SIMULATIONS AND GAMES IN TEACHING INTERNATIONAL RELATIONS AND STRATEGIC STUDIES

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Abstract: *International Relations (IR) and Strategic Studies (SS) have long utilized games and simulations as educational tools, especially in digital settings. Recently, these fields have evolved from technical training and executive action to interdisciplinary areas within the Social Sciences. This shift reflects a change in training objectives, moving from technical skills to a broader understanding of complex global dynamics. Modern approaches aim to foster a deep comprehension of these dynamics using diverse analytical lenses. This article examines the legacy of IR and SS in the contemporary use of gamification and simulations in education, highlighting their role in recent structural transformations. The research employs a hypothetical-deductive method, utilizing bibliographic techniques to explore the co-constitution of IR, SS, and educational gaming.*

Keywords: *Simulation; Video Games; Teaching-learning, International Relations, Strategic Studies.*

1. Introduction

The scientific fields of International Relations (IR) and Strategic Studies (SS) have anticipated by decades, perhaps centuries, the contemporary pedagogical movement that defends the use of games and simulations, increasingly in a digital environment, as a relevant instrument for the teaching-learning process. However, in recent decades, the gradual transition of IR and SS from areas of technical training and executive professional performance to become interdisciplinary fields of knowledge in the Social Sciences has brought new possibilities for the use of digital games and simulations in the teaching-learning process. Although there is a great amount of scientific production on the use of games in educational contexts, there is still an incipient recognition of how game studies can contribute to the understanding of contemporary international relations and their representations [Robinson 2015; Spiros, 2021; Mello 1996; Hassan, 2017].

This transition means that the objective of training in the area has shifted from the priority of absorbing protocols and technical skills in diverse scenarios of potential performance and professional decision-making. The broader need for a critical understanding of the multiple dimensions of global dynamics, their varied analytical lenses and possibilities of interpretation.

This paper presents the legacy of the IR and SS areas for the contemporary pedagogical movement that values gamification and the use of games and simulations in teaching-learning processes. It also discusses the contribution of this movement to the

recent structural transformations that these scientific fields are experiencing. This is a research with a hypothetical-deductive approach, which adopts a bibliographic research technique to explore the case of possible co-constitution between the scientific fields of IR and SS and the use of games and simulations in teaching-learning processes. This study aims to examine the legacy of IR and SS in contemporary pedagogical movements, analyze the role of gamification in teaching-learning processes and discuss the contribution of games and simulations to structural transformations in IR and SS.

The text is divided into three sections, in addition to this introduction and conclusion. In the first section, we address the contexts of gamification of the real world and the worldification of games, made possible by the advent of the Digital Age, and the growing use of complex digital games and simulations in different dimensions of social interactions, including teaching-learning. The second section demonstrates that such developments coincide with the traditional use of controlled simulations and instructional games in the areas of IR and SS as a way to apply theoretical assumptions and practice technical skills. Nevertheless, the third section demonstrates that digital games and simulations, including those for commercial use, have increasingly been a space for disputes about their representations of the world around us and its various contradictions. Such representations involve narratives that are experienced and reconstituted in the gameplay process, and have been increasingly observed as a relevant way to understand the images in dispute about how international relations and war are characterized.

2. The Gamification of the World and the Worldification of Games in the Digital Age

In the aftermath of the Second World War, the Third Industrial Revolution ushered in the Digital Age, a highly disruptive phenomenon in human history. This era is defined by the ability to convert energy from sensors into analog electrical impulses, which are then transformed into digital binary code by electronic components. This code can be assigned various functions depending on the output devices generating sound, light, and movement [Coutinho 2016]. The industrial-scale expansion of this process, tied to the global economy, spurred continuous scientific and technological advancements in hardware (electronic components and peripherals) and software (user interfaces for binary messages). Consequently, digital computers now process vast amounts of data and utilize algorithms to organize and prioritize information [Kitchin and Dodge 2011]. Today, most information and interactions are mediated by computers, including our representations of the world.

Digitalization has had a profound impact on art and media, with forms of communication full of narrative and interactive meanings being enhanced or created digitally. Digital graphic design, computer animation and human-machine interaction through control devices have enabled the transition of cultural practices to the digital environment. Games have driven digitization and, with the entertainment market, have complexified simulations of human processes (political, social, economic, cultural) [Salen and Zimmerman 2022]. Thus, the culture of play now permeates digital social interactions (gamification) [Caponetto et al. 2014], and digital games have become complex and representative of diverse social realities. These movements are known as

the gamification of the real world and the worldification of video games.

