Tampere University

Mauricio Castro Valdez

COUNTERFORENSIC LUDOLOGY

An approach to critical work with board games

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ABSTRACT

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This work introduces counterforensic ludology as a critical practice in game research and design that examines and questions the representation of state violence in board games. These games model political and historical realities through rules and procedures that emulate social systems, incorporating discourses that shape social imaginaries about the present and the past. Critical studies have deconstructed these models to show how they legitimize power distribution, the oppression of vulnerable populations, and the use of violence. However, unlike the critical interventions conducted with digital game systems—which allow for the subversion of hegemonic narratives and the articulation of narratives centered on subaltern actors—critical work with board games from this perspective remains scarce.

Counterforensic ludology is presented as a theoretical, practical, and political device that allows for examining, exposing, and disputing simulated state violence in board games, even when it occurs below the threshold of detectability for players and researchers. This practice recognizes the forensic aesthetics and materiality of game components, leveraging their sensory and expressive qualities to enhance critical analysis. By focusing on rules, mechanics, systems, and entities, it recovers and analyzes evidence of simulated state violence using residual information that the game produces but keeps inactive. This enables the reconstruction of the trajectories and experiences of subaltern entities in the game, generating counter hegemonic texts that question dominant discourses.

To demonstrate the procedures and results of counterforensic ludology, an intervention carried out with the board game Juden Raus! (1938) is presented. This game, produced in Nazi Germany, contains racist representations of Jewish people and models the regime's policy of Aryanization. The counterforensic exercise involved an iterative process of research, reconstruction, and creation. By digitizing the game using the Construct 3 engine, it was revealed that during the original sessions, players lacked significant agency and that the system generated information about the trajectories of the victims of antisemitic violence; however, this information remained on a residual plane, hidden from players.

Utilizing the residual elements of the game, a revised version was constructed that employs the algorithms of the original material to offer game modes that question its hegemonic narratives and enable spaces for critical exploration. This version allows players to actively participate in contesting the original discourse, facilitating the emergence of small stories of subaltern subjects and populations.

The project demonstrates how the counterforensic perspective allows for examining, exposing, and disputing the representation of political violence in board game systems. However, limitations in this approach are recognized, such as the risk of overlooking the act of playing and the circumstances of the players, or of revictimizing the violated populations and appropriating their stories. Future lines of work propose integrating the perspective of players to better understand their processes of meaning-making and exploring critical pedagogies in game design that enable designers to question and transform sociocultural and political structures.

This approach not only recovers the voices of hidden victims in ludic systems but also invites players and researchers to question and resist narratives that legitimize state violence. By transforming a hate artifact into a critical artifact, it contributes to the reflection on experimental methodologies for the critical study of board games and opens new possibilities for critical design and pedagogy in this field.

Keywords: board game digitization, board games, counterforensic, critical board game design, game criticism, game formal analysis, game subversion, ludology, narrative inquiry, object-oriented inquiry, procedural rhetorics, reflexive digitization

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1 INTRODUCTION

Recently, alongside the rise of the commercial board game industry in the West, interest has grown within game studies and critical design to expose and question how these artifacts articulate hegemonic discourses that legitimize the exercise of violence by the dominant over the dominated. Academic work conducted for this purpose has established that certain board games legitimize domination and violence through representations of social and historical realities, subtly influencing how players construct their imaginaries about power.

However, this work is not yet complete. Artists and game designers have approached digital games from a critical perspective, subverting the original rhetoric of these games in favor of discourses centered on the victims of this violence, namely the dominated subjects. To achieve this, they have drawn on residues from game systems; that is, traces of violence produced through simulation but displaced by the games' dominant structures below the players' threshold of detectability. This has not occurred in the same way with board games.

My area of interest is even more specific: board games that allow players to commit acts of violence against civilian populations in the name of the State. I am particularly interested in addressing the systemic representation of state violence in board games that model social and historical realities.

Like other cultural artifacts, games express ideological tensions, and their structures can either reinforce or conceal the ways in which violence is represented, sometimes portraying violent events indirectly or keeping them below the threshold of detectability.

This thesis reflects my effort to find ways to examine, expose, and question the representation of state violence in board games on my own terms and with my own tools: sociology, game design, and game research. I present counterforensic ludology as a critical practice that examines and subverts representations of violence in board games. By approaching board games from a counterforensic perspective, it becomes possible to identify, materialize, and present evidence of representations of state crimes. Ultimately, this counterforensic approach to games allows for the reconfiguration of the game itself, enabling new narratives about violence to emerge and challenging the game's original meaning.

In the first chapter, I present the background of this work, framing games as systemic artifacts that express ideology and can be critically approached through analysis and intervention. In the second chapter, I introduce counterforensic ludology, explaining its background, foundations, and procedures. In the third chapter, I present *Juden Raus!*, the game I work with in this thesis, and in the fourth chapter, I describe the counterforensic exercise I conduct with the game. Finally, the last chapter contains my reflections on this process and ideas for the next steps in this project.

2 BACKGROUND

In this chapter, I present the theoretical framework of the thesis. First, I approach board games as material culture that reflects the ideological tensions of their time and can convey rhetoric about state violence and its victims. In the second section, I explain how these games are critically examined through ludology, subversion, and reflexive digitization.

2.1 Board Games, Procedural Expression, and Ideological Tensions

This work is part of a broader interest in exploring how cultural objects algorithmically represent social realities and the ideological content present in those representations. In this sense, it aligns with the perspective of games as systemic cultural artifacts (Stenros, 2017, p. 504). I will now explain the implications of considering games as systems in relation to their expression and how a critical reading of this expression is possible.

2.1.1. Games as Systems

In this paper, I approach games as closed formal systems that subjectively represent subsets of reality, engage players in structured conflict, and resolve their uncertainty in an unequal outcome. This definition synthesizes the one presented by Crawford (1997, pp. 8–9): "a game is a closed formal system that subjectively represents a subset of reality" with Fullerton's (2008, p. 43): "a game is a closed, formal system that engages players in structured conflict and resolves its uncertainty in an unequal outcome." Next, I break down this definition and briefly discuss its components and implications.

The first part of the definition refers to the game as a closed formal system; namely, that each game is a "complex whole" (Oxford University Press, n.d.) that is bounded and structured by its rules and procedures (Fullerton, 2008, p. 42). The main implication of this conception is that it enables the study of the game as an object in itself, distinguishable from other games as well as from things that exist and happen beyond the game.

The second part of the definition refers to what the game can represent. At this point, it is important to clarify how I use the concepts of model and simulation in this thesis. Bogost has defined simulation as "a representation of a source system through a less complex system that informs the user's understanding of the source system in a subjective manner" (2006, p. 107). In this thesis, I use that definition to refer to the game model and simulation as the execution

of said model. Additionally, the definition recognizes that these models are subjective abstractions of reality. It is assumed that reality can be represented through the game systems, but it is also acknowledged that this representation is the product of a subject and, therefore, an interpretation (Iglesia, 2023). In this way, every game contains a model of reality (MODEL 1), which is an algorithmic representation of the mental model that its creator has about society (MODEL 2), which is enacted during the simulation.

The third part refers to the conflict between the players or game agents and the system. For Fullerton, the game system is constructed from a perspective of structured conflict, which does not imply the simulation of violence, but rather a tension between the system, the agents interacting with the system, and their objectives. This, in turn, implies that the entities and behaviors that enable tension have been previously structured by the designers, most likely in an intentional way.

Finally, the last part of the definition refers to the inherent uncertainty of the game space that the system enables and to the resolution of that uncertainty. Fullerton complements the idea of conflict with that of uncertainty, completing the outline of the complex and emergent nature of game systems. At the same time, this definition acknowledges the possibility of measuring, experiencing, expressing—and therefore interpreting—the game's outcome in different ways.

2.1.2. Procedural expression

Unlike what happens with narrative artifacts like literature or cinema, board games are systemic artifacts expressed through structured behaviors (procedures) that respond to the non-trivial actions of players (Aarseth, 1995). When a player interacts with the game, it processes the player's action, changing the state of its entities and systems according to the rules. Then, following the guidelines established by its designer, the game provides feedback to the player through texts (visual, auditory, haptic) that inform their experience. According to this framework, players are able to understand how their actions influence the system's behavior and receive information that grants value to this behavior. Consider an abstract game of chance where players roll a die. If they get a number less than 3, they win; otherwise, they lose.

"It's your turn. You have rolled the die. You rolled a 6. You lost the game."

These simple rules enable an extremely boring game, yet one that fulfills the objective of expressing itself through its state changes and providing textual information to the player that explains this state change and its consequences for the game.

I have briefly explained how board games express themselves through behavior, but this does not fully explain how players create meaning. Moreover, my hypothetical example does not do justice to the complexity of games that model social and historical systems. Frasca (2001, p. 27) and Bogost (2006, p. 132) have pointed out the role of players' interpretation of simulations as a fundamental element in understanding players' meaning-making processes. Bogost has observed that while playing, players interact with these models of reality and interpret them using their own mental models of reality as a reference. For example, if the game is about managing a country, it is expected that a lack of resources will lead to public discontent, which in turn affects the game's progress. When there are acute differences between the player's mental models and the game model, it is possible for what Bogost has defined as simulation fever to occur in the interaction:

> "The residue of this interaction infects both spheres, causing what I earlier called simulation fever, the nervous discomfort caused by the interaction of the game's unit operational representations of a segment of the real world and the player's subjective understanding of that representation" (Bogost, 2006, p. 136).

In this sense, we understand procedural expression as a type of communication that emerges in games through the systems and rules that define how the game should behave in response to player actions. Instead of conveying messages in a direct or narrative manner, procedural expression manifests in the effects these actions produce within the game's system and in how players interpret these effects. This allows the game to represent complex dynamics and simulate social or historical realities, where players not only interact but also interpret and imbue the experience with meaning through their own perspectives and mental models of the world.

2.1.3. Polyphony and Ideological Tensions

Cultural objects are materialized expressions of the ideas, values, and projects—namely, the ideologies—that coexist in tension within a society (McDonnell, 2023). The critical study of these objects allows us to better understand people and their cultural practices. Each object created, whether to solve a problem or simply as a form of expression, tells part of the story of how a society's ideas, values, and projects struggle for legitimacy. As a result of these conflicts, certain ideas fall out of use, values are reconstructed, projects conclude, and objects transform.

These ideological tensions in culture and its objects have been explained as the dynamic between dominant, subaltern, and emergent elements (Williams, 1978). The dominant or hegemonic elements of culture are those that are normalized; the subaltern elements correspond

to forms that are marginalized or assimilated by the dominant culture; and the emergent or counterhegemonic elements are new components that challenge the established dominant elements.

This discursive tension inherent in material culture implies the existence of voices that articulate, express, and discuss these dominant, subaltern, and emergent elements. For domination to exist, there must be those who are dominated, and for there to be a dominant truth, there must be explicit or implicit subaltern truths that support it. The concept of polyphony introduced by Bakhtin recognizes the ability of texts to house multiple voices that articulate dynamic and heterogeneous forms of expression within a single text:

> The concept of "polyphony" calls attention to the coexistence, in any textual or extratextual situation, of a plurality of voices that do not fuse into a single consciousness but exist on different registers, generating dialogical dynamism among themselves. Both heteroglossia and polyphony point not to mere heterogeneity as such but rather to the dialogical angle at which voices are juxtaposed and counterposed so as to generate something beyond themselves. (Stam, 1989, p. 229).

This polyphonic condition of cultural objects—and particularly of games—enables multiple readings of the same object, focusing on specific voices that do not necessarily resonate with the object's dominant text. As outlined above, cultural objects can be considered forms of expression of a society's ideological tensions and of the multiple voices that manifest around these tensions. In this sense, a critical reading of these objects must go beyond inspecting and questioning their dominant texts; it must also involve those embedded voices that occupy a subaltern plane but are intrinsically connected to the dominant.

Board games, as cultural objects that systemically represent social realities, are polyphonic artifacts that express the ideological tensions of their contexts. Like other cultural artifacts, these tensions can be analyzed in terms of their dominant, subaltern, and emergent elements (Williams, 1978). In the case of board games, the dominant elements and the discourses they articulate[1] align with the vision of their designers and are inferred from the relationship between the game's rules and mechanics, the storyline, events, characters, and the feedback presented to players (Booth, 2020). This causes gameplay experiences to generally unfold according to the terms proposed by the designers, relegating certain elements to the residual plane, which often operate below the players' detection threshold. As I explain in section 2.3,

[1] Booth has referred to these discourses as the "ludic discourses" of the game. In this thesis, when referring to dominant discourses, I also allude to this concept introduced by Booth.

critical work with board games must not only examine and expose the ideological tensions and relations of domination and subordination present in their texts, but also resist and subvert the hegemony and authority of these texts by recovering and amplifying their subaltern voices in the form of counterhegemonic texts (Bhandari, 2022).

2.2. Board games and State Violence

Board games represent political and historical realities through rules and procedures—models—that emulate the workings of social systems (Gonzalo Iglesia, 2016). These designed models are "embedded with cultural and ideological elements from their context of creation" (Iglesia, 2023) and, therefore, include discourses that shape social imaginaries about both contemporary society and the past. Critical game studies have deconstructed these ludic models of history and politics to show how, through the act of simulation, discourses on power, oppression, and the legitimacy of violence are articulated. A body of work demonstrates how seemingly innocuous board games circulate discourses of supremacism, colonialism, racism, and imperialism, legitimizing the violence that dominant groups exert against the dominated (Borit, Borit & Olsen, 2018; Collins, 2021; Flanagan & Jakobsson, 2023).

Recently, there has been a proliferation of games that model internal conflicts, such as civil wars or revolutions (Suckling, 2023), and there is evident interest within the field of game studies in understanding how games construct imaginaries about power. Likewise, critical artists and designers seek to subvert dominant discourses in games that legitimize state violence (Müllner, 2022). However, studies and interventions in board games focused on state violence remain limited.

Next, I will present the concept of state violence and explain how games model this violence explicitly and implicitly, suppressing the perspective of victims to convey their dominant discourses. This will serve to position ludology as a practice that exposes and challenges this state violence by recovering the perspective of the victims.

2.2.1. Framing State Violence

One of the political principles of modern states is that they hold legitimate control over violence within their jurisdiction to preserve social order and defend their sovereignty (Davenport, 2007). In the social sciences, this view of state violence has been expanded to include both direct forms of force (i.e., the control of public security) and structural forms (i.e., the denial

of public services to a specific population for political or military purposes). Instances have also been identified where the use of violence by the state is legitimate, as well as situations where such use is excessive, unjustified, and illegal.

Illegitimate state violence refers to acts of violence exercised by the state that are perceived as abusive or unjustified, such as genocide or the use of terror against its own citizens (Torres, 2018, p. 387). Blakeley (2016) further explains the difference between legitimate state violence and state terrorism:

> While states claim a monopoly on the legitimate use of violence, in that they claim the right to resort to violence in self-defence (sic), certain acts of state violence are nevertheless prohibited, even in the course of a defensive war. (...) State terrorism involves the deliberate use of violence against individuals that the state has a duty to protect in order to invoke terror in a wider audience. Targeting armed enemy combatants is legitimate in warfare, but certain acts are nevertheless prohibited. These include killing prisoners of war or subjecting them to torture or other inhuman or degrading treatment or punishment. (Blakeley, 2016, p. 68.).

For the reasons outlined above, in this thesis, I refer to state violence to denote the illegitimate use of state force against civilian populations for political purposes, both directly and indirectly.

2.2.2. Modeling State Violence

A board game models state violence when its rules and procedures enable the simulation of acts or events in which state entities or entities aligned with the state exert physical or symbolic violence against the civilian population.

These acts or events can be explicitly described as a rule or action occurring during gameplay, or they can be presented abstractly, consequently players uncover through interpretation or analysis. An example of the explicit representation of state violence is the game *All Bridges Burning: Red Revolt and White Guard in Finland*, 1917-1918 (Arponen, 2020). This game models the Finnish Civil War, allowing one player to assume the role of a state entity, the Finnish Senate. As part of their action repertoire, this player can conduct drastic acts of intimidation, such as the "White Terror," which increases their political power and moves them closer to victory:

> In the historical conflict, Terror took many forms, from more or less unplanned personal acts of revenge to organized persecution, violence, and executions. Elsewhere in the COIN Series, Terror has been conceptualized as serving to undermine state authority by illustrating its inability to protect its citizens. In the context of the Finnish Civil War, however, the power vacuum left by the demise of Russian rule in Finland meant that there was no central state authority to undermine. Gradually, central state authority

> disappeared altogether and local militias took over in its place. Accordingly, in *All Bridges Burning*, Terror is conceived as a weapon of intimidation: it deters an enemy Faction's support for their cause. This is explicitly simulated by the removal of enemy pieces and the additional cost of the enemy's Rally Command in spaces with a history of enemy Terror.

Although the game's designer explains that during the historical period modeled in *All Bridges Burning*, Finland did not have an established state authority, the "Senate" alludes to the role of the state during the conflict. Similarly, it should be noted that while the "Red" faction player can also carry out acts of "Red Terror," aimed at fulfilling a function similar to that of the "Senate" faction, these entities do not represent state power but rather an insurgent group within society.

