

V.E.Ga.S.: A tool to study morphology of the video games

Julian Alvarez^{1&2}, Damien Djaouti², Rashid Ghassempouri²,
Pr. Jean-Pierre Jessel¹ and Pr. Gilles Méthel²

¹ Irit-SIRV, Université Paul Sabatier, Toulouse, France

²LARA- Axe Arts Numériques, ESAV - Université de Toulouse le Mirail, Toulouse, France
alvarez@irit.fr

Abstract. The aim of this article is to present V.E.Ga.S tool, which intends to classify video games, study their nature and to corroborate hypothesis by a pragmatic approach. The approach has been inspired by the methodology of Vladimir Propp, who has classified Russian Tales at the time, as well as on the works and the "iterative" approach of the game designers Katie Salen and Eric Zimmerman. The approach consists in studying a significant number of video games in order to index their composition of elementary "bricks". Basing our study on this "bricks" and crossing them with other fields, we will try to classify and study video games. We thus hope to be able to have at our disposal, elements which will contribute to the research of the "emerging discipline of Game design".

Keywords: Bricks, Experimental Methods, Gameplay, Game design, Video Games, Morphology, Taxonomy.1 Introduction

1 Introduction

Sébastien Genvo¹ says that the definition of the gameplay is still vague: "The professionals (creators, journalists, etc.) and the amateurs of video games employ this concept instinctively. It's really revealing that a fundamental concept like "the gameplay" has not yet been defined" (p. 11). If the concept of "gameplay" is difficult to settle, it's perhaps because the very sense of "video game" is still hard to define. What's a "video game"? Does the "video game" have its own morphology? The last question refers of course to the approach of Vladimir Propp² concerning his well-known study about Russian Folktales. In 1928, he explains in his study, "Morphology of the Folktale", how he has identified a general idea that structures all the folktales that he has studied. He has proved, for example, that folktales that seems to be more complicated than others and thus could not be easily classified, are in fact composed of several more ordinary folktales and are thus based on the functions that are already identified. When we refer to a game like "GTA San Andreas" (Rockstar Games 2004), which offers to the player one global game that leads to a multitude of more ordinary games, then it's very tempting to rely on the approach of Propp. And

other scientific also prospect in that direction. For example Patrick Mpondo-Dicka¹, who specifies in his article, "Analyse sémiotique de quelques formes et fonctions" (Analysis of the significance of some forms and functions) that: "Like the popular folktale, the game of action (-adventure), as a story, is easily described compared to the significance of fairy tales. The relationship between the traditional story, folktale or legend and the video game is obvious...(.) The boss of the level end is one of the classic under-programs, which can be related to the final test of Propp." (p.210).

Our approach is to contribute to discover the very nature of the video game by an approach as well experimental as pragmatic. The references to Propp explored in this paper are situated on the very first pages of his pioneer work, when he postulates that to really get to know what is a folktale, we have to study all the aspects in order to establish a classification (p. 11 & 12).

The idea of a classification of the video games is not something new. The brothers Le Diberder³ as well as Stéphane Natkin⁴ for example have already proposed classifications. But in all of them although they act as references; we rapidly have found slants or absences. That's what Matthieu Letourneux¹ denounces in his article "The question about the style of video games." (p.40 & 41). He means that all classification is condemned to be outdated, because the technological evolution offers constantly new perspectives. We are thus in front of a paradox. Because in accordance with Propp it's essential to classify in order to understand: "The accuracy of the further study depends on the accuracy of the classification." (Translated from French). How be able to make a definition of a video game if its classification is rapidly wrong?

Again, Propp offers us a key to try to answer the paradox: "Although there is a place for the classification as a basis of every research it must be the result of a further study. However, we observe the opposite situation: Most of researchers start by classifying, thus introducing facts, when in fact, they should rather deduce." (Translated from French).

