

Contextualizing Dark Patterns with the Ludeme Theory: A New Path for Digital Game Literacy?

Bruno Dupont, Steven Malliet

Dr. Bruno Dupont

*University of Leuven
Institute for Media Studies / Meaningful Interactions Lab
Parkstraat 45 – Mailbox 3603
3000 Leuven
BELGIUM
bruno.dupont@kuleuven.be*



Bruno Dupont is a postdoctoral research manager at KU Leuven (Belgium) for the project Gam(e)(a)ble (within the Institute for Media Studies and Mintlab), focusing on the blurring distinction between gaming and gambling in youth. Besides this project, his research interests include depictions of digital games in media, intermedia phenomena, digital game literacy, and discourses about obsolescence in digital media.

Dr. Steven Malliet

*LUCA School of Arts
Department of Audiovisual Arts
Campus Genk, C-mine 5
3600 Genk
BELGIUM
steven.malliet@luca-arts.be*



Steven Malliet is a lecturer and researcher at LUCA School of Arts, campus C-mine Genk (Belgium). He is active in several artistic research projects that involve the creation of game and interaction rules. His academic research addresses the socio-psychological determinants of digital game play and the methodology of game text analysis.

ABSTRACT:

So-called dark patterns are widely discussed in game design. This phenomenon raises concerns for gaming education because numerous dark patterns trick players into real money transactions or gambling. A major obstacle to the practical assessment of the severity of a 'dark' pattern is the very definition of 'game patterns', basing solely on action-oriented structures. In order to take into account not only abstract expressions of the game system, but also the experience of the player, as well as the diverse contexts in which games are played, this article proposes to use the semiotic model of the 'ludeme'. A ludeme is a minimal element in game design consisting of a grapheme, an acousteme, and a motifeme. We begin by explaining and situating the conceptual framework of the ludeme theory, with a specific interest in its application to repetitions of the same game element over time and through different digital games. Then, the theoretical framework is applied to SimCity BuildIt and particularly to the 'dark patterns' in it. In the last part, paths for further developments of the model of ludemic analysis are discussed, with regard to its relevance for media education and digital game literacy.

KEY WORDS:

dark patterns, digital game literacy, game analysis, ludeme, ludoliteracy, SimCity.

Introduction: The Relative Darkness of Dark Patterns

"Moral relativism aside, I think 'bad' games exist",¹ claims B. Jackson in The Atlantic, while W. Audureau from Le Monde promises a "dive into UX, the art of manipulating video game players".² Thereby, both journalists introduce their readers to the concept of 'dark patterns' that you should have encountered a few times if you follow the media trends around gaming. It is indeed gaining attention as an umbrella term for a variety of game design features which should be (following the respective stances of the journalists) acknowledged, avoided, restricted, or even banned for players' safety. The designation 'dark patterns' originated in user experience design³ to refer to "instances where designers use their knowledge of human behaviour and the desires of end users to implement deceptive functionality that is not in the user's best interest".⁴ Rapidly, it became common among practitioners and journalists, before being taken up by HCI research. There are many instances of dark design in web development, such as the implementation of a deliberately complicated user interface that makes it hard on users to change their privacy

1 JACKSON, B.: *The Zynga abyss*. Released on 24th January 2012. [online]. [2021-03-08]. Available at: <<https://www.theatlantic.com/technology/archive/2012/01/the-zynga-abyss/251920/>>.

2 AUDUREAU, W. P.: *Plongée dans l'UX, l'art de manipuler les joueurs de jeu vidéo*. Released on 15th October 2019. [online]. [2021-03-08]. Available at: <https://www.lemonde.fr/pixels/article/2019/10/15/plongee-dans-l-ux-l-art-de-manipuler-les-joueurs-de-jeu-video_6015608_4408996.html>.

3 Remark by the authors: Harry Brugnell's self-claim of being the coiner of the term in 2010 with his website www.darkpatterns.org seems to hold true.

4 For more information, see: GRAY, C. M. et al.: The dark (patterns) side of UX design. In MANDRYK, R., HANCOCK, M. (eds.): *CHI '18: Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. New York: ACM, 2018, p. 1-14. [online]. [2021-03-08]. Available at: <<https://dl.acm.org/doi/pdf/10.1145/3173574.3174108>>.

settings or delete their profile. Similar techniques are now increasingly being applied in digital games, which led J. P. Zagal and his colleagues to specifically speak of 'dark game design patterns'.⁵ Their definition is easily understandable, as it mostly refines the term and translates it into game design concepts: "A dark game design pattern is a pattern used intentionally by a game creator to cause negative experiences for players which are against their best interests and likely to happen without their consent".⁶

The authors further categorize dark game design patterns in three subgroups summarizing the type of deception players are exposed to: 'temporal' dark patterns lure them into spending more time playing than expected; 'monetary' patterns tempt them to spend more money, and 'social' patterns rely on the players' will to increase their social capital.⁷ A few well-known examples⁸ of dark patterns in games make their detrimental character visible. The most discussed are loot boxes, which are in-game surprise gifts containing randomly or pseudo-randomly assigned bonuses helping to achieve an easier win or a more pleasurable game experience. Loot boxes are classified by the website DarkPatterns.games as monetary dark patterns, because users have to use real money (or in-game currencies that they buy with real ones) to acquire the loot boxes, whereby the phenomenon is akin to gambling, or even 'structurally identical'.⁹ Very common is also the 'grinding' mechanic, referring to the unavoidable repetition of simple and meaningless tasks aiming to artificially extend the play time. It is often linked to the accumulation of in-game resources, such as building material in construction games. Zagal et al. classify 'grinding' as a temporal dark pattern, although this assumption is subject to caution: As 'ground' materials have an in-game value, which sometimes is convertible into real-world currencies, they have a monetary aspect as well.

A typical social dark pattern would be the occurrence of (false) impersonation messages, for instance when a game uses the personal data of players to seduce their friends into using the game themselves, or using it more than they already do, for example, through automatically sending notifications in the name of the players to their friends. The website DarkPatterns.games additionally identifies a fourth category: 'psychological' dark patterns appeal to cognitive biases to trick players into making detrimental decisions. An example of this would be the 'illusion of control': the game system makes players think that they are improving their skills, that their ranking among other players is higher than is actually the case, or that they are close to winning whereas there is still a considerable way to go.¹⁰ Although this 'illusion of control' may relate to numerous play experiences and to effective game design features, using 'psychological' as a separate category is problematic from an epistemological point of view. It is not consistent with the three other criteria: money, time, and social status are in this view values invested in the game's economy, whereas psychology is rather the underlying reason for yielding to the developers' trick. Therefore, 'monetary', 'social' and 'temporal' dark patterns can be psychological as well – and in fact all are, at least partly, since they rely on the management of motivational factors.