The modeling of state violence in a game can reflect the ideologies embedded within it, as well as the rhetorical operations it performs to either question or legitimize these ideologies. In this sense, analyzing how this violence is modeled and how the player is fed back regarding its consequences can be revealing for its critical study. In the game *Nicaragua!* (Miranda, 1988), which simulates guerrilla warfare in Nicaragua during the 1980s, the "Repression" technique serves as a form of conducting "Intelligence" operations, which both the player representing the "Government" and the one representing the "Rebel" can choose to employ.

> Players use their intelligence capabilities to ferret out covert enemy units so that they may be attacked and eliminated or neutralized. They may do this through normal informer/military channels, or they may elect to use such repressive techniques as indiscriminate arrests and torture. (Miranda, 1988, p.13)
>
> (...) If the phasing player chooses to use repressive techniques in conjunction with his intelligence operations, the possibility of gaining information increases at the expense of alinenating the social classes. (...) A player may use Repression in each Intelligence Operation he performs. (...) Each time the phasing player uses Repression in the Intelligence Phase, the non-phasing player may add 1 to his National Will level or the non-phasing player may move the political marker of any one Social Class present in the Department one box in his favor. (Miranda, 1988, p.15)
>
> The *instant* a player's National Will level goes below the "1" box, regardless of whose turn it is or what phase of the turn it is, that player's side surrenders and his opponent is the winner. (Miranda, 1988, p.19)

Based on the above, it is possible to unravel some ideas about the ludic and discursive function of repression:

- *Both the State and the insurgents can repress the population.*
- *Repression can have a positive effect for the faction conducting it.*

- *Both factions are penalized for doing so.*
- *Repression of the population negatively impacts player performance but does not determine it.*

From these statements derived from the rules, we can assert that the game positively rewards repression but does not make it an immediate defeat condition. On the contrary, players can strategically use torture and indiscriminate arrests of the civilian population to achieve their political objectives. The critical study of games like *Nicaragua!* can address the modeling of state violence and assess its ideological and ethical implications.

2.2.3. Suppressing the Perspective of the Victims

One of the main challenges for game creators who represent political violence, especially those aiming to "realistically" depict a historical scenario, is establishing the conditions under which the game addresses this violence. For example, Train and Ruhnke explain that counterinsurgency wargames omit the representation of terrorist and genocidal acts in their mechanics to avoid "strongly negative reactions" from players (Train & Ruhnke, 2016, p. 515).[2]

Their alternative is to present wars in a *social vacuum*. The player is rewarded or penalized for choosing to attack civilians, but the consequences of these actions are presented in abstract terms, aligned with the game's dominant storyline. Alonge (2019) has observed that representing war in a social vacuum can have the rhetorical effect of sanitizing and legitimizing the excesses of war.

The abstraction of victims and the suppression of the consequences of violence from the game's dominant layer is an important design decision. For instance, Alonge has noted how, in certain games, the absence of civilian victims contrasts with the level of detail given to modeling specific aspects of war.

> *Squad Leader* presents several scenarios that depict urban combat, which is reproduced in a highly detailed way. There are even rules concerning movement in the sewer system. The only significant feature of city environment that is ignored is the presence of civilians. *Squad Leader*'s battles take place in a social vacuum. In Lou Zocchi's *Luftwaffe*, on the air bombing campaign against Germany, the Allied player must annihilate enemy cities and infrastructures, but the terrible human cost paid by the German population is never mentioned, not even in the historical and designer's notes.

[2] The authors reference the criticism received by the board game *Andean Abyss* (Ruhnke, 2012) on the BoardGameGeek forums for giving players the ability to commit acts of terrorism.

> Of course, the main reason why the so-called “collateral damage” is rarely mentioned in wargames is because they focus on the more “exciting” aspects of warfare: maneuvering and fighting. But one could argue that, through blurring the horrors of battle, wargame implicitly makes war acceptable. (Alonge, 2019)

All Bridges Burning and *Nicaragua!* model state violence, but they do not represent victims as entities, nor do they consider them in the game’s objectives: the game does not end based on how many times the population has been attacked. Yet we know this information exists. For example, in a modding exercise for *Nicaragua!*, we could establish a rule that limits state attacks to a specific number. This would bring victims into the game's dominant layer, making it a game condition to actively count the number of victims. Commercial games are designed so that information about victims and their trajectories remains below the players' threshold of detectability. The systemic procedure of suppressing information about victims and their trajectories from the dominant text is an exercise of power by the game.

Fig. 1. Footage of an Israeli airstrike in Gaza (Source: CNN, 2023).

Fig. 2. A screenshot from Call of Duty 4 (Infinity Ward, 2007) showing a perspective similar to military footage displaying airstrikes

Mass media, like television and newspapers, consciously conduct these types of operations. For example, television uses another technology, footage, to report (represent) the development of military actions without presenting civilian victims. The origin of the first image (Fig. 1) is part of the footage circulated by the IDF as evidence of the operation in which Mohammed Deif, the military leader of Hamas in Gaza, was killed. By focusing on the state intervention from an aerial perspective, the Israeli army shifts the fate of the 90 civilian victims of its attack to a residual plane, below the viewer's threshold of detectability. In the second image (Fig. 2), we see a segment from the C130 Airstrike mission in *Call of Duty 4: Modern Warfare* (Infinity Ward, 2007), in which the player controls a fixed-wing aircraft to annihilate enemy troops on the ground. As with other war simulation games, the perspective chosen for this mission can be understood as an effort to provide players with an immersive or realistic experience. Ultimately, this design choice allows *Call of Duty* to employ the same rhetorical operation as the IDF, constructing a successful narrative of the war on terror while omitting the presentation of victims.

While there are board games where the representation of state violence centered on victims informs players' emotional experience (Sterczewski, 2016), this thesis focuses on those games that conveniently abstract or omit it (Mukherjee, 2021). In this sense, I argue for the need for theoretical and practical tools that make it possible to detect information on violence in board games that exist below the detectability threshold.

2.3 Critical Work with Board Games

In this section, I present four approaches to critical work with board games. First, I refer to ludology, or the formal study of games. I present the rationale behind this approach and explain its benefits for the critical study of games. Second, I introduce board game subversion as a critical practice of resistance through art and design. Finally, I present two experimental approaches: Object-oriented inquiry and reflective digitization, which advance the critical analysis and design of board games.[3]

2.3.1. Ludology and Procedurality

Ludology has been defined as the formal study of the structure and elements of games (Frasca, 2013). This field approaches "games as games," differentiating their elements (Fernández-Vara, 2019; Fullerton, 2008; Järvinen, 2008; Juul, 2001; Stenros & Montola, 2024), their functioning (Aarseth, 1995), and their expressive procedures (Bogost, 2006; Bogost, 2007; Frasca, 2009) from those of other media forms.

Frasca has proposed organizing these formal elements into three schemas to facilitate analysis: the representational schema, the simulation schema, and the performance schema. The representational schema constitutes the fictional layer of the game, manifested through its story as well as the audiovisual representations of its components. The simulation schema, on the other hand, consists of constitutive rules (Stenros, 2024, p. 29) and the ways of interacting with these rules, or mechanics, that is, the algorithmic structure that enables the game's functioning. Finally, the performance schema refers to the actions players take to participate in the game.

Within the field of ludology, there is the procedural school, which places central importance on the simulation layer as the enabler of gameplay and a fundamental piece in the meaning-making process. Works from a critical procedural perspective focus on how the game's rules and procedures operate to circulate ideas, values, and projects about the world (Fernández-Vara, 2019, pp. 149–150). For this work, I approach ludology as the formal study of games that inspects their rhetorical operations, focusing on their algorithmic structure, complemented by the analysis of their representations and performance (Ambrosio, Ross; 2023).

[3] This practice is explained in more detail in Appendix I.

2.3.2. Subversion

Critical work with board games is not limited to analyzing their meaning-making processes; it also involves the act of appropriating and transforming these games and their cultures[4] to promote the reconfiguration of political realities and power structures.

Subversion as a cultural practice is the strategic use of creative methods to challenge, dismantle, or reinterpret established social, political, or cultural norms, revealing and contesting underlying power structures or dominant ideologies. Previously, Debord and Wolman used the French term *détournement*[5] to refer to the critical practice of diverting or subverting existing cultural objects to reconfigure their original meaning, thereby questioning or challenging dominant ideologies.

Regarding games, Flanagan has referred to subversion as a form of critical intervention that recognizes games as polyphonic artifacts and acts upon them to amplify the subaltern voices embedded within them:

> A subversion is an action, plan, or activity intended to undermine an institution, event, or object. When discussing subversion, it is necessary to know what system or phenomenon in particular one is working against, be it political, social, legal, or cultural. (...) Subversion has been identified by several theorists and practitioners as a powerful means for marginalized groups to have a voice. (Flanagan, 2009, p. 10-11.)

Flanagan envisions a scenario in which, through play, people navigate and reveal their subaltern voices—the hidden transcripts of the social—and in which designers are informed by players on how to enable play spaces that allow for the emergence of new discourses integrating these postponed voices:

> James C. Scott writes about subjugated persons and how the subjugated public resists power. He examines the spaces where those dominated can express their "hidden transcript," or offset narrative, one that serves to critique those in power. It is easy to see that games provide one such outlet. An effort to reveal or make visible these "hidden transcripts" that often lie among the "official transcripts" of power relations parallels the investigations of many players and artists in a variety of milieus. Is this not the

[4] Boluk and LeMieux (2017) have observed that games, the act of playing, and play cultures are colonized by the dominant discourses of digital gaming and its industries. In response to this situation, both authors propose the articulation of critical practices in which making, thinking about, and playing games occur in a single movement.

[5] "Détournement – a diversion, a detour, a seduction, a plagiarism, an appropriation, even perhaps a hijacking – is the integration of present or past artistic productions into a construction that surpasses them (...) That culture can be copied, that it is nothing but a copy, is merely a statement of fact. The trick is to turn the possibility of copying into an act that restores agency to the act of appropriation, rather than merely adding to the stock of worthless copies that surround us. The key to détournement is not to appropriate the image, but to appropriate the power of appropriation itself". (Debord & Wolman, 1956).

> essence of unplaying? (...) The hidden transcript played by those who are far from empowered can perhaps communicate to game designers important strategies through which games can expose, validate, or celebrate these equally valid modes of discourse. In turn, players may use this information and their experiences to alter the social institutions we live by. Using the critical play method, the role of the designer can widen to include an analytical framework for comprehension or analysis, characterized by a careful examination of social, cultural, political, or even personal themes that function as alternates to popular play spaces. (Flanagan, 2009, p. 261)

Subversion as a practice of resistance through creation has a strong relationship with the postcolonial. Cultural artifacts (goods and services) circulating in postcolonial societies are often infused with ideas and values that resonate with the ideological projects of centers of power. For subaltern subjects, the relationship with dominant culture and its artifacts inherently involves processes of assimilation and resistance (Bhandari, 2022), which are expressed in material culture (Williams, 1978). The subversion of digital games is a design practice widely spread within play and game-making cultures in postcolonial societies, whether as a way to make visible (Loban & Apperley, 2019), expose (Mir & Owens, 2013), think counterfactually (Apperley, 2013 & Mukherjee, 2017), or openly contest (Lakomy, 2019) Empire.

In the case of board games, one path for this cultural transformation is the critical intervention of popular games, aiming to reconfigure the tensions and voices that emerge during play. By recognizing games as cultural artifacts that embed ideological tensions, expressed through multiple voices, it becomes possible to subvert these elements to facilitate the emergence of new narratives.

In this thesis, I frame critical work with games in terms of subversion; that is, an intervention that facilitates the emergence of subaltern and postponed voices, which question and contest the dominant narratives of games and their cultures. In my case, I am particularly interested in working with the game's algorithmic structure and leveraging its inherent plurality of voices to enable new narratives that challenge what is established by the game's dominant texts.

2.3.3. Experimental Approaches

I present below two practices that advance the procedural study of board games and their subversion.

Object-oriented inquiry

In A Day in the Life of a Tree, Wilson and Rieley (1971) explore the suffering of a tree:

> Feel the wind burn through my skin
> The pain, the air is killing me
> For years my limbs stretched to the sky
> A nest for birds to sit and sing
> But now my branches suffer
> And my leaves don't bear the glow
> They did so long ago
> One day I was full of life
> My sap was rich and I was strong
> From seed to tree I grew so tall
> Through wind and rain I could not fall
> But now my branches suffer
> And my leaves don't offer
> Poetry to men of song
>
> (Wilson & Rieley, 1971)

To achieve this, Wilson and Rieley speculate about the experiences and emotions of an aged and damaged tree. This speculative approach is a common resource in musical works, but it has recently been consolidated to broaden our perspective on the world and its objects.

Object-oriented Inquiry (OOI) is a speculative methodology for game research focused on their components. This methodology is rooted in the philosophical tradition known as speculative realism (Harman, 2015) and has been adapted to critical game studies by Bogost (2006). Recently, Spiel and Nacke (2020) have explored the potential of OOI as a means to innovate research on the relationship between people and technologies, especially games, by shifting the focus away from the subjective experience of players and onto the game's components. In this regard, these authors have introduced narrative inquiry as a form of OOI that allows generating research data from the perspective of objects:

> Several approaches allow researchers to generate narratives from an object's perspective. For example, technology can be anthropomorphisized to discuss the different roles it takes up in relation to humans and other objects. Narrative inquiries can also rely on multiple human perspectives, be it through co-speculation on a thing with distinct groups, interviews with actors who enact being a thing from previously collected data or entire speculative enactments from an object's perspective. (Spiel & Nacke, 2020, p. 4)

I believe that narrative inquiry enables forms of analytical and critical work with subaltern voices present in games. First, OOI allows us to question game objects about the events and behaviors within the game. Then, it enables us to reconstruct these objects' perspectives, providing us with an understanding of their experience in the game world and their relationship with other objects and the player. Finally, narrative inquiry allows us to use this information to

speculatively reconstruct their perspectives. For example, from this perspective, we could use information about a game NPC to speculate about its experience in the game world and even create texts that narrate, from the NPC's perspective, how the game's events have unfolded.

Reflexive Digitization

Reflexive digitization is an experimental practice in board game research and design that uses digitization to examine, reveal, and question the algorithmic structure of these games. By reconstructing a board game in a digital format, the practitioner gains a deep understanding of the original material and develops tools that facilitate future interventions in the game.

This practice is being studied at the Game Research Lab of Tampere University under the supervision of Thomas Apperley. For clarity and to aid in the reading of this thesis, I include a description of the foundations and procedures of this practice in Appendix I.

2.4. Chapter summary

In this chapter, I presented the background of counterforensic ludology. In the first subchapter, I defined board games as systemic artifacts that represent social and historical realities through rules and procedures, framing the players' process of meaning-making as an interaction between the game's embedded models and the players' mental models. I then explained that games, as cultural objects, contain dominant and subaltern voices reflecting the cultural tensions of the society in which they are created and that, through design, creators prescribe a particular way of resolving these tensions.

In the second subchapter, I defined state violence as the illegitimate use of state force against civilian populations for political purposes, whether directly or indirectly. I argued that this state violence is reproduced in material culture, specifically in board games, and showed how it is suppressed in the dominant texts of these artifacts through internal power operations that function systemically.

In the third subchapter, I presented critical work with board games from ludology, subversion, and experimental approaches. I defined ludology as the formal study of board games, focusing on their simulation layer while also considering their narrative and performative elements. I then introduced subversion as a practice of resistance rooted in the design and art traditions of postcolonial societies, which intervenes in artifacts circulating

hegemonic discourses to recover the voices of the dominated. Next, I introduced two experimental methodologies: Object-oriented inquiry and reflexive digitization. I explained that Object-oriented inquiry, and specifically narrative inquiry, allows speculative work with game system information to reconstruct the perspectives and voices of both represented and omitted subaltern actors. Finally, I briefly introduced reflexive digitization as an experimental practice in board game research and design, using digitization as a means to examine, expose, and question the algorithmic structure of these games. This practice is explained further in Appendix I.

3 COUNTERFORENSIC LUDOLOGY

In this chapter, I explain the principles and foundations of counterforensic ludology. First, I introduce the counterforensic device as a theoretical-practical tool that advances the critical analysis of material culture. Second, I contextualize the counterforensic approach as a practice of resistance to the authority of hegemonic discourses. Finally, I explain the foundations and procedures of counterforensic ludology.

3.1. Counterforensic and the Study of Material Culture

In this subchapter, I outline the theoretical foundations of the counterforensic device. First, I introduce the concepts of material aesthetics, forensic aesthetics, and forensic materiality, which serve as a basis for the forensic perspective; second, I address the concept of the residual within the forensic framework; third, I analyze the terms forensic, anti-forensic, and counterforensic, highlighting their similarities and differences; then, I detail the nature of the counterforensic device; and finally, I present the value of this perspective for the study and subversion of material culture.

3.1.1. The Forensic Gaze

The *forensic gaze* is a lens for the investigation of objects that "scans for clues" (Jones, 2022, p. 65)[6]. This gaze ontologically recognizes three properties of objects: material aesthetics, forensic aesthetics, and forensic materiality, which I explain below.

The condition of material aesthetics refers to the inherent capacity of material objects to function as sensors that record changes in their environment:

> Matter can be seen as an aesthetic sensor insofar as its formal transformations register the different forces around it. Material aesthetics is primary, preceding human perception, apprehension, and judgment. (...) While aesthetics is generally understood as belonging to human senses and perception, "material aesthetics," however, captures the way in which matter absorbs or acquires (rather than apprehends or comprehends) its surroundings. (Weizman, 2020, p.138).

