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Short Communication

Futurable: Serious game to raise awareness by building futures

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Abstract

Today, educational uses of games (serious games) and gamification companies are multiplying, which are helping to extend the field of games so that "the idea of games comes to apply to realities, to situations, to behaviors in connection with which its use, until recently, would have seemed inappropriate, even absurd or scandalous'. However, all these systems are based on very diverse educational and political models, constructing their public sometimes as receivers to be trained, consumers to be convinced, workers to be hired or citizens to be mobilized. This article makes it possible to present and analyze a concrete case of mediation and awareness-raising through play, in which the playful experience is articulated with the fictional creation of anticipation in an attempt to support an open form of democratic dialogue about cities and territories' evolution regarding climate change issues. This game that was developed is analyzed through this article.

Introduction

"Serious games" are tools combining "action" and "emotion" by making the discovery of knowledge and the construction of skills attractive ("serious" aspect), through form, interactions, rules, and objectives. Games ("games" aspect) [1]. Thus, to the objective of entertainment is added a "serious" intention which can be educational, informative, communicational, commercial, ideological training [2], or even scientific popularization. "Such an association, which takes place through the implementation of an "educational scenario", which on the computer level corresponds to implementing a dressing (sound and graphic), a story, and appropriate rules, therefore aims to move away from simple entertainment. This gap seems to be indexed to the significance of the "pedagogical scenario" whose formal objectives coincide with those of the video game" (Alvarez, 2007: 428).

According to Arnaud [3], the scenarios used in the modeling and simulations of these games make it possible to make accessible to the public both the issues and the means to succeed in stopping or at least modifying the phenomena in progress. Serious games also highlight two dimensions: experience through doing and undergoing as a lever for learning, as well as the notion of the group as a support for development. For this reason, these systems allow a renewal of relationships between actors, a pluralization, and a sharing of expertise [4]. In addition, the use of games is more generally part of the diversification of foresight scripting registers and a greater use of exercises in fiction, creation, and imagination [4]. From a political point of view, serious games are indicators of planning practices and benchmarks, in the sense that they highlight agreements on the areas at stake, but also development projects that differ, through conflicts, from indications on the priorities, levers, and locks of territorial public action [5].

At a time when those elements are increasingly used for various purposes in companies, in schools, and more broadly in society, we are interested in this article in a particular example of awareness-raising by the game through the analysis of

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the Futurable territory game, which proposes to initiate its players into the making of futures and to make them produce a prospective reflection on the adaptation of the Loire Basin to the climate crisis. This work will make it possible to examine the way in which the game can represent a mode of production, appropriation, and transmission of knowledge that is not only valid but also conducive to prospective issues [3,4,6].

Futurable - game concept and development

What is the game about?: Explore common issues of sustainable cities through the prism of adaptation to climate change and ecological transition and by bringing scientific knowledge into line with territories, in order to facilitate knowledge transfer in an emergency context. The focal points revolve around a double entry focusing on territorial The Loire Estuary (Figure 1) development issues (energy, available resources, risks, land pressure, digital, civil security, health, etc.) on the one hand and economic activities, notably trade, agriculture, and tourism, on the other hand. The hypothesis which supports this work is that territory is only sustainable through the capacities of robustness in the face of disturbances and adaptation which can give it recourse in a systemic approach to different points of view in terms of strategies co-constructed around its activities.

How the game is played?: Basically, the game is based on debates led by player characters within a fictional parliament: The Parliament of the Estuary. In the first version of the game, this process is punctuated by the presence or appearance of non-player characters who can announce events, influence decisions, or just symbolize something. We explore the participants' perception of the risks linked to climate change while defining a sustainable territory and sharing technical, institutional, and civic experiences.

The central theme announced is adaptation to climate change through the adjustment of natural and human systems in response to current or future stimuli and the effects of these stimuli. The purpose of this adjustment is to reduce the negative impacts of climate change or to allow new opportunities to be exploited. The animation is done through a "narrative" built around the subjective (emergence of intrinsic value systems for each player), the alternative (construction of shared representations), and the omniscient (establishment of causes and consequences on the basis of verified information or data).

Relying on a digital interface manipulated by the game master and on a base map placed on a table around and on which the parliament is installed, the game protocol has undergone three periods that punctuated its evolution: the first year of life of the game (2018 to 2019), the Loire contextualization (2019-2021) and the future I-site phase (fall of 2021-2022). The initial target of the game was mainly elected officials who are used to operating in imaginative paradigms that prevent them from extrapolating from scientific data to societal issues. The first game sessions thus highlighted that these professions have difficulty conveying a message that is not based on data. In addition, some elected officials were put at odds during the workshops by the ideas proposed by other participants.