5 See also: ZAGAL, J. P., BJÖRK, S., LEWIS, C.: Dark patterns in the design of games. In YANNAKAKIS, N., AARSETH, E. (eds): *Proceedings of the Foundations of Digital Games*. Chania : FDG, 2013, p. 39-46. [online]. [2021-05-23]. Available at: <https://my.eng.utah.edu/~zagal/Papers/Zagal_et_al_DarkPatterns.pdf>.

6 ZAGAL, J. P., BJÖRK, S., LEWIS, C.: Dark patterns in the design of games. In YANNAKAKIS, N., AARSETH, E. (eds): *Proceedings of the Foundations of Digital Games*. Chania : FDG, 2013, p. 40-45. [online]. [2021-05-23]. Available at: <https://my.eng.utah.edu/~zagal/Papers/Zagal_et_al_DarkPatterns.pdf>.

7 Ibidem.

8 Ibidem.

9 See also: KING, D. L. et al.: Adolescent simulated gambling via digital and social media: An emerging problem. In *Computers in Human Behavior*, 2014, Vol. 31, No. 1, p. 305-313.

10 *Psychological dark patterns*. [online]. [2021-05-17]. Available at: <<https://www.darkpattern.games/pattern/4/psychological-dark-patterns.html>>.

Albeit the case of psychological dark patterns is the most blatant (which can be the reason why, while agreeing with DarkPatterns.games on the other categories, most scholarly authors avoid mentioning this fourth distinction), it sheds light on the overall imprecision of the categorization: a pattern can belong to one or more types, depending on the analytical perspective. In fact, this is the case for most social dark patterns, which imply temporal or monetary aspects as well, an observation that brings us back to the fact that social capital, in its sociological, Bourdieusian meaning, cannot be spent in the same way as, for example, monetary possessions.¹¹ Nonetheless, this list of shortcomings in the scholarly examination of dark patterns should not obscure its much greater merit: to analytically tackle a central and urgent concern of users and to explore its high relevance for gaming ecosystems. Indeed, the phenomena described belong without any doubt to the daily experience of players of contemporary commercial digital games, because these are often based on the free-to-play model: installing the game is free of charge, but certain options must be paid for in order to make progress, which leads to diverse ways of pushing the player to spend in-game money, sometimes in a covert, thus possibly dark manner.

In spite of this, the very concept of dark patterns is put into question by numerous scholars, such as S. Deterding and his co-authors. Their different pieces of criticism can be summarized into one stance: Considering some game patterns as dark per se assumes that darkness is objective, given in advance and applicable to all players, play situations and times, and ethical frameworks.¹² At the same time, J. P. Zagal and his co-workers admit that darkness is “dependent on context”;¹³ this results at least in a vagueness of the concept, at most in an inner contradiction making the term unusable. Between the urge and significance of studying deceptive game design on the one hand and questioning the existence of dark patterns on the other hand, the need arises to elaborate a conceptualization that accounts for multiple layers of meaning creation. This paper¹⁴ aims to make a first step in this direction, by explaining the contextuality, or relativity, of dark patterns, not to suppress it from the theoretical framing, but on the contrary to exploit its potential in terms of media analysis and media education. For these purposes, we will use the conceptual tools offered by ludeme theory, and show their relevance within this context, based on a case study of *SimCity BuildIt*¹⁵, before concluding on their limitations as well as the questions they leave open for further research.

11 For more information, see: BOYER, R.: L'anthropologie économique de Pierre Bourdieu. In *Actes de recherche en sciences sociales*, 2003, Vol. 150, No. 5, p. 65-78.; Remark by the authors: This difficulty to make clear what players invest in gaming and what they hope to win through this investment is, in our opinion, one of the many reasons for thoroughly analysing individual games in the light of their constitutive economies, in the way that S. Giddings brilliantly showed.; See: GIDDINGS, S.: Accursed play: The economic imaginary of early game studies. In *Games and Culture*, 2018, Vol. 13, No. 7, p. 765-783.

12 See also: DETERDING, C. S., STENROS, J., MONTOLA, M.: Against “Dark Game Design Patterns”. In LEORKE, D. (ed.): *DiGRA'20 – Abstract Proceedings of the 2020 DiGRA International Conference*. Tampere : DIGRA, 2020, p. 1-3. [online]. [2021-05-23]. Available at: <https://eprints.whiterose.ac.uk/156460/1/DiGRA_2020_paper_189.pdf>.

13 ZAGAL, J. P., BJÖRK, S., LEWIS, C.: Dark patterns in the design of games. In YANNAKAKIS, N., AARSETH, E. (eds): *Proceedings of the Foundations of Digital Games*. Chania : FDG, 2013, p. 40-45. [online]. [2021-05-23]. Available at: <https://my.eng.utah.edu/~zagal/Papers/Zagal_et_al_DarkPatterns.pdf>.

14 Remark by the authors: Of course, the views exposed in this study only engage its authors, but we want to explicitly express our gratitude to the fellow scholars who contributed to its maturation through their stimulating remarks: Rowan Daneels, Maarten Denoo, Morgane Frères, Eva Grosemans, Pierre-Yves Houlmont, Pierre-Yves Hurel, and Alexander Vandewalle.