[6] This gaze has had a significant impact on popular culture (for example, in detective series), and from a critical perspective, it has been observed as a "fundamental aesthetic closely tied to post-9/11 extensive surveillance discourse (...) and the broader context of the post-panopticon" (Elyamany, 2022). There is a growing body of reflection and research on the influence of this gaze in popular culture, but I consider that this goes beyond the scope of this thesis. It has been my decision to employ a specific definition of the concept to theorize about my own critical practice.

Viewed this way, material objects "perceive and communicate" with each other without human intervention. This non-sensory perception allows them to register information about what occurs in their environment, even when it happens below the threshold of human detectability. Thanks to this material condition, analytical work enhanced by science and technology can extract this information from objects, expanding knowledge about the situation or environment that these objects "witnessed."

Fig. 3. Image from a guide (Big Fish Games, n.d.) of CSI: New York (Legacy Interactive, 2008) illustrating the forensic perspective in gaming culture.

The forensic aesthetic condition includes the material aesthetic condition but grants objects an additional capability: to express themselves through a mediator to an audience:

> "(Forensic aesthetics) refers to the way things are presented. It involves various techniques and technologies for display—rhetorics and performance, gestures, narrative and dramatization, image enhancement, and projection." (Weizman, 2020, p.139).

This enables objects to participate in rhetorical exercises in which they support a thesis, while also allowing other parties to pose questions and dispute their expression. Of course, objects cannot speak for themselves, and it is the role of the mediator, an expert in the objects, to ensure the validity of what they and the objects assert. In this sense, Keenan and Weizman have defined objects and their mediators as a rhetorical unit:

> "Since the object and its interpreter form a single, interconnected rhetorical unit, refuting a statement attributed to the object requires dismantling the mechanism of its articulation; that is, by showing the object is inauthentic, the interpreter is biased, or communication between them is short-circuited. One might say the object and its 'friend' do not speak the same language, either because the expert misinterprets or, more radically, because the so-called discourse of the object wholly originates with its would-be advocate." (Keenan & Weizman, 2015, pp. 46–47).

Forensic materiality is the recognition of the uniqueness of objects (Jones, 2022). No two identical objects can exist in the same place and time, and, due to their own sensory capacities, these objects record information in their materiality about that place and time. This makes objects witnesses—or even agents—that carry a portion of the truth.

Therefore, in this work, we refer to the forensic gaze as the lens that enables the interpretation and analysis of events occurring in the world, including those that fall below the threshold of human detectability, leveraging the aesthetic and forensic capacities of the objects involved in them.

3.1.2. The Residual

The residual is a key concept for the forensic and critical practices that employ the forensic perspective, but even before that, it is a concept deeply embedded in people's everyday lives. We all produce and deal with residues. The *Oxford English Dictionary* defines *residue* (n.d.) as "the remainder, the rest; that which is left of things or persons." This broad definition encompasses everything left of an object (thing or person) that is no longer present. Meanwhile, the *Real Academia Española* (n.d.) defines the residual as "relating to residue," which it defines as "material left as useless after completing a task or operation." This definition aligns more closely with the critical systemic perspective of my work because it acknowledges two additional characteristics of residues: that they result from operations or work and their uselessness.

Systemic artifacts are expressed procedurally, that is, through operations involving rules and objects (Bogost, 2006). Systems generate multiple signifiers during these operations, but only some are articulated and recognized as the artifact's dominant texts (2.1). The elements that result from the expressive operations of artifacts and are not incorporated into the emergent dominant texts constitute the residual signifiers. These inactive and forgotten signifiers exist below the threshold of detectability. I refer to the network of these residual elements generated by the expressive operations of systemic artifacts as "the residual."

The residual can be imagined as a repository of evidence of the ideological tensions inherent in cultural objects. These are, after all, what the artifact's rhetorical apparatus uses to express itself but discards and conceals because they might reveal it. Residues are deemed useless from the dominant perspective of the system, though their uselessness is a state, not a permanent condition. From a forensic perspective, all objects contain information about themselves, other objects, and the world, waiting to be heard and interpreted. In forensic and counterforensic exercises, these useless objects are retrieved from the residual plane and reconfigured to expand our understanding of the operations that produced them.

What happens when we create new texts from residues? Residues tell grand stories that expand and challenge the signifiers inhabiting the dominant plane, though they often go unnoticed. For environmentalists, Taylor Swift's CO_2 emissions tell a story of massive resource waste in late capitalism. For Beatles fans, the residues hidden in their songs are an endless source of rediscovery. As I explain further, these residues can be used to articulate texts that expose the rhetorical operations of objects and challenge their dominant texts.

3.1.3. The Forensic, the Anti-forensic, and the Counterforensic

The term forensic, derived from the Latin root *forensis*, refers to something belonging to the forum, especially a judicial or legal forum (Real Academia Española, n.d-a), as well as to "the practice and skill of creating an argument before a professional, a politician, or a legal council" (Keenan & Weizman, 2015, p. 45). Weizman, examining the origins of the forum, makes this observation about the functioning of that space:

> The forum was a chaotic and multidimensional realm of economy, circulation, politics, and judgments in which both people and objects participated and were represented. Small objects, like coins or daggers, could be physically displayed, but abstract, distant, or overly large matters such as rivers, territories, wars, peoples, famines, or empires had to be made vivid through the power of aural representation or demonstration—what Quintilian referred to with the rhetorical term "prosopopoeia," the attribution of a voice to inanimate matters.

The Roman forum Weizman depicts is a space not restricted to the judicial; it is an arena where matters of public interest are debated. He also notes that, within this space, objects function as interlocutors, represented and participating in the forum's rhetorical displays.

With the advent of modern society and the consolidation of state apparatuses for population control, the concept and practice of the forensic became restricted, stripped of its critical dimension, and aligned with state apparatuses:

> The forum (…) began to be confined exclusively to legal courts, and 'the forensic' to the use of science within them, primarily medicine. The critical dimension of the forensic—its public and political element—was lost in the process. Thus, forensic science has become the art of the police (Weizman, 2020, p. 90).

But what happens when the State itself is on trial? How does the forensic operate when the violence under investigation has been committed by the State and occurs outside the framework of the law? Today, states hold "the monopoly on forensic resources," as they have extensive and robust technological, legal, and political apparatuses that allow them to maintain an advantageous position in defending themselves before forums (Weizman, 2020, p. 98). Seen this way, the search for truth by victims of state violence is orchestrated as an asymmetric dynamic, where entities, institutions, technologies, and bodies of knowledge that are ostensibly meant to protect them operate in their own interest.

The anti-forensic has been defined within the scope of cybersecurity as tools and techniques aimed at frustrating forensic activity (Garfinkel, 2007). Anti-forensics obscure objects, rendering them useless for use by state institutions in judicial forums; however, it is also a practice used by individuals and communities to protect themselves from state violence. An example includes protesters covering their faces to avoid detection by security cameras or hackers disabling surveillance systems in similar contexts.

The counterforensic is a civil practice that not only encompasses acts of resistance against state power apparatuses but also subverts them to expose and contest acts of violence that these commit against their own citizens. This resistance is manifested through acts of opacity—as in the case of anti-forensics—and transparency. Acts of transparency aim to identify and reveal state violence and the military, political, and judicial operations that states conduct to conceal it. Making state crimes transparent is a process that involves not only collecting, processing, and analyzing evidence of violence but also presenting such evidence in institutionalized forums such as courts, as well as creating and claiming new forums where state violence is hidden, ignored, or, worse, legitimized. In this sense, counterforensic practice constructs a network of artifacts—texts—in different languages that occupy and generate spaces for interpretation and assimilation.

3.1.4. The Counterforensic Device

The counterforensic device is a theoretical, practical, and political assemblage that examines, exposes, and contests the truth about state crimes across various forums. Theoretically, it builds

on forensic aesthetics, which recognizes objects as capable of recording occurrences beneath the threshold of human and institutional detectability and of being analyzed and interpreted to communicate these records. Practically, the counterforensic device is interdisciplinary, integrating knowledge and techniques from medical sciences, law, engineering, physics, art, design, and other fields to recover, examine, and present evidence of illegitimate state violence. Politically, the counterforensic positions itself as a challenge to power, particularly the ways its institutions exercise violence against the population and conceal it. It also involves the political act of (re)constructing forums to enable the exposure of individuals, objects, and discourses that institutional spaces prefer to overlook.

Forensic science—and therefore counterforensic practice—involves the relationship between three components: an object, a mediator, and a forum (Keenan & Weizman, 2015, p. 46). The object is the entity that perceives state violence and records it inevitably. However, the object cannot participate in the human world on its own; it requires an agent to facilitate its expression and represent it in the forum. The mediator is the expert and legitimate agent who captures, interprets, and presents the object in the forum. The forum, in turn, is the institutionalized space where cases related to state violence are debated. Each forum is distinct, as it is constituted by its own protocols, platforms, and interpretive communities.

Practically, Weizman notes that the counterforensic operates in three spaces (2020, p. 92): the field, the laboratory, and the forum. The field is the place where violence occurs and where traces of it remain; it is also the space where agents of state power work to conceal the evidence. Forensic investigators enter the field to preserve and recover evidence of state violence, often risking their safety, especially if this occurs in active conflict zones. Once recovered, the evidence is taken to the laboratory.

The laboratory is an institutionalized space that encompasses rules, protocols, tools, and techniques for working with evidence. This is where counterforensic investigators process and analyze violence, making it "speak" for the first time. After interpreting the evidence, forensic workers reconfigure it according to the rhetorical strategy that will be used in presenting the case in the forum. The result of this work in the laboratory is an artifact or a network of artifacts—knowledge objects—capable of conveying, in human-understandable terms, information that is valuable for rhetorical exercises in the forum (Bleeker, Verhoeff, & Werning, 2020). An example includes videos or three-dimensional models presented in hearings when explaining a case.

Finally, from a counterforensic perspective, forums are spaces where the truths about violence are contested. Counterforensic activists intervene in and create spaces where dominant narratives can be questioned, and alternative interpretations of state violence can be explored. More importantly, counterforensic work must enable pathways for restoring social bonds. In this sense, the revelation of victims' truths, even when not adhering to scientific standards stipulated by legal institutions, is fundamental.

3.1.5. The Counterforensic and the Subversion of Material Culture

In this work, I approach the subversion of material culture as the act of interfering with cultural objects to reconfigure their original meaning and thus question or challenge their dominant discourses. This subversive act involves recognizing three characteristics of cultural objects: their inherent ideological tensions, their polyphony, and their aesthetic or sensory capacities. Ideological tensions and polyphony have been previously explained as the capacity of cultural objects to incorporate multiple voices that reflect the tensions of the ideas, values, and projects of a society (2.1). Recognizing material aesthetics and forensic aesthetics allows us to consider cultural objects, their creators, and users from new perspectives. The counterforensic perspective accepts that objects perceive and record the world in ways we do not yet fully understand. Moreover, this perspective reveals that objects, their relationships, and behaviors often operate below the threshold of human detectability. This broadens the boundaries of critical analysis of cultural artifacts and allows for the revelation of expressive and ideological operations of objects that occur below the threshold of detectability.

Below, I present three paths of critical and subversive work with material culture enabled by the counterforensic device. For ease of explanation, I describe these paths separately, although in practice, they are part of the same route.

The first path is analytical. The counterforensic device allows us to examine the expressive operations of cultural objects beyond their dominant discourses. More specifically, the counterforensic approach integrates the forensic gaze and acknowledges that objects produce residual information that can be reconstructed or captured for study, with the aim of expanding understanding of the object.

The second path is practical. The counterforensic recognizes that the hidden or residual information of objects—whether written texts, films, photos, or toys—is a resource for reconfiguring the objects themselves against their dominant discourses. Therefore, it uses a

broad repertoire of techniques and intervention strategies from various disciplines such as art, engineering, or computing, among others, to construct knowledge objects that function as critical objects.

On a political level, the counterforensic device establishes two main lines. The first is the purpose of the practice, which is to clarify the illegitimate violence that dominant entities in society exercise against the dominated. The counterforensic device, by definition, questions how the State wields and exercises the monopoly of violence. It also focuses on the victims of that violence, who are often systematically marginalized populations. In this sense, counterforensic work with material culture should aim to make visible the excessive and illegitimate violence of the State and allow victims and their communities to articulate their truths and challenge the hegemonic discourses that invisibilize and revictimize them; otherwise, it will merely be forensic work.

The second political line refers to the work of mediators and forums. When the counterforensic device encounters a forum where the truth about violence is disputed, it intervenes. Therefore, mediators "listen" to the objects and devise appropriate strategies that allow their truth to be expressed and their counter-narrative to unfold. Furthermore, when objects and their mediators do not find suitable forums, they create them. Applying this reasoning to work with material culture and objects, the counterforensic device advocates for the reconfiguration and creation of spaces that allow for the presentation of the truth that objects seek to express.

3.2. Contextualization

In this subchapter, I explain the context of counterforensic ludology. First, I situate my work within the traditions of game subversion in postcolonial societies. Then, I present the theoretical and practical needs that drive me to approach games from a counterforensic perspective.

3.2.1. Tradition of Subversion

As a Peruvian and Latin American, my work as a game designer and researcher is rooted in the critical tradition of my region and country, which is currently articulated as a response from precarity to the socio-technical hegemony of North Atlantic countries, primarily the United States. This political relationship can also be understood in terms of postcolonialism, as it

challenges structures of power and dependence that have persisted since the colonial era and, with globalization, have expanded and deepened on a global scale (Quijano, 2014).

The condition of precarity has been defined as: "the conditioned access to infrastructure, education, culture, quality of life, mobility and so on: conditioned by market demands, geographical location, public perception and political interests" (Messias, Amaral, & Oliveira, 2019). This condition of precarity compels individuals, teams, and communities to generate strategies that allow them not only to access these services and products but also to appropriate, question, and subvert them. In the case of information technologies, this praxis has been described as hacking or technological disobedience, which enables "the prolongation of objects' lifespan, beyond their induced expiration or planned obsolescence from manufacture" and the transformation of "the possible uses of objects, generating adaptations or combinations that deviate from their intended and pre-designed uses" (Sienra, 2023, p. 84).

Fig. 4. The King of Peru 2: The Final Mecha is a 2001 modded version of King of Fighters, featuring Peruvian politicians and presidential candidates as playable characters (Source: BootlegGamesWiki, n.d.).

In the specific case of games, the body of academic work dedicated to researching cultures and practices of subversion and critical design is notably growing (Penix-Tadsen, 2019; Wong, 2021). However, based on my own experience, I can attest that it remains insufficient to capture the expanding ecosystem of communities, markets, and discourses related to these practices. This can be explained—partially—by the subordinate position that technological dissent

occupies within the official discourses on digital culture in the region, as well as by the limited attention that official institutions—whether design schools or governments—allocate to these practices.

3.2.2. (Counter)forensic Tradition in Latin America

Now I want to briefly refer to the forensic and counterforensic tradition in my region. This will allow the reader to gain greater clarity regarding my positionality as a game researcher and designer.

In Latin America, there exists a long and painful history of state violence against citizens, particularly the most vulnerable. From the *Escuela de Mecánica de la Armada* in Argentina to the hidden graves of the *Ayotzinapa* students in Mexico, Latin America holds numerous imprints of crimes perpetrated by states against their citizens. These unending cycles of violence have led Latin American societies to constantly re-examine their past, as a means of healing, rebuilding social bonds, and directing efforts towards making their fragile democracies viable. Forensic and counterforensic approaches are deeply rooted in the political, legal, and scientific traditions of Latin America, serving as essential tools to untangle the complex webs of repression and state violence that have marked the region:

> The main actors in this process are the forensic anthropology teams through a scientific and technical process that have enabled the localization of remains, give clues about repressive strategies, and above all have had an influence on changing the narrative of what happened. (Dutrénit, 2013).

This search for truth on behalf of victims has also influenced other forums, such as the artistic realm. Forensic work has become part of the landscape that depicts Latin American violence, with forensic agents portrayed in film and literature. Similarly, a counterforensic perspective has engaged with artistic and political work, reinterpreting the remnants of violence to construct narratives of memory, resistance, and reconciliation.