These sayings invite us to approach the classification of video games in a different manner. Maybe, if we follow the methodology of Propp, we will manage to create a classification being able to be adapted to video games? Maybe we will realize that the aspects of video games don't evolve?

To follow the methodology of Propp thus implies to establish a classification that will be deduced by a "preliminary further examination". This approach of a "analytical study" has to be run in a "formal and abstract way" and will lead us to find recurrent "functions" that composes the element that is studied (p.27).

In order to manage a "preliminary further examination" of our video games, we have chosen the approach made by the game designers Katie Salen and Eric Zimmerman⁵. Because their "fundamental principles" are elements you can put together in order to construct any game, that are similar with the "functions" of Propp which are combined in order to make up any tale.

Thus, in order to adhere to the "formal and abstract" study of Propp, we only retain in our study "the fundamental principals" being in touch with the "outside" as it defined by Winnicott⁶. At last as underlined by Salen and Zimmerman, we will play the video games, because the theoretical approach is not sufficient: "A game design education cannot consist of a purely theoretical approach to games. This is true in any design field." (p.11).

We hope that following this methodology will allow us to elaborate a tool dedicated to the morphologic study of video games in order to classify, study their very nature and corroborate hypothesis in a pragmatic approach.

We will first define the field of the study and the protocol that we decided in a first experimental approach. We will see how to analyse and index the video games taking into account their way of interactivity. In a second time we will use the results obtained during our first approach in order to refine the experimental protocol and identify new "ingredients". All along these two parts, we will also try to transmit our way of thinking.

2 First experimental approach

2.1 Story of the Research

At the very start, the first idea of the experimental study was to try to define the notion of "gameplay". This idea explained by Gilles Brougère⁷ relying on Roger Caillois⁸ (p.133 to 134) tells about the rules of the game (game or ludus) as well as the ability of the play (play or paidia). These two concepts put together side by side can induce a narrow relationship between the type of video games (Arcade Games, Reflection Games...) and the manner of interaction (Keys, manner of using the mouse...). But to the game designer Patrick Receveur¹, it is not so: "Pay attention to the fact that the interface can decrease the sensations of the player but it does not make the game; It is the means by which the orders from the computer are transferred." (p.290).

In order to clear things out we have tried to realize an experimental study with the following principles: Draw a tree structure in which should be classed video games according to their interface and check if at the end of each branch the principals of the game are the same. For example, for the branch representing the 4 arrows on the keyboard, will we always find games similar to "Pacman"? If that were to be checked, then yes, the interactivity would make the game, if not, it would be different.

2.2 Protocol of the first experimental step

First of all among the 4 ways of interaction described by Salen and Zimmerman (Cognitive Interaction, Functionally, Explicit, Beyond the object of Interactivity), only the one that corresponds to "Explicit Interactivity" (p.59 & 60) has been retained to be in accordance with the aspect "outside" proposed by the methodology of Propp. It's that way of interactivity that classifies particularly the different keys or peripheral devices of the game.

In front of the peripheral devices who permit the interaction of the video games, like the joysticks, guns, dance mats, eyes toys etc, it seems wise to start by taking away

the displays and set up a limit to the standard equipment of Macintosh or PC: The keyboard and the mouse (the model that has been chosen is with two buttons and a scroll wheel). Out of that a list of many possibilities has been defined. First for the mouse, we take the configuration of the buttons by defect (Click to the left = action, click to the right = options), we have retained those:

- Click on elements
- Move the mouse with a click (drag)
- Double Click
- Repeated Clicks
- Click on the right (click on the left + touch "ctrl" on Mac Os)
- Click on the screen
- The length of the click
- The mouse roll over zones in order to set off actions
- Move the mouse
- Move the mouse in a special way (fast movements or reproductions of distances)
- Turn the scroll wheel
- Special click (Serrated roller, Left + Right...)