15 ELECTRONIC ARTS: *SimCity: BuildIt*. [digital game]. Redwood City : Electronic Arts, 2014.

‘Ludemes’ Instead of ‘Patterns’: Centering on Player Experience

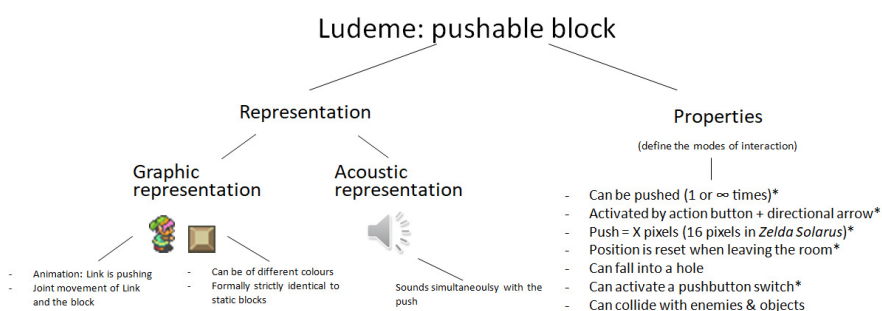
Returning to the issue of grinding, a behaviour very often linked with detrimental game use in medicine and psychology publications,¹⁶ we can note a strong discordance between these and more culturally or semiotically oriented analyses. Indeed, ludology and game theory, since J. Huizinga, have emphasized that repetition and recursion, for instance of the same mining mechanics, should be considered common, if not even ‘core features’¹⁷ of play. Moreover, some players experience grinding as a positive, entertaining game component, and N. Bojin¹⁸ even acknowledges “a subjective component to the grind”, allowing for differentiated ways of engaging with it. What seems to hold true for grinding could in fact apply to many other dark patterns. Behind the above cited critical text by Deterding et al., provocatively entitled *Against ‘dark game design patterns’*, one can read an unease with a core characteristic of game patterns (dark or not): they are abstract descriptions of segments of the underlying game system, as they focus on what action the system requires of the player (input) and what reaction it delivers as a consequence (output). This view relies on the seminal definition of digital game patterns by S. Björk and J. Hopalainen: “game design patterns are semiformal interdependent descriptions of commonly reoccurring parts of the design of a game that concern gameplay”.¹⁹ Within this conceptualisation, ‘gameplay’ has the strict, systemic meaning of “the structures of player interaction with the game system and with the other players in the game”,²⁰ which ignores the possibility that different players, in the context of the same or a different game, can attach different meanings to these structures.

In this view, a Goomba from the *Super Mario* franchise²¹ or a zombie from *The Last of Us*²² can both be considered instances of the same enemy pattern. Or, if we consider patterns of which is said that they can occur in a maliciously modified and thus ‘darkened’ form, such as harvesting,²³ cultivating fields in the *Age of Empires* series²⁴ and producing resources in *Universal Paperclips*²⁵ would fall within the same category, despite

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- 16 KING, D. L., DELFABBRO, P.: Understanding and assisting excessive players of video games: A community psychology perspective. In *Australian Community Psychologist*, 2009, Vol. 21, No. 1, p. 63-73.
 - 17 LOZANO, A.: Creative possibilities of repetition in videogame aesthetics. In *Studi di estetica*, 2018, Vol. 48, No. 18, p. 48-70. [online]. [2021-05-23]. Available at: <<http://mimesisedizioni.it/journals/index.php/studi-di-estetica/article/view/627>>.
 - 18 BOJIN, N.: *Exploring the notion of ‘Grinding’ in massively multiplayer online role playing gamer discourse: the case of Guild Wars*. [Dissertation Thesis]. Burnaby : Faculty of Communication and Technology, Simon Fraser University, 2013, p. 4-135. [online]. [2021-05-24]. Available at: <http://summit.sfu.ca/system/files/iritems1/13445/etd7871_NBojin.pdf>.
 - 19 BJÖRK, S., HOLOPAINEN, J.: *Patterns in game design*. Boston : Charles River, 2005, p. 34.
 - 20 Ibidem, p. 3.
 - 21 NINTENDO EAD, NINTENDO EPD: *Super Mario Bros (series)*. [digital game]. Kyoto : Nintendo, 1985-2021.
 - 22 NAUGHTY DOG: *The Last of Us*. [digital game]. San Mateo : Sony Computer Entertainment, 2013.
 - 23 Remark by the authors: Lewis – followed on this point by Zagal et al. – explains that harmless “harvesting” can turn into dark “interaction by demand” if the time requested to, for example, let a crop ripen, cannot be used for other actions. If so, it is then a means, often backed by out-app notifications, to make players leaving and joining the game at moments and for times decided not by themselves, but by the game system.; LEWIS, C.: *Irresistible apps: Motivational design patterns for apps, games, and web-based communities*. Berkeley : Apress, 2014, p. 109-110.
 - 24 ENSEMBLE STUDIOS et al.: *Age of Empires (series)*. [digital game]. Redmond : Xbox Game Studios, 1997-2021.
 - 25 LANTZ, F.: *Universal Paperclips*. [digital game]. New York : F. Lantz, 2017.

involving different objects, standing for different genres and making different actions possible through their results. Thus, following the authors, patterns define themselves not by directly graspable aspects, but by their 'us[e]', their 'consequences', and their 'relations'²⁶ to other patterns which they can reinforce, contradict or alter. For instance, the *Deadly Traps* pattern is described in terms of "game events that kill Avatars and Units if they are within the area of effect of the trap".²⁷ Among their defining traits, deadly traps trigger the following consequences: "[they] threaten players with Penalties of Damage or loss of Lives or Units if the players activate them. [...] Deadly Traps can cause Tension or Surprises, especially in Exploration or Reconnaissance goals. Deadly Traps can also be used to limit the Game World in an intuitive way. Deadly Traps are examples of Ultra-Powerful Events which are impossible to Evade by the players who have activated them".²⁸

Admittedly, the authors always accompany the description of such patterns with one or more examples from existing digital games, and sometimes of concrete in-game manifestations of the patterns. In the present case, they state that "typical examples of deadly traps include pits, falling blocks, lava, fire, acid, steam, machinery, crushing presses, fast-moving vehicles, and collapsing bridges, but many more are possible".²⁹ However, these examples are merely conveyed for the sake of comprehension: the patterns themselves are defined on an abstract level, which results in "general descriptions".³⁰ The – in a manner of speaking didactical – addition of examples illustrates the restrictions of the thinking in patterns itself: its abstraction makes it difficult to visualize for the non-specialist in game design, which is the case for most players. Furthermore, by focusing on (inter)action, patterns foreground the role of the mechanical component of digital games, leaving aside their other, especially audiovisual features.



Picture 1: Schematisation of a ludeme according to Hurel

Source: HUREL, P.-Y.: *Le bloc-à-pousser chez un amateur de Zelda: trajectoire d'un dépliement*. Presentation presented at LabJMV Seminar. Liège, presented on 17th December 2018.

26 BJÖRK, S., HOLOPAINEN, J.: *Patterns in game design*. Boston : Charles River, 2005, p. 38-39.
 27 Ibidem, p. 74.
 28 Ibidem, p. 75.
 29 Ibidem, p. 74.
 30 Ibidem, p. 38.