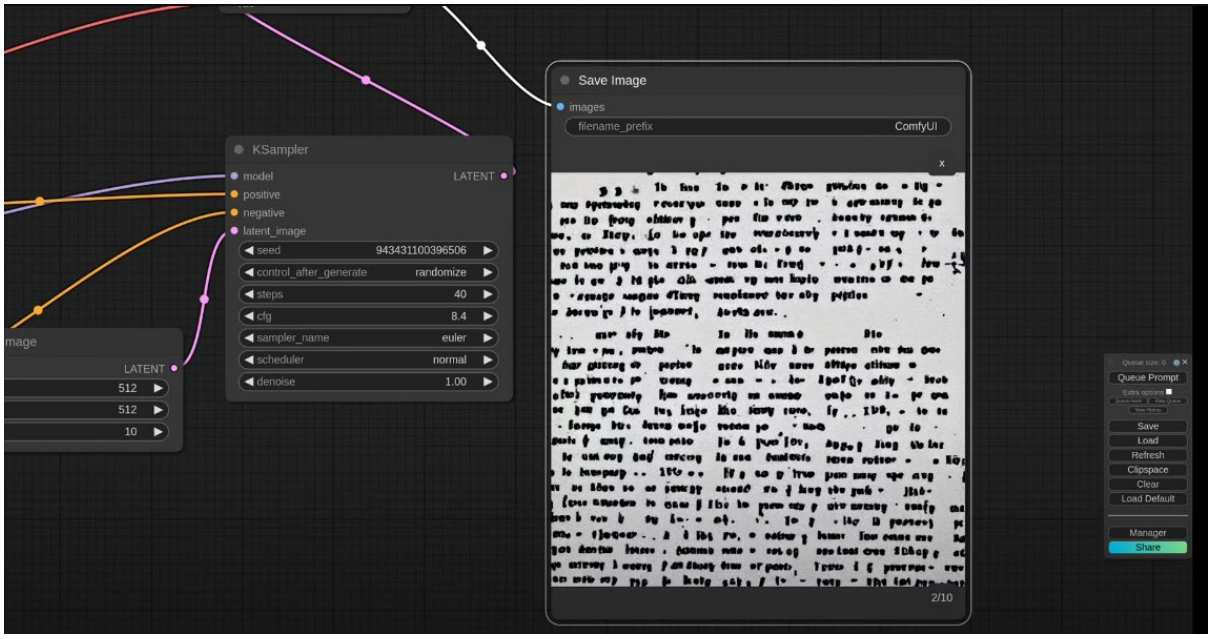

Fig. 5. Workspace view of Karen Palacio (n.d.). The artist uses declassified CIA data to train the text2image AI model, Stable Diffusion (Screenshot by author).

A recent example is the artist Karen Palacio (Palacio, n.d.), known as *kardaver*, who has appropriated released data on Operation Condor. Palacio works with records from the covert, systematic plan of military, economic, and ideological intervention carried out by the United States in Latin America during the 1970s and 1980s, using them to create new mnemonic artifacts. Palacio's work challenges official memory forums through art and subversive engineering, contributing to the creation of new forums.

3.2.3. Why Counterforensic Ludology?

The previously presented context gives rise to a specific need: the creation of a theoretical-practical framework that enables the study and contestation of the representation of state violence in board games. While a critical body of work already exists to study the representation of state violence in media and digital games, in my research for this thesis project, I have not found similar frameworks addressing board games. Additionally, I have not encountered studies on board games that explore the potential of residual information generated by simulations to deepen the examination of ludo narratives articulated by games, or to construct counterhegemonic texts that subvert these narratives.

The wounds of state violence against its population rarely heal. Even after violent operations cease, struggles continue in political, scientific, judicial, and cultural forums over the construction of narratives that explain—or, rather, justify—this violence. In this context,

counterforensic practice has proven valuable for strengthening justice-seeking processes and reestablishing social bonds. With this same impetus, I present counterforensic ludology as a practice that exposes and contests the narratives games construct to legitimize state violence. I believe this practice advances the study and design of board games—especially in Latin America—by providing theoretical and practical tools to examine and subvert them. Furthermore, I consider that this practice has the potential to expand the range of forums in which board games can currently participate as interlocutors.

3.3. Definition

Counterforensic ludology is a critical practice that examines and disputes the representation of state violence in board games. This practice analyzes traces of the simulation of state violence and uses them to articulate narratives from the victims' perspective.

It is based on the counterforensic device, a theoretical-practical assemblage that recognizes the inherent ideological tensions in games and provides tools to expose and address these tensions through the reconstruction of residual information.

In a counterforensic exercise, experimental techniques such as Object-oriented inquiry and reflexive digitization are applied to recover and analyze evidence that reveals simulated state violence within the game. Then, through critical intervention, this evidence is used to reconstruct the victims' stories.

The results of a counterforensic exercise are threefold. First, on a research level, practitioners gain expert knowledge of the ideological load of the board game. Second, on a practical level, a network of critical artifacts is generated that makes the victims' case visible and raises awareness of ludic discourses that legitimize state violence. Finally, on a political level, existing forums are engaged, and new forums are created where this emerging truth is disputed from the victims' perspective.

3.4. Foundations of counterforensic ludology

3.4.1. Concepts and definitions

Ludology

Ludology is defined as the formal study of the structure and elements of games (Frasca, 2013). One of the main contributions of the ludological perspective to the study of digital and board games is its recognition that these generate meaning through behaviors, not only through symbols, as in literature or cinema. In this work, I approach ludology as the formal study of board games, focused on their simulation elements and complemented by the analysis of their representations and performance (Frasca, 2009).

The counterforensic

The counterforensic is a device that investigates and contests state crimes. Theoretically, it starts with recognizing material objects as receivers and transmitters of information about the world that lies below the threshold of human detectability. Politically, it is rooted in the critical tradition that questions and resists the legitimization of state violence, informing processes of justice and truth-seeking for victims. Practically, it is an interdisciplinary practice that disputes the forensic texts produced by state apparatuses across various forums, such as courts of justice, public squares, and museums.

Ludology and the counterforensic

Games produce their own forensic texts by design. During and after gameplay, games inform players how to interpret the outcomes of violent actions occurring within the simulation. These forensic texts are products of the game's dominant structure and are often aligned with its hegemonic narratives. However, this is not the only record the game produces; there exists surplus—residual—information that results from the simulation but is postponed in the dominant text. It is precisely on this excessive and opaque plane of the game that the victims of state violence and their stories are often situated..

Fig. 6. In Sid Meier's Colonization (1994), the outcomes of the colonization process in the Americas are presented in the game's terms, prioritizing information such as the amount of gold obtained (Source: AppleSauce, 2023).

The critical work conducted with this residual information enables the emergence of new—counterforensic—texts that expose and challenge the dominant forensic text, which legitimizes and conceals the excesses of simulated violence. In this sense, counterforensic ludology is the critical practice that reveals and contests the dominant narratives of state violence in board games, through the materialization and articulation of counterforensic texts that expose the excessive dimension of the simulation.

3.4.2. Components

The forensic and the counterforensic operate through the interaction between objects, mediators, and forums (Keenan & Weizman, 2015, p. 46). To apply this framework to the study of simulated violence in board games, I have adapted the definition of these objects. Below, I clarify what I mean by objects, how mediators relate to them, and how they appear in forums.

Game entities as object

In explaining the forensic, I referred to material aesthetics as the ability of objects to perceive and record changes in their environment, and to forensic aesthetics as the way these objects are interpreted and presented in different forums. The next step is to establish how these aesthetics

manifest in both physical and digital board games and how their analysis enhances the study of games' expression.

In their physical form, board games have material components that represent the game's entities: for instance, the dog piece in *Monopoly* is a physical component that, during play, represents a specific entity within the game system and a character in the fictional world. In physical board games, it's evident that components operate within the representational, simulation, and performance layers. On the representational layer, they contribute to articulating the fictional world and allow players to establish a physical connection with it. On the performance level, components structure how players act during gameplay. On the simulation level, the materiality of the components enables tracking their state in the game: the location of a piece on the board—or off it—reveals information about the state of the entity it represents in the system. Players use visual and physical cues to recognize the state of game entities at a given moment, and when these cues are insufficient, they rely on record-keeping tools like tables or notes.

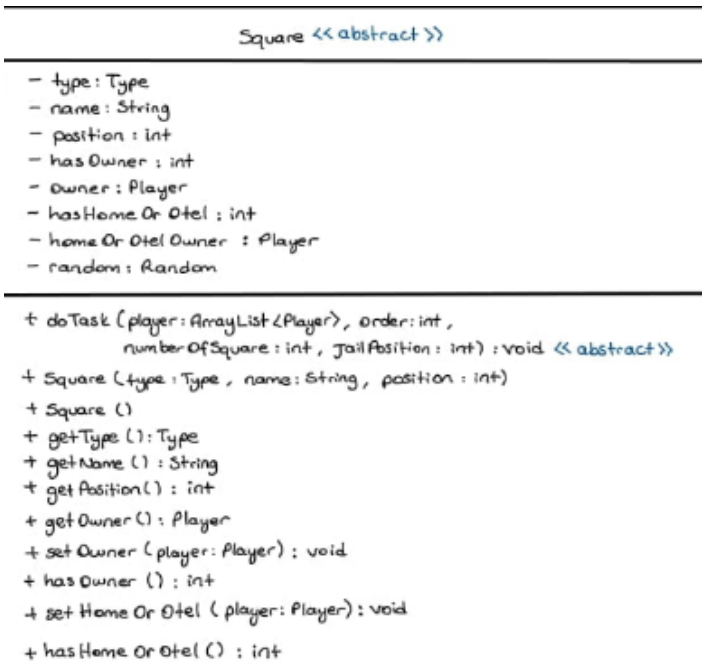

Fig. 7. Representation of the "square" entity in Monopoly obtained from a game digitization document (Polat, n.d.).

In the digital version of board games, this aesthetic capacity of game entities manifests through properties and relationships. The game entities are visually represented and may even have physical manifestations (haptic technology), but their existence in the game system doesn't

depend on physical state; rather, it relies on the continuous processing and storage activities performed by the game engine. During its operation, the engine records information on the state of each entity's properties and relationships, which is used by the game's systems to function.

Information forensics relies on the ability of digital systems to store relevant information about users and their activities. Forensic technicians examine these systems to identify, preserve, recover, and analyze data pertinent to resolving a case. Even when users have attempted to delete evidence from their devices, forensic scientists rely on the computer's meticulous logging processes to reconstruct and recover information.

Counterforensic ludology operates under similar logic: by translating a board game's model into a digital format, the process of recording and organizing events (acts of violence) occurring during a simulation is facilitated. This significantly amplifies practitioners' ability to gather, analyze, and work with evidence of crime simulation that, in the physical version, would be elusive or simply unrepresented.

The residues of play

Game systems generate signifiers that shape the ludic and emotional experience of players. After each procedure, the system collects information about its entities, organizes it, and presents it to the player in a way that allows them to understand the consequences of their actions and plan their next moves. I refer to this set of signifiers presented by the game system to players as the dominant text, or the forensic text of the game. However, game systems do not produce only dominant signifiers; they also generate residual signifiers that lie outside the forensic text. Games are typically interpreted according to terms defined by the designers, relegating certain elements to the residual layer. For example, in *Monopoly*, players do not receive information about how many times their pieces have visited jail or how much money they have invested in railroads during a game. This is understandable from a design perspective; after all, the goal is to create an engaging experience, and only those elements that contribute to that experience are prioritized in the dominant layer. In digital versions of board games, this design decision becomes even more evident, as game engines can process and store data on the state of each entity without consuming significant resources; if a player receives no feedback on a game event or their units' state, it is because, for the designers, this information is irrelevant to the experience they wish to create.

A game cannot construct a dominant forensic text without a residual layer to support it. In this sense, we can consider board games as artifacts that produce dominant narratives about political realities, constructed upon stories of violence that are suppressed. The simulated war in *Risk* is a succession of military actions resulting in an outcome: the conquest or loss of a territory. However, if we examine each military action closely, we can confirm that for it to occur, the game system executes a series of procedures that generate residual information. Using this residual information, we could, for example, narrate a game of *Risk* not in terms of who won, but in terms of how many units were lost during the war, or we could focus on a particular entity and reconstruct the entire game history from the perspective of one artillery unit. In the analog version of board games, this residual text is practically inaccessible, as players do not manually record every game event or the state of each entity. By transferring game entities to a digital medium, the collection of evidence about the actions produced and represented during play becomes easier. Since this is a counterforensic approach that challenges the truth constructed by dominant ideological apparatuses, our interest lies in investigating what occurs below the threshold of detectability, in the residual layer of the simulation. In this sense, counterforensic practice with games recovers and uses this residual information as an interlocutor, thus enabling the reconstruction and analysis of state crime simulations.

The Game State as a Research Tool

The representation of the state of entities in a game is known in game design and game design research as the game state. The game state is an immaterial component that results from the organized abstraction and representation of the properties, behaviors, and relationships of the components—both material and immaterial—of a game. Järvinen defines it this way:

> Game state is information which contains data of how the game elements are configured (in relation to each other) and their attributes in one specific moment of time. (p. 51)

The author also distinguishes between major and minor game states. Major game states relate to the main objectives of the game, such as the score, while minor game states encompass information about lower-priority objectives, like the positions of pieces on a board. In this thesis, which focuses on the game's residual, lower-priority information, I use the term "game state" without differentiating between high- and low-level information.

From the player's perspective, however, the game state can be represented as a text that is never neutral, as it prioritizes certain properties and relationships of entities to summarize the state of the game system:

> Both Tetris and football players spend most of the game dealing with minor game states, but often only the most significant changes in game states are explicitly acknowledged by the game system: the system not only stores this information, but it communicates it explicitly by displaying a change in score, etc. (p. 53)

In board games, the game state can be abstracted by reading the materiality of the game components: the position of pieces on the board, a notepad, a counter. In digital board games, this component is expressed through informational cues displayed on the screen, often as counters and status bars.

Counterforensic ludology is interested in how entities—the objects—perceive the violence that occurs during the simulation. The game state, as an abstraction of the state and trajectory of each entity, holds records of the player's participation in the simulation of state violence, which are critical for conducting this practice.

Game scenarios

In a simulation game, scenarios are configurations of the game state—its systems and entities—that can be predictable and reproducible. Game creators are aware of these scenarios when generating the game's rules and mechanics, using them as reference points during their design processes (Fullerton, 2008, p. 323). Players, in turn, can discern these scenarios and, as their experience grows, gain a deeper understanding of their conditions, functions, and consequences for the simulation's development.

Game scenarios are the working field of counterforensic ludology. It is in these scenarios where violence occurs and where evidence resides. During an exercise, practitioners delimit, extract, and translate these scenarios to gather evidence, observe its behavior, and conduct experiments to understand how the game model systematically produces violence.

The laboratory

Laboratories are institutionalized spaces where evidence is processed, analyzed, and experimented with (Weizman, 2020, p. 93). They have rules, procedures, and tools that allow specialists to work appropriately with the evidence. A laboratory that does not follow established rules and procedures or lacks the proper tools may compromise the integrity of the

evidence, rendering it invalid for the forum. Evidence inevitably transforms when processed and analyzed in the laboratory: each interaction with forensic agents, the environment, and their working instruments implies an irreversible change in its material condition. Therefore, practitioners use tools, techniques, and protocols that mitigate and clarify these transformations to preserve the authenticity of the evidence and enable experiments that help answer the case's questions.

In counterforensic ludology, the laboratory is a virtual space made up of the protocols, techniques, and tools used to study evidence of the simulation of state violence. Protocols are the established procedures that regulate each step of working with game objects, ensuring consistency and rigor in analysis. Techniques are the methodologies for working with the evidence, and tools encompass all technologies involved in the process of analysis and intervention with the game.

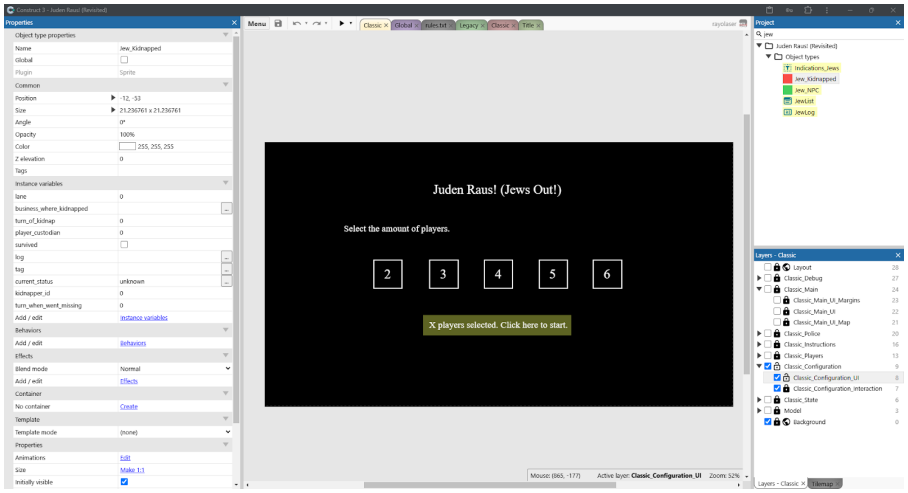

Fig. 8. The Construct (n.d.) IDE view during the development of Juden Raus! (Screenshot by author).

When a counterforensic exercise is conducted using digitization as a technique and game engines as tools, transformations occur in the game entities that can amplify the understanding of the evidence and enable new forms of critical work with it. Specifically, this translation of board games to digital systems facilitates the collection of residual information that complements our knowledge of the simulated world and its entities.

Mediators

Mediators are expert agents—individuals or collectives—that grant agency to objects through their interpretation (Keenan & Weizman, 2015, p. 43). In the investigation of state crimes, mediators are responsible for retrieving and articulating traces of violence to expose the relationship between law enforcement and its victims. In counterforensic ludology, mediators retrieve and articulate evidence of the simulation of state crimes to create artifacts—texts—that expose this violence.

Mediators lead the critical work with the game, taking charge of its examination, preparation, and presentation in forums. During the examination of the object, they use game research and design techniques to understand and extract evidence of its expressive operations. Then, in the preparation stage, they translate the evidence into critical artifacts that facilitate its circulation across different media and languages. Finally, in the forum, they enable the presentation of these critical artifacts.

