

The Ontological Aspects of Puzzles into Metaverses

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Abstract: The present text talks about the substantiation and usage of logic-mathematical puzzles inside the metaverses and its incidences as cognitive objects. Starting from the evolving path of hypermedia to the metaverses, it is introduced some formal criteria to reflect on the interactive context of the metaverses exemplified in the presentation and solution of logic-mathematical puzzles, taking as a paradigm example the metaverse experience of *Myst online*. It is concluded by the importance of the collaboration between the digital narrative and interactive problematical formulation for the research, production, knowledge and teaching-learning processes.

Keywords: metaverse, ontologia, lógica matemática, games, topofilosofia, etnocomputação.

Introduction: from the hypermedia to metaverses

Since the initial moments of computer history and personal computers, we can identify the existence of a whole development and cooperation path that connects collaboratively computer science and the narrative structures of western tradition. Amongst many and excellent reviews that were produced, we would like to enhance the ones accomplished by Murray (2003) and Manovich (2001), which points out by the hypermedia concept and accomplish a discussion of this concept in relation to the western tradition legacies of arts, literature, cinema and design. From the transposition of tradition content, like literature pieces, to the computational environment in the shape of regained text blocks capable of receiving search fields by words, until we reach the concept of cyberdrama postulated by Murray (2003:24) we have a rich path, which certainly will not be possible to contextualize completely in the present article's space. However, we let indicate the importance of the historical reference. From this point on, we teletransport ourselves to the hypermedia discussion in the emergent cyberspace

context, based on Lev Manovich's work (2001) in *The Language of New Media*.

As Manovich has indicated, the occurred mutations in the cyberspace, since the beginning of the 1990s were neither free, nor planned. Not only its springing out, but also its progressive mutation is related to the emerging of digital paradigms that determine the personal computer evolution means and its incorporation in human life and culture. As so, far from being an ordinary phenomena, the digital phenomenon, in this case having in mind its designation under the hypermedia field, has produced new cultural forms that has resituated themselves and continue to transform the western culture. These paradigms can be better understood when we have in mind their participation in games, and furthermore, in cyberspace with the emerge of metaverses.

Besides, according to Manovich, the 1990s were the years of the so called new media, in which we have the rising of numberless cultural objects that exemplify the new media potential, in the perspective of the computer usage, in the revealing of aesthetic shapes genuinely original and historically without any predecessors. Among these objects, two special ways are featured: they are two computer games, Doom and Myst. These two cultural and digital objects pass by their accomplishers and fans community, producing a series of elements that have added a new meaning to the idea that we had about concepts such as authors, communication and expressive languages potential.

As paradigms, they opened specific digital economy types inside the post-modern era. Inside each one of these paradigms we have special economies producing and determining its social, cultural, technological and conceptual effects (Pinto, 2005). These new type of economies, which are opened by the new ways of interfaces of both games are designed by Manovich (2001) as "cultural economies" that structure new ways of digital life. One of the examples of this turn produced by the new paradigms can be visualized when J. C. Herz says the following: "It was an idea that stipulated a new time. To release a thinner and free version (of the game) through the

shareware sources, Internet and online services, followed by a complete, registered and for sale version of the software”.

And with this procedure, it is formally initiated the Demo Plays policy, the playable version of softwares, in which we show the product potential. The Manovich analysis is supported by the studies of Michel de Certeau (1999), when he says that: “the producers define the basic structure of an object, and release some examples and tools to allow consumers to create their own versions, sharing it with other consumers”.

From this type of economical politics, opens the path to establish new digital objects: the open source software, the free software and all the production and licenses group that it is reachable in the cyberspace. It will be this emphasis on this type of perspective of facing things that has allowed, in a short period of time that Internet converted into cyberspace or else, in a surfable and interactive space, as it was the project of the Web creator, Tim-Burnes Lee.

According to this perspective, one of the consequences that we have is that cyberspace has become progressively a place in which is made available an infinity of paths that are visualized mentally by the user as “environments to be visited”. This was the idea presented by Robin Miller, when he said that they “were creating environments to be briefly followed” – lacking a better term, many have called this a game and the authors themselves called it like that because they lacked a better concept. With Manovich studies (2001) and Murray (2003), the fulminating light of the narrative concept is released on the cyberspace landscape. Games such as Doom, and above all Myst, constitute themselves as digital narrative, in navigable and interactive digital environment and, in particular, make public specific and powerful “cultural forms” sufficiently able to reshape a series of aspects of human life and culture.

Such as cyberspace navigation allows the introduction of the new cultural forms perspective and its respective economical policies, the navigable space in cyberspace (especially structured games over narratives), opens the possibility of understanding the digital universe and its revolution, not as opposite ruptures of the development of the western tradition of Gutenberg’s culture, but as an extension of the human world, of being in a world and share with your similar being the living in narrative processes as powerful cultural forms, in which we identify here as metaverses.

According to Dannam, the Myst universe was created by the brothers Rand and Robyn Miller around 1987. Six years after hard working, in 1993, Myst was released, the first of a series of “serious games”, quoted as an elegant scripting structure, concept design, and mystical ideas blended with an Art Nouveau aesthetic, in a New Age reading and pictured in the interior of an extraordinary audio design. Certainly we can imagine that it was just a

young game producers’ dream, of accomplishing a project that materializes all its ideas and put in front of the user a digital narrative more likely to be the Shakespearian method. We should now observe that the digital universe, not only the entertainment one, but fundamentally what it refers to the interaction protocols of machine men were pointed out by Myst, as digital aesthetic was by Apple.

