

Cancer on the Holodeck: Metaphors and Cultural Construction of a Disease through Digital Games

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ABSTRACT:

A study from the OECD published that Cancer is one of the main causes of mortality in developed societies, with remarkably high prevalence, incidence and mortality rates for both sexes. This study closely examines nine digital games to elucidate how they conceptualize a disease like cancer around a narrative concerning the sickness, patients, treatments and outcomes. Discourse and content analysis techniques were applied to the message contained in the games looking to illuminate the connection between the narrative core, the audio-visual representation and the interactive aspects of the game, within the parameters of values-conscious design applied to digital games. This provides some evidence about the cultural and visual aspects of how game designers conceptualize the disease as a part of society. This research uncovers culturally embedded themes and reveals the prevalence of metaphor use in cancer discourse which relied on science, social support and spiritual convictions for social empowerment, building empathy and identification.

KEY WORDS:

cancer, cultural industries, digital games, serious games.

Introduction

In her well-known book *Hamlet on the Holodeck*, Janet H. Murray¹ discussed how literary universes evolve and become virtual reality environments as represented by *Star Trek*'s holodeck. This technology consisted of an empty room in which a computer simulated real-life situations and was used to train the characters of the series (following the same logic used for the X-Men in the *Danger Room*). The use of this metaphor illustrated the immersive and interactive potential of the new media for their users, who were able to interact with a fictional world without being aware of their surrounding environment. Portraying games as a narrative spatial model of interactive fiction that proposes virtual worlds is currently one of the most popular analytic approaches to digital games. This article aims to address how this approach has become crystallized in the cultural construction of one of the most tragic diseases of our time: cancer. Cancer is one of the main causes of mortality in developed societies, with remarkably high prevalence, incidence and mortality rates for both sexes.² The World Health Organisation (WHO) estimated that cancer was responsible for 8.8 million deaths in 2015. The most common causes of cancer-related death are (lung, liver, colorectal, stomach and breast) and the main risk factors include high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use and alcohol use.³

1 MURRAY, J. H.: *Hamlet en la holocubierto: El futuro de la narrativa en el ciberespacio*. Barcelona : Paidós, 1999, p. 36-37.

2 Health status. In *Health at a Glance 2017: OECD Indicators*. Paris : OECD Publishing, 2017, p. 52. [online]. [2020-06-29]. Available at: <https://doi.org/10.1787/health_glance-2017-8-en>.

3 *Cancer*. Released on 12th September 2018. [online]. [2020-06-29]. Available at: <<http://www.who.int/news-room/fact-sheets/detail/cancer>>.

The tragic nature of this disease explains its strong presence in traditional media, which usually concentrate on news, risk factors and prevention,⁴ and tend to over-represent the information.⁵ This focus on cancer is reflected in popular media such as movies, television and comics,⁶ which have offered visions adapted to their differing audiences and their respective discursive features. It has had an increased presence in popular culture in the context of new media through virtual communities,⁷ social networks, like Facebook⁸ and narratives broadcast through YouTube,⁹ for example. The involvement of the media in the social imaginary related to cancer entails a wide range of interlinked issues and approaches. A non-exhaustive overview of these covers different areas. The first addresses the dissemination of prevention strategies on two levels: primary (by promoting healthy habits), and secondary (related to early detection). These efforts have not been as successful as they could be, since cancer mortality would be reduced by 70%¹⁰ if the media role were to be optimized.¹¹

A second point of interest is the process of empowerment in the face of cancer, analysed through a broad set of strategies, notably including positive thinking fostered by family ties¹² and the use of the media.¹³ The most recurrent metaphor used by the media is the 'war against cancer'¹⁴ to represent the attitude towards the disease.¹⁵ A two-way reading of this empowerment process indicates, on one hand, the benefits of this formulation – having a good understanding of the disease and standing in one's power – and, on the other hand, its main drawbacks – excessive responsibility of the patient for the effectiveness of the treatment, frustration, undermining of preventive behaviours and a simplistic perception of the disease.¹⁶ An interest in identifying the types of relationships that emerge between the actors involved (patients, family members, health professionals, environment, etc.) has also been observed, which includes their interactions and the consequences that cancer has on the bonds created between them. This provides a social dimension that has been approached from perspectives that are as multi-faceted as the phenomenon itself.¹⁷