And for the keyboard, we have retained what follows:

- Top, Bottom, Left and Right arrows
- Special keys (Space, Enter, Tab, CTRL, Alt, Command, Esc and Delete)
- Other keys (Alphanumeric, punctuations, symbols, functions...)
- Alphanumeric data capture
- Combination of keys
- Press repeatedly
- Laps of time of the keys concerned

The number of combinations exceeds 4 million possibilities. Rapidly, the construction of an arborescence to class them all appears to be much too hard. And even if the classification would be realized, the global lecture should not be very easy. Therefore in a second time a table classing the different combinations of the mouse and the keyboard seems to be more appropriated. This one was voluntarily limited to 4046 combinations to allow us to study the viability of the approach quickly.

2.3 Fixed constraints

When we have started to index the first games, we realized in an empirical way the importance to put further limits in our experimental study:

* **Only the play part of the game:** Only the play part of the game is considered. We don't consider the interactions in the menus nor the configuration of the game...

* **Not games for several players:** To begin, we only study games for one player or the one player mode of the video games.

* **No games including several distinctive games:** The software games including several games will not be classified as one game (Simulations of several sport tests,

games of adventure including several tests, etc.). We will classify every game separately.

* **No games emulated:** A big number of games coming from Arcade Games or Console Games that have been transferred to the family computers of Macintosh or PC by programmes that have reconstructed virtually these games by emulation. These games can thus be played on the keyboard or with the mouse. But, as the creators of these games did not intend that they should be played on keyboard or with the mouse we will not include them in our classification.

* **No reconfiguration:** We will use the way of control suggested by the game when it is possible to change it.

2.4 The results of this first experimental step

The inventory of the software games starts. More than 1000 games have been investigated. The very idea is to study the principle of each game, to notify its objective and its interactivity. Once these data are collected, the game is classed on a spreadsheet, in the square that corresponds to its combinations of interactivity. Thus the "Pacman" for example is classed in the square where the combination of the interactivity is: "Uses Top arrow + Bottom arrow + Left arrow + Right arrow". The descriptions are the following: "Game which requires to move in order to collect things without being touched by the enemies". Further on, other games with the same principles are indexed in the same square, like games: "Amigo", "Mouse Hunt", "Amoeba", "Road Carnage", "Retarded bombs", "Q*bert"... Effectively, in all these games, the player has to avoid enemies and in the same time collect elements to pass to a higher level. But, rapidly other types of games are classed in this square as well. Games like "Tetris" for example, or games like car racing, or games of simulation like "BMX Backflips" and also strategic games (Treasure chases for Amstrad CPC)... It is difficult to class all this different games in one family because the aims are close and different at the same time. Except if we are allowed to say that they all are "action games".

Concerning the mouse we will find the same phenomenon with for example the square of "Mouse moved"; Here the different games gravitate around games of "skill", but it is not possible to make another classification more rigorous. Which make us come back to the general classifications already defined by the brothers Le Diberder or Stéphane Natkin.

We could be satisfied with a result like this, relying on the fact that there seems to be a connection between the interactivity and the greatest categories of games. But, there are in fact other squares where no general categorisation is possible. For example the square: "Click on elements", where different games of rapidity, strategy, shoot, puzzles, adventures, etc, are classed.

This experiment thus proves the following observations to us:

* **The interface alone does not permit to classify video games:** If a classification cannot be deduced from a table which lists the combinations of interfaces, that is because effectively "The interface does not make the game" as pretend Patrick

Receveur. But for the moment, it would be preferable to specify: "The interface alone does not make the game". Because in fact, without interaction, there is no game as suggested by Salen and Zimmerman: "Play implies interactivity: to play with a game, a toy, a person, an idea, is to interact with it" (p.58). And according Chris Crawford⁹, "Interactivity" is defined as this: "A cyclic process in which two active agents alternately (and metaphorically) listen, think, and speak" (p.76). So here, "interface" is just the "listening" aspect of interactivity. This implies that "interface" is maybe just one ingredient to check to classify game.