Meanwhile, in Doom, another game pointed out by Manovich as paradigmatic, the rhythm is fast, whereas in Myst, it is slow, rhythmic by a expressive new age soundtrack. In the world of Myst, and we speak here mainly of Myst Original in 1993, “the player moves in the world literally step by step, discovering the narrative along the route”. In this discovery the user soon verifies that the worlds of Myst I, full of landscapes and sound constructions were complete and profoundly empty. At the time (1993) it was about lonely worlds, in with the user was unleashed in a digital adventure in pursue of its puzzle. In Myst there aren’t game levels, but complete and differentiated environments that offer a variety of situations, in which they present themselves as enigma to be solved.

From the resolution action of the puzzles, new faces of the narrative emerge. At them, the user accomplishes a tour in the pursuit of worlds and the solution of its mysteries. The essence of the game, in which resides in a terrific architecture and the navigation possibility inside it, making available the intervention of its paths, its destination. As in an anticipated dream by Schopenhauer (2007), the digital Argonaut mingles inside the navigable worlds of Doom and Must, and there their avatars live intensively in systematic conditions of proto-metaverses.

Characteristics of the navigable space in the metaverses from an experience with games

One of the differentiable game elements is its possibility of introducing into the plan of computerized human action, in the relation man-machine-world, that we can call the Discovery logic. Since its first version, Myst already initiates the proposal of introduction the digital Argonaut in the position of opening itself to the progressive apprehension of a logical discovery and, with that, assimilate more and more increasing complexity schemes inside a basic narrative of the game. With a delicate intellectual property, Manovich tells us that “the player moves in the world literally step by step, discovering the narrative along the route”. This is a structure in which “the logic of the discovery is necessary”. Each enigma or puzzle presented in Myst contributes to a resolution of a part of a mystery and allows you to advance in the understanding of the game, in the narrative comprehension and even in its navigation. In this process the subject of the navigation is persuaded to dedicate itself hours in front of the game and

through the schemes accomplished inside the game, reinforces its “elementary logical structures”, according to the ideas of Piaget (1970).

Another important aspect consists in the navigation structure. *Myst* organizes itself as a universe commanded by a navigation aesthetic that proposes a freedom of movement. The user can remain as long as he/she wants in each of the various worlds and, if that is the case, for the simple pleasure of walking through it, appreciating its landscapes, or even, accomplishing an intimate contact with the local cultures of the game. The authors themselves have declared that if they have not reached the status of the game, they would be simply satisfied by producing worlds in which we could just go by. This is one of the great qualities of *Myst* (Murray, 2003), the free navigation around digital worlds that the metaverse of *Myst* unleashes.

Along with an aesthetic of free navigation, we have an extremely generous and detailed exploration economy of the environment. This type of economy has as a result the development of the environment observation, of its details and characteristics. As a result, the analytical potential of the cybernaut is motivated inside the richness of the world’s details and its objects that were abandoned to solitude: labs, libraries, galleries, refineries and a number of equipment are put to be explored. Many of them, already interactive in the first version of the game in 1993, in which will become more and more complete, complex and functional, each time the narrative is incremented with a new episode (the various versions of the game). In this case, the technological evolution of the computers and its processing capacity are followed by the interactive resources that are made available to the cybernaut agency and the transformation of the digital universe. Thus, to define a game based on the exploration economy is to define the knowledge progression of the man.

If the game characterizes itself for being based on an exploration aesthetic and an economy of exploration of its environment and objects, that does not mean that it does not introduces, from the narrative point of view, elements that put, even in a disguised way, obstacles to the user. The situation proposed to the cybernaut, expressed by the help request of the character Athrus to release him and his wife from prison, and yet discover which of his sons was the crazy responsible for such action, it updates dynamically the problematic of the hidden opponent in which you have to deal with. The logic, the solution for the enigmas and the cybernaut behavior are the only weapons that are available. Murray (2003) relates this script structure of *Myst* with the script structure produced by Shakespeare in theatrical plays.

Finally, our synthetic analysis allows us to situate ourselves in this metaverse inside a constructive perspective. There isn’t a pre-data: the secrets and enigmas need to be found and solved so that we have the sequence of the central and tragic story. Inside this universe, in

which today works in a open narrative in the WEB (URU live), the structure of the solution of the narrative, even better, its outcome, tends to offer multiple possibilities, including different endings, all of which are linked with the interactive behavior of the user. The strong factor that boosts the constructive fundament resides in the organization of the puzzles and in the independence of its solutions, not having a linear order to their resolution, but leaving the possibility of the manifestation of various player styles.