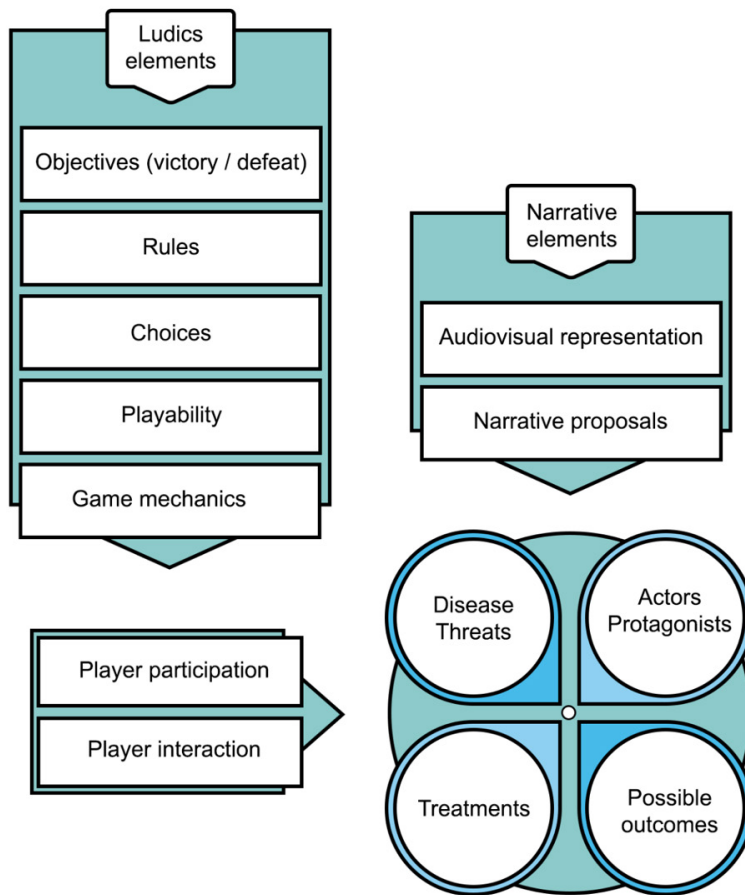
- 4 ELIOTT, J., FORSTER, A. J., McDONOUGH, J., BOWD, K., CRABB S.: An examination of Australian newspaper coverage of the link between alcohol and cancer 2005 to 2013. In *BMC Public Health*, 2018, Vol. 18, No. 47, p. 2-12. [online]. [2020-06-29]. Available at: <<https://doi.org/10.1186/s12889-017-4569-0>>.
- 5 JENSEN, J. D., MORIARTY, C. M., HURLEY, R. J., STRYKER, J. E.: Making sense of cancer news coverage trends: a comparison of three comprehensive content analyses. In *Journal of Health Communication*, 2010, Vol. 15, No. 2, p. 141.
- 6 NAVARRETE-CARDERO, L., VARGAS-IGLESIAS, J. J.: The ability of video games to depict cancer as a dramatic experience. A comparative study with literature and cinema. In *Communication & Society*, 2019, Vol. 32, No. 3, p. 1-2. [online]. [2020-06-29]. Available at: <<https://doi.org/10.15581/003.32.3.1-15>>.
- 7 For more information, see: WEN, K. Y., MCTAVISH, F., KREPS, G., WISE, M., GUSTAFSON, D.: From diagnosis to death: A case study of coping with breast cancer as seen through online discussion group messages. In *Journal of Computer-Mediated Communication*, 2011, Vol. 16, No. 2, p. 331-361. [online]. [2020-06-29]. Available at: <<https://doi.org/10.1111/j.1083-6101.2011.01542.x>>.
- 8 FERNÁNDEZ-GÓMEZ, E., DÍAZ-CAMPO, J.: Communication about cancer on Facebook. Organizations of Argentina, Chile, Colombia and Spain. In *Cuadernos.info*, 2016, Vol. 26, No. 1, p. 36-37.
- 9 CHOU, W-Y. S., HUNT, Y., FOLKERS, A., AUGUSTSON, E.: Cancer Survivorship in the Age of YouTube and Social Media: A Narrative Analysis. In *Journal of Medical Internet Research*, 2011, Vol. 13, No. 1, p. 2-8. [online]. [2020-06-29]. Available at: <<https://www.jmir.org/2011/1/e7/>>.
- 10 SONG, M., VOGELSTEIN, B., GIOVANNUCCI, E. L., WILLETT, W. C., TOMASETTI, C.: Cancer prevention: Molecular and epidemiologic consensus. In *Science*, 2018, Vol. 361, No. 6409, p. 1317-1318.
- 11 MAY, B.: Targeted Social Media Initiatives for Cancer Prevention in Young Adults. In *Oncology Times*, 2018, Vol. 40, No. 19, p. 18.
- 12 WILKINSON, S., KITZINGER C.: Thinking differently about thinking positive: a discursive approach to cancer patients' talk. In *Social Science & Medicine*, 2000, Vol. 50, No. 6, p. 799.
- 13 For more information, see: WAKEFIELD, M. A., LOKEN, B., HORNIK, R. C.: Use of mass media campaigns to change health behaviour. In *The Lancet*, 2010, Vol. 376, No. 9748, p. 9-15.
- 14 SONTAG, S.: *La enfermedad y sus metáforas. El sida y sus metáforas*. Barcelona : Taurus, 2003, p. 5.
- 15 WILLIAMS-CAMUS, J. T.: Metaphors of cancer in scientific popularization articles in the British press. In *Discourse Studies*, 2009, Vol. 11, No. 4, p. 492-493.
- 16 HANAHAN, D.: Rethinking the war on cancer. In *The Lancet*, 2014, Vol. 383, No. 9916, p. 559-563.; HAUSER, D. J., SCHWARZ, N.: The war on prevention: Bellicose cancer metaphors hurt (some) prevention intentions. In *Personality and Social Psychology Bulletin*, 2015, Vol. 41, No. 1, p. 75.
- 17 KLEINKE, A. M., CLASSEN, C. F.: Adolescent and Young adults with cancer: aspects of adherence – a questionnaire study. In *Adolescent Health, Medicine and Therapeutics*, 2018, Vol. 9, No. 1, p. 82.

A third approach is based on the interpretation of disease and death in contemporary societies, combined with the tragic role of this genetic disease that has involved new forms of treatment in modern medicine. This emphasizes trust in medical resources, but also the patient's own religious convictions as a way of successfully dealing with the disease, or from a palliative perspective.¹⁸ The article uses these approaches to analyse the representations of cancer through the qualitative study of one of the most important media in the 21st century: *digital games*.¹⁹ The research question, then, is what digital games have contributed to the social imaginary in connection with cancer. In other words, in the same way as other popular media have contributed to the social perception of this disease, this work tries to highlight the most popular vision conveyed by the digital games that have addressed this issue.