Game design: The issues identified quickly led us to explore several avenues of reflection in order to overcome these limitations (Figure 2). First of all, it was admitted that leaving room for investment, interpretation, and appropriation of elements related to the game for players is preferable so that they fully engage in the game. Indeed, as game theories have shown, the existence of a margin of appropriation is a necessary condition for the emergence of the game and the adoption of a playful attitude by the players: "Playing is 'appropriate for the game, that is to say, create a distance allowing interpretive freedom of the rules and results [...]' [7]; "play is the experience of a game by a player and play is a creative, appropriative

Figure 1: The Loire River Estuary

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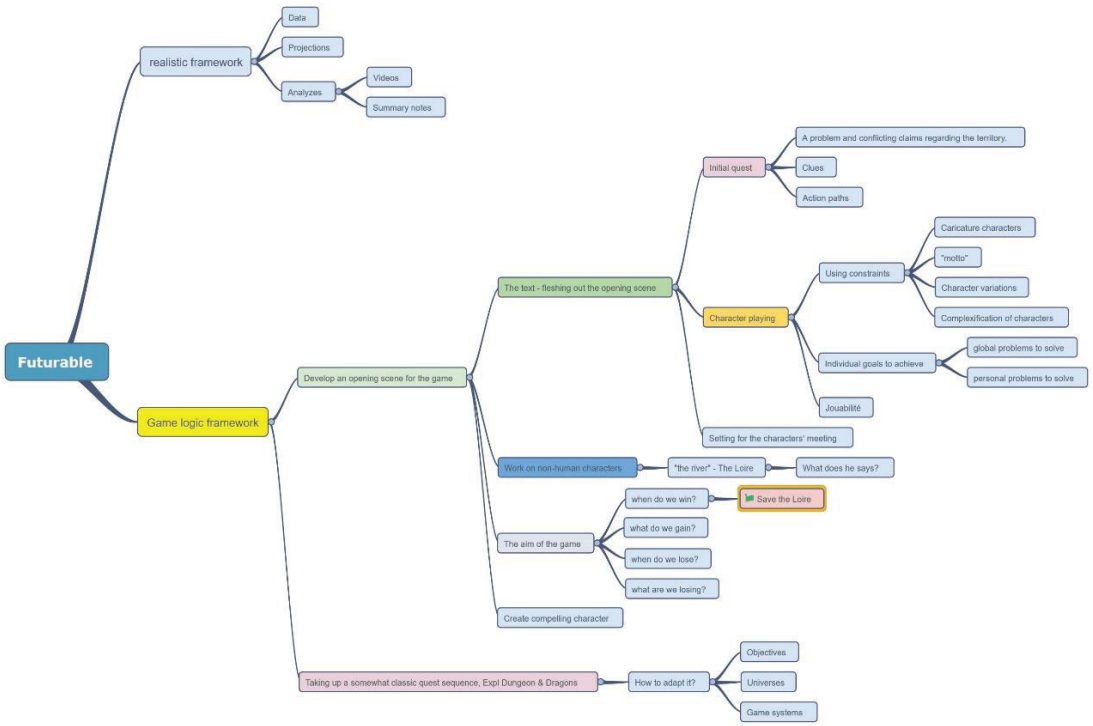

Figure 2: Mind map for improvement of Futurable within the framework of the i-Site Future project.

process of understanding and engagement in a dialectical relationship with the game system and with other players [8]. Play is appropriation, creation, expression, and, to a certain extent, submission to the rules of a game" [9]. So, starting from the hypothesis that, if the players get involved, this will push them to make many decisions we are acting on a performative factor. Furthermore, they should not hesitate to give way to all their ideas, however irrational and unrealistic they may seem because an idea that may seem impossible could subsequently be a source of inspiration for developing projects or open new perspectives. Thus, players need to feel free to express their points of view, even if they are not specialists in all the themes discussed. The fun and fictional context setup has the function of pushing them to speak.

Born from an approach based on the geography of development, graphic semiology, and the game of territory [10], Futurable aims to offer a possible and realistic vision of a future territory, by bringing together scientific knowledge, realities, and shared representations of the territory in question as a support for action. A possible vision, because it is about confronting the players with situations already seen and experienced elsewhere, and realistic, because the game offers a study of the impacts that their decisions or indecision, according to their knowledge and the levers of action at their disposal, could have on the territory. Its objective is to make players from various backgrounds think by bringing them together around a device that looks like a role-playing game that will allow them to immerse themselves in the future of the Loire estuary.