Yet when remembering particularly vivid memories of past gaming activities, especially those which they interpret as significant for their later gaming preferences, gamers seem more inclined to recall in-context features of games, such as the iconic ‘pushable blocks’ in the *Zelda*³¹ series series (Picture 1).³² In their most common form, these blocks can be pushed or pulled in either direction, allowing solving spatial puzzles. Together with this mechanical aspect, the ‘pushable block’ combines a graphic appearance, and a sound accompanying the pushing, making what it is easily recognizable by players,³³ despite minimal variations through the opuses of the *Zelda* series. This semiotic tripartition is not specific to *Zelda*, but is rather generally applicable to numerous basic elements in games.

Basing on similar premises,³⁴ D. Hansen comes up with a proposition of a digital game grammar with the *ludeme* as the ‘basic video game unit’.³⁵ His work draws on heterogeneous sources from analogue and digital game studies and mitigates diverse views on minimal design elements,³⁶ in an attempt to link together ‘being and doing, formalization and use, game and player’.³⁷ The *ludeme*, as the videoludic equivalent of F. de Saussure’s morpheme, is constituted of a “grapheme (graphic unit), a sound, or even an acousteme if one wants to continue the structuralist tradition, and of mechanical properties or mecanemes”.³⁸ Our decision to analyse dark game content in terms of *ludemes*, rather than patterns, reflects a deeper discussion on the processes of meaning creation that take place during game play. For instance, J. J. Vargas-Iglesias and L. Navarrete-Cardero³⁹ refer to the concept of a mechanic as a game’s basic textual unit, and point out that different points of view exist regarding its definition. There is, on the one hand, the position that a mechanic should predominantly be understood in terms of game rules, i.e. code that has been implemented by the game developers and that exists independently of any player activity. An example of this view can be found in R. Hunicke, M. LeBlanc and R. Zubeck’s MDA framework,⁴⁰ outlining that mechanics are essentially programmed algorithms, while the dynamics refer to the interaction of a player with these mechanics. On the other hand, there is the position popularized by M. Sicart⁴¹ that such

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- 31 NINTENDO EAD et al.: *The Legend of Zelda (series)*. [digital game]. Kyoto : Nintendo, 1986-2021.
- 32 HUREL, P.-Y.: *L'expérience de création de jeux vidéo en amateur – Travailler son goût pour l'incertitude*. [Dissertation Thesis]. Liège : Faculté des Sciences de l'Information et de la Communication, University of Liège, 2020, p. 5-287.
- 33 Ibidem, p. 179.
- 34 Remark by the authors: Practically, the redefinition of *ludemes* is based on a dialogic co-construction between D. Hansen and P.-Y. Hurel between 2018 and 2020, rather than on a seminal authorship of one author above the other.
- 35 HANSEN, D.: *Morphologie du médium vidéoludique : Le ludème envisagé comme unité minimale fonctionnelle du jeu vidéo*. [Master’s Thesis]. Liège : Département de Langues, Lettres et Traductologie, University of Liège, 2019, p. 40.
- 36 Remark by the authors: The origin of the term “*ludeme*” itself remains uncertain, as Hansen explains. Quite symptomatically, a good part of his work traces the origins of the concept and to construct a new definition. According to Parlett, the ownership of the term can be given either to A. Borvo or to P. Berloquin in the 70s. However, their use of “*ludeme*” has little in common with our own understanding of it, which is much more akin to later occurrences listed by Hansen, such as the works of B. Cousins or R. Koster (both in the 2000s). In any case, Hansen is not the first scholar to use the word ‘*ludeme*’ but his work still notably redefines it towards the in-context-use which we adopt in this article.; See PARLETT, D.: *What is a ludeme? And who really invented it?*. [online]. [2021-05-24]. Available at: <<https://www.parlettgames.uk/gamester/whatsaludeme.html>>.
- 37 HANSEN, D.: *Morphologie du médium vidéoludique : Le ludème envisagé comme unité minimale fonctionnelle du jeu vidéo*. [Master’s Thesis]. Liège : Département de Langues, Lettres et Traductologie, University of Liège, 2019, p. 41.
- 38 Ibidem, p. 51.
- 39 VARGAS-IGLESIAS, J. J., NAVARRETE-CARDERO, L.: Beyond Rules and Mechanics: A Different Approach for Ludology. In *Games and Culture*, 2020, Vol. 15, No. 6, p. 588-607.
- 40 For more information, see: HUNICKE, R., LEBLANC, M., ZUBEK, R.: MDA: A formal approach to game design and game research. In FU, D., HENKE, S., ORKIN, J. (eds.): *Proceedings of the Challenges in Games AI Workshop, Nineteenth National Conference of Artificial Intelligence*. San Jose : AAAI Press, 2004, p. 1-5. [online]. [2021-05-24]. Available at: <<http://www.cs.northwestern.edu/~hunicke/MDA.pdf>>.
- 41 SICART, M.: Defining game mechanics. In *Game Studies*, 2008, Vol. 8, No. 2. [online]. [2021-05-24]. Available at: <<http://gamestudies.org/0802/articles/sicart/>>.

a mechanic is only activated by a significant effort of a player, and as such, that player agency should be always considered an indistinguishable part of a game's building blocks. In proposing to investigate game content in terms of ludemes, rather than patterns, we indirectly align to this second position.

Our argumentation is further supported from the perspective of formal and structural semiotics on games. D. Myers⁴² asserts that, while games consist of pre-existing programmed elements such as objects or statistics, their semantic essence resides in the fact that these elements are continuously being recontextualized and repurposed through player activity. Myers points out that unintended (and often even immoral or anti-social) activities on behalf of the player should therefore not be considered side effects of a game text, but rather as belonging to its essence. Similarly, P. Lankoski and S. Björk⁴³ argue that a game text indeed consists of a number of basic atoms or components, but that the challenge of analysing game content resides in exposing the relations between these primitives. Again, this deeper understanding can only be achieved if one takes into account the interaction between a player and these building blocks. Finally, C. A. Lindley⁴⁴ refers to four formal layers that constitute a ludic world, one of which is the performative layer. Within this performative layer, the game world presents itself to the player in a way that is unique to each playing session, and the game narration never merely unfolds according to fixed plot points.

In this view, the Goombas in Mario games differ from the zombies in *The Last of Us*, and so do the office supplies in *Universal Paperclips* and the armfuls of cereals in *Age of Empires*: they are different ludemes triggering different recognition and reaction processes for the players encountering them. This perspective also supports the diversity with which comparable mechanics are perceived and experienced by individual players, for example as Bojin reports with regard to grinding in *Guild Wars*.⁴⁵ While "patterns" may be relevant for game design and game analysis, ludemes mimic the experience of players themselves, in the context where they play, and provided with their own videoludic culture.