Method

The research material includes games with narrative elements directly linked to cancer as a disease. The sample was found by conducting searches using the keywords 'cancer' and 'video games' in the main digital game distribution platforms (Steam, Apple Store and Google Play), databases (Moby Dick, EuroGamer and Serious Games Database), and academic databases (WoS, Scopus and Google Scholar). The selection criteria were that the product description had to explicitly refer to cancer and it had to be presented as a game. Those which referred to cancer but did not address a process of symbolic construction of the disease were discarded. This was the case of the advergame *Rooftop Runner*²⁰, the questionnaire *Help Fight Breast Cancer*²¹ or crowdsourcing projects such as *Play to Cure: Genes in Space*²² and *Reverse the Odds*²³. These games did not offer a proper storytelling or metaphoric story about cancer, but a more pragmatic and basic approach like questionnaires or some kind of divulgation. The final sample consisted of nine digital games, all of which had a connection between the narrative core, the audio-visual representation and the interactive aspects of the game, within the parameters of values-conscious design stated as how "games express and embody human values. From notions of fairness to deep-seated ideas about human conditions, games provide a compelling arena where humans play out their beliefs and ideas".²⁴ The analytical model (Picture 1) is based on the digital game's contribution to the social imaginary and its cultural influence in contemporary societies,²⁵ and on different models of narrative analysis²⁶ that have been connected with cultural constructions of cancer.²⁷ The analysis, therefore, revolves around a series of key elements, namely the disease, patients, treatments and ways to combat the condition, and the outcomes that arise, and how these relate to the discursive characteristics of the digital game.

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- 18 KASTBOM, L., MILBERG, A., KARLSSON, M.: A good death from the perspective of palliative cancer patients. In *Supportive Care in Cancer*, 2017, Vol. 25, No. 3, p. 937.
 - 19 DOVEY, J., KENNEDY, H. W.: *Games Cultures: Computer Games as New Media*. Maidenhead : Open University Press, 2006, p. 84.
 - 20 MATMI: *Rooftop Runner*. [digital game]. London : Cancer Research UK, Matmi, 2009.
 - 21 SILVER DOLLAR GAMES: *Help Fight Breast Cancer*. [digital game]. Burlington : Silver Dollar Games, National Breast Cancer Foundation, Inc., 2011.
 - 22 CANCER RESEARCH UK: *Play to Cure: Genes in Space*. [digital game]. London : Cancer Research UK, 2014.
 - 23 CANCER RESEARCH UK et al.: *Reverse the Odds*. [digital game]. London : Cancer Research UK, 2014.
 - 24 FLANAGAN, M., NISSENBAUM, H.: *Values at play in digital games*. Cambridge : MIT Press, 2014, p. 3.
 - 25 MURIEL, D., CRAWFORD, G.: *Video games as culture: considering the role and importance of video games in contemporary society*. London : Routledge, 2018, p. 18-20.
 - 26 PÉREZ-LATORRE, O., OLIVA, M., BESALÚ, R.: Videogame analysis: a social-semiotic approach. In *Social Semiotics*, 2016, Vol. 27, No. 5, p. 591.
 - 27 For more information, see: STACEY, J.: *Teratologies: A Cultural Study of Cancer*. London : Routledge, 1997.



Picture 1: Analytical Model

Source: own processing

Narrative-audio-visual Approach

The narrative, aesthetic, ludic and technological approach to the games analyzed matched their evolution (2003-2018). The basic premises of each game are presented below:

- *Ben's Game*²⁸ – a child and his skateboard are miniaturized inside his own body in order to destroy cancer cells and collect the seven shields that will protect him against the side effects of chemotherapy. This idea came from the *Make-A-Wish* foundation, which made it possible for Ben Duskin, a nine-year-old child with leukemia, to collaborate with *Lucas Arts* on the design of a game based on his experience and disseminate it to hospitals in order to improve the motivation of their youngest patients.²⁹ This game does not specify its target audience, but it could be estimated that it is aimed at a young audience, about 8-9 years old, like Ben.

28 JOHNSTON, E.: *Ben's Game*. [digital game]. Phoenix : Make-A-Wish Foundation, 2004.

29 *Ben's Video Game Fights Cancer*. [online]. [2020-10-31]. Available at: <<https://northwestwishes.org/wishes/wish-stories/i-wish-to-be/ben-video-game-creator>>.