The gamification of the real world is a macro-social movement influenced by the growing technological digitalization of human interactions. The growth in the use of technology in everyday contexts has strongly influenced the growth of gamification, in that it provides the necessary tools and platforms for implementing game elements in a variety of contexts [Hamari et al. 2014; Fardo 2013; Borges et al. 2013]. Technology has facilitated the creation of immersive experiences, allowing game mechanics such as points, badges, leaderboards and challenges to be integrated into non-game environments [Fardo 2013; Caponetto et al. 2014]. Still in the context of the digital transition, gamification offers numerous possibilities. It can be used to engage users in new technologies or digital platforms by creating interactive experiences.

The use of gamification is primarily seen in the job market as a method applied to marketing programs and web applications to engage and retain customers and users [Aparicio et al. 2012; Fardo 2013]. However, it still shows inconsistent results in terms of its application. These inconsistencies can be attributed to two opposing psychological processes: a negative process through attention and a positive process through pleasure, where the relative strength of these processes determines the overall effect of gamification [Bekk et al. 2022]. Within the educational field, gamification is defined as the use of game elements (mechanics, strategies, and reasoning logic) outside of digital game contexts. The purpose of gamification is to motivate individuals, help solve problems and promote learning. [Aparicio et al. 2012; Fardo 2013; Landers et al. 2018].

Gamification aims to make learning more dynamic by encouraging students to think from the perspective of a game designer while tackling educational challenges [Fardo 2013; Toda et al. 2018]. In addition, advances in mobile devices have made gamification more accessible to a wider audience. The widespread use of smartphones and tablets allows users to engage with gamified systems anytime and anywhere [Chin 2023]. This allows for real-time feedback and data tracking, which can improve user engagement by providing immediate rewards or personalized experiences based on progress, or individual behavior [Hamari et al. 2018]. Overall, the rise of technology has provided opportunities for innovative approaches to implementing gamification strategies in different sectors.

The elements of gamification, although initially considered positive, can generate significant contradictions when they are not applied critically. There is a tendency in the literature to idealize gamification [Aparicio et al. 2012; Toda et al. 2018], which diminishes the attention given to the problems arising from its misapplication. From a marketing point of view, gamification can hide transaction costs and replace monetary rewards for employees and consumers. In education, the implementation of gamification faces challenges such as a lack of long-term evidence, inadequate scientific methods, the need for customization, the emergence of unwanted behaviours and a lack of technological support [Toda et al. 2018]. In addition, gamification can create unwanted effects, such as making students dependent on the gamified elements [Andrade et al. 2016].

Alongside the gamification of the real world, there is a trend towards the “worldification” of digital games and simulations. This concept involves the complexification of the dynamics and mechanics of digital games and simulations, as

well as the growing commitment of developers to present in-depth narratives that represent crucial aspects of societies. In this way, the real world is represented more accurately in games and digital simulations, which brings with it the ideological filters present in any artistic, aesthetic or media representation.

There are still few considerations about the worldification of video games as a significant phenomenon, where games drive social narratives and allow immersion via role playing. In this context, Game Studies has become important for understanding the changes in contemporary media due to digitalization and digital culture [Chess and Consalvo 2022]. Digital games are more present in the media industry thanks to digitalization, which promotes convergence between media such as television, cinema and video games [Zotto and Lugmayr 2015]. They are integrated into the cultural industry in entertainment (streaming and films based on video games) and through the intensification of transmedia narratives [Chess and Consalvo 2022]. This integration with other arts broadens the ability to see them as art or literature, as their narrative elements can be analyzed in the light of traditional literary theories [Frasca 2003], representing the Material Turn of Game Studies.

The Material Turn in game studies refers to a shift in research approach that considers digital games as material objects existing in the world, rather than purely virtual experiences [Apperley and Jayemane 2017]. Such a perspective recognizes the connections between games and broader issues, such as International Relations, as well as highlighting the impact of games on our bodies, perceptions and cognitions, suggesting the need for research and testing to understand the role of games in mediating the mind-world relationship.

Traditional media is based on representing traits and events within pre-established narratives. Industrial media productions are proficient at creating and consuming narratives, but it is important to note the ability of video games to convey an author's ideas and feelings and of simulations to express messages that narratives cannot [Frasca 2003; Consalvo 2006]. Change is a basic assumption, and game designers must keep simulations as entertainment and think about how to subvert reality. Therefore, it is important not just to follow what is stipulated by the game or simulation, but to understand what they emphasize, value and omit in their narrative and why. Games and simulations are no longer just learning tools but are competing for space in the representation of reality, a field in which International Relations and Strategic Studies still have a lot to learn.