* **Today there are more combinations not used than used:** the combinations used by more than 1000 video games destined to a family computer correspond to 77 of the 4046 interactions, that represent about 1,9% of the interactions inventoried in this first experimental approach (less than 0,002% for the 4189185 combinations). That means that today there is an enormous "Terra Incognita" of "not used interactions" left to be explored.

* **The combinations used by the games of interactivity do mostly include "directing arrows" for the keyboard and "the click on elements" for the mouse:** Among the combined boxes containing at least one listed game, the arrows enter in about 54,54 % of the combinations (42 boxes out of 77). Those including "clicks on elements" represent about 37,66% (29 cases out of 77). The games that don't use arrows or clicks on elements represent only 16,88% (13 boxes out of 77). That means that more than 83% of the interactive combinations listed in this study implies arrows on the keyboard or "click on elements", or both of them. That means perhaps that those two ways of interaction represent as well as for the players as for the game designers the normal reference in terms of ergonomic ease.

* **The more the combinations of the interactivity gets complicated, the more the number of games is reduced:** We have found a majority of titles in the boxes using only the keyboard (especially those which imply "arrows"), or only the mouse (especially those who imply "click on elements"). When the keyboard and the mouse are combined or that the numbers of keys on the board or the functions of the mouse are increasing then the numbers of titles decrease in a spectacular way. Furthest, that means that if the combinations are very complicated, the game gets very specific. For instance "WarCraft 3" (Blizzard, 2001) is all alone in the square using the combinations of the mouse: "Click on the elements" + "Mouse moved with click" + "Click on the screen", combined with the keyboard: "4 directional arrows" + "Special keys" + "Other keys" + "Combinations of keys".

This first experimental approach has rapidly shown its limits to obtain a classification. It has nevertheless given some encouraging results in pointing out the way of new ingredients to be found. We thus decide to continue to develop the number of parameters to study.

3 Second experimental approach

3.1 Definition of the fields

Because "The interface alone does not permit to classify video games", other elements now have to be found out. This leads us to a "preliminary further examination" (recommended by Propp) and which visibly has not been enough developed in our first approach. It is at this stage that we discover the "fundamental principles" defined by Salen and Zimmerman:

« As fundamental principles, these ideas form a system of building blocks that game designers arrange and rearrange in every game they create. » (p.7). These "fundamental principles" are elements you can put together in order to construct any game, that is similar with the functions of Propp who are combined in order to make up any tale.

But which are those "fundamental principles"?

« Which are those fundamental Game Design? They include understanding design, systems, and interactivity, as well as players' choices, actions and outcome. They include a study of rule-making and rule-breaking, complexity and emergence, game experience, game representation, and social game interactions. They include the powerful connection between the rules of a game and the play that the rules engender, the pleasures games invoke, the meanings they construct, the ideologies they embody, and the stories they tell. » (p.6).

Thus, in order to be faithful to the "formal and abstract" appearance of Propp, we only retain in our study "the fundamental principals" being in touch with the "outside" defined by Winnicott. The formal criterions of the design, the systems, the interactivity, the actions, the results and the rules of the game as a hardware and a software point of view. The « Systems » terms approached in a formal way such as Salen and Zimmerman define it (p.51) can be integrated for us in « the rules of the game ». For each one of these fundamental principles, we thus make correspond the following fields. Here are the details:

***Design:** « Design is the process by which a designer creates a context to be encountered by a participant, from which a meaning emerges » (P. 47). While remaining "formal", we decided to index the following fields to try to circumscribe these first "fundamental principles":

- **Title:** First we start by class the title of the game. If the description of the game is not complete or is doubtful, an asterisk is placed before the title. If there is already a homonym, the letter "h" is placed after the title into parenthesis.