To act as mediators, practitioners must understand the game's functioning, especially its model, and be able to interpret its elements and structures to articulate new narratives about the violence it generates. This requires mediators to be familiar with game research and design techniques, as well as to understand the game's production and circulation context, along with its cultural status. Additionally, in their crucial role as interpreters, mediators clarify their positionality, making transparent the standpoint from which they manipulate and interpret the object.

Forums

Forums are institutionalized spaces where narratives about state violence are articulated and contested (Weizman, 2020, p. 93). Although a forum is commonly thought of as a court of justice, university classrooms, public squares, museums, and online communities also serve as forums where state violence is discussed. Forums are never neutral; each has its own protocols, rules, and an interpretive community that examines and debates cases. Given this reality, mediators have the task of preparing the evidence and developing rhetorical strategies suited to the needs and characteristics of each forum.

In counterforensic practice, mediators facilitate the presentation of evidence before the forum to challenge the official narratives of the State. Mediators' work is always carried out at a disadvantage, as the State possesses legal, technological, and discursive resources that allow it

to legitimize its violence. Therefore, when the forum conditions are insufficient for presenting a case, practitioners create new spaces that enable the fair presentation of alternative and counterhegemonic narratives.

At the time of this project, the forums in which I have presented the results of a counterforensic exercise have been exclusively academic. Due to the sensitivity of the topics addressed by the game used in the counterforensic exercise, the presentation of the critical artifacts produced has been restricted.

3.5. Procedures of counterforensic ludology

In this section, I describe the procedure for counterforensic intervention in board games. First, I explain the ethical considerations that must be considered to carry out this type of work. Then, I present the organized procedure, which synthesizes my critical practice with board games and the forensic practice framework proposed by Weizman (3.1).

3.5.1 Mitigating risks

During the presentations of this project in academic forums, potential risks of working with the representation of state violence were raised. In particular, the risk for researchers of compromising their safety by exposing themselves to these representations was noted, especially when they must assume the role of perpetrators of such violence. Additionally, concerns were raised about the possibility of re-victimizing victims through the creation of artifacts that, in their attempt to be critical, might reproduce historical and social patterns of violence.

I believe that these situations can be mitigated through four concrete actions: establishing ethical guidelines for game development, reviewing sources and validating products with experts, choosing an appropriate methodology for working with source material, and having institutional support.

Working with problematic cultural objects, such as propaganda artifacts, requires strong ethical principles. In this regard, establishing specific guidelines and rules for the project—as well as adhering to the standards of the institutions that support it—is essential for conducting it ethically. Additionally, making the objectives and research and development procedures

transparent in counterforensic game projects facilitates scrutiny and fosters trust among audiences and communities.

Given the risk of inadequately representing victims of historical traumas, it is essential that the project is based on a thorough review of sources and is supported by consultation with experts in the topics addressed. Counterforensic work demands diverse specializations, particularly a solid foundation in sociology and history. Furthermore, it should have the input of experts and individuals recognized as authorities in the field who can validate the project[7].

Regarding methodology, it must meet the research and design objectives of the counterforensic exercise while ensuring the researcher's safety by mitigating their potential exposure to difficult knowledge. In the appendix of this thesis, I explain how reflexive digitization allows for an in-depth investigation of the systems and events of a board game without the need to reproduce problematic roles. Lastly, institutional support is essential for undertaking this type of project safely. In my experience with *Juden Raus!*, the project was monitored and supervised by my thesis advisor, Thomas Apperley, who ensured my safety during the development of this work.

3.5.2. Case Review

As with criminal investigation, counterforensic intervention with games begins with a case review. This case review comprises two processes that I explain below: specifically, the review of the game's cultural status and of the critical work that other parties have previously carried out.

The first activity involves reviewing sources that explain the context of the game's production and consumption, as well as those that document analyses from various perspectives and the critical interventions performed with the game.

The second activity is the critical analysis of the game, conducted from a ludological perspective focused on the representation of state violence and its victims. I have previously mentioned that there are two limitations to the study of state violence in board games: first, that it manifests below the threshold of player detectability; and second, that it is rare for the victims and their trajectories to be acknowledged by the game's narrative. Due to this, the selected

[7] This last requirement has not been met so far, and for this reason, none of the versions of Juden Raus! created for this thesis have been made public.

observation and analysis methods must broaden the field of vision and allow for the collection of evidence of violence against victims, even when it occurs below the detectability threshold. I believe that reflexive digitization, described in Appendix I, meets these requirements and offers advantages for game analysis and subsequent intervention.

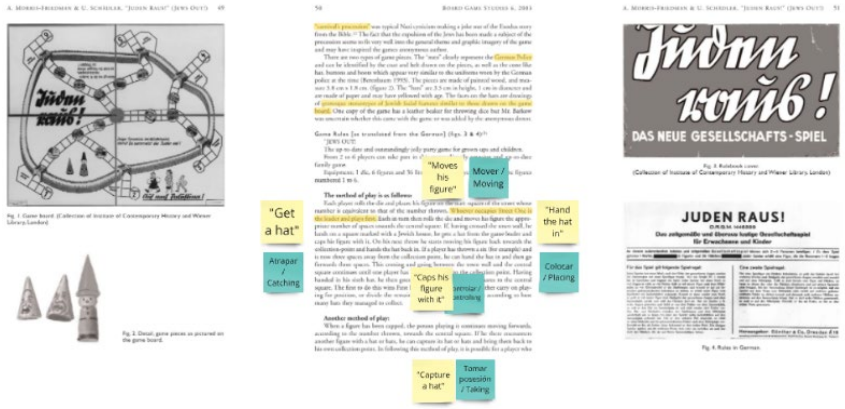

Fig. 9. A view of the online board used to analyze an article on Juden Raus! (Screenshot by author).

Following the case study, a broad understanding of the game model and its rhetoric on state violence has been achieved. More precisely, it has been possible to identify the game's systems, entities, and events that are directly related to the simulation of state violence. At the end of this stage, this knowledge is systematized into knowledge objects—documents and tools that facilitate its critical intervention, such as game logs, game design documents, and the game code.

3.5.3. Evidence Collection

During the case review, I identified game scenarios in which state violence is enacted against entities representing marginalized populations. The goal of the next stage is to collect evidence of the acts of state violence simulated in the game.

The first step in this procedure is to extract and delimit the scenarios of violence so that, at least in analysis, they are distinguishable from other game scenarios. To do this, the conditions within the game system that enable these scenarios are identified, as well as the properties, behaviors, and relationships of the entities involved. The primary resource for extracting scenarios is the game log, an organized representation of the game system's state and the behavior of its entities at any given moment during gameplay. By analyzing the game log as a text, it is possible to identify events in which state violence occurs and the behavior of all

entities involved in those events. Once extracted, the scenario is reconstructed in a format that facilitates its processing and analysis; for example, in graphic schemes or working boards.

3.5.4. Evidence Processing and Analysis

The purpose of the evidence processing and analysis stage is to organize, examine, and interpret the traces of state violence produced by the game system. To this end, information is extracted from the evidence gathered in previous stages and used to reconstruct events and determine the "responsibility" of the entities involved.

I have explained that, in board games, state violence occurs below the threshold of detectability and that, often, the victims themselves are not represented as entities in the game. When this happens, it is important to turn to the residues of violence recorded by the system to reconstruct the victims, whether individuals or entire populations. This allows for the reconstruction of crimes from a broad perspective, not only from the forensic view of the game. This strengthens the case and subsequently enables the articulation of new counterhegemonic narratives centered on the victims. Additionally, reconstructing the trajectories of the perpetrators allows for an understanding of the responsibility of agents of state violence.

To understand the victims' trajectory, I use the narrative inquiry method presented in section 3.4.1. In this way, I question the game's entities (Weizman, 2015, p. 31) with the following questions:

- Where have you been?
- What happened to you? When? Where?
- Who is responsible for what happened to you?

For the perpetrators, the questions posed are:

- What have they done? When? Where? With what?
- Who has been affected?

I also inspect other entities related to scenarios of violence, such as buildings, vehicles, or tools. At the end of this process, I have information on the trajectory of each victim and perpetrator during each scenario in the game.

3.5.5. Case Preparation

After the evidence processing and analysis activities, the necessary resources are available to build the victims' case. During preparation, the forums are analyzed, and rhetorical strategies are devised for presenting in each of them. Following the strategy, the evidence processed in the forensic investigation is used to create a network of critical artifacts that contain and express the victims' truths.

The first step is to review the forums in which the intervention will take place. The rules, procedures, expectations, and rhetorical cultures of each forum must be considered during the case preparation process. Universities, courts, public spaces, and gaming clubs are all forums in which interventions may occur, but each has its particularities.

The second step is to construct a rhetorical strategy. This involves considering the rules of each forum, the ideological guidelines and rhetorical preferences of its interpretive community, as well as the practitioners' own positionality concerning the simulated acts of violence and the objects intervened.

The third step is to create artifacts that articulate the victims' truth. These artifacts do not necessarily have to be board or digital games; ludic artifacts can be created to intervene in gaming clubs, while academic artifacts can be developed for presentation on a university panel.

Finally, the interpreters of the objects in front of the forums must prepare to facilitate the achievement of the rhetorical goals of the artifacts.

3.5.6. Case Presentation

The final process of the counterforensic exercise is the presentation of the case before one or more forums. At this point, following the outlined rhetorical strategy and the rules and procedures of each forum, the interpreters facilitate the display of the constructed artifacts. These will be subject to interrogation and questioning, and the interpreters must facilitate the interpretation of questions and answers. The emerging inquiries and questions will constitute important resources for directly improving the artifacts and expanding the field of discussion on the victims' truth within that forum.

3.6. Chapter Summary

This chapter was created as a standalone document to provide an understanding of the principles and procedures of counterforensic ludology.

First, I presented the principles and foundations of counterforensic ludology. I introduced the forensic gaze as a lens that enables the investigation of objects as sensors capable of capturing and expressing information about their surroundings. I then presented the concept of the residual as the network of excessive signifiers produced by a systemic artifact as it expresses itself, but which remain inactive and below the threshold of detectability. I explained that these can be examined to reveal the internal power operations of artifacts as well as the ideological tensions between their dominant and subordinated texts. I continued by presenting the counterforensic as a practice that subverts the forensic texts produced by state apparatuses in order to expose and challenge the violence of these apparatuses, giving voice to the victims through the interpretation of residual traces of violence. Finally, I introduced the counterforensic device as a theoretical-practical-political apparatus that enables three lines of critical work with material culture: an analytical line, to study the residual information of cultural objects; a practical line, to reconfigure these objects against their dominant discourses; and a political line, aimed at clarifying state violence and enabling victims to articulate their truths.

In the second subchapter, I contextualized the counterforensic within postcolonial critical traditions, specifically those of Latin America, where there is a history of state violence and a need for practices that challenge hegemonic narratives.

In the third subchapter, I defined counterforensic ludology as a critical practice that examines and disputes the representation of state violence in board games. I also explained that this practice analyzes the traces of simulated state violence occurring below players' threshold of detectability and uses them to construct narratives from the perspective of the dominated, the victims of the violence.

In the next subchapter, I presented the components of counterforensic ludology, namely, game entities as objects that record information about state violence; game residues as a source of information on violence that occurs below the threshold of detectability during simulation; the game state as a research tool for reconstructing events and tracking the trajectory of game entities; game scenarios as sites where violence occurs; the laboratory as a space for processing

evidence; the mediators who interpret and present the evidence; and the forums where narratives about state violence are contested.

Finally, I described the procedures of counterforensic ludology based on my own practice and a review of the procedures presented by Keenan and Weizman (2015) and Weizman (2020), which include risk mitigation, case review, evidence collection, evidence processing and analysis, case preparation, and case presentation. I emphasized how this approach seeks to expand critical analysis and board game design, providing tools to expose and subvert hegemonic discourses and fostering new spaces for dialogue and understanding of state violence and its representation in games.

4 SELECTED GAME

In the first part of the chapter, I explain the criteria for selecting the game. Then, I provide a brief historical overview to familiarize the reader with the social reality represented in the game. Next, I present an overview of the game, explaining its mechanics and discussing its production and circulation context. Finally, I summarize the critical work that has been done with the game and present the reasons that justify its subversion.

4.1. Selection criteria

The purpose of counterforensic ludology is to reveal and subvert the rhetoric in board games that legitimizes state violence, promoting the emergence of narratives centered on victims and marginalized groups. As I explained in the background section, board games that model situations involving state violence often omit representations of civilian victims for ethical, commercial, and political reasons. Counterforensic ludology examines and intervenes in the algorithmic structure of these games to recover and expose evidence of the state violence simulated during gameplay. In this regard, the game selected for this exercise meets two conditions: it models state violence and suppresses the perspectives of civilian victims.

4.2. Juden Raus!

4.2.1. Historical background of *Juden Raus!*

Explaining the origin and spread of antisemitic ideas in Nazi Germany goes far beyond the scope of this thesis. However, to address this case, I find it essential to briefly reflect on the use of games during the Third Reich to build and establish supremacist ideas.

Material culture played a fundamental role in spreading racist and supremacist ideas in Germany, legitimizing policies of marginalization and extermination of its population. The Reich Ministry for Public Enlightenment and Propaganda, known by its German initials as the RMVP, orchestrated a cultural policy with concrete actions aimed at spreading hate narratives and justifying the exercise of state violence against marginalized populations—including Jews (Petropoulos, 1999; The Wiener Holocaust Library, n.d.-c, 2019). Within these actions, the Nazi party gathered thinkers, artists, and creators aligned with the regime's ideas, who worked in coordination to expand the communicative reach of the regime. The propaganda apparatus

of the Third Reich not only exploited the media resources at its disposal but also advanced their use for propagandistic purposes. Notable examples include Leni Riefenstahl's influential film work and Goebbels' extensive propagandistic repertoire.

During the Third Reich, games were also promoted as a medium. Large-scale events like the 1936 Berlin Olympics were organized to present Nazi Germany as a strong and unified nation while masking the regime's attacks on the civilian population .

Nazism was in tune with the civilizing vision of sports that circulated throughout the Western world at the time (Muñoz, 1997). In the years leading up to World War II, organizations aligned with the party promoted ideas associating physical discipline and sports with racial purity:

> SS Chief Group Leader Jeckeln attacked the "Blond craze" at a meeting of the NSDAP. Blond hair and blue eyes by themselves, he said, were not convincing proof that one belongs to the Nordic race. A girl who wants to marry an SS man today must be above reproach in every respect. Therefore she is required to possess the Reich sports medal. Many people, perhaps even today, could not understand the reason for this requirement. Germany does not need women who can dance beautifully at five o'clock teas, but women who have given proof of their health through accomplishments in the field of sport. "The javelin and the springboard are more useful than lipstick in promoting health." (Mosse, 1966, p. 43).

Similarly, demonstrating excellence in sports disciplines endorsed by the Reich was a requirement for entering a military career:

> As an SS candidate, during his first year of service he must earn the military sports insignia and the bronze Reich sports insignia. There-upon, at the age of nineteen or nineteen and a half (...) he enters the Labor Service and, following that, the army.

There is evidence of supremacist and racist ideas circulating in games and toys manufactured during the Third Reich, and academic works have been produced that provide detailed descriptions of each of these artifacts (Milton, 2024; Postert, 2018). However, there is still limited English-language literature analyzing the ideation and creation contexts of these artifacts. On this topic, Lisa Pine recently discussed how game design was cultivated within Nazi-affiliated women's organizations:

> In order to reach every German housewife, the Nazi organizations embraced a variety of vehicles and techniques. Propaganda and housekeeping tips supporting the Four Year Plan were featured in the Women's Bureau's own house organ the Deutsche Hauswirtschaft and in the NS Frauenwarte. (...) Nazi women's groups produced staggering numbers of flyers and other publications. (...) The Women's Bureau even produced a board game for girls as part of this campaign, Wettlauf mit dem Verderb (compete against waste) (Pine, 2016, p. 26).

Juden Raus! is an interesting case because it was not produced by the Nazi party but by a group of independent inventors. While the game circulates the racist ideas championed by the Nazi party, the fact that it was produced by civilians indicates the reach of these ideas within the civilian population, and, above all, how the Nazi propaganda apparatus impacted pastimes and design traditions, transforming them into vehicles for ideological circulation (Postert, 2021).

4.2.2. *Juden Raus!* overview

Juden Raus! is a family board game published in Dresden, Germany, in 1938. The authorship of this game has not been established, but its patent is registered under the company Günther & Co. Additionally, its distribution was managed by Rudolf Fabricius's firm (Morris-Friedman & Schädler, 2003, p. 48).

Theme of the Game

The game models the process of Aryanization in the Third Reich in the years leading up to World War II.

Objective of the Game

The game is played in groups of 2 to 6 players. The players take on the role of German police officers with the goal of capturing and expelling Jewish people (represented as hats) before their rivals.

Game Components

The basic components of the game are the board, player tokens – police officers (6), hat tokens – Jewish people (36), the die, and instruction cards. The board represents a German city surrounded by a wall and is divided into 6 lanes, one for each player. These lanes are further divided into spaces, which are occupied by police officers and hats. There are four types of spaces: concentration point spaces, transit spaces, Jewish business spaces, and the city center space. The city center is equidistant from all players and is the only meeting point for their avatars. Each lane has 3 Jewish business spaces, totaling 18. These are the only structures clearly described in the game. The businesses belong to the following Jewish families: Hirschfeld, David, Jacob, Levin, Goldmann, Gorstein, Stern, Cohn, Salomon, Hirson, Rosenbaüm, Herz, and Lowenstein.