Mathematical Logic and Interactive Puzzles

If the design structure of *Myst* organizes itself as a navigable space (Manovich, 2001) opened in the production of a *even more variable narrative* (Murray, 2003), this means that the more we advance in the various versions of *Myst*, the more we find the progressive construction of a *discovery logic* (Tonéis & Petry, 2008) that assumes *Wagnerians* proportions. At one point we have here emergent phenomenon that become more and more evident if we are to be taken to suppose that they organize themselves from a fundamental structure of this world, we can say here, the metaverse that can be designed as the *aesthetic experience of metaverses*. At another point, this theme of *aesthetic experience* constitutes in a conceptual work object in the phenomenology (Gadamer, 1999; Petry, 2003; Tonéis & Petry, 2008). In this case the secret passion between the *aesthetic* and organization of *interactive puzzles* founded in the mathematical logic constitutes in one of the fundamental metaverse elements, such as our model example here, *Myst*. It is in this aspect that we think that the modern science game, not only allows the technical digital world but also reserves many surprises to the man. Regarding navigable and interactive adventures that we can allow in the numberless metaverses, they can open the possibility of challenges in which both the logical and mathematical reasoning can be inextricably connected.

In Tonéis & Petry (2008), the central theme of the analysis is taken inside the question of the aesthetic experience, identified as the first form of constitution and reckoning of the living world. We have learnt with the hermeneutics phenomenology that each and every experience must be taken as an encounter: like a happening that touches us and invites us to discoveries. The personal experience is born from a reflexive process, when something happens to us, touches us, passes by us resulting in a transformation, because we understand that the reflexive act has a transformer character, and consequently, the actions to be followed. A cognitive discovery, a solution to a problem that has taken all of our attention, tends to generalize to our whole life the impact of its solution: therefore, the entire discovery matters in a reflective experience. Inside it we can observe that the

importance of the significance of the objects by the individual is in considering that without this last one the process of the knowledge construction, in its wider conception, will be harmed. It will be in this sense that the *doing math* demands the emergency of investigating each Argonaut that really enters the means of the metaverse, or else, the process of developing and experience a group of characteristic processes of the math activity itself. The math activity is defined as a resolution of problems. In the usage of the digital universe, in the navigable space, in a metaverse, for example, we can invite the Argonauts to participate in the immersive narratives so that those story protagonists wish to proceed in their script overcoming challenges – puzzles – and in this way developing, in several levels, an ontological math, before calculation and algebra. It will be in this sense that this ontological opening in math or even in logic will be in the origin of the problem resolution, in reflective process application and action, etc... Such dynamism is, unquestionably, offered by *Myst* to its visitors.

It will be in these aspects that *Myst* is more than a dense and sophisticated game. When you understand the meaning that a game contains, the player has the responsibility to discover and take advantage of the several logical possibilities hidden in it. Development possibilities, mathematical logic reasoning that are capable to project its experience beyond mere leisure and/or pleasure.

While the Argonaut explores the spaces offered in the landscapes and environments of the metaverse, inside its alternate universe, it will be living unique experiences that will be able to be converted in the future in high level logic-mathematical structures. The experiences in the metaverse help the structuring of the capacity of problem solving. It is like this that, when developing a method to “escape the problem”, to overcome this barrier or any other, that constitutes, progressively, in the way of acting positively in the construction of a mathematical reasoning, of a discovery logic (in which can have structural incidents in practical life).

Dominating the extension of verbal concepts and perceptive groups, restructuring itself logically, so, *coming from its own experiences*, actions and operations, the metaverse proposes its traveler an activity that establishes itself as a context of an autonomous activity, place in which it is demanded to discover itself (by the initiative of its actions) the relations and the notions of a complex network of meanings that constitutes its plot on the narrative, recreating them. When they are recreated, it is produced a new and personal knowledge! This is now founded in its own experiences, in the interaction with the environment, private and public – in the community. To know the real is also to configure it and to be able to reconfigure it.

As such, this means that, in other words, *to mean the real preserving the richness of the senses in the real*. Like

Merleau-Ponty (2006) used to say, the senses relate themselves before the language. The representation is born in the necessity of understanding this real. At the same time, not only in the mathematical symbolism, but also in the logical abstraction can be understood as the delicate fruits of an adaptation process (Piaget 1970) – *assimilation* and *accommodation* – arising from singular experiences of a subject of experience (aesthetic).

It will be on this line of thought that the computer game studies and its applications have been object of systematic investigation inside this area of cultural and scientific examination. In this aspect, among many authors that currently have dedicated themselves to this new region of human thought and life, we remember here of the contributions of Mayer (1996), Miles (1999), Manovich (2001) and Murray (2003), among many others. It is like this that, by analyzing the game *Myst*, Miles proposes to discuss questions that are more general regarding the expressive possibilities of the multimedia environment. The present references in *Myst* include artistic works or traditions as diverse and rich as the *Odyssey* by Homer, the *gothic romance*, the *painting tradition*, the *filmic surrealism*, besides the, clearly, *interactive fiction* derivative from Borges. To Miles, *Myst* represents the beginning of a new form of art – that synthesizes different means in new combinations – and, what is equally important, recovers and reinvents different ancient art forms that for long have been claimed obsolete” (1999:309). This relation of recovery and rescue constitutes to Miles the most important research object.

It is on this sense that *Myst* opens a new paradigm of interface man/computer (Mayer, 1996). The conceptual hyper-realist proposal and the image refinery, the tridimensional effects, the textures and the perspectives of the scenery contribute to an intense immersive experience.