3. Games as a Tool: the tradition of using games and simulations in IR and SS

IR and SS, as fields of study and practice, have a deep and multifaceted relationship with games, particularly those with instructional content. The historical interaction between these domains has been remarkable. By shaping strategies, influencing decision-making, and simultaneously providing learning and insights into global scenarios through board games, simulations, and wargames, these tools were used for training and strategic analysis by political, military, and diplomatic leaders. Such tools allowed for the exploration of hypothetical scenarios and the understanding of the complex dynamics of relations between nations.

Within this tradition of using games and simulations, the board game *Kriegspiel* emerged as one of the most sophisticated forms of military and political simulation. While games like Go and Chess were more about developing strategic intuition than representing the reality of combat, *Kriegspiel* was a notable forerunner in seeking a more realistic representation of war. It incorporated elements of strategy, diplomacy, and decision-making, making it a powerful analytical tool, offering the ability to model complex interactions between state and non-state actors, as well as predict outcomes based on different decisions, which allowed for a deeper understanding of global dynamics [Bousquet 2015].

Another significant innovation in the approach to wargames emerged in post-unification Germany: optimization for strategic, operational, and tactical levels [Caffrey 2019, 26]. The German combat experience during unification and conflicts with France influenced these games, not only honing military skills but also establishing a solid foundation for understanding the complex dynamics of International Relations. The digitalization of warfare after World War II also profoundly transformed the development and execution of military strategies. Strategists began to interact with representations of war on computers, transcending mere illusion, shaping reality through practical interactions between simulations and the real world, and becoming an essential tool in the production of effective strategies and operations [Der Derian 1990, 2003, 2008, 2013]. The growing influence of computers on simulations brought about significant changes, with simulation environments increasingly reflecting real-world war operations and blurring the line between simulation and real experience [Caffrey 2019].

The modeling of war strategies expanded significantly with operations research and systems analysis, intensively applied during World War II, playing a crucial role in the development of simulations [Castellano and Werle 2021, p. 69]. In parallel, game theory emerged to model interactions between rational actors and develop cooperation and conflict strategies [Der Derian 1990]. The transition of the focus of simulations from combat to strategic and political issues reflects a growing understanding that international decisions often transcend the battlefield, incorporating broader political, economic, and strategic considerations. This highlights how the application of simulations in the armed forces has significant implications not only for military preparation, but also for the diplomatic and security strategies adopted by states in international relations.

Furthermore, Game Theory plays a crucial role in the analysis of international relations and decision-making in complex and interdependent scenarios. Its application offers a powerful conceptual framework to understand how actors (individuals, States and/or organizations) make strategic decisions in situations that lead to competition or cooperation [Mello 1997]. However, the theoretical framework still needs development in the field of IR and SS, given that its assumptions about the complexity of the real world and its problematization still lack the development already achieved in other areas of knowledge. For now, the theory serves more as a protocol for laboratories simulating simple environments, capable of representing theoretical abstractions that are still very generic.

Game Theory also aids decision-making in conflict, negotiation, and cooperation scenarios. It allows decision-makers to consider various options, evaluate the

consequences of their choices, and potential responses from other actors [Mello 1997]. Game analysis helps predict how individual and collective interests, influence decisions and identify strategies for desirable outcomes. In limited complexity scenarios, Game Theory offers valuable insights for issues like international security, alliances, conflict resolution, and diplomatic negotiations, where anticipating other actors' behavior and seeking mutually beneficial solutions is crucial. However, “There's an irony in academia being the birthplace of games and yet ostracizing the genre…” [Pearce 2004]. Despite integration into economics in the 1980s, Game Theory hasn't seen equivalent adoption in International Relations:

> Nevertheless, while game theory became a major staple in economic analyses, there has been no parallel move in the field of international relations. To illustrate, no student who ignores Nash equilibrium can pass a microeconomics course yet no such condition exists for an IR student, say in a course on IR theory. [GUNER 2012, p. 2]

This gap in knowledge and training in IR has significant implications, as the diversity of theoretical approaches within the field is not yet matched by the sophistication of Game Theory for more diverse and complex contexts. Furthermore, reluctance to embrace Game Theory can be a barrier to innovation in IR. In an increasingly complex and interconnected world, the ability to model and simulate interactions between States and international actors is crucial to anticipate scenarios and inform political decisions. Therefore, a lack of training in simulations and modeling can result in limited analysis and inaccurate predictions, hindering the effectiveness of adopted policies.

From another perspective, simulation offers an approximate practical experience of crucial events and mechanics for professionals in the field in their contexts of centrality, relevance and rarity of events that move between the seriousness of political demands and the taste for playfulness [Robinson 2015]. Through simulations, they can experience complex and challenging situations that mirror international reality, allowing them to develop strategies, make decisions and understand the political and strategic implications involved. This is because simulations bring abstract content to life through students' own decisions and processes and allow them to experience International Relations theories through simulations [Asal 2005; Robinson 2015].