A Lexicon of Ludemes: Variation and Evolution across Digital Games

As basic units composing a digital game, ludemes must be combined to produce larger groups, or 'sequences'.⁴⁶ These sequences themselves aggregate to constitute the complete gameplay. For such groupings to take place, the same ludeme must mostly

42 MYERS, D.: Time, Symbol transformations, and Computer Games. In *Play & Culture*, 1992, Vol. 5, No. 4, p. 442-456.

43 LANKOSKI, P., BJÖRK, S.: Formal analysis of gameplay. In LANKOSKI, P., BJÖRK, S. (eds.): *Game research methods*. Pittsburgh : ETC Press, 2015, p. 24-34. [online]. [2021-05-24]. Available at: <<https://dl.acm.org/doi/10.5555/2812774.2812779>>.

44 LINDLEY, C. A.: The semiotics of time structure in ludic space as a foundation for analysis and design. In *Game Studies*, 2005, Vol. 5, No. 1. [online]. [2021-05-24]. Available at: <<http://www.gamestudies.org/0501/lindley/>>.

45 ARENANET: *Guild Wars*. [digital game]. Seoul : NCSOFT, 2005.

46 HANSEN, D.: *Morphologie du médium vidéoludique : Le ludème envisagé comme unité minimale fonctionnelle du jeu vidéo*. [Master's Thesis]. Liège : Département de Langues, Lettres et Traductologie, University of Liège, 2019, p. 66.

be repeated. Although it is possible that a ludeme only appears once in a game, this case is rare: the abovementioned recognition and reaction processes rely in most cases on the repetition of ludemes within the same game, allowing the players to learn how to handle them quickly and efficiently. As their experience grows, players tend to become acquainted with increasingly more ludemes and to analyse them with more certainty. To stay in the linguistic vein, we can use the term 'lexicon' for the private mental collection of ludemes which a specific player 'possesses' and which, accordingly, they can call upon when confronted with a given game. This process of recalling a ludeme from their lexical repertoire enables rapid action in game environments often characterized by causal complexity and/or time scarcity. For example a former player of *Super Mario* on NES can immediately assess the danger (losing a life) of a Goomba in most of the games from the franchise and know about a means of eliminating it (by jumping on its head).

Like all semiotic elements, ludemes can be borrowed and cited by different people and works, thus players also can rely on their experience with *Zelda* blocks, if available, when solving *Pokémon*⁴⁷ puzzles involving similar elements (Picture 2, 3). They can do so because over time they have learnt how to recognize and use them, and have added them to their own lexicon. On the side of the game creators, this happens because they consciously (sometimes probably also unconsciously) took up ludemes from their own lexicon, and reused them in the work that they were creating.

Pictures 2 and 3 make clear that an 'original' ludeme being taken up by another later work rarely achieves perfect identity: mostly, there is only a resemblance between the two. To put in linguistic words again: like all languages, digital games are subject to variations or, seen diachronically, evolutions. However, ludemes can wander from game to game, genre to genre, and creator to creator, the most massive reuse of ludemes logically within digital game franchises, like the already cited *Mario*: the high level of similarity between the *Mario* titles across time and platforms is precisely what makes them *Mario* games, and makes players recognize, value, and trust them as a whole. How far the series has pushed the ludemic replication, and how well experienced players have acquired the language of *Mario*, is visible in the spin-off *Super Mario Maker*⁴⁸ (first opus in 2015). This mix of game and creation engine proposes in fact a list of functioning ludemes issued from the history of the franchise.



Picture 2: Link pushing blocks in *Tower of the Gods*

Source: *Puzzle*. [online]. [2021-03-16]. Available at: <<https://zelda.fandom.com/wiki/Puzzle>>.

47 For example: GAME FREAK: *Pokémon: Let's Go Eevee!*. [digital game]. Tokyo, Kyoto : The Pokémon Company, Nintendo, 2018.

48 NINTENDO EAD: *Super Mario Maker*. [digital game]. Kyoto : Nintendo, 2015.



Picture 3: Pushing blocks with the Strong Push Technique in *Pokémon: Let's Go Eevee*

Source: *Secret Technique*. [online]. [2021-03-16]. Available at: <https://bulbapedia.bulbagarden.net/wiki/Secret_Technique>.

Without discussing the numerous economical aspects favouring franchise dynamics in contemporary smartphone games production, one can state that an important part of the commercial Android and iOS game market consists of faithful remakes and adaptations with modernizations of iconic game series of the 90s and 2000s. These games capitalize on the nostalgia of generations of players who have grown up with titles such as *Crazy Taxi*,⁴⁹ *Age of Empires* or *The Sims*⁵⁰, but at the same time take into account the fact that these games are now part of the collective archive of digital game culture, which serves as publicity for new iterations.

Exploiting Players' Game Lexic: Dark Ludemes in *SimCity BuildIt*

In the same way, *SimCity BuildIt*, the game that we will use for our case study to examine the usefulness of a ludemes approach in the context of dark design, exports the computer-originated *SimCity* franchise on smartphones and mixes a rather straightforward reuse of most ludemes from previous titles with some added elements typical of free-to-play smartphone games. It is still a town-planning simulation, where the player builds a city and makes it grow in scale and prosperity, but now involves social features

49 HITMAKER: *Crazy Taxi*. [digital game]. Tokyo : Sega, 1999.

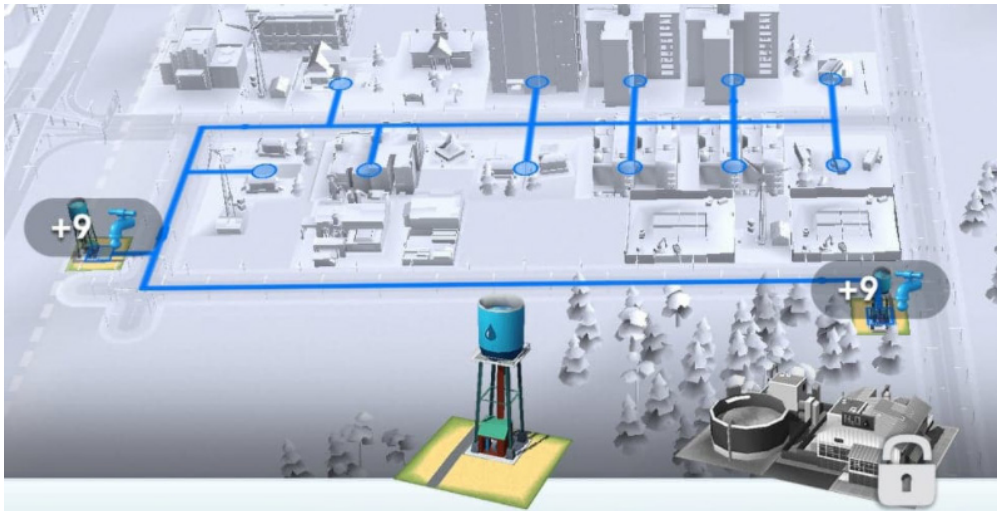
50 MAXIS: *The Sims (series)*. [digital game]. Redwood City : Electronic Arts, 2000-2021.