But it will be in the introduction and the emphasis given in the solution of the enigmas (*puzzles*) that will transform the metaverse of *Myst* into something absolutely differentiated and putting it, as an experience that simulates the difficulties and progresses that the individual faces in its representations of the real world. And Murray (2003) reminds us that the “solution of the puzzles usually depends on subtle sound clues, rising the attention of the player to the meticulous sound project”. The complete *Myst* project conspires to produce an essential connection between its visitor and the presented virtual world. When entering this *holodeck* the Argonaut converts himself in another element in the big puzzle that *Myst* is. Its first mission is to discover what to do and where to go. The clues will lead him to the discovery, in the virtual world, of its own potentialities in the resolution of problems and constructions of methodologies. The geometrical comprehensions of the spaces as well as the mental maps built while exploring are evidences of the creative potential existing in this parallel universe, *Myst*.

In the resolution of a puzzle we find an experience, and opportunity, a tool to logical organization of events and actions. Such organization can occur almost unconsciously, when it is about developed cognitive processes, due to the ease and familiarity with the world of Myst obtained by each visitor. What we expect at this point of our reflection is the comprehension of the mathematical experience in the resolution of a puzzle as being an attempt to formalize concept and actions taken during such resolution and so consciously understanding some concepts that are supporting such resolution.

As so in a comprehensive approach, we can say that here between a game the so called *conscious takeover* (Piaget, 1977), in which it focus on the action process that transforms an *scheme* into a *concept*, or else, going from the behavior of the resolution of the puzzle, to arrive at stages of generalization that get wider and more universal. Maybe that is the aspect to be initiated with the undefined practice to reach the *episthème* that the activity of solving puzzles can be compared to a *maïeutica socrática* that, by means of investigation, the person will find the answers to the question that has been formulated and like this it will be reckoned the methods involved in its investigation. From the arguments presented, we cannot fail to glimpse in Myst new possibilities that emerge from the immersion in the virtual world, in the constriction of the abstractions and mathematical concepts that are present in the digital universe, and so, transport them to the mathematical language and a possible formalization or conceptualization: elements that can habituate the aesthetic experience inside the metaverses.

The context of the puzzles inside the metaverse experience in Myst online: URU

With the growing development of software and hardware in a way of always overcoming its predecessors, in processing speed, space for data storage, the digital universe became fundamental part of our living world. It is almost impossible to designate how much we denominate in the virtual world to different people constituting in absolutely live experiences. We are connected beings; we keep in touch with the real time with the help of a virtual world, instant messages, chats, forums, etc. It will be in this path that Petry (2009) looks to present the emergency of the metaverse, from ontological elements, in which enable the structure of ubiquitous aesthetic-digital experience. From that point, “in an expansion of the concept of hypermedia by Manovich (2001), the metaverse can be thought as a collocation in a piece of the Wagnerian concept of *Total Opera*, with the difference that its characters identify with their audience.” In this metacontext, the evolution and transformation suffered by the interface concept, at the metaverse we are taken to consider it as *digital life forms* (Petry 2009:1). From that

perspective, the digital universe can be thought in one continuous line with the daily life, like an extension or prolongation or, in a word, a metaverse. In fact, the continuous transformation that enables this process in the interior of digital life is one of the main denotative that there is “life in the digital universe” and that we can refer ourselves in the metaverses as new ways of man/machine interface.

The importance of an ontological look over the objects that conduct a more refined attention to the world that constitutes the metaverse conducts us in the direction of understanding the opening to this aesthetic experience, or else to a metaverse experience in its total, in this *world of infinite worlds* (Merleau-Ponty, 2006). This occurs in Myst, in various versions, in different levels of experience. Teletransporting evolutionally to its online version, Myst opens opportunities to the phenomenological sense of sharing with the other the experience: the “being-with”. *Being an experience with them*, communicating internally with the world, with the body and with the others (Merleau-Ponty, 2006), designates the necessity of engaging in transforming attitudes and activities, of being in movement being *with them* instead of just being next to them. Like Heraclitus would say, “everything flows, everything changes”; so occurs with the digital universe, in constant metamorphosis. With that we can say that the metaverses constitute themselves in our projections of something more fundamental, something unique, something singular, in other words, transcending the material reality to the digital representation plane, we are equally taken in Myst to face our fundamental incompleteness and, from this finding, put ourselves in the condition of being capable of accomplish our transforming experiences. To reach a differentiated link to conscious, in which reciprocity is beyond the mere exchange, the simple feedback. In the online version of the game the Argonaut has the opportunity to broaden his experiences sharing the story with other protagonists.