Gameplay

At the start of their turn, players roll the die to calculate their token's movement on the board. Initially, players move towards the city center. Once they reach the center, they move in the opposite direction, back towards the concentration point of their lane, and so on. Players cannot voluntarily change their token's direction and depend on the die roll to move. As players transit their lanes, they may land on one of the 3 Jewish family businesses in each lane. Upon doing so, they capture a hat and place it on top of their police token. Hat capture is not optional. If, upon reaching the city center lane, the player encounters another player with captured hats, they steal them. This action is also mandatory. Upon landing on their lane's concentration point, the player deposits the captured hats and changes direction to return to the city center. The first player to transfer 6 hats from the city to concentration zones wins the game.

Cultural Status

Due to its racist and supremacist rhetoric targeting Jewish people, *Juden Raus!* has been labeled "the most infamous game in history." It is not currently distributed commercially, and the only available physical copies are held at the Wiener Library of the Holocaust in Tel Aviv and the Museum of Jewish Heritage in New York City (Morris-Friedman & Schädler, 2003, p. 47 & The Wiener Holocaust Library, n.d.-a).

The commercial and cultural impact of this game on German society in 1938 cannot be estimated. Morris-Friedman and Schädler note that there is no evidence suggesting the game had a significant impact on the German public. On the contrary, the authors present two items that suggest the game may have had low demand and lacked support from Nazi media.

The game's impact on contemporary society has not been academically studied. Online, there are accounts from individuals who have reconstructed *Juden Raus!* in physical and digital formats and played it out of academic curiosity or morbid interest. In the editorial "To Replicate or Not to Replicate? Our Question (and Reflections)," Christine Schmidt, Deputy Director and Head of Research at The Wiener Holocaust Library, comments on the game's status in the museum's collection:

> Although perhaps its significance at the time was minimal, it is clear that for the Library and its visitors, as well as other museum and heritage institutions, the game carries import. It's probably a stretch to claim that, in the words of Oren Stier, it has reached 'iconic' status, but perhaps amongst our own collections it has. For example, in moving to our current premises at Russell Square in 2011, a special, moveable display case was created expressly for the game. (...)

In some ways, the game has become synonymous with the Library and its foundational collections: the Library was built on examples of Nazi propaganda and antisemitic tracts collected by Alfred Wiener and his colleagues as they were being disseminated and to serve as a warning. *Juden Raus!* is not the only racist game, nor is it the only game we have in our collections, but when we refer to 'The Game' among the staff, we know which one we mean. (The Wiener Holocaust Library, n.d.-b)

Beyond these references, in my exploratory review, I could not find evidence suggesting that *Juden Raus!* was a cult game during the Third Reich or that it holds such status today.

4.2.3. Critical work conducted on *Juden Raus!*

Game Analysis

During the literature review for this thesis, I found two academic articles analyzing *Juden Raus!*. Below, I provide a brief overview of these articles, noting their main observations regarding the game's ideological content.

Morris-Friedman and Schädler (2003) analyze *Juden Raus!* from a historical perspective, explaining its characteristics as well as its production and consumption context. The authors explain that *Juden Raus!* is a modified version of another German game, Fang den Hut (1927):

> "Jews Out!" is a modified race game with two versions of the rules given. The first version is a simple game of chance with no interaction between the players. The second version adds a little more strategy to the game and is similar in feeling to "Parchisi" or "The Hyena Game" (Bell 1979). The main source for the game was certainly "Fang den Hut" (English title "Trap the Cap"), a game published by Otto Maier Verlag, Ravensburg, as early as 1927 and still distributed today in various countries. (p. 52)

However, they observe that *Juden Raus!* differs from other games with similar mechanics because it has a "theme of racial hatred," which is expressed through its objectives and its racist representations of Jewish people:

> "Juden Raus!" is a race game that instills values of a totalitarian fascist regime. It has both the theme of racial hatred and employs racist images in the game design. The object of the game is to deprive the German Jews of their property and to make them leave the city. The game board clearly states that the first player to remove six Jews from the city wins the game. In this way the game clearly foreshadows the policy of racial genocide that was to follow. (p.48)

The authors reflect on how these racist objectives and representations transform a game that would otherwise be "harmless" into an artifact of hate:

> (…) the hats especially designed for the capturing method of Fang den Hut, are also used to depict the captured Jews. This clearly demonstrates that it was this harmless and successful board game that inspired the anonymous author of "Juden Raus!". (p. 53)

More recently, Seriff (2017) examined *Juden Raus!* by focusing on the game's rules and the dynamics they enable, comparing them to extermination practices:

> The Juden Raus! game similarly presaged a very real practice known as Judenjagd (hunt the Jew), which involved searches for Jews who had survived ghetto liquidations and deportations to death camps in Poland in 1942 and had attempted to hide 'on the Aryan side.' The ultimate goal of such 'hunts' was the brutal evacuation and extinction of the hunted and discovered Jews in the Nazi death camps... The rules of play also mirror longstanding political and ideological practices of isolating, exiling, or extinguishing Jews from as far back as the Christian Inquisition. (p. 161)

These articles provide limited information about the gameplay experience of *Juden Raus!* Morris-Friedman and Schädler acknowledge having played the game but offer few insights into their experience as players. For his part, Seriff does not clarify whether his analysis of *Juden Raus!* is based on his own gameplay experience or a textual interpretation of the rules.

Another important aspect of these analyses is the omission of details about the game reconstruction process. Morris-Friedman and Schädler admit to having digitized the game based on the available rules to analyze it; however, they do not detail how this process was conducted or what gameplay insights emerged from it.

Finally, both works agree that *Juden Raus!* is an antisemitic propaganda artifact that reflected and circulated the dominant discourses of its production and use context. Using this game as a point of reference, Seriff reflects on popular culture items:

> (...) not only reflect a society's dominant values and positions about a hated or feared 'other,' but work subliminally to both create and maintain them in the national public imaginary (...) Games—or high art parading as games— must be seen in this construction not only as a reflection of a country's dominant acts and ideologies, for example, but as active components in the constitution, reinforcement and entrenchment of those ideologies.

Game interventions

The only digital version of *Juden Raus!* I found during my ludographic review is the one created by users *HalloikbenJim* and *Lejon* for the Tabletop Simulator (Berserk Games, 2015) engine. This version is available for free on the user-generated content distribution platform,

Steam Workshop. *HalloikbenJim* explains the reason behind this digitization project as follows:

The digitization and upload of this game is purely for historical and educational reasons. I personally condemn anti-Semitic and Nazi ideologies, and for these reasons I think it is important not forget history, so it won't happen again. By playing through this game, known as "history's most infamous board game.", you will experience how toxic ideologies indoctrinate otherwise normal families by placing offensive stereotypes in a "fun" context and by normalizing the exclusion of minorities from society.

To create this version of the game, the creators reconstructed its rules and components using the article by Morris-Friedman and Schädler, reviewed in the previous section, as their primary reference.

The authors replicated the original board and tokens as three-dimensional models manipulated during gameplay. As in the original version, these pieces contain racist representations of Jewish people, which may be disturbing to players. In this version, the correct functioning of the game's algorithmic structure relies entirely on the players. The game rules have not been automated, so players must know and enforce them, as in the original version.

At the time of developing this thesis project, I found no other references to critical exercises conducted with Juden Raus!.

4.2.4. Reasons to subvert *Juden Raus!*

Juden Raus! is one of the most problematic board games in existence. It generates such aversion in Western culture that even its reproduction for museum purposes is debated (The Wiener Holocaust Library, n.d.-d). Is it worthwhile to reconstruct this object? After all, at this point in history, what new insights can an antisemitic propaganda artifact from World War II offer us? In my view, the critical work on this game remains incomplete. Analysts have done well to expose the hegemonic narratives of violence that *Juden Raus!* articulates, but little has been done to subvert them. There is still a need to expose the subaltern narratives embedded in the game and examine their potential to challenge the hegemonic narratives it produces.

What if we transform this violent artifact into a mnemotechnic resource that generates critical awareness about state violence against its citizens? The counterforensic exercise with *Juden Raus!* seeks to demonstrate that it is possible to use a board game's algorithmic structure to

question its own rhetorical operations. More specifically, this exercise aims to show that it is feasible to employ residual elements of the game system to reconstruct the perspective of those who are victimized during a simulation. I argue that counterforensic ludology allows for the articulation and presentation of these subaltern narratives, as well as enabling forms of critical play through an artifact based on the same algorithmic structure. In this way, the game's original propagandistic purpose is subverted, granting it value as a mnemotechnic resource.

4.3. Chapter Summary

This chapter is divided into two parts, each with specific objectives. In the first subchapter, I explained the criteria for selecting *Juden Raus!* as the case study for this thesis. The established criteria were that the game model state violence and that this violence, along with the victims' perspective, be suppressed by the game system itself. *Juden Raus!* meets both requirements, as it models police violence against Jewish populations and, while it represents the victims, it does not give them a voice.

In the second subchapter, I provided an overview of *Juden Raus!*. First, I offered a historical account to familiarize the reader with the social reality represented in the game. I explained that in Nazi Germany, sports, games in general, and board games in particular were part of the regime's propaganda machinery, promoting rhetoric of hatred toward minorities. Then, I gave a general view of the game, detailing its components and basic mechanics. I also reviewed prior critical work on the game, highlighting that, while there are analyses from a historical perspective, these have not focused on its rules and mechanics. More importantly, the residual elements generated by the game and the subaltern texts it articulates have not been explored. Likewise, I noted that no critical design work has been done with the game.

Based on these observations, I concluded the chapter by pointing out the need for a critical analysis of *Juden Raus!* from both analytical and subversive perspectives.

5 COUNTERFORENSIC EXERCISE

In this chapter, I present the counterforensic exercise conducted with *Juden Raus!*. First, I introduce a methodological note explaining the choice of reflexive digitization as the research method. Then, I present the procedures for case preparation, evidence collection, evidence processing and analysis, and case presentation.

5.1. A note on methods

5.1.1. Reflexive digitization and the counterforensic

Reflexive digitization offers methodological, ethical, and safety advantages for counterforensic work. Methodologically, it facilitates the reconstruction of residual information generated by the game system, which has proven useful in tracking simulated violence. Additionally, reflexive digitization simplifies experimentation tasks, enabling a deeper analysis of violent scenarios. Finally, this methodology generates knowledge and tools that support critical intervention with the original material.

In terms of practitioner safety, digitization allows them to examine problematic objects on their own terms, without the need to consume disturbing content or engage in roles or activities that symbolize violent acts.

5.1.2. Digitization rules

I established three rules for the digitization process of this project:

- The digitized game retains the original algorithmic structure: its rules are identical to the original, and its mechanics derive from these rules.
- If the original game includes racist representations or hate symbols, these are not included in the digitized version.
- No new entities or fictional elements are introduced in the game. Only the retrieval, reconfiguration, and use of the game's residual information are permitted.

5.1.3. Digitization tools

The tool I use to digitize board games is Construct 3 (Construct, n.d.), a web-based authoring game engine with which I have experience digitizing board games. I chose Construct 3 because it meets two criteria: it allows for translating simulation models and enables conducting and

evaluating experiments. The event and entity system in Construct 3 facilitates the representation of the game's algorithmic structure, simplifying the translation of the simulation model into digital format. Additionally, Construct 3's debugger supports in-depth examination of the game model and the conduction of experiments with it.

5.2. The exercise with *Juden Raus!*

I conducted the exercise with *Juden Raus!* during January and February 2024 and documented the intervention in a research journal hosted on the micro-blogging network Mastodon. Below, I detail this exercise.

5.2.1. Case review

Objective: To analyze how the board game *Juden Raus!* represents state violence and its victims.

Digitization procedures

I conducted the digitization of the game during January 2024.

Preparation

Since the physical version of *Juden Raus!* is inaccessible, the first challenge of the project was to reconstruct the game in digital format to enable analysis. The source used to inform the reconstruction was the rule transcription presented by Morris-Friedman and Schädler (2003, p. 50). The concrete outcome of this process was the creation of a game digitization document that includes:

- synthesized game rules,
- an entity map and main game processes,
- safety considerations for game design.

Juden Raus! – MVP

The "Minimum Viable Product" version of *Juden Raus!* (Castro Valdez, 2024) is the first version I developed. The following conditions were established for the game's digitization:

- the algorithmic structure is preserved intact,
- the reproduction of graphic elements is omitted to protect my integrity as a researcher.

This is a minimalist version of the game that does not include graphical representations. The game screen contains only two elements: an action button and a text box. The action button allows players to roll the dice and switch turns. All events occurring during the game are chronologically recorded in the game state. This information is then presented to players in text form.

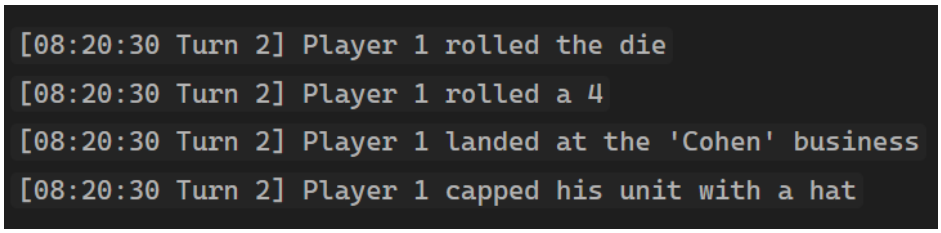

Fig. 10. Screenshot of Juden Raus! MVP's log (Castro Valdez, 2024) showing Player 1's actions (Image by author).

The model's entities (players, police, citizens, buildings) are represented as objects with properties, behaviors, and relationships, and the game algorithms are represented through an event sheet.

This version of *Juden Raus!* meets the goal of exposing the game's algorithmic structure without using racist iconography. This allowed me to conduct an initial analysis of the game and its procedural rhetoric safely. Additionally, this exercise revealed that *Juden Raus!* is a game where players make no decisions, with their agency limited to rolling the dice; therefore, a single button suffices to control the game from start to finish.

Juden Raus! – Alpha

The second iteration of *Juden Raus!* (Castro Valdez, 2024) was built to facilitate experimentation with the game. This version introduces two significant changes compared to the first; specifically, it allows players to track each game entity during gameplay and enables full automation of the sessions. Details follow.

The digitized version of the game offers an expanded view of the information structure of the game entities. In the physical version, most of this information goes unnoticed because it is unnecessary for play, but in the digital version, each entity informs the game system at all times of its current state and trajectory throughout the game. Specifically, the digitized version of *Juden Raus!* allows us to closely track the trajectory of each victim of the game's violence. By

amplifying the game state with the information generated by the game system about each entity, a "micro-view" of the game is enabled, focusing on its entities.

```
[18:14:10 Turn 3] Citizen 1 was abducted by Policeman 3
[18:14:10 Turn 3] Citizen 1 was moved from slot 3 to slot 6 by
Policeman 3
```

Fig. 11. Screenshot of Juden Raus! Alpha's log showing Citizen 1's trajectory (Image by author).

At the interface level, this version introduces buttons that allow the player to control the flow of information received in text form. This way, the player can check the status of each entity (player, building, police, citizen). It also includes an option to download a game report, containing a chronologically ordered description of all events.

The second significant change in this version is that it enables full game automation. The alpha version includes a settings menu that allows players to set the number of human and computer players. If the player chooses to play solely with computers, the game resolves automatically, and a report of the events is downloaded in text format.

The dominant narratives of *Juden Raus!*

Previous studies have established that *Juden Raus!* is a racist and supremacist propaganda artifact. This is evident in the representational layer of the game: the game's title references a slogan popularized by antisemitic groups during the Third Reich, Jewish citizens are depicted with racial stereotypes, and even the board includes an illustration of Jewish people being deported to Palestine. So, what else can the study of *Juden Raus!* reveal?

The analysis conducted during digitization allowed me to identify two rhetorical strategies that have not been addressed in the reviewed studies: the rhetoric of the proliferation of the "other" and the rhetoric of "true player agency". I argue that these emerging rhetorics also operate on a discursive level to legitimize state violence.

A sanitized genocide

By the time of the game's publication in 1938, the "Jewish question" was already well-established in German public opinion as a social issue, and the fantasy of expelling German Jews to Palestine was seen as a solution. However, neither the German government of 1938 nor *Juden Raus!* explicitly communicated the ultimate purpose of their system: the mass

elimination of Jewish people. Both the game and the German state concealed this excessive information from their rhetoric to gain acceptance in German households.

Viewed from its rules, *Juden Raus!* is a family race game that does not display violence. The game rules present five mechanics: “move your figure,” “get a hat” (from the game master), “cap your figure with it” (a hat), “capture a hat” (from another player) or “give a hat,” and “hand the hat in” (at the collection point). Translating these mechanics into the nomenclature proposed by Järvinen (2007, 384-394) gives us the following mechanics: “moving” (your figure/hats), “catching” (hats), “controlling” (hats), “taking” (hats), and “placing” (hats). As Flanagan and Jakobsson (2023) have explained, the pervasiveness of problematic ideologies in board games lies not only in the representation of the game world (racist or supremacist content) but in those innocuous mechanics that represent violent operations (colonization, elimination, land appropriation) and forced displacements.