(such as adding Facebook friends as neighbours, which unlocks specific rewards) and in-game purchases as well. To illustrate one of the many ludemes which are common to both games, we can look at the in-game challenge of connecting areas of the city to the underground water supply network in both the computer version (here *SimCity 2013*)⁵¹ and the smartphone remake: the graphic representation is very similar, the mechanical features as well: connecting to the existing pipes and providing the surrounding area with water (Picture 4, 5). The sound produced, a gurgling sound, is very comparable too. For the players, it means that knowledge and experience accumulated in the computer versions can easily be reutilized in opuses on mobile.



Picture 4: Underground pipes in *SimCity 2013*

Source: Water. [online]. [2021-03-16]. Available at: <<http://simcity2013wiki.com/wiki/Water>>.



Picture 5: Underground pipes in *SimCity: BuildIt*

Source: authors' screenshot; ELECTRONIC ARTS: *SimCity: BuildIt*. [digital game]. Redwood City : Electronic Arts, 2014.

51 MAXIS: *SimCity*. [digital game]. Redwood City : Electronic Arts, 2013.

True to its free-to-play model, the game also contains pay features, all aiming at accelerating the pace of expanding and embellishing the city. They go together with incentives for the player to choose them. In the following, we will focus on the ludemes playing this role. BuildIt is not the first foray of the EA franchise into free-to-play, as it was preceded by *SimCity Social*,⁵² which operated between 2012 and 2013. The rather covert manner in which this more socially oriented, previous version of the smartphone game stimulates the player to spend their time and money has led some scholars⁵³ (among other non-scientific commentators) to classify it as a game with dark patterns. Although in a less extensive manner, BuildIt takes up some of these features, such as the 'artificial scarcity', creating a specious sense of urgency through temporary offers (with a countdown highlighting the upcoming deadline). But more central to the core gameplay of the game is the 'pay to skip'⁵⁴ pattern. More than the computer versions of *SimCity*, the smartphone game indeed relies on the accumulation and production of various primary and secondary resources. The wood, metal, and plastic that the player collects can be then transformed into more elaborate materials and goods such as boards or nails.

As is common in numerous digital games focusing on resource management, more complex goods require more time and more rare components to be produced. However, there is here a glaring difference in the production time of goods of the same complexity level.⁵⁵ For example, the production of wooden boards takes up to 30 minutes, as opposed to seconds for other kinds of simple artefacts needed to build houses. This obvious unbalance combines with a paying shortcut allowing boards (and other objects) to be produced instantaneously. Indeed, the resources to-be-created are transferred into a limited number of slots, where they are queued and provided with a timer indicating the time until their completion. When occupied, these slots are accompanied by a button representing a banknote, preceded by a number. Through pushing the banknote button, the player can spend the corresponding amount of SimCash to obtain the resources immediately.

SimCash is the name of the one in-game currency which has to be bought with real money. This use of such a fictive currency with real money value is in itself seen as a dark pattern called premium currency (see *DarkPatterns.games*), because it blurs the estimation of monetary value. It is important to emphasize that SimCash does not exist in the computer versions of the game, nor does any kind of premium currency. The action and consequences of buying in the Android and iOS game are complexified by the existence of another currency, the Simoleons. These are represented as golden coins, and not linked with real-life money. While SimCash gives access to the most advantageous purchases (besides the immediate completion of goods, it also allows for buying prestigious and efficient infrastructures), Simoleons are used for less decisive actions and earnings and cannot be exchanged for building materials.

If we conceive of the currencies in BuildIt as patterns, and particularly as dark patterns, their analysis ends with the previous observations. Yet, in our opinion, the ludemes approach allows for further developments, by allowing a comparison between versions on the basis of what players perceive on their screen and react to. Indeed, the picture of a banknote figuring SimCash and functioning as a link to the pay transactions page is

52 MAXIS: *SimCity Social*. [digital game]. Redwood City : Electronic Arts, 2012.

53 See also: ZAGAL, J. P., BJÖRK, S., LEWIS, C.: Dark patterns in the design of games. In YANNAKAKIS, N., AARSETH, E. (eds): *Proceedings of the Foundations of Digital Games*. Chania : FDG, 2013, p. 39-46. [online]. [2021-05-23]. Available at: <https://my.eng.utah.edu/~zagal/Papers/Zagal_et_al_DarkPatterns.pdf>.

54 Ibidem.

55 Remark by the authors: Thereby, we understand the in-game production system, that can be schematized into a laddering in complexity and requirements: first-level resources only require time to be produced, second-level artefacts require tendentially more time and the transformation of first-level resources, and so on.

actually taken up from a previous PC version of SimCity, namely *SimCity 3000*⁵⁶. Therein, it is not linked with expenses in real money, but rather part of the 'loan'-ludeme. Through clicking on it, a fictive loan can be taken out, providing new financial resources in the game. This ludeme is central to the game, as it is the fastest way to augment the player's cash provisions, especially in the beginning, when numerous expensive infrastructures have to be erected without much income. In some difficulty modes, it is even impossible to start building a city without taking out such a loan. Transferring the banknote grapheme from the loan to the Simcash ludeme means calling upon associations made by the players because of their previous experiences with the former, such as inevitability, beneficiality, or harmlessness in terms of real-world consequences.

While the reuse of the banknote is an example of citation from one work in another from the same franchise, and as such limits its effect to players familiar with the cited work, it integrates itself in a broader blurring of the line between real money and fictive transactions in *BuildIt*. What they have in common is their reliance on ludemic processes. The co-occurrence in the smartphone game of two very similar ludemes for different kinds of exchanges falls into the same category. Indeed, the Simoleon is composed of a coin grapheme, of a sound (acousteme) figuring the tinkle of falling coins, and points towards in-game earnings and expenses, while SimCash is represented by a banknote, accompanied by a slightly different metallic tinkle sound, and points towards real-world transactions (Picture 6).