- **Author:** This field allow us to identify the author or the studio of development that realized the game. To class this data will allow us to get an idea about the number of persons implicated in its realization and the conditions as well. This data base will also permit us to notify if the author is known and also if he is productive. At last it might be possible to follow an author and his editors as time goes by....

- **Categories:** The software games have been classed since their apparition by the players into big categories (Adventure, Arcade, RPG, FPS..) The choices are sometimes fuzzy and it is not exceptional to find the same title put into different categories. For example "Space Invaders" could be classed like an "Arcade game" and also as a "Shooting Game" or as a "Shoot'em up"... We have made our choice knowing that the existing categories are contestable as Matthieu Letourneux explains (p.39). The very idea is to get indications in order to help us first to class rapidly our games. Thus we don't try to justify these different categories. After some discussions we have decided to retain what follows: Adventure, Fight game, Management game, Skill game, Construction/Creation Games, Casino and Cards Games, Shooting Games, Toys, Education, Network, Platform; Picture puzzles, Rapidity/Reflexes Games, Brain puzzles, RPG, Simulations and at last Strategy Games.

- **Date:** Matthieu Letourneux says (p.41) that, computer science depends on the technical evolution. Therefore it is very important to date a game. That will allow us to notify eventual births or evolutions of gameplays as time goes by. Crossing this data with others like "the platforms" (see beneath) will allow us to realize the relationship between the software game and the park of computers at the time...

- **Editor:** Class this data will allow us to know who are the editors and if they last, if they have to be on a big level in order to innovate the software games or if on the opposite the small level will allow to innovate, the number of the titles distributed... etc. If the author of the game is as well the distributor, his name is classed in this field.

- **Link:** An URL permits to charge and visualize on Internet the game classed and notified.

- **Graphics:** This field classes the graphics of the games. The idea is to find out if you can find an eventual relationship between the principles of the game and its graphics. The categories, not exhaustive, are: 2D, 3D isometric, 3D precalculated, 3D Real Time or at last Text.

* **Country:** Indicates the country of the editor of the game and its author or studio of development. This field could eventually make us discover if the new concepts of game always come from the same country or further on to see if some countries are fond of special interactivities. Actually, Sébastien Genvo underlines (p.98) that the brothers Le Diberder make us "aware of the fact there is an Americanism more and more pronounced concerning the software games.". It is though interesting to have this field of "Country" in order to verify the remarks. .

- **Platforms:** We wish to have recent platforms as well as those of older generations. The principal idea is to discover whether as time goes on, if the ground is followed by an great innovation of the gameplay. We have put Amstrad CPC and The Commodore C64 as the first machines in our chronology. They represent to us the generation of family computers of the eighties, the most widespread before the advent of the mouse. After them there are the arrival of the Amiga and The Atari ST introducing the mouse and at last The MAC and The PC being the family computers of today.

- **Public:** The aim of this field is to index the very heart of the target of the game. That will permit us to see if the functions of interactivity are related to the age of the players : Baby <3 years old, Children 3 to 6 years old, Children 7 - 11 years

old, Teens 12 - 15 years old, Teens 16 - 17 years old, Adults 18 - 25 years old, Adults 26 - 35 years old, Adults 36 - 50 years old and Seniors >50 years old.

- **Support:** This field will distinguish if the game at the beginning is distributed on a physical support (CD-rom, DVD-rom, Disc.....) or if the game is available by downloading or "listing". The main idea is to discover if the gameplays are different in according to their support. The support also implies the way of distribution of the game.

* **Interactivity:** The interfaces classed in chapter 2.2 define this second "fundamental principle".

* **Actions + Rules of the Games + The results:** These three elements immediately refer to the notion of "function" in the very sense of computer science. A function is defined by an entrance, a processing and an exit. We consider here that "the actions" are what the player gets as instructions on the interface. "The game rules" let us know how to proceed. Once the treatment executed, the function returns "the results". Software developers use often the term of "bricks" to designate small modules of autonomous programs. Their approach is that in order to create different applications, we just have to assemble different combinations of bricks (in accordance with "the blocks" of Salen and Zimmerman). In the same way, we specify that the combinations of the bricks of the games have to be in accordance with the rules and the aims of every video game (the term of "game" refers to the notion of "game rules" leaning on the saying of Gilles Brougère). This third "fundamental principal" is related to "the functions of Propp and will be developed in the next chapter.