An example of this are the MUNs (Model United Nations) or Simulation Models of International Organizations, which, although implemented mainly in analogical models, allow students to delve deeper into the foreign policy of a State and place themselves in a position for formal diplomatic negotiation before their peers [Hazleton and Mahurin 1986]. In MUNs, debate is strongly encouraged so that the student not only immerses themselves in the context of a State, but also understands international negotiations based on a modal structure, a key characteristic of a simulation.

Therefore, MUNs fulfill their role as a learning laboratory, which allows the development of political expression and factual knowledge about the area of International Relations. At the same time, it prepares students for possible real scenarios of discussion and crisis, after all, they involve themselves directly with diplomatic situations as representatives.

When considering the use of simulation, analog or digital, in International Relations, it is important to explore the study area's considerations regarding playing. International Relations (IR) theorists often invoke Game Theory to separate agents from

structures [Hirst 2019, p. 3]. Applied to teaching IR, simulations help students visually understand international interactions by combining theoretical knowledge and historical context [Asal and Kratoville 2013]. Furthermore, conventions from social sciences (rules) are attributed to an abstract structure of world politics (game), making play vital for expanding political imagination. One challenge in political science teaching is the experience gap between undergraduates and government officials, which games placing students as decision makers can address [Shirkey 2017].

Similar to game theory, there is a need to improve understanding of non-classical theories and their application in IR, considering different approaches for a more holistic understanding of diplomacy and the international system. The study by Engel, Pallas, and Lambert (2017) examined how IR students applied theories such as realism, liberalism, social constructivism, and critical theories through MUN simulations. Despite a strong emphasis on realism and liberalism, few students discussed social constructivism or critical theories, indicating these perspectives were less explored. Thus, focusing predominantly on traditional approaches like realism and liberalism can limit understanding and critique of the global system and traditional international institutions.

4. Games as Living Representations: New Horizons in the Use of Games and Simulations in IR and SS

With the development of Game Studies, the understanding of what games and simulations can teach about the real world has expanded dramatically. Although serious games and controlled simulations have evident instructional value, the social sciences have come to realize that, due to the globalization and complexification of games, they can be seen as mass representations of the world around us. Video games are structured from semiotics but differ in the construction of elements such as characters, environments, and events [Frasca 2003]. Thus, it is important to distinguish between the visual/interactive representations in digital games and real simulation. The interdisciplinary nature of games, their focus on practical applications, and the lack of a cohesive structure hinder their recognition in conventional scientific disciplines, despite being a familiar concept [Frasca 2003; Wiggins 2016].

In the context of International Relations (IR) Studies, commercial games have been the subject of growing research, investigating everything from policies represented in games to demonstrations of armed conflicts [Hirst 2019]. Two main aspects are evident in commercial games: militarism and its influence on popular culture, and the potential of these games to affirm or emancipate certain identities or social groups [Hirst 2019; Berents and Keogh 2018; Robinson 2015; Shaw 2012].

IR and Strategic Studies (SS), as interdisciplinary fields, can leverage the development of related disciplines. In History, for example, the relationship between history and games is established through references to historical reality, portraying real events, characters, or scenarios [Schwarz 2014]. These elements contribute to the sense of authenticity and historical accuracy, aiding in the interpretation and construction of narratives [Valença and Balthazar Tostes 2019]. Hassemer (2014) discusses the rules of historical representations in digital games, where game design becomes the history itself

[Hassemer 2014; Schwarz 2014]. Nohr (2014) expands on this argument, citing the game Age of Empires (1997) as an example, highlighting its immersion in the culture of the portrayed period and the requirement for strategic decision-making based on historically relevant circumstances [Nohr 2014].

A challenge in the field of International Relations is overcoming the association of game research methods with studies of drama and narrative from traditional arts [Gonçalves and Lima 2020]. Although digital games follow a narrative model, this approach limits the understanding of the medium and the ability to create games more suitable for educational purposes [Frasca 2003; Valença and Balthazar Tostes 2019]. Asal (2005) observes a relative growth in the use of simulations for teaching in International Relations; however, literature on this topic is still scarce, lacking attention on how to integrate simulations into the teaching of the discipline.

Robinson (2015) argues that, due to the highly visual and auditory nature of games, it makes sense to focus on what is seen and experienced, although he acknowledges that this may be more challenging to describe in words than the narrative of a game. The value of games for International Relations theorists lies in the ability to tell stories from experiences within games and simulations.