- *Re-Mission*³⁰ – the player embodies a nanobot, Roxxi, designed to fight cancer and infections at a cellular level after being introduced into the human body. The player engages in a series of missions to help adolescents with cancer to overcome the disease. This game was also used in healthcare contexts to analyse its effects on patient behaviour.³¹ This game's audience is described as 'children with cancer and for their relatives'.³²
- *Cancer Game*³³ – a graphic adventure featuring a journey through different parts of the human body (lungs, liver, stomach and intestines). Each of these organs is associated with a puzzle screen. Solving the puzzle helps to understand pernicious habits associated with this disease like tobacco, alcohol, heavily processed foods, etc. *Cancer Game*, as it is written on the website, was 'created as a game for the general public'.³⁴
- *Re-Mission 2*³⁵ – a collection of mini games with a simplified narrative premise with respect to its predecessor, in which players embody *nanobots* that fight cancer with the help of the immune system, antibiotics and chemotherapy. Same target audience as the previous game.
- *NanoDoc*³⁶ – an online strategy game developed by the Laboratory of Multiscale Regenerative Technologies to crowdsource nanomedicine. Its objective is to look for patterns that help eliminate tumours thanks to nanotechnology. *NanoDoc* ideal age groups are 'families, graduate students, adults, elementary school (6-10 years) and college'.³⁷
- *AlphaBeatCancer*³⁸ – a simple game for mobile devices aimed at a child audience in which a teddy bear faces various mini games related to cancer treatment (blood drawing, medication, nutrition, etc.). This game is PEGI3 rated.
- *That Dragon, Cancer*³⁹ – the most popular and award-winning game in the research material. A hybrid project halfway between a documentary movie and a graphic adventure developed by Ryan Green. He has a son called Joel, a 5-year-old boy affected by a strange and very aggressive type of cancer. The player participates in a tour of the family's experience in the fight against the disease through the game's twelve scenes. This game is PEGI3 rated and ESRB 'Everyone'.
- *Help Me to Cure Nadia's Cancer*⁴⁰ – the player must discover and use different treatments to cure Nadia's cancer. Each treatment proposal corresponds to a mini-game and several explanatory videos about the disease in Nadia's bloodstream. For this case, the audience is not specified. However, young people can be assumed to be the main target according to what the games proposes.
- *I, Hope*⁴¹ – a young girl named Hope sees her island home attacked by a monster called Cancer. Guided by her grandpa, she starts a quest to find the weapons and knowledge she needs to defeat the monster and restore peace to her home. This game is PEGI7 and ESRB 10+ rated.

30 REALTIME ASSOCIATES: *Re-Mission*. [digital game]. San Francisco : Hope Lab, 2006.

31 KATO, P. M., COLE, S. W., BRADLYN, A. S., POLLOCK B. H.: A video game improves behavioural outcomes in adolescents and young adults with cancer: a randomized trial. In *Pediatrics*, 2008, Vol. 122, No. 2, p. 314.

32 HOFFMANN, S., WILSON S.: The role of serious games in the iManageCancer project. In *ecancermedicalscience*, 2018, Vol.12, No. 850, p. 2-13. [online]. [2020-10-31]. Available at: <<https://doi.org/10.3332/ecancer.2018.850>>.

33 WEI, W.: *Cancer Game*. [digital game]. [2020-06-29]. Available at: <<http://veevia.com/playgame/cancergame.html>>.

34 *Cancer Game: Interactive Narratives through Explorational Storytelling*. [online]. [2020-06-29]. Available at: <http://veevia.com/project/Cancer_Game/index.html>.

35 REALTIME ASSOCIATES: *Re-Mission 2*. [digital game]. San Francisco : Hope Lab, 2013.

36 LRMT MIT: *NanoDoc*. [digital game]. [2020-06-29]. Available at: <<http://nanodoc.org/>>.

37 *NanoDoc*. [online]. [2020-10-31]. Available at: <<https://scistarter.org/nanodoc>>.

38 MUKUTU GAME STUDIO: *AlphaBeatCancer*. [digital game]. São Paulo : Mukutu Game Studio, 2016.

39 NUMINOUS GAMES: *That Dragon, Cancer*. [digital game]. Indianola : Numinous Games, 2016.

40 *Help Me to Cure Nadia's Cancer*. [digital game]. [2020-06-29]. Available at: <<https://www.xplorehealth.eu/en/media/help-me-cure-nadias-cancer>>.

41 ROY, K.: *I, Hope*. [digital game]. Irvine : GameChanger Charity, Kenny Roy, ++Good Games, 2018.

All these games share some common features. The first one is how the user experience is addressed. They are all either short games or allow players to break up game time. Therefore, they are products targeting both traditional and casual players in order to facilitate the dissemination of their discourse in a wide range of audiences. Another remarkable aspect is the genre to which these games belong, which determines their discourse and mechanics. In particular, the games that prevail are the most popular ones among young people (action and adventure), featuring high playability: *shoot 'em up*, graphic adventure games and platforms.⁴² The animated aesthetics and narrative premises are also fitting for a young audience.

Results

The representation of cancer as a threat has different degrees of abstraction, which are analysed below:

a. When cancer is shown as a single tangible threat (Picture 2) – the most simplified mode of representation – it is characterized as a monster or a grotesque being whose vile-ness is represented in its own image; it ranges from a very abstract concept of cancer, to the physical image of a monster (*I, Hope*), to concrete manifestations such as liver or lung cancer (*Cancer Game*).



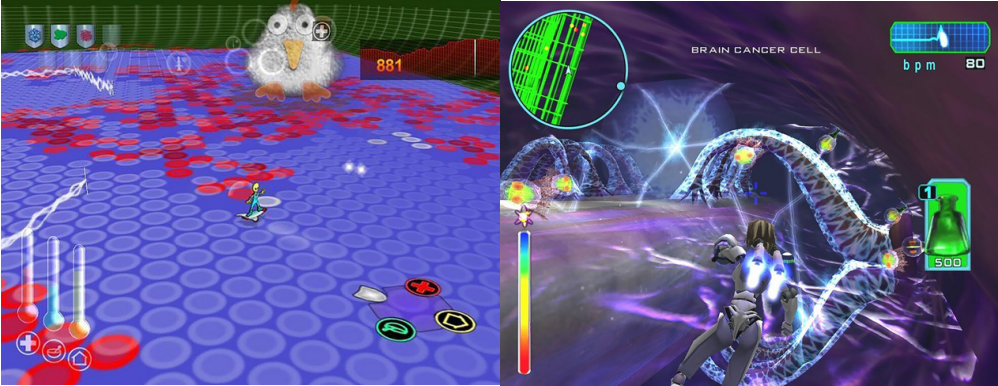
Picture 2: Cancer as a single tangible threat

Source: authors' screenshots; ROY, K.: *I, Hope*. [digital game]. Irvine : GameChanger Charity, Kenny Roy, ++Good Games, 2018.; WEI, W.: *Cancer Game*. [digital game]. [2020-06-29]. Available at: <<http://veevia.com/playgame/cancergame.html>>.