3.2 The "game bricks"

Propp specifies 4 rules in order to define the functions of Russian folktales (p.31 to 33):

«1 - The permanent and constant elements of the tale are the functions of the characters, whoever they are or whatever are the manners of their functions to be filled. The functions are the fundamental constitutive parts of the tale »: In the context of the video game that signifies that whatever is the "design" and "the interactivity" of the game, the "game bricks" are always identical.

« 2 - The number of the functions of the fairy Tale is restrained »: Which implies in the context of the video game, that there are probably a limited number of game bricks.

« 3 - The succession of the functions is always the same ». This third rule in the context of the video game implies that the player has to make choices (Salen et Zimmerman p. 33 and Gilles Brougère p. 52) and thus has to activate different successions of functions, which leads us to apprehend it otherwise: For each video game that we are studying here corresponds one combination of game bricks.

« 4 – All the Fairy Tales belong to the same form concerning their structure. ». This last point would perhaps make us able to elaborate a classification of video games according to their combination of game bricks.

The game bricks that we have identified are based on games studied at the very start of our research, and we specify that this is just an approach and therefore we do not pretend to present a final list. One of the points not yet defined concerns the cognitive aspect. Thus, if we propose a game brick "MEMORIZE" with the following description: This brick tests the short term memory of the player. For example, he has to tell which element that has disappeared on an image observed just before. "Do we here describe the rules of the game or are we describing the process of knowledge of the player in order to obtain an aim consisting just to show an object? We think that the last option is the good one. We thus have tried to eliminate in every brick the cognitive aspect to respect the "formal" aspect imposed by the methodology of Propp. This step is also consolidated by the remark that Sébastien Genvo underlines when he mentions Jacques Henriot: "No structure in itself is play-some: the game is above all a question of intention." (p.11).

We therefore present the first schedule of brick games, which we define today as "intentions" of external elementary game rules ("external" meaning: "do not consider the cognitive aspect", referring to the "inner" aspect of Winnicott).

01 - Brick "ANSWER": This brick invites the user to give an answer entering a datum or pointing out one. For example: (questions, test, questionnaire of multiple choices, choice of dialogues in a game of adventure...). If the number of answers becomes important, we have a game of "location" like, "Where is Charlie?" or the game of "Find the differences between two pictures"...

02 - Brick "MANAGE": This brick invites the player to manage resources in order to reach a target. For example the quantity of petrol necessary for a car to go as far as possible, or munitions in a Shooting Game, or troupes in a Strategy Game or further on first material in a Game of economic simulation for example...

03 - Brick "HAVE LUCK": This brick invites the player to defy the chance. (Game of jackpot for example).

04 - Brick "SHOOT": This brick invites the player to touch an element situated at a distance. For example in the game of "Space Invaders", the player has to shoot a missile in order to touch a vessel of the enemy; It includes as well the big family of FPS or Game of Shooting with the target to move on the screen...

05 - Brick "CONSTRUCTION/CREATION": This brick requires creativity (on the opposite of a puzzle that has to be reproduced) and asks the player to put elements together, construct, create special elements or not, colour, draw after motifs or geometric elements or not. This brick is also applies the sound dimension;

06 - Brick "BLOCK": This brick defies the player to block an enemy or an element pointed out.

07 - Brick "COLLECT": A game where you have to collect or catch elements. These elements can be fixed or moving or both alternately.

08 - Brick "DESTROY": Game of destruction of the elements/enemies.

09 - Brick "MOVE": Game where you have to move/drive/pilot an element or a person.