Online Myst, URU, is a game in the multiplayer line, a game in which the explorers, like in other types of metaverses, have the possibility of creating their own avatars, selecting its characteristics that provides them a digital presence (*Digital Anwesenheit*). When, aside with their digital partners, the Argonaut from the metaverse enters in the great restoration council D’ni. Among other adventures, we are invited to rediscover, restore and rebuild the ancient D’ni civilization and learn their story. The planned metaverse in URU live presents new surprises to the member of the Myst community. In function of the used engine characteristics and its planning for a communitarian environmental, at the real time multiuser style, the environment of URU live allows the possibility of your modification as time goes by. The Myst community analysts organize a list of characteristics of the URU live metaverse. The first consists in the fact that the

metaverse organizes itself in navigation worlds with surreal environments that encourage the exploration. In second place, the high level of gameplay, due to the fact that there aren't any rules at first, levels, maps to be memorized – only the navigation and the encounter with the community members that are inserted as data. The third element is the non-violence and the impossibility of having a user dying or being killed by another player. The fourth element is, and maybe here the most important one, the possibility of *volunteer interaction with other players*, different from the offline versions, in which solitude was the game's trademark. In fifth place, less important, we find the progressive introduction to the puzzles; to a group of them is reserved the task of supplying the necessary information to the digital inhabitants of the metaverse about the mysterious civilization D'ni; to another group of puzzles is reserved the role of inserting enigmas that must be solved so that the Argonaut deciphers the functioning of the worlds, its structures and mechanisms, enables passages to places in other Eras not yet explored. It will be at this fifth group, the puzzle group that we aim here, in which we will be questioning around its ontological constitution.

We will initially see that they are capable to be worked on by the new inhabitants of the D'ni civilization from communitarian strategies of multiplayer collaborative relation. As so, the possibility of the group solution of a problem – puzzle – opens new possibilities for discussion about problem solving shared in communities, once that in the experience we are more than one, we simple *are*. Here, inside the metaverse, the idea of the body, the unit moves to a collectivity sense, so we are. *Myst online* put us in a kind of a new *never-ending story*, with the story being continuously being renewed, with new possibilities in the story being inserted, by new members, by modifications in the environments, in new plots that are the product of collaboration – the essence of a new kind of *digital economy* that is powered with the advent of the metaverses: the online cooperation economy. It is the group of digital inhabitants that discuss and examine together the handling possibilities of the puzzles (in the following image) to give access to a superior installation tread.



It is in the *aesthetic communitarian experience* context, committed to the online puzzle resolution that emerges in the collective construction of the *D'ni* metaverse, going by the individual consideration and looking for dialogues with

others and with the digital source. By being capable of exposing its line of thought, before it used to be inner and blurred, the Argonaut finds in the metaverse the possibility of sharing its ideas and theories with its journey fellows. This team united by the same ideal, to live the story, compromises with the ending of this very same, deepening in the processes of conceptualization, enriching the logic-mathematical thought in the encounter with the puzzle solving. In the interior of the metaverse experience they are the link, the connection to overcome the obstacle and initiate the walking towards the other. These are demonstration of ontological character of logic-mathematical structures present in the metaverses. The path is not ready, is not defined, they are created by walking, rising up along our course. Paradoxically, in a multiple and cooperative way, the adventures become much more singular, as the more people are involved in the experience, the more singular this one becomes.



A brave new World of educational metaverses: the narrative and the discovery context

The enigmas of Kadish Tolesa are among the most difficult ones in URU. Not only we have to imagine how to solve them, but we should also imagine how to interpret the clues. All the evidences are in this gallery – Kadish Tolesa – the question is, then, to study the panels, make detailed notes and sketches or even to examine the possible relation between them.

Something that is always present in *Myst* is to be always prepared to return to a determined spot to look once more at some details and to revisit some strategies. Something important to bare in mind to all the enigmas of Kadish is the fact that the master Guild Kadish knew how to omit information to seem more powerful to others. Consequently, the base to solve the enigmas is to preferably discover what is missing to our point of view. Here, the ontological investigation strategy indicates that at the phenomenal observation lets the Argonauts community fill the blank spaces in the proposed narrative. If we think that the blank spaces in the narrative must be completed,

for example an X element, which will have a function of structure the sense deeply and profoundly, we can refer this narrative strategy ontologically to the developed tradition from, at least two developments: while Frege's logic teaches us that an empty space in a proposition comes to be filled by a logical object or a function to consequently obtain a sense and a denotation, on the other hand the hermeneutics phenomenology shows us that this very same process of logic meets its function of an reversed blackout that was submitted to the sealing of organization conditions of the world. In this case, it is cooperative in the making the narrative regular and unconscious by the accomplished processes that are revealed in its fundamental structures by the academic research of metaverse. It will be on this specific sense that we will introduce and discuss here the three telescopes puzzle in the Kadish metaverse. See the image representation below:



As the word telescope says in its usual sense, we have in Kadish three devices that have a double purpose: firstly to provide a proximate vision of a distant point and at the same time adjust them through concentric circles fired by buttons to align them among themselves, having as a final result of the alignment the triggering of doors with its correspondent passages. The three telescopes are close to each other. After an analysis, we turn the telescope device on and we look through an aim again. This is the first of three telescopes devices alike in Kadish, which altogether makes the puzzle reachable for our sight. Call it telescope one. The second telescope is located in a pavilion that is reached by taking the way from the connection that passes by the ascendant arch. The third telescope is situated next

to the second one at a clearing on the floor.

Each telescope has three buttons in its base and each click in a specific button rotates the device rings. Each click in one of the buttons rotates the associated parts in the telescope – rings about 1/8 of the circle circumference.