Picture 6: Two very similar ludemes for different transactions in *BuildIt*

Source: authors' screenshot; ELECTRONIC ARTS: *SimCity: BuildIt*. [digital game]. Redwood City : Electronic Arts, 2014.

Other observations can be made on the complex economic system of *BuildIt* (which contrasts with the overall simplicity of the game), but those two examples already display the intertwining of ludemic processes across different versions of *SimCity* and within *BuildIt* as such. These developments show, in our opinion, two advantages of analysing potentially misleading or detrimental game design with ludemes: it acknowledges the use of already lexicalized references from the players' game culture by designers, as well as the interpretations of this design by players who recall these references for orienting themselves in a game. In the case of ludemic coherence, these assumptions made by the players help them to achieve their goals. This is what happens, for example, when knowledge about pushable blocks from *Zelda* is reused to solve puzzles in *Pokémon*. In other

56 MAXIS: *SimCity 3000*. [digital game]. Redwood City : Electronic Arts, 1999.

cases, and if no other interpretative frameworks counteract the false interpretation, ludemic contradiction leads the players to make decisions against their best interests – for instance resorting to thoughtless real-world transactions in BuildIt.

In this section, we have shown that ludemic analysis leaves room for players' prior experiences and knowledge in the interpretation of gameplay elements. Moreover, it places this interpretation in the centre of the issue of detrimental game design. Design elements can be abusive because they trigger specific and delusive expectations relating to their outcome, but these expectations can only be activated through an interpretative process. In the last part of this article, we will sketch the consequences of this view on two categories which are important for media education purposes: the players' agency and their literacy.

What Ludemes Can and Cannot Do for Media Education: Questions to Ponder

Literacy and agency are central to the emancipatory goals of media education: both as an ideal and as a teaching discipline, they strive to achieve media understanding in terms of reception and production, and promote the active behaviour of citizens when confronted with media issues. Decomposing games into ludemes rather than patterns shifts the focus from the game to the player's reading of it, which means that possibly manipulative components cannot be considered in a one-size-fits-all fashion anymore. It instead acknowledges the situated, changing, and political character of play.⁵⁷ Among other things, it implies that different players can achieve diverse levels of literacy regarding manipulative design. As this diversity traces back to the diversity of prior play experiences and personal tastes regarding digital game genres,⁵⁸ it forces us to always consider a player's (un)awareness level in relation to specific game sequences and to their own needs as a conscious agent.

If we come back to our case study, using ludemes to decompose the SimCity franchise results in making clear how some aspects of game design can become or *be made* delusive. Using graphemes and acoustemes from a version without in-game payments and transposing them into a model with transactions counteracts the reuse by players of heuristics from previous game experiences. But, in a more positive way, analysing the evolution from the 'loan' ludeme from computer versions, up to the 'transaction' ludeme in the smartphone digital game makes visible *where precisely* manipulation occurs. Educators can indeed show which design elements are modified, added or suppressed to orient players towards actions which they can reprove. Through comparing different versions of a digital game through time, or through retracing the use of similar ludemes among different games, evolutions in game design can be made visible, audible and experienceable. Crossing these analyses with insights in the changing business models within the digital game industry allows learners to grasp these models in a practical, experiential mode. We see this approach as a first step towards educating (especially young) audiences in controversial business models, such as free-to-play offers, not through rejecting them as a whole, but through decomposing their use of already existing material from the overall digital game culture.

57 APPERLEY, T.: *Gaming Rhythms: Play and Counterplay from the Situated to the Global*. Amsterdam : Institute of Network Cultures, 2010, p. 11-28.

58 ZAGAL, J. P.: *Ludoliteracy: Designing, understanding, and supporting games education*. Pittsburgh : ETC Press, 2010, p. 116.

This kind of analytical, deconstructive view helps learners to identify points of attention for themselves, and to make informed and precise choices when playing games containing possibly delusive elements. If players can operate so – and we do think that they can, if properly informed –, then it seems that not only the noun ‘patterns’ must be put into question in an educational context, but also the adjective ‘dark’. As a matter of fact, darkness can be dissipated through literacy, and is thus more a reception effect than a defining feature of the ludemes. Among the attempts to redefine the concept,⁵⁹ we want to suggest building upon A. Terp, P. Graßl, and H. Schraffenberger’s idea of ‘reflective patterns’: if these “appeal to the user’s reflexive ability”,⁶⁰ then it is possible to think of *non-reflective* patterns, formulated in a way that discourages or hinders reflexion. Thinking of non-reflexivity as an obstacle which can be analysed and surpassed, speaks for an educational approach to digital games, calling for a pedagogical view, didactical methods, and literacy goals. Yet, as Hansen himself points out, the essence of ludemes lies in learning principles: they provide anchor points within the constitutive uncertainty of playing games, allowing players to think of plausible hypotheses for a successful interaction with the game system. These presumptions then can be tested through trial-and-error processes.⁶¹ Hansen only briefly introduces the operators of the learning-through-ludemes, but his sketch can already inspire media educators, who can rely on this method when designing content aiming at reinforcing digital game literacy.

Taking into account previous work from Zagal, these educators should avoid any artificial reduction of this variety of experiences, and try not to “describe [...] judgmentally rather than analytically” by “assum[ing] that people experience a game the same way they do”.⁶² Raising literacy generally among players is a good thing if it goes together with valuing their agency. In recognizing that playing digital games is playing with the signs of which they consist, our approach wants to look not only at the continuum between ‘awareness’ and ‘unawareness’ of a problematic property of a game, but also at that between ‘unwillingness’ and ‘willingness’ to expose oneself to it. The oscillation of the player along both axes explains better why some players deliberately find pleasure in engaging in processes designed to make them spend time and money, although they recognize them as such. Re-establishing players’ agency paves the way for educational approaches in which they are considered as participants of their own literacy acquisition: by making them rely on their own prior knowledge and valuing it, we can provide them with the tools for analysing new gaming experiences, as well as with the feeling of competency in this enterprise.