Futurable mobilizes different points of view from different actors in a logic of sharing and co-construction (with map, debates, dialogues, etc...) of a sustainable territory. It can be positioned as a facilitator making it possible to approach, discover, and understand in the short, medium, and long term, the challenges of climate change as well as the ecological and societal transitions at work in the territory [11]. This objective also implies for this game to study the play modes of the different types of participants within the framework of the prospective scenario which takes shape and reinvents itself throughout the games. They reveal planning practices and benchmarks and are likely to provide information on the different possible paths towards an alternative territorial future) [12]. Futurable explores the contributions of fiction in the sense of Schaeffer (1999), quoted by Dulguerova [13]: "shared playful pretense (consensual dimension of the production and reception of fictions)" and of the landscape in the sense of Marechal (1996): "tangible expression translating imposed [...] or even dreamed choices as well as the natural, technical, economic and social logic inspiring the developments and projects of a group or a society on its territory". These contributions feed the production of common narratives of the territory.

The Futurable framework thus aims to offer a kind of distancing of the present by three means. First, futurology, in the sense of "projecting the current state of the world into the future, that is to say guessing its evolution, distinguishing between what is already unavoidable and what can be acted on" [14], is used as a tool to get out of the current planning constraints (administrative, legal, political) and to stimulate the search for new modes of action. Secondly, simulation is used to get out of the current development model and

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experiment with an alternative territorial development model. Finally, the roles or character incarnation invites to free oneself from the professional constraints of the actors and to stimulate the search for new systems of interests. According to Loinger [15], the study of another possible territorial future constitutes a means of clarifying the planning and priorities of public action. Thus, this framework can also be considered as an instrument for reflection, scripting, and evaluation of urban models - revisiting known urban models, as well as a tool for inventing (and testing by the model) new scripts: urban density and the associated urban forms (compact city, linear city, polycentric city, garden city, etc.), mobility issues, mix of city services and functions (functional urbanism versus functional mix). It is also about summoning the prospective as a procedural benefit as said by Vanderliden (2014). The value is more in what the fact of having projected has created as a shift in itself than in the results of this perspective. This is why Futurable can be considered a game of awareness. Resilience awareness. Resilience is the ability to live with uncertainty.

Furthermore, the adventures and disasters mastered by the game master are dramatic events, because they push for action, it was a question of thinking about a more effective way to punctuate them and thus simplify the role of the game master while by allowing him to deepen other phases or aspects of the game. From there, it is a question of leaving margins for investment, interpretation, and appropriation while not omitting the sensitive, the irrational, and the subjective. It also means thinking in terms of emotional attachment to places and characters while considering the body that plays and the situated and localized nature of the knowledge that the players must transmit to each other. These proposals also concerned the question of scale in terms of changing the level of difficulty of the game, and the simplification of the game universe. Priorities were placed on the following four aspects: the definition of an objective for the game and for the players; modification of the sectorization of the game; testing a game with a map that is not that of the estuary (but with similar constraints) and the creation of a system to simplify the role of the game master.

The realization of this priority began with in-depth work on the issue cards by transforming them into job descriptions. It was possible to create several job descriptions from a single-issue card. The themes covered on a single card are often plural while being focused on the same area, which facilitates links between professions and forces players to interact, because their personal objectives are related, in addition to the objective of the part. Specialized sheets, called "expert" sheets, have been added to the job sheets. These serve as role cards (without giving too many prerequisites in order to avoid locking the players into roles in which they do not recognize themselves at all, which would limit the handling of the character). They are distributed randomly at the start of the game (after selection by the game master according to the theme of the game). The cards not distributed to the players will fulfill the role of specialists to whom the players can call two or three times during the game (during the debate phases). The introduction of adventure cards through a redefinition of the rules for access to card funds makes it possible to trigger a bonus or penalty for players. They were intended to serve as a means of limited access (in a number of requests) to additional information.

