6.3. Changing Hierarchy.
- Relationships between main and secondary actions.
- Real Relationships between main actions.
- Real Relationships between secondary actions.
- Simulated Relationships between main and secondary actions.
- Annulated between main and secondary actions.

6.4. Type of Structure.

### 4B ASPECTS OF THE INTERACTIONAL ACTIONS AND TYPE OF INTERACTION AVAILABLE

Selective, Transformative or Constructive


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<th>5B. VALUES OR SPIRITUAL PRINCIPLES AND UNSCRUPULOUS VALUES THAT AVAILABLE TO ACTIVATE THROUGH THE INTERACTION WITH THE NARRATIVE CHARACTERISTICS OF THE ACTIONS Values and Unscrupulous Values that appear potentially related with the interaction developed.</th>
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<tr>
<td>5.1 VALUES</td>
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<td>5.2 UNSCRUPULOUS VALUES</td>
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<th>7. INTERACTIONAL CHARACTERISTICS OF THE SPACE:</th>
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<td>7.0 General Description of the Interactions with the Spaces</td>
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<tr>
<td>7.1. Natural or Constructed / Mimetic-Natural or Mimetic-Info graphic</td>
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<td>7.2. Senses Implied in the Spatial Perception: View, Ear and/or Touch.</td>
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<td>7.3. Implicit Space and/or Explicit</td>
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<td>7.4. 2D / 3D or 4D Space</td>
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<td>7.5. Perspective: Size, Scale, Position and Point of Views.</td>
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<td>7.6. Focus or Defocus.</td>
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<td>7.7. Illumination and Color Temperature.</td>
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<td>7.9. Protagonist Space and/or Hyperspace.</td>
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<td>7.10. Absent Space or Suggested Space.</td>
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<tr>
<td>7.11. Space of Selection and have Representation: Coincident or Different.</td>
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**4C ASPECTS OF THE INTERACTIONAL SPACES AND TYPE OF INTERACTION AVAILABLE**

Selective, Transformative or Constructive

**5C. VALUES OR SPIRITUAL PRINCIPLES AND UNSCRUPULOUS VALUES THAT AVAILABLE TO ACTIVATE THROUGH THE INTERACTION WITH THE NARRATIVE CHARACTERISTICS OF THE SPACES. Values and Unscrupulous Values that appear potentially related with the interaction developed.**

**5.1 VALUES**

**5.2 UNSCRUPULOUS VALUES**

**8. INTERACTIONAL CHARACTERISTICS OF THE TIME:**

**8.0 General Description of the Interactions with the Times.**


<table>
<thead>
<tr>
<th>8.2. Duration: Pure Diegesis – Impure Diegesis- Open or Close.</th>
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<td>8.3. Frequency: Repetitive Sequence or Singular Multiple.</td>
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<td>8.5. Iteration.</td>
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### 4D. ASPECTS OF THE INTERACTIONAL TIMES AND TYPE OF INTERACTION AVAILABLE

- Selective, Transformative or Constructive

### 5D. VALUES OR SPIRITUAL PRINCIPLES AND UNSCRUPULOUS VALUES THAT AVAILABLE TO ACTIVATE THROUGH THE INTERACTION WITH THE NARRATIVE CHARACTERISTICS OF THE TIMES. Values and Unscrupulous Values that appear potentially related with the interaction developed.

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<th>5.1 VALUES</th>
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<th>5.2 UNSCRUPULOUS VALUES</th>
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The validity and functionality of these models of analysis of the hypermedia interface has been proven on several researches such as on a previous scientific investigation applied to the creation “Smoke & Mirrors”, developed by Sheldon Brown, director of the Center for Research in Computing and the Arts from the University of California San Diego, or two the analysis of the most interacted and immersive interactive elements presented on the hypermedia interfaces of the videogames Antigrav and Sims2. The creation of “Smoke&Mirrors” counted with some constrictions, structures and expressions not interactional, inherited from the lineal and unidirectional communication systems, but it develops the proper hypermedia tools to transmit an...


educational and valuable message. With the analysis of this previous research “Elaboration of analysis models for the identifying the most used hypermedia expressions in order to motivate the multidirectional communication: application to the creation Smoke & Mirrors” the analytical models aesthetic-narrative that I built were corrected and improved. The type of interactions were added as well as the values section to analyze how each value can be interacted through each hypermedia expression and narrative form. These analysis models were corrected and they were used as descriptors, with the design of the experiment, to observe what are the expressive, narrative, emotional and value characteristics that are more attractive and interacted by the teenagers. This implement model here presented was lately applied to the analysis of successful videogames with some didactic contents, such as Antigra, from Sony, or Sims2, from Electronic Arts. With all, it was found what are the most immersive combination of expressions and narrative interactive forms of the hypermedia that serve for the transmission of values to the youth. That is why, these models where improved through time and the conclusions found after their application have been very useful in the design of videogame prototypes embedded on MMOG, massive multiplayer online games such as the awarded prototype EC Game Exchange Cultures, embedded on SL, Second Life. A game and an interactive museum located within the game Second Life where the players were able of learning about different countries and cultures through the exchange of original arts, food recipes, architectures, customs, and other cultural items. In synthesis, this model can be applied with this and other implementations to any hypermedia communicative product. The use of audiovisual recordings to register in synchronicity the real and virtual interactions will serve to contrast the analytical data compiled with the model with the real interactions developed over the interfaces by the users, players or reader-authors.

3. - POTENTIAL APPLICATIONS IN THE NEW VIRTUAL WORLDS AND SPACES FOR HYPERMEDIA COMMUNICATIONS.