10 - Brick "AVOID": Brick inviting the player to avoid elements/obstacles/enemies/adversaries.

11 - Brick "MAINTAIN": This brick forces the player to maintain one or several elements in a precise place or state (stability...).

12 - Brick "POSITION": This brick defies the player to position elements at very special places or key positions.

13 - Brick "TIME": This brick invites the player to pass a test within a time that is limited or as fast as possible;

14 - Brick "SCORE": This brick invites the player to make scores. Credits, Real or virtual sums of money are assimilated to a score.

If none of these Bricks is in accordance with the software game, it means that it is a **"TOY"** or a brick that have not yet been classified.

How class the aspects of a game?

We propose for example "Galaxian" (<http://www.2dplay.com/galaxians/galaxians-info.htm>). The very idea of this game is to invite the player to pilot a ship and to destroy another ones with it. "To pilot" imply the brick 09 "MOVE". But the player also has to fire on enemy ships. This implies the brick 04 "SHOOT". And to destroy them, brick 08 "DESTROY". it is not over. The player also has to avoid the enemy fire back. This implies the brick 10 "AVOID". In this game we also have to imply the brick 13 "TIME", because the player has to destroy all the enemies before they reach his ship. Finally, the game invites the player to make scores. This will thus imply the brick 14 "SCORE".

In order to represent the aspects of the "Galaxian ", we thus have combined the following "game" bricks: "SHOOT" + "DESTROY" + "MOVE" +"AVOID" + "TIME" + "SCORE".

This combination is confirmed by the diagram of Galaxian that Raph Koster made (<http://www.theoryoffun.com/grammar/gdc2005.htm>). In its diagram we can find the same elements: "Get highest score"(SCORE) + "Kill enemy"(DESTROY) + "Position token"(MOVE).+ "Press fire button"(SHOOT) + "Don't get hit"(AVOID) + "Move" (MOVE). Raph Koster¹⁰ precise that "Vertical time was time" (TIME). This correspondence is for us a good point and encourage us to continue on this way.

3.3 Positioning the database

The idea to add this data to a base of already more than four millions combinations will not permit the use of an ordinary spreadsheet. The idea of a Data Base type MySQL added to PHP program language is imperative at this level. And this technology will also permit a more complex manipulation of the data in order to edify personalized tables by crossing the desired data. Moreover the data of the base could as well be transferred to a software of statistic processing in order to work out new dimensions. V.E.Ga.S. (Video Entertainment & Games Studies) is born. It's the name of this data base.

V.E.Ga.S. is actually tested, in order to finalize the tool of this second experimental approach. We now have to index the games on the precedent basis and updating their databases. We take advantage to add new titles. When a significant number of titles have filled the basis, we could start to explore and analyze the first results. We then will see if a classification could be drawn.

4 Conclusion

All along this article we have tried to detail our methodological approach in order to work out a tool which aim is to classify video games, study their very nature and corroborate hypothesis by a pragmatic approach. The first experimental approach has given encouraging results and has supplied a path that has encouraged us to continue our research. This study raises regularly new questions that lead us to affine the experimental protocol. This is probably explained by our methodological choice that uses two approaches which seems at first antagonistic but complementary: One is iterative and empirical (supported by Salen and Zimmerman); the other one is logic and formal (supported by Propp).

However, until this moment, we stop our refinement of our experimental tool. We consider that the database is sufficiently refined, even though there are surely some means left. The idea now is to index a significant numbers of games in order to cross the data and perhaps to deduce an outline of classification.

If we manage then we could consider that the approach has been successful. On the contrary, we will perhaps find new data and thus discover errors that will allow us to continue this study. We then will make a third version of our tool.

If a successful classification appears, then we will be able to think of the 'inside' aspect and the multi-users video games that for the moment is left by.

V.E.Ga.S. is accessible on the following address: www.bigarobas.com/ludovia/vegas/

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