This type of construction is associated with games that do not provide specific answers about the causes of the condition or its development, but present an avoidable situation, either through healthy lifestyle habits (*Cancer Game*) or by empowering younger people faced with the disease (*I, Hope*).

42 Remark by the author: The taxonomy used is based on specific features (WOLF, M. J. P.: Genre and the video game. In RAESSENS, J., GOLDSTEIN, J. (eds.): *Handbook of computer game studies*. Cambridge : MIT Press, 2005.): *shoot 'em up* (or *shooters*) are games that "involve shooting at, and often destroying, a series of opponents or objects"; graphic adventure games are "set in a world usually made up of multiple, connected rooms or screens, involving an objective" (p. 202), [...] "although completion of the objective may involve several or all of these that must be solved after several steps, for example, finding some keys and opening doors in other areas" (p. 196); and platforms are games which move "through a series of levels, by way of running, climbing, jumping, and other means of locomotion [...]" [They] also involve avoiding dropped falling objects, conflict with (or navigation around) computer-controlled characters" (p. 201).

b. Cancer as a set of tangible multiple threats (Picture 3) is associated with medical aspects of the disease. There is also an abstract representation related to some aspect of cancer or its treatment, such as in Ben's Game, where the side effects of chemotherapy (colds, vomiting, chicken pox, fever, bleeding, hair loss and rashes) take the form of the enemies to be defeated (Iceman monster, Robarf monster, Big Chicken monster, Fire monster, Vamp monster, Qball monster, and the Tornado monster).



Picture 3: Cancer as multiple threats

Source: authors' screenshots; JOHNSTON, E.: Ben's Game. [digital game]. Phoenix : Make-A-Wish Foundation, 2004.; REALTIME ASSOCIATES: Re-Mission. [digital game]. San Francisco : Hope Lab, 2006.

Re-Mission, Re-Mission 2 or Help Me to Cure Nadia's Cancer opt for a scientific representation showing both bacteria and cancer cells: leukemia, lymphomas and osteosarcoma, among others. The design choice is intended to meet the therapeutic and educational objectives of the game to help understand the nature of the disease. It presents the features of the scientific discourse associated with the disease along with the mechanisms to fight it.

c. Finally, That Dragon, Cancer articulates a relationship with the disease which is never specifically or tangibly formulated (Picture 4). Cancer itself is not specifically represented in visual terms; instead, the game depicts the effects on the Green family; the parents (Ryan and Amy) and their four children, one of whom (5-year-old Joel) suffers from a rare type of cancer that is extremely aggressive. The twelve scenes that make up the game show some aspects of the Green family's daily life with Joel's disease, interspersed with dream scenarios that reflect inner desires, thoughts and anxieties.



Picture 4: Cancer as an intangible presence

Source: authors' screenshots; NUMINOUS GAMES: That Dragon, Cancer. [digital game]. Indianola : Numinous Games, 2016.

The ambiguity of *That Dragon, Cancer*'s representation of the disease is seen in the absence of specific objectives or the requirement to 'win'. The game is conceived as being part of the Green family's testimony, and is consistent with the current representations of cancer, which avoid presenting it as a conflict. In this way, the aim of the game is not to obtain optimal results; rather, the interest lies in establishing a connection with Joel's family, in line with his father's statement: "so much of life is not about knowing the answers, but to walk next to others without knowing them".⁴³

The ideas outlined above allow concluding with the reflection and the persistence of the symbolic construction of cancer as a scourge regardless of their representation formula; "it was, metaphorically, the barbarian within".⁴⁴ A fact that is reflected in both the way the personalization of cancer determines the rest of the elements in the discourse – ways of dealing with the condition, outcome, etc. – and the ability to specify its effects.

Us on the Screen: Players, Spectators and Patients

Most of the digital games feature some figures that are related to emblematic characters from other digital games. These include Roxxi (Re-Mission), who is a young *nano*bot that enters the blood plasma to fight the disease and resembles Lara Croft, the protagonist of the well-known saga *Tomb Raider*⁴⁵; the 'teddy bear' aesthetic of Alpha (AlphaBeatCancer); Hope (I, Hope), a warrior teenager reminiscent of Link, the protagonist in *The Legend of Zelda*⁴⁶, one of Nintendo's most famous sagas; and, Ben, who travels on his rocket skateboard (*Ben's Game*) and is inspired by the popular sports digital game franchise *Tony Hawk's*⁴⁷. At last, robots and spaceships are the avatars used in Re-Mission 2 and Help Me to Cure Nadia's Cancer. The utilization of avatars that are easily identifiable due to their popularity in the world of digital games means that they are readily accepted by those familiar with this culture as well as by a young audience.

That Dragon, Cancer and *Cancer Game* employ a different logic. In *That Dragon, Cancer*, Joel's parents narrate the experience of those who support the patient. *Cancer Game* employs an anonymous character who travels through different organs of the human body and faces threats to its health. This is the only one game focused on prevention, in order to "present a playful way to engage people in exploring symptoms and causes",⁴⁸ in the words of its creator. The construction of protagonists is complemented by other actors who participate in the narrative. These can be categorized into three major roles: moral guides, medical authorities, and elements of the human body.

a. Hope's grandpa falls into the first category. He entrusts his granddaughter with the mission of obtaining weapons and knowledge to face the disease. It is a family member who guides the player's efforts and objectives.