These rules are also presented to players at the start of the game. They are now formulated in such a way as to give players more room to maneuver in their decisions while highlighting a central theme that the game will deal with. For example, "Your actions must comply with the principle of Zero Net Artificialization" or "You cannot exploit resources that are not on your territory. But you can always negotiate with your neighboring territories", "Proposals which do not appear on the map are considered as null". In order to allow a synchronic and playful approach to the issues while offering an imagined vision of them, an illustration mission is each time entrusted to one or more scientific illustrators (and this since the creation of the game): these produce a "life drawing" (Figure 3), translating the characters as well as the workshop discussions into images. The illustrations provide a counterpoint to the plan view characteristic of the information transmitted by the maps, opting for a sensitive approach specific to the landscape.

Finally, a dimension of uncertainty was added through the roll of the dice, to determine how the decisions taken at the end of the debates are received by the population. The higher the score displayed by the die, the more likely the parliament is to be re-elected. Figure 4 summarizes the progress of a game.

Discussion

The game hypothesis starts from the postulate that fiction and landscape are prisms that lead to reading and analyzing the "territorial system" by producing exchanges and confrontations between its actors. Indeed, this territory is both a lived space where a network of relationships is woven and a formed space, supported by non-human entities (the river, biodiversity, the atmosphere, the soil, etc.). The latter are invested in scientific tools that attempt to give them a language that would be intelligible to us. How then to produce dialogues between these different entities and try to no longer oppose these two realities? This work pursues a path of role-playing, to give rise to an interspecies parliament in line with the work of B. Latour (2015) and the hearings of the Loire Parliament conducted by the Pôle des Arts Urbains (Tours City), collaborator of the Nantes Futurable Association.

Futurable proves that serious games can enable actors to understand the logistical and technical challenges linked to citizens' behavior [3]. They can be used as a laboratory supporting the design of alternative territory projects, insofar as it makes it possible to create favorable conditions for the actors to be able to extract themselves from the mechanics of thought of the present. This is also supposed to help rethink the current interest systems - for example, centers of attraction through real estate rent, fishing ports, large processing centers, and factory facilities - which govern the relationships between actors [12].

In a favorable socio-political context in demand for operational, flexible, and inclusive solutions, Futurable

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Figure 3: Live drawing result (Source: Futurable team).