With the objective of establishing properly each circuit, you need only to push the buttons you have the correspondent configuration in one of the panels (see the image above): Telescope 1 is situated on the top of the panel, telescope 2 in the middle of the panel and telescope three in the inferior part of the panel. In case there weren't any alteration in the device configuration (telescope 1), the correct alignment is reached, pressing the left button 4 times, the central button once, the right button five times, according to the table below:

	Esquerda	Centro	Direita
Telescópio 1	4	1	5

And resulting in the configuration exemplified by the following image:



On the second telescope, look through the scope display to see three keys that control the rotation of the device. From the initial state, press the right key three times for the correct alignment of this device. You do not have to touch the other keys. The behavior structure is diagrammed in the following table:

	Left	Center	Right
Telescópio 2	0	0	3

And according to the following image:



Now being at Telescope three, look through your display. From the initial state, the proper adjustment is reached by pressing the left key three times, the central key seven

times and the right key three times, as shown in the next table:

	Left	Center	Right
Telescópio 3	3	7	3

And according to the following image:



If telescopes 1 and 2 are adjusted correctly, we can see the movement in the back when this when this third telescope is adjusted and, when we step behind the display we can see that the door in the tree ahead was opened: the three telescopes puzzle is solved.

At first we identified combinations that involved three possible movements with buttons – right, central, left – and we have also verified the Kadish Tolesa gallery, finding many clues that could be useful in the resolution, the most evident one is the drawings in the wall, once that it represents the telescopes solutions, so what is left to the visitors is to be able to translate these images by looking at the scope display, hence the drawings are not that obvious. The key to the images is in the exploration of the blank spaces of the scope. So when visualizing the image in the gallery, we should relate to the telescope, however considering only linear formations. That is the reason why we advice to make notes or draw whatever is necessary from the gallery, or else, to return there as many times as necessary. Summing up, we will have the following combinations:

	Left	Center	Right
Telescópio 1	4	1	5
Telescópio 2	0	0	3
Telescópio 3	3	7	3

The three Telescopes puzzle of Master Kadish can be

analyzed, not only in logic but also mathematically. The analysis, on the other hand, has incidences and ontological basis and, from the metaverse point of view, it allows the organization of the take over of the epistemological conscious, allowing that the knowledge acquired inside the *aesthetic-logical experience* in the metaverse, obtains more global potentials in the lives of the members of the D'ni community. Such as a preparation for a resolution to other problems inside the metaverse, and also as ostentation of the groups' own personal reflexive abilities. Even that no member of the group comes to accomplish a logical-mathematical formalization of the puzzle, the developed steps in the problem resolution takes them to the situation that Piaget (1977) designs as the *conscious take over*: to know how to do something is just like knowing how to explain something to someone else – or else, in a *wittgensteinian* language, I know how to play this game, so I understand this game.

From the table above, at the mathematical point of view, we have verified that this can be compared to a square matrix of an order of three, and with that we focus on the particularities of the mathematical structure involved in the resolution of this puzzle. The values of the table, that represent the circular movements present themselves as odd prime numbers even between 3 and 7, in other words, just the figure 4, compound number derivative from the only even prime, the number two, occurred only once. This reveals the nature of the movements in this game, the movements as being primary, movements that generate movements, like in this case, the opening of the door, as action and reaction.

Elements of the Fibonacci sequence are also revealed as present in the table (1, 1, 2, 3, 5, 8, 13,...) what values even more the question of natural movement. Another relation that becomes the focus of our observation is the sum of the lines and columns of this table, because adding lines and columns, in the intersection we will have the same value, 26, which is composed by 13 multiplied by 2, in other words, two prime numbers between themselves.

The mathematical characterization of a puzzle is not only about the number conversion of the events, but in its ontology it constitutes exactly in the thinking exercise.

It is due to these characteristics that the frontiers between mathematics and logic become tenuous. According to Russel (1960) such separation became too delicate due to the nature of the logical demonstration with the usage of algebra and algebra resolutions from the conception of initial assumptions or even deductive structures. It is on this sense that he has created between 1900 and 1905 its famous *Types Theory* that sought to handle problems coming from the sets theory. If from one side, there exist classes more than things, what results in a paradox, the logical organization of a puzzle (as referred), tends to structure the analysis and the reasoning centered in formal conditions and procedural actions. In the sayings of

Putnam (1988) the formalization does not have as a task the solution of the real problems or other things, but the task to serve as a sound instrument to enlighten the difficulties that can become clearer and operative from its systematic.

In this sense we can understand each button that works as logical positions (0 or 1) and so we would have a new binary table of the three telescopes situation.

The topological alignment of the three telescopes results in the opening of the door, the missing on this puzzle, can be compared to the interdimensional portal in Stargate. Here we have the dialogue between the Web's digital metaverses with the filming metaverses. If through the portals of Stargate we can reach new worlds also by metaverses, we can teletransport ourselves to new metaverses. The procedural schemes that are functioning, not only in the Kadish telescope but also in the Stargate portal are formally identical: solar rotations around a central axis determine the conjunctions (alignments) of symbols (logical positions) that determine the triggering of unrevealed mechanisms at first.