43 SCHOTT, G.: *That Dragon, Cancer: Contemplating life and death in a medium that has frequently trivialized both*. In CARTER, M., GIBBS, M. R., O'DONNELL, C. (eds.): *DiGRA '17 – Proceedings of the 2017 DiGRA International Conference*. Melbourne : Digital Games Research Association, 2017, p. 8. [online]. [2020-06-29]. Available at: <http://www.digra.org/wp-content/uploads/digital-library/30_DiGRA2017_FP_Schott_Dragon_Cancer1.pdf>.

44 SONTAG, S.: *La enfermedad y sus metáforas. El sida y sus metáforas*. Barcelona : Taurus, 2003, p. 88.

45 CORE DESIGN et al.: *Tomb Raider (series)*. [digital game]. London, Tokyo : Eidos Interactive, Square Enix, 1996-2018.

46 NINTENDO et al.: *The Legend of Zelda (series)*. [digital game]. Kyoto : Nintendo, 1986-2019.

47 NEVERSOFT et al.: *Tony Hawk's (series)*. [digital game]. Santa Monica : Activision et al., 1999-2020.

48 *Cancer Game: Interactive Narratives through Explorational Storytelling*. [online]. [2020-06-29]. Available at: <http://veevia.com/project/Cancer_Game/index.html>.

b. The medical authority is represented as an honest but inflexible source of information (That Dragon, Cancer), and also as an enabler of support for the human body to eliminate cancer (Re-Mission and AlphaBeatCancer). In this case, the effect of the treatments is flagged by a behavioural message to ensure patients' compliance with their drug regimens, one of the main challenges in medicine presently.⁴⁹

c. Some games present different elements of the human body: organs, as well as components of the bloodstream, including platelets, red blood cells, etc. Their role is mainly to be cancer targets, battlefields (in the case of organs), or as sites that bear witness to the player's efforts to combat the threat.

Playing Is Winning: Mechanics and Actions

The arguments put forward by the characters are completed by the ludic elements of the game. These mechanics are associated with activities that are essential for a human being's survival and development:⁵⁰

a. The principle of harvesting mechanics resides in the collection and provision of food to ensure survival. The search for objects within the game is identified with the prevention of, or the fight against, the disease. In Ben's Game the different shields that grant protection against the side effects of chemotherapy are the target, while the protagonist of I, Hope undertakes a quest for knowledge and weapons (magic goggles, strength gauntlets, a gong for courage and horn of support) that enable her to defeat the monster that threatens her island home.

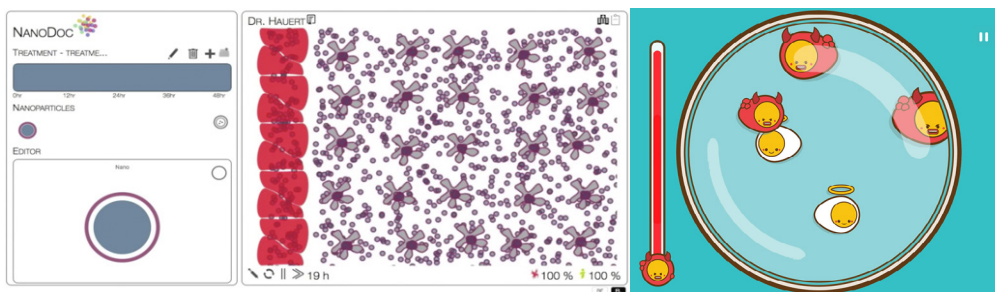
b. The capture mechanics are linked to "hunting animals and confronting enemies, eliminating them or being eliminated".⁵¹ The use of combat in the different manifestations of cancer highlights the player's struggle for survival when facing the disease. This is particularly reflected in Re-Mission, Re-Mission 2, Ben's Game and in I, Hope. The very visual construction of the tools and weapons to combat the disease uses classic elements of action games such as Roxxi's multi-purpose med blaster in Re-Mission and other generic uses.

c. The mechanics challenge the player's skill throughout the narrative (Picture 5). This is integrated into a progressive learning curve to ensure interest is maintained. These mechanics are adapted for the target audience. In this way, the skill requirements of AlphaBeatCancer involve simple mechanics that contrast with more demanding games such as I, Hope and NanoDoc (which is intended for an adult audience). Finally, the minimalism in That Dragon, Cancer is notable for the way in which it reinforces the testimonial and narrative character of this game as opposed to the other digital games discussed.

49 BLOOM, B. S.: Daily regimen and compliance with treatment: fewer daily doses and drugs with fewer side effects improve compliance. In *BMJ: British Medical Journal*, 2001, Vol. 323, No. 7314, p. 647.

50 PÉREZ-LATORRE, O.: From Chess to Starcraft. A Comparative Analysis of Traditional Games and Videogames. In *Comunicar*, 2012, Vol. 19, No. 38, p. 122-123.