Regarding commercial games with educational potential, they combine entertainment and learning, spanning various genres such as fiction and real history. Fictional games stand out for problem-solving, critical thinking, and creativity, while historically accurate games focus on providing precise representations of past events, allowing users to explore different periods and historical perspectives [Nohr 2014; Schwarz 2014]. These games also present complex scientific concepts, logical challenges, and ethical dilemmas for players to solve, contributing to the development of cognitive skills.

Regarding the act of playing, Hirst (2019) argues that it is an essential way in which people choose to spend their time when they are not working, yet playing is still present in other more serious realms, including adult and child education. In International Relations, the act of playing is explored through productions that stem from an analysis of identity/subject, which are part of feminist, post-structuralist, post-colonial, queer, and other interventions within the discipline. As the author elaborates,

> *Play is aligned with, and provides a useful vocabulary for, theoretical traditions in IR that seek to explore modes of becoming that problematise and resist concrete Being. This is because the play invites an exploration of the disrupted and processual character of subjectivity*. [Hirst 2019, 7]

Schell (2015), in “The Art of Game Design: a Book of Lenses”, suggests fundamental parameters for good games: mechanics, story, aesthetics, and technology. Mechanics encompass procedures, rules, and objectives of the game, such as space, time, objects, attributes, actions, rules, skills, and chance. This approach gains scientific prominence by allowing the analysis of rhetoric in digital gaming environments, where player behavior and interactions carry more weight than words or written images, as highlighted by Hergenrader (2016):

> *Even though an examination of rules and processes should be part of any rhetorical analysis of games, this does not mean we must discount other types of critical examinations; quite the contrary, games can and should be*

> *critiqued both at the level of language as well as for their representations of people, places and things. Scholars are equipped to bring forward all manner of theoretical frameworks from various disciplines: film studies, communication studies, rhetoric, literary theory, art history, feminist theory, economics, critical theory, visual studies, philosophy, psychology and more.* [Hergenrader 2016, 31]

For International Relations, it is crucial to consider not only the mechanics of games, but also the meta-stories and narratives imposed upon them. It is imperative to explore how Game Studies can transform the medium through narrative and simulation. In digital games, the role of narrative differs from other forms of media, operating in a comparative and opposite manner at the same time [Pearce 2004]. In digital games, everything revolves around the act of playing and the player's experience, allowing researchers to focus their attention on the act of playing rather than on a narrative context [Pearce 2004, p. 144].

The elements present in digital games create a dismantled narrative structure, a lively and ever-evolving representation. In this context, Pearce (2004) identifies six different narrative operators that can exist within a game.

> ***Experiential****: The emergent narrative that develops out of the inherent conflict of the game as it is played, as experienced by the players themselves.* ***Performative****: The emergent narrative as seen by spectators watching and/or interpreting the game underway.* ***Augmentary:*** *Layers of information, interpretation, backstory, and contextual frameworks around the game that enhance ot}er narrative operators.* ***Descriptive:*** *The retelling or description of game events to third parties, and the culture that emerged out of that.* ***Metastory.*** *A specific narrative overlay that creates a context or framework for the game conflict.* ***Story System:*** *A rule-based story system or kit of generic narrative parts that allows the player to create their own narrative content; story systems can exist independent of or in conjunction with a metastory.* [Pearce 2004, 145]

The play-centric argumentative method, as described by the author, incorporates layers of information, interpretation, background history, and contextual frameworks around the game, expanding the narrative operators that can be accessed and analyzed through in-depth research [Pearce 2004; Fullerton 2006]. Despite consistent recommendations, analyzes of games and simulations from this perspective are still scarce in International Relations (IR) and Strategic Studies (SS).

A highlight is Nick Robinson's (2012, 2014, 2015, 2016, 2021) work on representative narratives in games. Robinson argues that the digital gaming sector can be considered part of the military-entertainment-industrial complex, tracing a line from the development of game-based simulations after the Gulf War, discussed by James Der Derian (1990), to the simulation fever observed in the US military after the Iraq War, especially in flight simulators seeking realistic experiences. Robinson also highlights political concerns, cultural impact, and budgetary implications of war simulations, raising questions about their potential consequences and impact on reality perception.

Robinson's concept of the military-entertainment-industrial complex refers to the close relationship between game developers, active-duty military personnel, and military equipment manufacturers. The resulting games celebrate the soldier's perspective [Robinson 2012; 2021], emphasizing themes such as camaraderie, sacrifice,

and authenticity in combat scenarios, with narrative scenes showing rescue missions or soldiers killed in action [Robinson 2012; 2021].

Thus, it is essential to understand the emphases, values, and omissions in these narratives, questioning the reasons behind specific world representations. Games and simulations transcend their instructional role, competing for space in the forms of reality representation.