3.1. Research Groups About Videogames.

As it has been proved, the scientific process that is required for the study of the hypermedia interface with its different aesthetic, narrative, perceptual, emotional and value variables is a complex and multidisciplinary process.

The study of broad groups of young adults or of other ages require a big investment of professional work from multiple scientist and experts from different knowledge areas such as: cognitive, perceptual and cultural psychology, communication, anthropology, narrative, ethics, pedagogy, sociology, statistics, etc. anthropology, la narrative, la ethic, la pedagogy, la sociology, la statistical, etc. From a multidisciplinary perspective, and with the professional team work, it is possible to build model of producing educational videogames and hypermedia systems to broad publics, that can compete on interest and attractive with the most popular commercial games on the market. Moreover, it is required more evolved technological media for registering audiovisual data of the physical and psychological behaviors of the interface users. On this way, it will be possible to observe information about the different levels of biological and technological media of communications that the expressive interactions human-machine or human-machine-human implied.

It will be also necessary to count with programmers, designers, creators, proffessors and artists for the optima production of edutainment videogames. In the area of the ethics and of learning values, the online videogames are very valuable to create fun and constructive dialogs about the different values that can be practiced by different cultures, for example in the MMOG Second Life. It is true that for obtaining ideal multicultural development of these videogames is necessary a precise local study of young adults group internationally, so the found elements were able to be contracted to find the most attractive interactive expressions for each culture and take them into account for the creation of edutainment videogames. On this form, the interaction of all

international participants of a MMOG will be more motivated with secondary actions that would generate a constructive dialog about the common values independently of the expressed. For instance, a videogame based on a fictitious World War, where the only way for all the planet to survive would be diplomatic cultural and commercial agreements, and where all the players should know the cultural habits, languages and natural and industrial resources of each country so they could obtain better agreements and save the planet. When they win, all win and when they lose all lose. This was the dynamic of the videogame prototype previously mentioned, EC Game, Exchanging Cultures that was design with the application of the model conclusions and it was awarded with the 3rd Prize by the Annenberg School for Communication, at the University of Southern California, on the International Competition “Reinventing Public Diplomacy Through Videogames”.

![Prototype of the Diplomatic Game](image)

Figure 10. Prototype of the Diplomatic Game embedded on the MMOG Second Life.

### 3.2. Market of the Educational and Cultural Videogames.

Currently, there are very advanced informatics systems generators of artificial intelligence,

virtual reality, of real time construction and calculus of graphics, that has been develop by the videogame industries. To commit the videogame industry with the development of educational games, the collaborations between cultural and educational institutions, ministries, universities, etc can be motivated, so both can exchange knowledge and resources. For instance, the University of California San Diego made some agreements with the videogame company Sammy Studios and Sony entertainment between others in order to sell an/or lend the different informatics resources, used to generate videogames, for the development of scientific visualizations. There are a lot of companies with resources of this type already developed and willing to establish bridges of collaboration for the development of educational applications. The Interactive Media Division, School of Cinematic Arts, University of Southern California, counts with the support of the videogame company, Electronic Arts, to develop its Game Lab, a place where professors and students help the development of innovative new videogames, called serious games, where the players experienced or help to develop social conflicts.

Moreover, private companies dedicated to the development of cultural and educational contents, such as Anaya Multimedia, in Spain or McGraw Hill, internationally, invest more and more, and they should continue interesting, in the development of edutainment videogames, because they will be the books of text of the present and the future. It is easier that a student learn about historical conflicts on an immersive way playing and learning than just reading or watching some pictures.

During the XXI century, the alarm on the accelerated technological learning and the big numbers of hours invested by the youth in using new technologies and the consume of violent videogames, is calling the attention of the society to study why the videogames are so attractive to teenagers. Without trying to judge from ignorance the new media and their expressive resources, these can be used and redirected for the transmission of cultural and educational contents through the videogames. On this form, it will be possible to change the old lay “the letter with blood enters” that so many educational traumas has caused to several generations. Although it sounds paradoxical, it is now the blood and violence of the videogames the one that calls our attention to find edutainment solutions. Maybe the call for attention of the blood of the

new generations of players has been necessary. This form of virtual interaction with the violence, normally used under a humoristic or catharsis value, as it occurs with the cinematic genre of gore or horror, has served for the parents and educational institutions to awake and to evolve into the new literacy and to their application to study the new media of expressions. A culture that were not repressed by virtual contents of blood, maybe can inspire the time where the education between adults and youngsters can be more interactive, that the culture and education inter-generations, if not on the vanguard, it can be in balance with the new forms of expressions. Moreover, observing the human history the new forms of expression finally are more inclusive and rich full expressively, and exclusive only of one media or generation.

Hopefully, more videogames and classes based on interactive media systems will be seen. Classes that will be more entertainment for the students and a renewal and an update education for the professors too. Institutions and universities such as the M.I.T, Massachusetts Institute of Technologies, at the Department of Comparative Media, developed educational videogames that are good prototypes and example of the edutainment potential that the videogames represent. Videogames about literature, history, engineering, physics, chemistry, etc; will full the classes the near future, since the commercial videogames already full the conversation of the students in the present. The adjective of commercial or popular will be able to be applicable to edutainment videogames that will offer enough quality, thanks to the application of models of analysis of the hypermedia interface, like the one expose here, and the increment of research on the area of interactive multimedia interfaces applied to the multidirectional communication of edutainment contents. At the end, what is more attractive than learning while playing?


4. REFERENCES.

- Gregory Thomas, How to Design Logos, Symbols & Icons.