51 Ibidem, p. 123.



Picture 5: Skill mechanics with increasing difficulty

Source: authors' screenshots; LRMT MIT: *NanoDoc*. [digital game]. [2020-06-29]. Available at: <<http://nanodoc.org/>>; MUKUTU GAME STUDIO: *AlphaBeatCancer*. [digital game]. São Paulo : Mukutu Game Studio, 2016.

d. Finally, configuration mechanics – typical of strategy and resource management games – are less common. For example, in *Re-Mission 2* they are reduced to minor expressions (you can only customize some weapons before each mission); however, they are predominant in the *NanoDoc* online game. This game was based on solving puzzles based on patterns (actual configurations of tumour cells) to enable users to provide solutions that would be tested later with real tumours.⁵²

That Dragon, Cancer: The Testimonial Role of Digital Games

That Dragon, Cancer offers an experimental audio-visual and interactive narrative that is well suited to its commemorative purpose. The player's action is focused on exploring the virtual environment without receiving specific indications about what to do. For example, to start with, the player controls a duck that wanders around a pond and can find some pieces of bread thrown by Joel; this allows the conversation between Joel's parents about the child's disease to be heard and the limitations that cancer imposes on his cognitive development. From that point onward, the player's identity changes in the different scenes (doctor, father, mother or a casual observer who keeps the child entertained at the hospital). This is aimed at orchestrating a number of different views about the suffering of the patient and his family that is similar to the testimonies that could be seen in a documentary. The construction of this virtual experience prioritizes the immersive and virtual recreation of speed or optimal performance during the game. Joel's father, developer of *That Dragon, Cancer*, explained this purpose in the following way: "videogames unlike any other mediums allow you to linger in spaces ... looking back at the time we spent with Joel it wasn't what he said, or it wasn't the event that we remember but those spaces between ... I think videogames allow you to rest in that space better than anything else".⁵³

52 HODSON, H.: *Gamers unleash swarms of nanoparticles on tumours*. Released on 11th September 2013. [online]. [2020-06-29]. Available at: <<https://www.newscientist.com/article/mg21929344.600-gamers-unleash-swarms-of-nanoparticles-on-tumours/>>.

53 SCHOTT, G.: *That Dragon, Cancer: Contemplating life and death in a medium that has frequently trivialized both*. In CARTER, M., GIBBS, M. R., O'DONNELL, C. (eds.): *DiGRA '17 – Proceedings of the 2017 DiGRA International Conference*. Melbourne : Digital Games Research Association, 2017, p. 6-7. [online]. [2020-06-29]. Available at: <http://www.digra.org/wp-content/uploads/digital-library/30_DiGRA2017_FP_Schott_Dragon_Cancer1.pdf>.

Finally, the documentary purpose of this digital game reflects the Christian convictions of its creators. In this sense, the game expresses a dialectic between medicine and faith as a way of managing pain and accepting dramatic situations⁵⁴. This approach is reflected in several scenes where recourse to prayer alleviates the suffering of the character and proposes an exclusive spiritual dimension. This device is used to express the ways in which disease and death are interpreted in contemporary societies.⁵⁵

Outcomes: Losing a Battle Is Not Losing the War

The construction of the conditions that determine the end of game experience—and its interpretation as a victory or defeat—contribute to the meaning of the discourse. The research material recreates classic formulations based around victory by achieving objectives (eliminating threats, completing a route or solving a series of puzzles) that are complemented by other indicators (secondary points or achievements). The gaming experience is consistent with the usual affective purposes associated with digital games: frustration and anger management, motivation, gaining perspective, empowerment and relaxation.⁵⁶ The interest in reaching these objectives explains the low level of difficulty of the games, in order to maintain the attention of children or a casual audience. In addition, games like *Re-Mission* use the device of earning advantages such as invulnerability or unlimited weaponry; while these reduce the game's challenge for a traditional player, they make it possible to enjoy the gaming experience in a much more relaxed way and make it easier for the discursive objectives to be met successfully. Victory is associated with defeating the representation of cancer by reinforcing the idea of empowerment and the logic of positive thinking intended by the creators: “by inspiring positive thinking to obtain the knowledge through the explorational storytelling, players are challenged to gain the ‘keys’ to good health within a creative narrative and reality”.⁵⁷ Clinical studies using games like *Re-Mission* have shown that they enhance players’ perception of the risks associated with the disease and are more prone to request information related to it.⁵⁸

The other side of the coin of any game is defeat due to not fully understanding its mechanisms, or to the inability of the player to meet the challenges involved. The most significant aspects of the games were that they empowered the player by minimizing the negative consequences of players’ failures; and that they relied on a virtual respect for life and death, which is markedly paradoxical in this medium, as it has trivialized both concepts.⁵⁹ There was a set of games in the sample, which includes *Cancer Game* and

54 SEREGNI, M., TONIOLO, F.: *That Dragon, Cancer: tecniche narrative del vissuto ludico*. In *Critical Hermeneutics*, 2020, Vol. 4, No.1, p. 157-158.

55 DE LA HERA CONDE-PUMPIDO, T.: The persuasive roles of digital games: The case of cancer games. In *Media and Communication*, 2018, Vol. 6, No. 2, p. 104.

56 Ibidem, p. 105-106.

57 *Cancer Game: Interactive Narratives through Explorational Storytelling*. [online]. [2020-06-29]. Available at: <http://veevia.com/project/Cancer_Game/index.html>.

58 KHALIL, G. E.: When losing means winning: The impact of conflict in a digital game on young adults’ intentions to get protected from cancer. In *Games for Health: Research, Development, and Clinical Applications*, 2012, Vol. 1, No. 4, p. 284.