5. Final Considerations

This article provided an introductory approach to how International Relations and Strategic Studies are associated with the contemporary phenomenon of real-world gamification, especially in teaching-learning processes. We also sought to discuss the potential for IR and SS to follow Game Studies and engage more systematically in the analysis of the complementary phenomenon of the globalization of digital games and simulations. In it, complex representations of international, historical, and contemporary dynamics invade digital metaverses and promote complex narratives, absorbed and experienced by the interactive audience. This process ends up constructing and prioritizing specific views on cooperation, conflict, society, race, gender, economy, politics, diplomacy, and war.

For such an effort to be undertaken, advances can be made on both fronts analyzed. In the spectrum of gamification (games and simulations as teaching-learning tools), the historical development of instructional games and controlled simulations for training future diplomats and military personnel has not fully kept pace with the complexification of game theory and related fields to understand much more diverse and variable systems in terms of structures, agents, and processes. These limitations affect how the field is able to evaluate alternative theories and simulate scenarios marked by uncertainty and variability regarding Western history.

In the spectrum of globalization (games and simulations as living representations of the world), it is important to broaden the understanding in the areas of IR and SS that video games and digital simulations have an increasing capacity to disseminate and stimulate the co-constitution of complex narratives that represent how the world was, is, and should be. Such representations are often more accessible to the population than the actual dynamics of international relations, and therefore impact the social understanding of how such relations operate.

Such advances involve, at their core, the recognition of games and simulations as open and complex systems capable of exploring diverse and plural interpretations of how global dynamics permeate our reality.

7. References

Andrade, Fernando R. H., Riichiro Mizoguchi, e Seiji Isotani. (2016). “The Bright and Dark Sides of Gamification”. Em *Intelligent Tutoring Systems*, editado por Alessandro Micarelli, John Stamper, e Kitty Panourgia, 9684:176–86. Lecture Notes in Computer Science. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-39583-8_17.

Aparicio, Andrés Francisco, Francisco Luis Gutiérrez Vela, José Luis González Sánchez, e José Luis Isla Montes. (2012). "Analysis and Application of Gamification". Em *Proceedings of the 13th International Conference on Interacción Persona-Ordenador - INTERACCION '12*, 1–2. Elche, Spain: ACM Press. https://doi.org/10.1145/2379636.2379653.

Apperley, Thomas, e Darshana Jayemane. (2017). "A Virada Material dos Game Studies". *Lumina* 11 [1]. https://doi.org/10.34019/1981-4070.2017.v11.21419.

Asal, Victor. (2005). "Playing Games with International Relations". *International Studies Perspectives* 6 [3]: 359–73. https://doi.org/10.1111/j.1528-3577.2005.00213.x.

Asal, Victor, e Jayson Kratoville. (2013). "Constructing International Relations Simulations: Examining the Pedagogy of IR Simulations Through a Constructivist Learning Theory Lens". *Journal of Political Science Education* 9 [2]: 132–43. https://doi.org/10.1080/15512169.2013.770982.

Bekk, Magdalena, René Eppmann, Kristina Klein, e Franziska Völckner. (2022). "All That Glitters Is Not Gold: An Investigation into the Undesired Effects of Gamification and How to Mitigate Them through Gamification Design". *International Journal of Research in Marketing* 39 [4]: 1059–81. https://doi.org/10.1016/j.ijresmar.2022.03.002.

Berents, Helen, e Brendan Keogh. (2018). "Virtuous, Virtual, but Not Visceral: [Dis]Embodied Viewing in Military-Themed Videogames". *Critical Studies on Security* 6 [3]: 366–69. https://doi.org/10.1080/21624887.2018.1432531.

Berwaldt, Julio Werle, e Igor Castellano. (2021). "Estado, inovação e indústria de defesa: a simulação digital de combate nos EUA". *Revista Brasileira de Estudos de Defesa*. https://api.semanticscholar.org/CorpusID:260038372.

Borges, Simone De S., Helena M. Reis, Vinicius H. S. Durelli, Ig I. Bittencourt, Patricia A. Jaques, e Seiji Isotani. (2013). "Gamificação Aplicada à Educação: Um Mapeamento Sistemático". https://doi.org/10.5753/CBIE.SBIE.2013.234.

Caponetto, Ilaria, Jeffrey Earp, e Michela Ott. (2014). "Gamification and Education: A Literature Review". Em *Gamification and Education: A Literature Review*. Genova, Italy.

Chess, Shira, e Mia Consalvo. (2022). "'The Future of Media Studies Is Game Studies'". *Critical Studies in Media Communication* 39 [3]: 159–64. https://doi.org/10.1080/15295036.2022.2075025.

Chin, Sylvia. (2014). "Mobile technology and Gamification: The future is now!" Em *2014 Fourth International Conference on Digital Information and Communication Technology and its Applications [DICTAP]*, 138–43. Bangkok, Thailand: IEEE. https://doi.org/10.1109/DICTAP.2014.6821671.