The descriptions of the mechanics presented in the game’s rules are its dominant descriptions. When we view these mechanics from the perspective of the subaltern subjects in the game—the victims—it becomes clear that these hegemonic forms offer only a limited explanation of what is really happening in the session. The victims are pursued, captured, transferred, moved, and delivered. Articulating these mechanics during analysis reveals that players participate in three dynamics conveniently omitted from the game’s description: kidnapping (“moving” + “catching”), forced transport (“moving” + “controlling”), and imprisonment (“moving” + “placing”).

Through analyzing the reconstructed game, we observe the result of combining these mechanics and dynamics, which is the game’s overarching operation: an efficient process of eliminating marginalized populations, in this case, German Jews. The game normalizes this elimination by presenting a sanitized version of the game’s mechanics and dynamics, packaged as the fantasy of expelling German Jews to Palestine. In this way, players can enact crimes against humanity abstracted as a drastic public policy.

The proliferation of the “Other”

The Germany depicted in *Juden Raus!* embodies long-standing stereotypes that continue to fuel supremacist rhetoric today. Hatred directed at ethnic groups often exaggerates their participation in society, particularly in economic and cultural spheres. This rhetoric suggests that the "original" culture is being diluted by the traditions of invading groups and that the

productive sector is being overtaken by these same agents. Such rhetoric is not grounded in actual data but in the amplification of ethnic and racial stereotypes. According to the German census conducted in 1933, at the beginning of the Nazi regime, 0.75% of the German population was Jewish, primarily concentrated in urban areas (United States Holocaust Memorial Museum, n.d.). However, in Nazi rhetoric, the Jewish population's presence in various spheres of German society was pervasive, almost total. In the Germany of *Juden Raus!*, 11% of the city is inhabited by Jewish families, and 100% of local businesses belong to these families. Jews control economic life, and their presence in the city is undeniable.

Juden Raus! suggests that the "others," the Jews, are everywhere. Moreover, it warns that these agents proliferate due to their involvement in the country's economic life. The rules state that whenever a player lands on a Jewish-owned business, the "game master" hands them a hat, which they place atop their police figure. Each time a player visits a Jewish business, they take a hat; after all, the "others" proliferate uncontrollably. If a player lands on a Jewish business and finds no one, the game would not be functioning properly, and its rhetoric of proliferation would fail.

The original game includes 36 hat tokens representing German Jews. When played with fewer than six players, the provided tokens are sufficient for the game to function normally. However, a problem emerges during the digital adaptation: with six players, a point is reached where there are not enough hats to continue the game. When the computer evaluates the citizen capture procedure, the system lacks the necessary elements to function; the system fails, the game stops, and the game's rhetorical exercise ceases. What exactly does this mean?

It is not uncommon for a physical board game to lack the components needed to function. Pieces break, get lost, or are not included in the original package due to a production error. When this happens, players replace them and continue playing. For the digital version, the digitizer must set rules to overcome this crossroads: Should the game stop when this scenario occurs, or should I modify the system's functionality to allow Jews to proliferate until the game halts? A literal translation of *Juden Raus!* into digital format would reproduce the algorithmic short-circuit and stop the game at that point. This scenario demonstrates that "the Jews are not unlimited" and that there is a game state where the city is depopulated of the "others." A more permissive digitization of the game would involve adjusting the game's algorithmic structure so that it does not stop due to a lack of Jewish tokens. In this adapted system, tokens are not

pre-set but are generated procedurally each time a player lands on a Jewish business, allowing the original game's fantasy of "proliferation" to come to fruition.

True player agency

What does player agency consist of in *Juden Raus!*? What options are available, what decisions players make, and how do these impact the game? How does this agency relate to the game's rhetorical operations and the political fantasies of its players? In the following section, I present my reflections on player agency in *Juden Raus!* and the relationship between the player and the game during a session.

Player agency is measured by the capacity to make meaningful decisions that affect the development and outcome of a game.

During the digitization process, I explored player agency through the significant actions and decisions players make throughout the session. For this purpose, I created a player journey, noting every moment the player interacts with game elements and makes decisions, as shown below.

This exercise revealed that players make no meaningful decisions during the session; their actions are limited to the game's "housekeeping" tasks:

- rolling the dice,
- calculating their police piece's movement,
- moving their police piece on the board,
- selecting a hat from the hat stack,
- placing a hat on their police piece,
- dropping the hats off at the collection point,
- tallying their points and those of their rivals,
- taking a hat from a rival,
- and (if no hats are available and needed) replacing a hat.

An example of the players' lack of meaningful decisions is that, in digitizing the game, a single "CONTINUE" button suffices to allow the model to function from start to finish.

Interestingly, although the events in this game are predetermined by the system, the final agents who conduct the processes of citizen abduction, transfer, and elimination are the players, not the system. Even in the most minimalist version of the game, the players—or any entity filling

their role—are responsible for pressing the button that activates the model's functions and triggers everything that occurs in the fictional layer. What, precisely, is the relationship between the players and *Juden Raus!*?

One of *Juden Raus!*'s most powerful rhetorical operations is convincing players that they have agency while playing. Reflexive digitization reveals that players have no real control within the game; they are merely automatons—or accomplices?— who enable the game's purpose to be fulfilled. This uncovers the players' most significant decision: allowing themselves to be used by the artifact. In my view, the relationship between players and the game unfolds as follows: players approach the game aware of its racist content, yet they do not truly play it; rather, they relinquish their agency to allow the game to enact its rhetorical purpose. The game, in turn, requires players to exist (function) beyond its ideal form (its design); for this, it provides players with manual tasks like preparing the board or moving pieces. Viewed this way, players and the game enter into a tacit contract: the game offers players a fictional agency through housekeeping tasks, and players surrender their subjective responsibilities—leaving it to the game to handle the simulated violence.

5.2.2. Evidence collection

Juden Raus! incentivizes players to commit state crimes with impunity: to win, players must abduct, forcibly transfer, and eliminate German Jewish citizens. However, it reveals little about the perspective of the victims of this violence and their trajectories. The objective of this stage is to inspect the game scenarios that simulate state violence in order to recover evidence that allows us to reconstruct the victims' trajectories.

Scenario 1: Abduction of Jewish citizens

The first scenario of violence is the abduction of Jewish citizens. In this scenario, three entities interact: specifically, the police, Jewish citizens, and Jewish family businesses. The abduction occurs whenever a player lands on a Jewish business. According to the original rules, the hat representing the Jewish person is placed on top of the player's token. From that moment, in the analog version of the game, both units are physically assembled. In the digital version, this assembly is expressed through the properties and relationships of the entities involved.

The abduction involves the following procedures carried out by the police entity:

```
roll() → the police calculates how many spaces they will move
move() → based on the roll result, the police moves
check_business() → the police checks the Jewish business entity
kidnap_citizen() → the police captures the Jewish citizen entity
```

Fig. 12. The functions involved in the abduction procedure (Image by author).

The check_business() and kidnap_citizen() procedures involve the police officers, businesses, and citizens, transforming their values through interaction. By exploring the residual information in the game state, we can identify each victim as well as their captors. We can ascertain each victim's surname (deduced from the family business where they were captured), the time of abduction (in the fictional world), and the location of abduction (position in the fictional world). As for the captors, we can determine which player controls them, how many other victims they have taken, or whether they had another victim in captivity at the time of this abduction.

Scenario 2: Forced Transfer of Citizens

Once Jewish citizens are captured, players transport them to a collection point. During this transfer, while passing through the city center, one police officer may encounter another officer with prisoners. When this happens, the officer arriving in the city center takes the other officer's prisoners:

```
roll() → the police calculates how many steps to take with the abducted unit
move() → based on the roll result, the police moves
check_center() → the police checks if there is another police in the city
center
steal_prisoner() → the police takes the prisoners from the rival
```

Fig. 13. The functions involved in the exchange of prisoners (Image by author).

By analyzing this scenario through counterforensic work, we can deduce how many turns each victim has been missing and identify their fellow captives. Additionally, we gather information on the internal tensions within the law enforcement forces.

Scenario 3: Imprisonment of Jewish Citizens

The third scenario is the imprisonment of Jewish citizens. This scenario occurs when the police arrive at a collection point located outside the city and have prisoners in their custody:

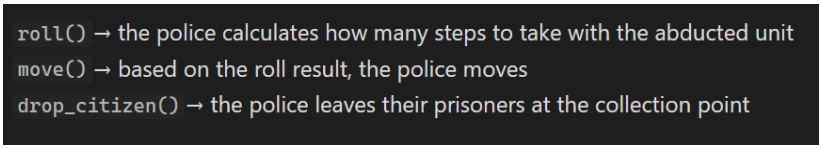

Fig. 14. The functions involved in the imprisonment of prisoners (Image by author).

This scenario allows us to identify the first point of contact for Jewish citizens with imprisonment. Through the game state, we deduce how many turns it took for the unit to reach prison and which victims they will encounter there. On the police side, this scenario lets us determine how many prisoners they have delivered to the prison.

Scenario 4: Elimination of Jewish Citizens

The final scenario of violence we explore is the elimination of citizens. As previously explained, under certain conditions, all 36 tokens in the game can be exhausted, leaving no way to continue the session. In the analog version, this can be resolved in three ways: by recycling a unit from the collection point, creating replacement pieces, or keeping score in an external log, such as a notebook. In digitizing the game, I encountered two possible solutions to this problem: ending the game immediately ("the game can't continue because there are no more Jews in the city") or recycling Jewish citizen units to allow the game to continue. The MVP version of *Juden Raus!* follows the first approach, ending the game when this bug occurs. In contrast, *Juden Raus!* - Alpha presents this decision as a mechanic: to continue, a Jewish prisoner must be recycled (eliminated).

Through counterforensic work, we can trace this process of elimination—and recycling—of citizens:

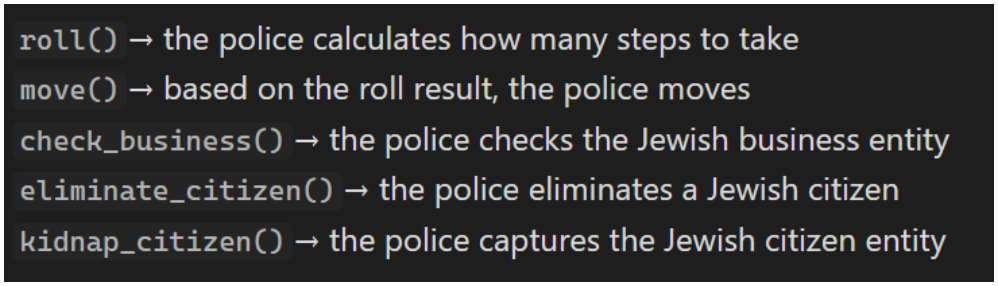

Fig. 15. The functions involved in the elimination of citizens (Image by author).

5.2.3. Evidence processing and analysis

The goal of evidence processing is to reconstruct the trajectories of each victim and perpetrator. To understand the victims' trajectories, we ask the game state the following questions:

- Where has the victim been?
- What has happened to the victim? When? Where?
- Who is responsible for what has happened?

For the perpetrators, we pose these questions:

- What actions have they taken? When? Where?
- Who have they affected?

We also inspect the buildings within the game to supplement the case:

- What has happened here? When?
- Who has passed through here? When?

The result of this interrogation of the game state provides complete information on each victim's and perpetrator's trajectory during each game session, as demonstrated below:

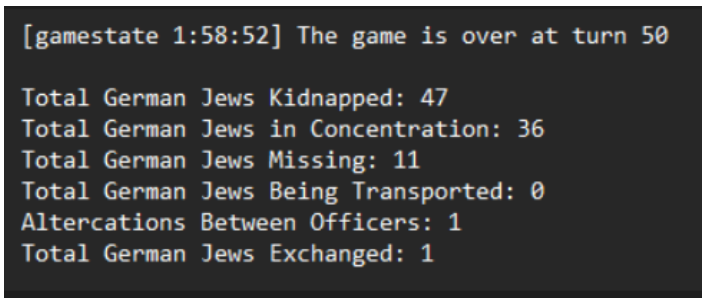

Fig. 16. Juden Raus! Alpha's log showing the trajectory of a perpetrator (Image by author).

In this case, we can track the individual trajectory of a victim from abduction to their fatal end. We know when they were abducted, where, and by whom. We know they were transported for 8 turns before reaching prison, where they died after 3 turns.

5.2.4. Case preparation

The ludological analysis of *Juden Raus!* allows us to assert that the game articulates a hegemonic supremacist narrative that suppresses the victims' perspective and legitimizes state violence. Throughout the game, the representational, algorithmic, and performance components work together to create a fantasy of violence against Jewish people in which the

player participates as an accomplice. For this reason, the subversive work with *Juden Raus!* aims to question the legitimacy of this dominant narrative and to enable the emergence of victim-centered narratives.

Juden Raus! Revisited

Juden Raus! Revisited (Castro Valdez, 2024) is the intervened version I present for this thesis project. This version allows the player to understand and experience the role of victims of antisemitic violence, rather than that of the perpetrator. In this way, Revisited subverts the game's original rhetorical objective and offers players an experience that questions state crimes.

Fig 17. The main screen of Juden Raus! Revisited (Screenshot by author).

How it was done

The intervention was carried out during August 2024 and was documented in a research journal.

The design process aimed to create a game that exposes and questions the hegemonic narratives of the original game, using the residual information generated by the algorithmic structure of the source material. This process followed these rules:

- the game retains the original algorithmic structure,
- the game does not include the racist representations of the original game,
- the game does not introduce new fictional elements, only reconfigures the available information within the game system.

The main resource for constructing this version was the body of evidence collected during the initial stages of the counterforensic exercise. Academic sources consulted and feedback received from peers during my presentations in academic forums were also valuable.

Having established the rhetorical objective as "making state violence visible and telling the story of the victims," my next task was to experiment with the collected evidence. I constructed experimental game modules in which I configured the game information in various ways, enabling new approaches for players to engage with the fictional world. Finally, Revisited presents two modes of use that reconfigure the game data in distinct ways, allowing for two complementary critical experiences: the testimony mode and the investigation mode. I explain them below.

Testimony mode

Rhetorical Objective

To challenge the hegemonic narrative of hatred present in the original material.

Theme

The experience of Jewish citizens facing state violence during the Third Reich.

Game Objective

To survive Nazi captivity.

Components

The game is available in digital format. To play, a computer with a web browser and a mouse or touchpad is required. The player interacts with the system by pressing a text box.

The game is purely text-based and is expressed in the second person:

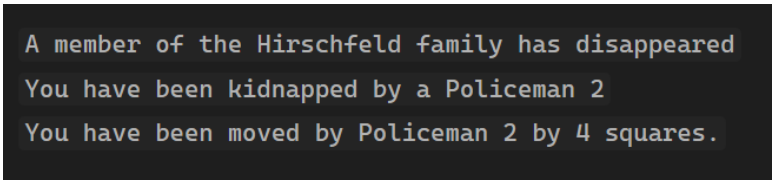

Fig. 18. A view of the game log in Juden Raus! Revisited showing the game in second person (Screenshot by author).

Gameplay

The testimony mode places the player in the role of a victim of German police violence during the Third Reich. During each turn, the player receives information about what is happening in the city and with their family. At the start of the game, the player is a Jewish citizen gradually learning about acts of violence occurring in their neighborhood. Depending on their fate, the player will either remain an external witness to the violence or eventually be captured by a German police officer. The game progresses similarly to the original version: each turn, game events are calculated and resolved by the system without requiring the player to make decisions. The game ends if the player dies or if the police meet their quota of expelling six Jewish citizens.

The subversion

This module rearticulates the residual information of the victims with the purpose of humanizing them. Here, the player can learn about the story and fate of each Jewish prisoner, something impossible in the analog version. In this way, the module enables the emergence of small stories that narrate events of violence from a counterhegemonic perspective.

On a technical level, the work has involved gathering and reorganizing the system's residual information and creating an appropriate interface for its presentation. In line with the rhetorical objectives of this exercise, the game maintains a minimalist style, focusing the player's attention on the unfolding story.

Investigation mode

Rhetorical Objective

To expose the complicity of players in articulating hate rhetoric through gameplay.

Theme

The agency of players as they interact with artifacts of hate propaganda.

Objective of the Artifact

To generate resources for critical work with the original material.

Components

This module is also available in a web format. A mouse or touchpad is required for interaction.

This artifact generates text documents that record the actions occurring during a simulation:

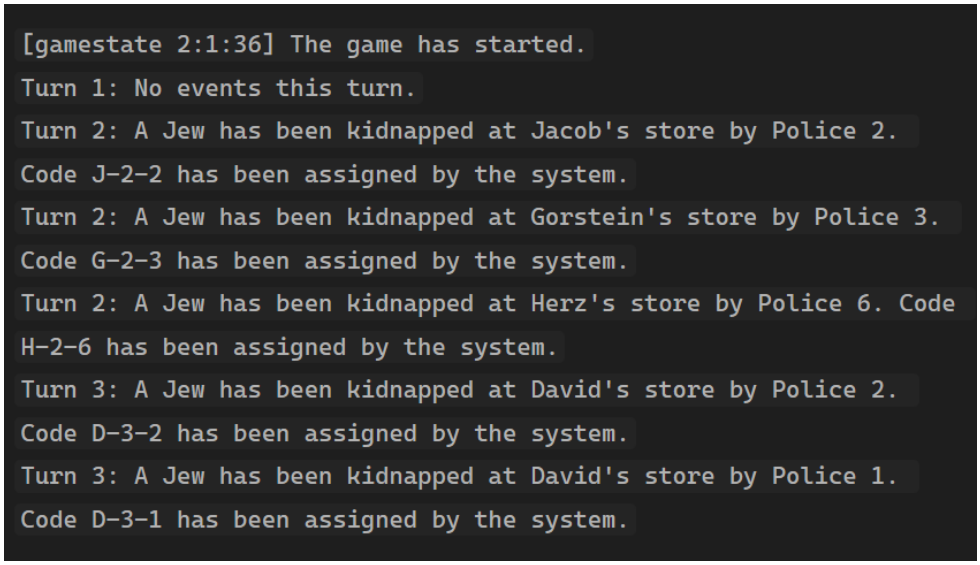

Fig. 19. A view of an automated game of Juden Raus! Revisited (Screenshot by author).