59 SCHOTT, G.: *That Dragon, Cancer: Contemplating life and death in a medium that has frequently trivialized both*. In CARTER, M., GIBBS, M. R., O'DONNELL, C. (eds.): *DiGRA '17 – Proceedings of the 2017 DiGRA International Conference*. Melbourne : Digital Games Research Association, 2017, p. 4. [online]. [2020-06-29]. Available at: <http://www.digra.org/wp-content/uploads/digital-library/30_DiGRA2017_FP_Schott_Dragon_Cancer1.pdf>.

Nanodoc, in which the player cannot fail, as there are no winners or losers. The player can only move forward at different speeds, obtaining a higher or lower score. Ruling out defeat in this way creates a positive discourse.

The games that penalize the errors made by players involve an active learning process. The player is encouraged by being offered a new opportunity to achieve victory. This could be done by temporarily deactivating the *nanobot* in Re-Mission (as a mere mishap) or by using simpler resources such as the 'Try it again' option in Ben's Game and Re-Mission 2. A more euphemistic enunciation was that found in I, Hope, in which players returned to what they were doing a few seconds before the failure, proposing an alternative narrative with a laconic 'This is not how the story goes'. That Dragon, Cancer again is different from the rest of the games, due to the absence of victory and the omission of any kind of progression indicator beyond the strictly narrative aspect. The purpose of the game was to allow the player to contemplate and recognize/admit the losses and gains that the game presents,⁶⁰ reflected in the idea that: "Our journey has been characterized by hope and many small miracles, a community of faith and a set of amazing physicians. And even in the event we lose him, our desire is that our hope remains".⁶¹

Conclusions

This study on the contribution of digital games to the symbolic and social framework related to cancer is framed within the scholarly tradition that sees gaming as a cognitive strategy intended to explain and understand the world.⁶² The original question about the ability of new representation technologies, embodied in digital games, to address the construction of a cultural imaginary, still remains. These digital games provide some of the possible answers from different angles: empowerment, testimony, medicine, and the internalisation of preventive habits.⁶³ Therefore, they share the perception that this medium can offer more than entertainment in connection with significant issues such as this. This feature is confirmed in the objectives stated by the developers, the design of the digital games themselves, the involvement of institutions and their media relevance.

The creators' viewpoint reflects their conviction that digital games have considerable potential, as they capture the interest of young people, can be replayed (thus reinforcing the message conveyed), they have an immersive potential, and they involve a cooperative aspect that creates spaces of dialogue on complex aspects of cancer. Ultimately, there is an interest in obtaining and subscribing to the findings that suggest that a carefully designed digital game can have a positive impact on the health habits of young people afflicted with chronic diseases.⁶⁴ The analysis reveals some interesting insights into the types of action found in digital games to promote empowerment processes, build empathy and identification, and in general terms, the potential of digital

60 SCHOTT, G.: That Dragon, Cancer: Contemplating life and death in a medium that has frequently trivialized both. In CARTER, M., GIBBS, M. R., O'DONNELL, C. (eds.): *DiGRA '17 – Proceedings of the 2017 DiGRA International Conference*. Melbourne : Digital Games Research Association, 2017, p. 4. [online]. [2020-06-29]. Available at: <http://www.digra.org/wp-content/uploads/digital-library/30_DiGRA2017_FP_Schott_Dragon_Cancer1.pdf>.

61 GREEN, R.: *Why We're Making "That Dragon, Cancer"*. Released on 10th April 2013. [online]. [2020-06-29]. Available at: <<http://www.thatdragoncancer.com/thatdragoncancer/why-were-making-that-dragon-cancer>>.

62 FRASCA, G.: Juego, videojuegos y creación de sentido. Una introducción. In *Comunicación*, 2009, Vol. 1, No. 7, p. 43.

63 AUXIER, J. W.: That Dragon Cancer Goes to Seminary: Using a Serious Video Game in Pastoral Training. In *Christian Education Journal*, 2018, Vol. 15, No. 1, p. 112-113.

64 KATO, P. M., COLE, S. W., BRADLYN, A. S., POLLOCK B. H.: A video game improves behavioral outcomes in adolescents and young adults with cancer: a randomized trial. In *Pediatrics*, 2008, Vol. 122, No. 2, p. 314.

games in contexts not linked to mere entertainment or escapism. However, it should be borne in mind that none of the games in this sample have obtained the volume of sales achieved by the most popular ones, and the interest they have generated has come from their exceptional nature within the field, rather than from the desire to know more about the disease.

The narrative and ludic ideas in digital games advocate a vision of cancer that enables players to culturally recode the disease, regardless of whether this results from their own experience or from mediated construction. Narratives have been adapted to an epic construction of combat or riddle solving that encourages extrinsic motivation in relation to the disease or the treatments to be followed. The support of other narrative resources has to do both with their themes and with their originality to explore the documentary logic of this medium and the spiritual dimension around cancer. In short, what has emerged is the potential of digital games to encourage reflection or mediation on complex experiences. Future research will need to take into consideration how, as opposed to other media, the immersive capacity of these digital games to offer a fully detailed emotional discourse about the people affected by cancer and the circumstances they must face. This work lays the foundation for the identification of the cultural construction of cancer in the interactive entertainment of digital games through its own and particular language and standards.

The interactive capacity of digital games promotes a focus on the discourse, as it demands immediate actions and reinforces empowering interpretations, while proposing immediate and concrete solutions to the threat. By simplifying gaming objectives, rules and mechanisms, and using a positive design, a vicarious experience of growth is enabled. In addition, the cause-and-effect relationship is explored as users are identified as the main architects in their own healing. The immersive capacity of digital games reinforces this formulation and renders them as privileged media within the natural communicative ecosystem of digital natives.

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