From the metaverse experiencing point of view, the puzzle resolution implies in cognitive processes that result in comprehensive schemes. From the formal and phenomenological point of view the *understanding* precedes the *explanation* (Von Wright, 1979). Even that thematically situated in different philosophical traditions, we can observe that in the *metaverse aesthetic experience* both formal schemes can converge in a community. If the comprehension generally comes by means of a leap in the total vision of things and of the world, the relating, introducing and letting registers to the society movement is accomplished inside the explanation scheme. Our purpose in the present article sought the valorization of the aesthetic-ontological experience inside the metaverses and, by accomplishing the presentation and analysis of the URU metaverse in a modular puzzle. Our intellectual action does not have as a purpose to give the last word on the proposed theme. On the contrary, it seeks to route of questions that are situated in the range of our academic research. It occurs that, however, with the present article we could reach to demonstrate some elements of the logic-mathematical structure resident and alive in the *play the metaverse game*, having as a result the opening of a line of dialogue between new worlds and new possibilities.

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Notes:

- (1) To see, for example, the work of Cléuzio Fonseca Filho, C. (2000). *História da computação: teoria e tecnologia*. São Paulo. LTR Editora. E-Book in <<http://professores.faccat.br/assis/hcomp/hcomp.html>>.
- (2) The hypermedia concept has many definitions, since its context inside the computer science, going through the Design, and arriving at the culture and information theory. In a general aspect “les hypermédias, dans lesquels les informations ne sont pas seulement de type texte, mais également de type image, son, vidéo ou encore multimédia, ont vocation à présenter l'information. Dans les applications basées sur le Web, l'information est présentée selon une approche hypermédia, mais de plus, il est possible d'effectuer des traitements à travers l'interface Web. Dès lors, il n'est pas surprenant de constater que beaucoup de travaux de recherches sur les hypermédias ont été réalisés ou sont en cours de développement” (Hypermédias:

<<http://fr.wikipedia.org/wiki/Hypermédias>>. On the side of culture and semiotics theory, we have Santaella (2000) telling us that: “far from being just a new technique, a new mean of preexisting content transmission, the hypermedia is, in reality, a new language in pursuit of itself”.

(3) *Not free* means that those mutations are supported by a historicity that is revealing from a dialogue that crosses and trespasses a number or regions. *Not planned* points to the fact that they do not constitute in the result of a unique and monolithically program of work and research, but they could be seen previously as an phenomena in which we have the multi determination of forces that reciprocally feed themselves. As so, they are related to discussions that binds in an intense dialogue and mutual influence in the multidisciplinary areas and internal crisis, to know, in the emergent computer science (Fonseca Filho, 2000), in the plastic arts that shows themselves as digital (Domingues, 2000), in the literature that recognizes as cyberliterate (Carmona 1976; Barbosa, 1977) in the technical philosophy (Feenberg, 1999), in the cybernetic (Wiener, 1965), in the critical theory (Marcuse, 1964), in the communication (MacLuhan, 1964; Flusser, 1983), in the semiotics (Santaella, 2001; 2004), for example, in the mentalities history (Certeau, 1999 and Bairon, 2002) and in the hermeneutics philosophy (Heidegger, 1929 and Vattimo, 1985).

(4) The term digital paradigms is used by Manovich (2003) himself and it derives from its reading of science philosopher research, Thomas B. Khun, initiated in its paper Khun, T. (1978) *The structure of the scientific revolutions*. SP. Perspectiva. Wikipedia presents a very adequate definition of the concept: “The word paradigm (Greek: παράδειγμα (paradeigma), composite from para- and the verb δείκνυμι "to show", as a whole -roughly- meaning "example")”

[<http://en.wikipedia.org/wiki/Paradigm>]. From its concept formulation in the science philosophy, the term paradigm crosses today the human knowledge field, and in men's sciences, it is used by Manovich in the sense of a guiding model (of design), a type of a concept-object that stimulates and determines socio-cultural and technical developments. A study that shows the incidence of Khun's paradigm concept in human sciences and philosophy can be found in Stein, E.J. (1992). “The philosophical paradigms on the threshold of a new millennium”. Estudos Leopoldenses. Série História, v. 28, p. 47-58.

(5) Link to *Doom*. See also: David, K. (2003): *Masters of Doom: How Two Guys Created an Empire and Transformed Pop Culture*. At Wikipedia we have a very interesting description: “Doom is a computer game released in 1993 by id Software, and one of the seminal titles of the first person shooter genre. Combining 3D graphics with graphical violence, it has become as controversial as hugely popular, with a shareware version release that is estimated to be played by 15 million people. Besides defining many first person shooter game elements, *Doom* has established a sub-culture by making games popular in networks and allowing expansions created by players (WADs). The game success has influenced the games boom in the 90s up to the point that these games were sometimes called Doom clones.” The Doom franchise continued with *Doom II: Hell on Earth* (1994) and a number of patches as *Ultimate Doom* (1995), *Master Levels for Doom II* (1995), and *Final Doom* (1996). From: (<http://pt.wikipedia.org/wiki/Doom>).

(6) Nowadays, the base site for the worlds or metaverses of *Myst* is: <<http://www.mystworlds.com/us/>>. At Wikipedia we have a summary of the game: “Myst is a computer game of the adventure

genre developed by Cyan and distributed by Brøderbund in 1993.” It was originally developed by the Macintosh computers, but one year later it gained a Windows version. The game creation was directed by the Rand and Robyn Miller brothers. This game was one of the most famous among the adventure games, helping to disseminate the genre. Myst was considered a model to the game industry at the time by its attractive graphics at a time in which computer graphics resources were limited. It was between the most sold computer games during the whole 90s, encouraging the sequels productions: Riven, Exile, Revelation and End of Ages. Besides that, the game was reprinted twice in Myst Masterpiece Edition with better graphics and better sound and in Real Myst with 3D effects and other news. This game led also to book publication based on the game story, a MMORPG game called URU: Ages Beyond Myst and comic books” (<http://pt.wikipedia.org/wiki/Myst>).