For this to happen, two major research perspectives yet need to be explored. On a theoretical level, the ludemic framework, still young and incomplete, must be reinforced, for example by systematically harvesting the ludemic lexicon of a huge variety of games, or through identifying which other interpretative elements than ludemes, as we mentioned earlier, are recruited when players gauge a new game. On the practical side, the theoretical model of learning through ludemes must be tested. This can happen empirically, through in-situation observation of players confronted with games that they do not know, as well as through

59 Remark by the authors: Researchers from Gam(e)(a)ble, the project in which we participate, are pursuing this goal as well, because “unravel[ing] the design complexity of gambling in games” and “address gaps in prevention, early intervention and social assistance” implies to define precisely which gambling mechanics can be described as delusive and/or harmful, and how this negative potential can be avoided or overcome.; See: *Why Gam(e)(a)ble?*. [online]. [2021-05-17]. Available at: <www.gameable.info>.

60 TERPSTRA, A., GRASSL, P., SCHRAFFENBERGER, H.: Think before you click: how reflective patterns contribute to privacy. In *What Can CHI Do About Dark Patterns? CHI Workshop – May 8, 2021*. New York : ACM, 2021, p. 2. [online]. [2021-05-17]. Available at: <<https://darkpatternsindesign.com/position-papers/>>.

61 HANSEN, D.: *Morphologie du médium vidéoludique : Le ludème envisagé comme unité minimale fonctionnelle du jeu vidéo*. [Master’s Thesis]. Liège : Département de Langues, Lettres et Traductologie, University of Liège, 2019, p. 89.

62 ZAGAL, J. P.: *Ludoliteracy: Designing, understanding, and supporting games education*. Pittsburgh : ETC Press, 2010, p. 116.

intervention studies to measure the possible literacy gains of a sensibilisation to ludemic game analysis. Next to these complete but time-intensive perspectives, more pragmatic methods already common in game studies can be applied: playing at different levels of expertise or adopting several playing styles;⁶³ letting different coders analyse the same game and complement the gained insights with document analysis of meta texts of the game in question;⁶⁴ or conceptualizing players as semiotic systems in themselves,⁶⁵ while taking care of establishing different models taking into account diverse kinds of situated play.

Regardless of the epistemological lens(es) that are adopted, a methodology needs to be established that enables us to operationalize the shifts of meaning that can occur when a ludeme is being recontextualized through player activity. Specifically, a game analysis method should be elaborated that facilitates the investigation of three processes of re-contextualization: Firstly, re-contextualization within the same game. It is possible that the first time players encounter a dark element (for instance a loot box) they are tempted (by its graphic design in the case of a grapheme) to take the bait. As the game progresses, though, players might become more aware of the statistics underlying this loot box and about the added value of its rewards in the overall game. Players may become more ludoliterate through experience, and accordingly develop different interactions towards a dark design element, as such effectively reinterpreting it.

Secondly, re-contextualization across games. While certain dark design elements can be transferred from one game to another, in this process their acoustic, mechanical and graphic characteristics do not remain identical to the original, and their 'dark' properties may be altered as well. An interesting case in point is again the example of the loot box. While originally developed in the context of casino-style gambling games, loot boxes have now become part of the universe of a broad range of genres, where there exist more diverse and heterogeneous possibilities for their contextualization. For instance, in the currently highly popular title *Genshin Impact*⁶⁶, the odds of obtaining an item from a loot box are no longer completely randomized, but are partly based upon a player's previous achievements. As such, the loot box simultaneously operates as a balancing mechanic, levelling the playing field between more and less experienced players, which leaves the question whether or not its 'dark' nature is the same as in its original conception.

But we should not forget about recontextualization outside the magic circle. Lastly, as was shown in the context of monetary and social patterns, the characteristics of dark game elements are often dependent on how they are implemented in third party platforms such as Steam or Facebook. It is a well-known case, for instance, that Steam has recently modified its policy of enabling financial transactions between players, making it more difficult to buy or sell game avatars. This means that the monetary pattern attached to certain grinding mechanics is effectively altered. Subsequently, we notice that gaming communities start to set up their own servers where such transactions are made possible again.⁶⁷ This shows that a continuous process of recontextualization occurs, based on practices outside the game realm (and thus partly outside the control of the developers).

63 AARSETH, E.: Playing Research: Methodological approaches to game analysis. In MILES, A. (ed.): *Proceedings of the 5th Digital Arts & Culture Conference (MelbourneDAC 2003)*. Melbourne: RMIT University, 2003, p. 2-6. [online]. [2021-05-24]. Available at: <<http://www.bendevane.com/VTA2012/herrstubbz/wp-content/uploads/2012/01/02.GameApproaches2.pdf>>.

64 MALLIET, S.: Adapting the principles of ludology to the method of video game content analysis. In *Game Studies*, 2007, Vol. 7, No. 1. [online]. [2021-05-24]. Available at: <<http://www.gamestudies.org/0701/articles/malliet>>.

65 For more information, see: KÜCKLICH, J.: Perspectives of Computer Game Philology. In *Game Studies*, 2003, Vol. 3, No. 1. [online]. [2021-05-24]. Available at: <<http://gamestudies.org/0301/kucklich/>>.

66 MIHOYO: *Genshin Impact*. [digital game]. Shanghai: MiHoYo, 2012.

67 For more information, see: THORHAUGE, A. M., NIELSEN, R. K. L.: Epic, Steam, and the role of skin-betting in game (platform) economies. In *Journal of Consumer Culture*, 2021, Vol. 21, No. 1, p. 52-67.

We finally want to draw attention to another debate regarding the term 'dark patterns', which has very recently emerged at a number of conferences and informal communication channels. In this case not the use of the concept of 'patterns' is being criticized (as was the main line of thought of the current paper), but additionally it is being argued that the term 'dark' should be abandoned, in favour of a term that does not carry any ethnic connotation, in an attempt to decolonize the academic discourse. Although at the moment it is difficult to predict which this alternative term should be, a number of authors have begun using the concept of reflectivity in order to refer to the presence or absence of player deception.⁶⁸ In conclusion, we state that the ludeme approach have a lot of potential to tackle a number of terminological, conceptual and methodological difficulties surrounding the investigation of dark design in digital games. While it offers a more flexible method to grasp the subtleties of this phenomenon, we notice, though, that a refinement of our conceptual tools is required. We hope that, in bringing up these issues we have established a first step towards the development of such a refined instrument and contributed to a constructive debate on how this can be effectuated.

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68 For more information, see: TERPSTRA, A., GRASSL, P., SCHRAFFENBERGER, H.: Think before you click: how reflective patterns contribute to privacy. In *What Can CHI Do About Dark Patterns? CHI Workshop – May 8, 2021*. New York : ACM, 2021, p. 1-6. [online]. [2021-05-17]. Available at: <<https://darkpatternsindesign.com/position-papers/>>.

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