Consalvo, Mia. (2006). "Console Video Games and Global Corporations: Creating a Hybrid Culture". *New Media & Society* 8 [1]: 117–37. https://doi.org/10.1177/1461444806059921.

Coutinho, Luciano. (2016). "A terceira revolução industrial e tecnológica. As grandes tendências das mudanças". *Economia e Sociedade* 1 [1]: 69–87.

Davidson, Drew, org. (2008). *Beyond Fun: Serious Games and Media*. Pittsburgh, Penn.: ETC Press.

Der Derian, James. (1990). "The [S]pace of International Relations: Simulation, Surveillance, and Speed". *International Studies Quarterly* 34 [3]: 295. https://doi.org/10.2307/2600571.

———. (2003). "War as Game". *The Brown Journal of World Affairs* 10 [1]: 37–48.

———. (2008). "The Desert of the Real and the Simulacrum of War". *International Affairs* 84 [5]: 931–48. https://doi.org/10.1111/j.1468-2346.2008.00747.x.

———. (2013). "The Simulation Syndrome From War Games to Game Wars". Em *Interpreting the Political: New Methodologies*, por Terrell Carver e Matti Hyvarinen. Hoboken: Taylor and Francis.

Egenfeldt-Nielsen, Simon. (2008). "Practical Barriers in Using Educational Computer Games". Em *Beyond Fun: Serious Games and Media*, editado por Drew Davidson. Pittsburgh, Penn.: ETC Press.

Fardo, Marcelo Luis. (2013). "A gamificação aplicada em ambientes de aprendizagem". *RENOTE* 11 [1]. https://doi.org/10.22456/1679-1916.41629.

Frasca, Gonzala. (2003). "Simulation versus Narrative". Em *The Video Game Theory Reader*, editado por Mark J. P. Wolf e Bernard Perron, 221–35. New York: Routledge.

Fullerton, T. (2006). "Play-Centric Games Education". *Computer* 39 [6]: 36–42. https://doi.org/10.1109/MC.2006.205.

Hamari, Juho, Jonna Koivisto, e Harri Sarsa. (2014). "Does Gamification Work? -- A Literature Review of Empirical Studies on Gamification". Em *2014 47th Hawaii International Conference on System Sciences*, 3025–34. Waikoloa, HI: IEEE. https://doi.org/10.1109/HICSS.2014.377.

Hassan, Lobna. (2017). "Governments Should Play Games: Towards a Framework for the Gamification of Civic Engagement Platforms". *Simulation & Gaming* 48 [2]: 249–67. https://doi.org/10.1177/1046878116683581.

Hassemer, Simon Maria. (2014). "Does History Play the Role of Storyline? Historiographical Periodization as Theme in Video Game Series". Em *Early Modernity and Video Games*, por Tobias Winnerling e Florian Kerschbaumer. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Hergenrader, Trent. (2016). "The place of videogames in the digital humanities". *On the Horizon* 24 [1]: 29–33. https://doi.org/10.1108/OTH-08-2015-0050.

Hirst Aggie. (2019). "Play in[g] International Theory". *Review of International Studies* 45 [5]: 891–914. https://doi.org/10.1017/S0260210519000160.

Huizinga, Johan, Joao P. Monteiro, e Johan Huizinga. (2000). *Homo ludens: o jogo como elemento da cultura*. 4. ed. Coleçao Estudos 4. Sao Paulo: Perspectiva.

Izidro Gonçalves, Fernanda Cristina Nanci, e Leticia Cordeiro Simões De Moraes Lima. (2020). "Aprendizado ativo nas relações internacionais: um estudo empírico sobre o papel do lúdico no processo de aprendizagem". *OASIS*, nº 32 [junho]: 29–47. https://doi.org/10.18601/16577558.n32.04.

Kitchin, Rob, e Martin Dodge. (2011). *Code/Space: Software and Everyday Life*. Software Studies. Cambridge, Massachusetts London, England: The MIT Press.

Kriz, Willy C., J. Tuomas Harviainen, e Timothy C. Clapper. (2018). "Game Science: Foundations and Perspectives". *Simulation & Gaming* 49 [3]: 199–206. https://doi.org/10.1177/1046878118781631.

Landers, Richard N., Elena M. Auer, Andrew B. Collmus, e Michael B. Armstrong. (2018). "Gamification Science, Its History and Future: Definitions and a Research Agenda". *Simulation & Gaming* 49 [3]: 315–37. https://doi.org/10.1177/1046878118774385.