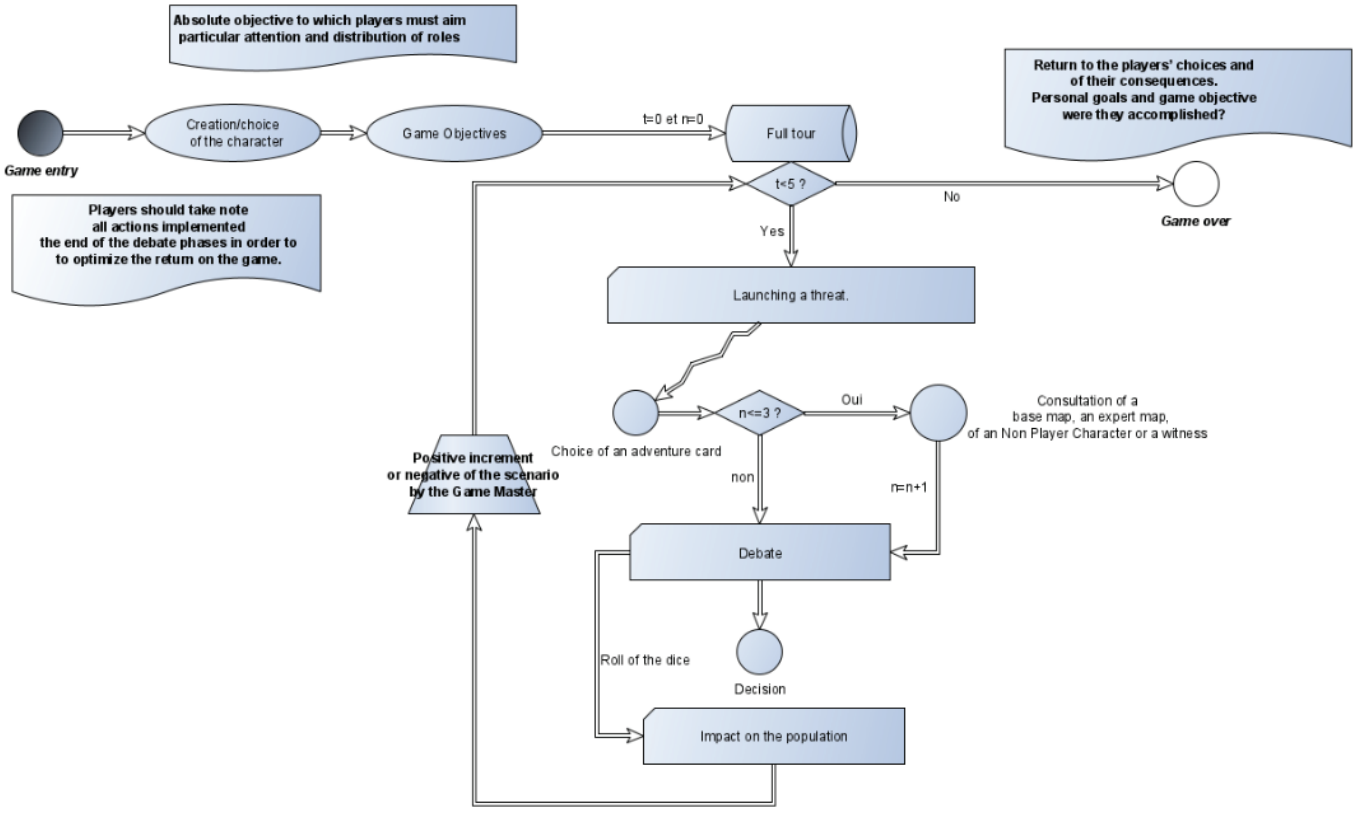

Figure 4: The different phases of the i-Site version of the Futurable system (t: number of complete tours; n: number of consultations of base maps or expert maps).

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appears as a creator of links. One of those links' pillars on which Futurable is based is transversality, internal and external. Transversality in the orchestration of the actors: the elected official and the citizen dialogue, thus guaranteeing the framework in which the energies can be deployed in a sustainable way. The idea is, therefore, to shed scientific light on the new collaborative forms between actors and operators: cooperate so that the subjects of resilience are shared by all elected officials, and not "entrusted" to an elected official in transition, isolated from other subjects. By training an isolated elected official on systemic risks, we create frustration and at the same time a gap with other members of the community. By training both the citizens and the leaders of the municipality, a common culture conducive to action is allowed to take hold: there is no longer any question of being on the defensive within the team itself.

One other characteristic of Futurable is to be transversal in its themes from the outside (energy, food, attractiveness, landscape, democracy, etc.). This premise aims to allow the deployment of this framework in a diversity of municipalities, interested in different themes while taking care not to add one more device to the tools already at their disposal and by guaranteeing the replicability of the device.

A gateway to this work is to understand it as an "involving" activity, which would bring together elected officials and citizens on a subject. This work also defends the belief that user expertise has more value. It aims to help local actors build their own shared analysis of the situation: it is as relevant as external expertise and, above all, the actors will have strengthened their capacity for cooperation along the way. Finally, we are particularly interested in the territorialization of the solutions proposed: what will be the governance models deployed in the implementation of development projects in the territories? How do serious games in their dimension of mediation make it possible to propose a more shared, decentralized, and cross-sectoral approach to the making of policies? If so, what are the effects and challenges of these developments within the groups they represent, and in the relationships between the actors? How will the solutions identified be managed locally and what are the values associated with managers and inhabitants? The answers to these questions are deduced from the game protocol.

In the case of the Nantes Futurable game, awareness is a continuous process that occurs throughout the game, in the form of testimonials provided by non-player characters, information present on the character cards, thematic base maps, which can be consulted on a request from the players. It is on this principle of experience and participation that this system works. Indeed, some games are organized with officials of the Loire estuary territory who are sometimes more "knowledgeable" about the subjects covered by the game than the game itself: the challenge is therefore not to provide knowledge to this kind of public but to allow them to consider what they know from a new angle. In order to achieve this objective, several methods ranging from debate to situational scenarios and the possibility of soliciting non-player characters are used. More than raising awareness Futurable tries to provide its players with a tool to learn to understand their territory and to participate in the debate relating to its past, its present, and its future. He tries to give them the legitimacy to do so. In this, the game is close to the orientations of popular education.

Conclusion

Futurable is an experience that is offered to players rather than simple knowledge transmission. This experience aims to make them sensible and attentive to issues relating to the territory of the Loire estuary. The support of serious games is subject to debate, whether because of the opposition between the notions of "games" and "seriousness", as explained by Vincent Berry [16], or by the impossibility of evaluating whether this format may or may not be truly effective in raising player awareness, as Michel Lavigne [17] noted during his studies. However, he notes that the use of serious games for awareness raising obtains very variable results depending on the game configuration, its subject, and its players and that therefore not everything in this format should be rejected.

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