(7) J.C. Herz is the author of Joystick Nation: How Videogames Ate Our Quarters, Won Our Hearts, and Rewired Our Minds (1977). Brown. Little. and of *Surfando na Internet – uma Aventura On-line* (1996). São Paulo. Domínio Público.

(8) The results of this new cultural economy politics: fifteen million copies of Doom were downloaded.

(9) Robin Miller, one of the brothers of the pair of authors of Myst, musician and writer, has published along with Rand Miller and David Wingrove, the compendium *The Myst Reader* (2004). New York. Hyperion, which contains a series of diary writing of Athrus about the Myst plot.

(10) Lorna Dannan is the nickname of an autonomous researcher of games and ciberliterature that maintains the biggest reference site about the Myst themes, the D’niHall, available at the electronic address: <http://www.dnihall.com>. The D’niHall space not only fights with a giant text-based, images and audio data bank, but it is also the basis of an international community of fans and researchers of the Myst saga.

(11) According to the legend that occurs in the international fan community, the game success wasn’t predicted by its authors. In interviews years later, they have commented that they wanted to do something in which they would really be compromised, even if it was successful or not. Precise information around the immediate success of Myst is not precise. But in any case it appears that this digital product has arrived at the right time and that the CD-Rom users were just waiting for something like this. This impression, discussed in the specialises magazines and by literature seems to be confirmed by the fact that the first game’s Christmas, in 1993, estimates that it got to 20 million dollars sale. Until today, according to information from another game student, Paulo Monteiro, the creator of the free expansion of the Myst Universe, called Ilathid (www.ilathid.com), the Myst success was eventually overcome in values, but not exceeded as a cultural phenomenon.

(12) It is at this aspect that, from Huizinga (1938), the own game conception is redirected to its fundamental aspects. According to the thinker, the game and the play constitutes themselves into absolutely primary life categories and, in this sense, as essential as reasoning – *Homo sapiens* – and the objects factoring – *Homo faber* – making it appear the denomination *Homo ludens*, in which means before any other hypothesis that the playful element that is present in the basis of the civilization appearance and development. This point of view tells us that the game is even previous of this culture and it rises from the game: “as a distinct and fundamental factor, present in everything that happens in the

world (...) it is in the game and by the game that the civilization springs up and develops” (Huizinga, 1990: preface). Game and culture constitutes in a cycle that is not possible to determine the beginning and the end.

(13) It is equally the case of Freud (1914) and Lacan (1953) studies that have identified the pre-linguistically stages in the anticipation of the human subjectivity.

(14) The Janos Biro Blog: “Jorge Luis Borges when writing, in 1941, a tale called ‘*El jardín de senderos que se bifurca*’, marked the idea of interactive fiction twenty years before the first fiction interactive work was written. (In: <http://infoblarg.blogspot.com/2008/03/fico-interativa.html>). Victor Vasarely Zettm configuring another textualization also refers to Borges, but giving emphasis at the Biblioteca de Babel tale, referring other contributions, such as, Barthes, Joyce, Landow, etc.” In:

(<http://www.unicamp.br/~hans/mh/config.html>). Interactive science fiction at Wikipedia in:

(http://en.wikipedia.org/wiki/Interactive_fiction).

(15) The real knowledge, different from opinion. The knowledge of causes that is necessarily true. A mixture of science and knowledge, by what it differs from the so called empirical sciences. A rational effort to substitute the opinion, lets, the knowledge around the quota. It is divided into praxis, technè, e theoría.

(16) It is our modest understanding that Dilthey could glimpse our days today and the metaverses that emerge at the horizon of human life, certainly would add an extra volume in its Diltheyniana, probably with the title: *Teoria do mundo digital* (2009) in complement with its *Der Aufbau der geschichtlichen Welt in den Geisteswissenschaften* (The building of the historical world in its spiritual science) (1910).

(17) Taking also, for example, at Manovich’s path (2006), this idea has constituted in an extrapolation of Wittgenstein (1994) game languages formulations ways of life. Such production context of several ways of digital lives can be found in Leão (2005), Fraga (2007) and Prado (2007), for example.

(18) According to the esD’ni portal information (from: <http://www.coolwind.ws/esdni/htmls/esuru.html>), the users that had the opportunity of navigating through the preliminary version of URU live have commented that the visual-graphic sensation is similar to waking inside a film.

(19) The Neverending Story is a cinema adaptation, of 1984, from the homonym book of Michael Ende. (Wikipedia, available at http://pt.wikipedia.org/wiki/The_Neverending_Story). Accessed in April 2nd 2009).

(20) The term Stargate refers to the American science fiction productions (of the “Space Opera” genre) that started with the motion picture Stargate, in 1994. The plot in all the productions goes around the Stargate premise, a superconductor device that allows time travel through the “subspace”. (Wikipedia, available at <http://pt.wikipedia.org/wiki/Stargate>).