Lee, Michael, e Zachary C. Shirkey. (2017). "Going Beyond the Existing Consensus: The Use of Games in International Relations Education". *PS: Political Science & Politics* 50 [2]: 571–75. https://doi.org/10.1017/S1049096516003218.

Liu, Alan. (2013). "The Meaning of the Digital Humanities". *PMLA* 128 [2]: 409–23. https://doi.org/10.1632/pmla.2013.128.2.409.

Lugmayr, Artur, e Cinzia Dal Zotto, orgs. (2016). *Media Convergence Handbook. Vol. 1: Journalism, Broadcasting, and Social Media Aspects of Convergence / Artur Lugmayr, Cinzia Dal Zotto [Editors]*. Vol. 1. Media Business and Innovation. Berlin Heidelberg New York Dordrecht London: Springer.

M. Valença, Marcelo, e Ana Paula Balthazar Tostes. (2019). "O Storytelling como ferramenta de aprendizado ativo". *Carta Internacional* 14 [2]. https://doi.org/10.21530/ci.v14n2.2019.917.

Maciel Toda, Armando, Alan Pedro Da Silva, e Seiji Isotani. (2018). "Desafios para o Planejamento e Implantação da Gamificação no Contexto Educacional". *RENOTE* 15 [2]. https://doi.org/10.22456/1679-1916.79263.

Mello, Flavia de Campos. (1997). "Teoria dos jogos e relações internacionais: um balanço dos debates". *BIB - Revista Brasileira de Informação Bibliográfica em Ciências Sociais*, nº 44 [julho]: 105–19.

Nohr, Rolf. (2014). "The Game Is a Medium: The Game Is a Message". Em *Early Modernity and Video Games*, por Tobias Winnerling e Florian Kerschbaumer. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Pearce, Celia. (2004). "Towards a Game Theory of Game". Em *First Person: New Media as Story, Performance, and Game*, editado por Noah Wardrip-Fruin e Pat Harrigan, 4:143–53. Cambridge, Mass: The MIT Press.

Pepinsky, Thomas B. (2005). "From Agents to Outcomes: Simulation in International Relations". *European Journal of International Relations* 11 [3]: 367–94. https://doi.org/10.1177/1354066105055484.

Robinson, Nick. (2012). “Videogames, Persuasion and the War on Terror: Escaping or Embedding the Military—Entertainment Complex?” *Political Studies* 60 [3]: 504–22. https://doi.org/10.1111/j.1467-9248.2011.00923.x.

———. (2015a). “Videogames and IR: Playing at Method”. *E-International Relations* [blog]. 2015. https://www.e-ir.info/2015/05/28/videogames-and-ir-playing-at-method/.

———. (2015b). “Have You Won the War on Terror? Military Videogames and the State of American Exceptionalism”. *Millennium* 43 [2]: 450–70. https://doi.org/10.1177/0305829814557557.

———. (2016). “Militarism and opposition in the living room: the case of military videogames”. *Critical Studies on Security* 4 [3]: 255–75. https://doi.org/10.1080/21624887.2015.1130491.

———. (2021). “Beyond the Shadow of 9/11 Videogames 20 Years after 9/11”. *Critical Studies on Terrorism* 14 [4]: 455–58. https://doi.org/10.1080/17539153.2021.1982462.

Salen, Katie, e Eric Zimmerman. (2022). *As regras do jogo: fundamentos para o design de games: nível 3*. Edição Brasileira. Vol. 3. Editora Edgard Blucher.

Schell, Jesse. (2008). *The art of game design: a book of lenses*. Amsterdam ; Boston: Elsevier/Morgan Kaufmann.

Schwarz, Angela. (2014). “Narration and Narrative: [Hi-]Story Telling in Video Games”. Em *Early Modernity and Video Games*, por Tobias Winnerling e Florian Kerschbaumer. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Shaw, Adrienne. (2012). “Do You Identify as a Gamer? Gender, Race, Sexuality, and Gamer Identity”. *New Media & Society* 14 [1]: 28–44. https://doi.org/10.1177/1461444811410394.

Spiros, Nikita, Kargas, Aikaterini, e Sarela. (2021). “Engaging International Relations with Videogames”. Em . Paris.

Weight, Jenny. (2008). “Self, Video Games and Pedagogy”. Em *Beyond Fun: Serious Games and Media*, editado por Drew Davidson. Pittsburgh, Penn.: ETC Press.

Wiggins, Bradley E. (2016). “An Overview and Study on the Use of Games, Simulations, and Gamification in Higher Education”: *International Journal of Game-Based Learning* 6 [1]: 18–29. https://doi.org/10.4018/IJGBL.2016010102.

Winnerling, Tobias, e Florian Kerschbaumer. (2014). *Early Modernity and Video Games*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.