Gameplay

This module is not exactly a game but rather a memory machine. Users have only one available option: "RUN A SIMULATION." Activating this button automatically resolves a session and downloads two documents for the player. The first document is a detailed log of the activity that occurred during the simulation, formatted as a report; each process and its outcomes are listed chronologically. The second document is a compilation of testimonies from each of the Jewish citizens involved in the simulation. Although the player has not interacted with any of these entities, their stories are there to be consulted.

The Subversive Element

This module demonstrates the functioning of *Juden Raus!*'s algorithmic structure and its effects; each simulation evidences the hate embedded in the game. Moreover, it reveals the players' relationship with this apparatus of hate: those who play *Juden Raus!* do not act as independent agents but as automatons serving the discourse. Thus, the critical proposal of this module is not limited to the original version of *Juden Raus!* but extends to all board games that perpetuate hate rhetoric: by consuming and spreading these artifacts, it is you who is being used—not the other way around.

5.2.5. Case presentation

Forum review

In this section, I present the academic forums in which I have participated with *Juden Raus!*. These brief reviews describe the expectations and conditions established by each forum, allowing me to explain the rhetorical strategy I use to present the game in these spaces.

Game Research Lab's Spring Seminar

The first presentation of *Juden Raus!* took place at a European academic forum, specifically at Tampere University in Finland. I prepared a subverted version of the game for the Spring Seminar organized by the university's Game Research Lab. After being evaluated by a jury, I presented the exercise results in a talk titled "Unraveling the Residual: Critical Metagames as Tools to Reveal and Challenge Ideologies in Board Games" (Castro Valdez, 2024).

This forum adheres to the rules of Tampere University and has its own ethical and conduct codes, fostering diversity and participant safety. One established etiquette rule requires presenters to provide advance notice of any violent or disturbing content. This consideration was taken into account when presenting the talk and the game's content.

The audience at this forum did not need convincing of the importance of studying games as propaganda artifacts; in fact, this space has been advancing game research since the establishment of game studies as a discipline. Rather, my rhetorical effort focused on demonstrating the value of the counterforensic approach for researching material culture in general, and games in particular.

During the presentation, I acted as an active interpreter of the subverted game: I presented screenshots, explained its mechanics, and showcased its results. Although I created a playable version for this event, there was no opportunity to demonstrate it live, so its presentation was limited to the documentation provided.

DiGRA Spain

The Spanish Digital Games Research Association (DiGRA Spain) has organized the 3rd International DiGRA Spain Congress 2024 (DIGRAES24) for November of this year . DiGRA Spain is part of DiGRA, an "international association for academics researching digital games and associated phenomena." DiGRA Spain adheres to the conduct code of this organization (Digital Games Research Association, n.d.), which is available on their website. I reviewed this

code to find references concerning the handling of difficult knowledge, which helped me understand the established conditions for this forum and guide my presentation. Under "Fostering Safer Spaces," point 2 of the code of conduct states:

> All members of the community are responsible for fostering inclusion: In addition to not using sexist, racist, heterosexist, cissexist, ableist, classist, casteist, or otherwise derogatory language, this means being open to accepting and processing criticism in a non-defensive manner. It also includes community accountability in recognizing where harms have been done and seeking to promote a collegial environment for all.

Additionally, point 5 under "Toward Better Practices" states:

Be very careful when referencing or drawing on content created by hateful movements that you do not open new avenues for those movements to target and harass game studies scholars.

I submitted a talk titled "A Counterforensic Approach to Reconstruct Histories of Political Violence in Board Games" as part of the "Interdisciplinarity and Research Methods" track. In this work, I outline the foundations and procedures of counterforensic ludology, presenting *Juden Raus!* as a case study. The talk has been selected, and my presentation will take place on November 13, 2024.

As in the Spring Seminar, no space has been allocated for project demonstrations at this event, so I will once again serve as an interpreter for *Juden Raus!* to provide evidence that violent games can be subverted and transformed into critical mnemotechnic artifacts.

Thesis dissertation

The third presentation of the game occurs within the context of defending my thesis at Tampere University. This is also an academic forum specialized in game studies and game culture, where *Juden Raus!* appears as part of an argument about the potential of the counterforensic approach to critique board games.

In this case, for the validity of the research, the game will be available for consultation by those responsible for reviewing this work. For this reason, the version of *Juden Raus!* presented in this forum adheres to the ethical standards required by the university.

5.3. Chapter Summary

In this chapter, I have presented the counterforensic exercise I conducted with *Juden Raus!*. In the first subchapter, I explained my choice of reflective digitization as a research method

because it facilitates the exploration of unknown unknowns and allows for an in-depth analysis of its violence scenarios without exposing myself to disturbing content. I established three rules for this process: maintaining the original algorithmic structure of the game, omitting racist representations and hate symbols, and avoiding the introduction of fictional elements. Additionally, I selected Construct 3 as a digitization tool due to its capacity to translate simulation models into digital format and because it facilitates rapid prototyping and experimentation.

In the second subchapter, I presented the counterforensic exercise conducted with *Juden Raus!*. First, I described the reflective digitization process applied to the game, which resulted in two versions, *Alpha* and *MVP*. These versions facilitate research tasks and generate insights into the rhetorical operations of the original game. Through this process, I identified two main rhetorical elements: the rhetoric of the proliferation of the "other" and the rhetoric of player agency. The first concerns the exaggerated representation of Jews in the fictional world, portrayed as constant and uncontrolled threats to German economy and society. The second rhetoric is reflected in the lack of meaningful choices for the player, who merely performs automatic actions such as rolling the dice and moving pieces. This creates an illusory agency, as the player participates in acts of violence without real control, becoming a passive accomplice to the game's narrative of hate.

In the final part, I explained the development process of *Revisited*. This intervened version of the game allows players to understand the perspective of the victims and to generate data and documents that challenge the hate-driven rhetoric of the original game. Finally, I discussed my participation with this project in various academic forums, demonstrating the effectiveness of counterforensic ludology in analyzing and subverting problematic board games.

6 REFLECTIONS

This final chapter contains my reflections on the contributions and limitations of counterforensic practice for research and critical intervention in board games, in light of the exercise conducted with *Juden Raus!*. These reflections incorporate comments and observations from researchers and players who have become familiar with this approach following my participation in colloquia and the thesis seminar.

6.1. Contributions to Critical Board Game Research

6.1.1 The Forensic and the Power Operations of Games

Counterforensic ludology recognizes the forensic aesthetics and materiality of board game components and leverages these qualities to enhance critical game analysis. As I explained in sections 2.4 and 3.3, forensic aesthetics involve recognizing the sensory and expressive capabilities of objects. From this perspective, all objects perceive and interact with other objects in their environment without the need for human mediation, recording these encounters in their materiality. People, like other objects, can infer and interpret this information recorded by objects. This, in turn, allows objects to "express themselves" in various forums through expert mediators (Keenan & Weizman, 2015, p. 44). Secondly, forensic materiality refers to the uniqueness of objects. Building on forensic aesthetics, we recognize each object as unique, given its specific characteristics and relationships at a particular moment (Jones, 2022).

Applying these principles to board game systems[8], we approach each game entity as a unique object capable of perceiving and recording information about other objects through properties and relationships. As demonstrated in the *Juden Raus!* exercise, each "prisoner" in the game possesses properties and relationships that make them unique within the game system. At the beginning of the game, each prisoner occupies a specific position on the board and has a range of possible states: "alive or disappeared," "free or captured," among others. Additionally, prisoners have relationships with other entities; for example, with the "police" who pursue them or the "buildings" where they are captured.

[8] This does not exclude the possibility of leveraging the forensic aesthetics and materiality of game components to conduct research that is not centered on game systems. For instance, in sports analysis, information about game objects—such as the ball or playing field—is used to analyze player behavior during a match.

“[14:55:04 Turn 2] Citizen 1 was abducted by Policeman 1”

“[19:58:15 Turn 3] Citizen 1 was moved from slot 3 to slot 6 by Policeman 1”

In the MVP version, we see that a prisoner changes their state between turns in a game session that remained inactive for a few hours.

Fig 20. Data analysis shows that Lionel Messi—arguably one of the most iconic goal scorers in football—never played within the opponent's penalty area (Source: OneFootball, 2024).

The recognition of forensic aesthetics and materiality contributes to the critical analysis of games by providing evidence to expose the power operations within the game system. The game system exerts power when it suppresses information about the game's state to ensure the proper deployment of its dominant discourse. Concealing information is a fundamental part of all game design exercises; in fact, some games are built around gameplay that consists of hiding and recalling information. Similarly, there is information about game entities and systems that designers consider irrelevant to the functioning and enjoyment of the game.

Fig 21. In That's not a Hat (Lapp, 2023), the goal of the game is to remember the illustrations on the cards. When a card is drawn, it is shown and then kept face down (Source: Amazon, n.d.).

However, when the board game in question is an artifact created with explicit rhetorical purposes—propaganda games, educational games, serious games—the information that is omitted becomes essential for understanding the game's rhetorical mechanisms. In this sense, the counterforensic exercise with games reveals how the game rejects this information and allows us to assess the intentions behind this omission, linking them to the game's rhetorical premises.

6.1.2. The Residual and Subaltern Texts

The entities involved in a simulation record information about the state of the system and its components. However, only a small portion of that information—the dominant information—is used to inform players' gameplay and emotional experience. I refer to the web of information that the game generates but keeps inactive as residual information. Residual information is crucial for the critical study of board games not only because it reveals the game's power operations (see previous point) but also because it allows for the reconstruction of the state and

trajectory of all those entities (simulation actors) that occupy a subaltern role within the game system, as well as within the discourses it articulates. For example, in the exercise with *Juden Raus!*, I used residual information from the game system to reconstruct detailed reports of all acts of violence committed against the prisoners:

- Exact time of the act of violence in the real world.
- Exact time of the act of violence on the game's clock.
- Player responsible for the act of violence.
- Police officer responsible for the act of violence.
- Last name of the person subjected to violence.
- Last names of the witnesses of the person subjected to violence.
- Street where the act of violence took place.

But the residual not only allows us to reconstruct the state and trajectory of game entities; it also enables us to imagine these entities' experiences. In section 3.3, I introduced *narrative inquiry* as a speculative methodology that investigates games from the perspective of their objects. This type of speculative methodology uses information from the game model and its components to articulate texts voiced from the perspective of the entities. Consider the case of players who are in jail in *Monopoly*; the residual information from the system allows us to learn a bit more about the player-prisoner:

- The turn in which they went to jail.
- The reason they went to jail.
- What they last did before going to jail.
- How many times they have been in jail.
- How many people have visited them in jail.
- Who has visited them in jail.
- With whom they shared a cell.
- How much money they lost while in jail.
- How many times they have tried to get out of jail.

By conducting *narrative inquiry* on this player using residual information, we can speculate about their experience in jail and allow them to express themselves in the first person:

I'm here since turn 9. It's my first time in jail. I ended up here because I had bad luck. No one has visited me yet, but I share a cell with the Dog. During my time in jail, I've had tenants, but

none have paid me. If I weren't here, I would have collected at least 300[9]*. This is my third attempt to get out, but I haven't succeeded.*

Counterforensic ludology works with the residual information of games that model state violence to reconstruct the trajectories and testimonies of victims within the simulation. I have demonstrated in the exercise with *Juden Raus!* that working with the residual information of the game's entities and units made it possible to recover the voices of subaltern actors who are (under)represented in the game: Jewish citizens who were subjected to violence are no longer racially stereotyped hats but rather actors with their own history.

For this reason, I consider these subaltern texts, which emerge from working with the residual, to be valuable resources for researching representation in board games, as they allow us to access the voices and perspectives of subaltern actors (victimized individuals) and integrate them into the game's critical analysis.

6.2. Limitations for Critical Board Game Research

6.2.1. This Practice Overlooks the Act of Playing

As a research approach, counterforensic ludology views the board game as a systemic artifact, focusing on its algorithmic structure. From the procedural perspective in which this practice is situated, the meaning-making process of games occurs when players' mental models are engaged by the game's models. Previously, this procedural view of games has been criticized for abstracting and even ignoring player performance (Sicart, 2011). From a play-centric perspective, understanding the expression of games requires considering the meaning-making process that occurs during play.

However, as I explained in section 2.3, my procedural view of board games is complemented by the representational and performance layers of the game. As part of the analysis of a board game during counterforensic practice, its representational elements (theme, storyline, visual and material representations) and performance elements (usability, potential experiences enabled by gameplay) are reviewed to understand the holistic and multimodal way in which the game's ideology is expressed.

[9] A personal discovery has been learning that the currency in Monopoly is called "Munny" (Monopoly Wiki, n.d.).

6.2.2. Is this research, or is it a speculative exercise?

The counterforensic approach I present in this thesis intersects with the philosophical tradition known as object-oriented ontology or speculative realism, in that it acknowledges a material aesthetics of objects not centered on humans, and a forensic aesthetics where humans act as agents operating within the same hierarchy as objects (Harman, 2015). From the perspective presented in this work, objects are entities that function as "sensors that register changes in their environments" (Weizman, 2020, p. 138) and "take agency through their interpretation, speaking by virtue of their 'friends'—those people who gather around them and construct them" (Keenan & Weizman, 2015, p. 43).

The "ludological" component of this approach, responsible for analyzing the original material, focuses on unraveling the structure and functioning of the game's algorithmic structure, as in other exercises of formal analysis. What characterizes the counterforensic approach is its recognition that close reading of a game may be insufficient to understand what lies below the threshold of detectability, and it complements this with residual information, recovered through experimental techniques such as digitization. The *MVP* and *Alpha* versions of *Juden Raus!* preserve the game's original algorithmic structure, its constitutive rules, but amplify our understanding of the game's dynamics by bringing to light residual information the game system generates about state violence.

On the other hand, subversive exercises with games indeed have a speculative and interpretive component. In the case of *Juden Raus! Revisited*, the game contains the algorithmic structure of the original game and only uses information provided by the system, yet it speculates about the victim's perspective, which was originally disarticulated and scattered as residuals. To subvert the dominant discourses of the game and its rhetorical operations, my work has involved reconfiguring the game system's data to reconstruct the trajectory of the victims and allow them to tell their truth in the first person.

6.3. Contributions to Critical Board Game Design

Counterforensic ludology is part of the tradition of critical and political art and design work that subverts material culture; specifically, work that disrupts the functioning of objects and uses their own expressive mechanisms against them. Subversion is a political and aesthetic act that challenges the ideological operations embedded in any object and is not limited to a

specific type of rhetoric. Rather, it addresses all rhetorics that legitimize power, domination, and violence. Counterforensic ludology situates this subversive practice in the specific context of violence exerted by state entities against their own citizens. In this sense, this approach resonates with resistance practices in dominated societies that oppose hegemonic discourses legitimizing their domination, and it challenges the established traditions of board game design.

Next, I present two contributions of counterforensic ludology to the critical design of analog board games[10]. Both contributions aim to subvert state violence discourses in analog board games, though they can also be integrated into design practices that seek to subvert board games more generally.

6.3.1. Integrating Residues into Critical Work with Analog Board Games

We know that board games, as systemic forms of material culture, produce residues that reveal the ideological tensions inherent in the game. Designers, in deciding what information from the game system is presented to players and how it is displayed, determine the dominant text generated by the game. As we have pointed out, this process relegates information about game entities and events to the residual plane, beyond the player's threshold of detectability. In this sense, residues are a fundamental input for questioning the game's power operations and rhetorical objectives.

There is a close relationship between critical game design practices and working with residues. Reverse engineering is an established game design and hacking practice in which designers and hackers disassemble programs that contain digital games to gather information about the system, either to exploit it or simply to deepen their understanding. Among the information collected, residues—those housed, produced, and processed by the system but not utilized—often capture the interest of player and designer communities[11]. For example, through reverse engineering, practitioners discovered that in *NES Remix* (Nintendo, 2013) for the Nintendo Wii U console, the title screen for *Super Mario Bros.* was built over an image of the Mona Lisa. This is likely due to the team responsible for this menu having previously worked on *Nintendo 3DS Guide: Louvre* (Nintendo, 2013).

[10] It is important to make this distinction since, although analog and digital board games are based on the same game model, digital systems offer advantages for working with game-generated information.
[11] The blogs *Super Mario Broth* (n.d.) and *The Cutting Room Floor* (n.d.) are examples of communities dedicated to exploring and discussing residues extracted from popular digital game files.A

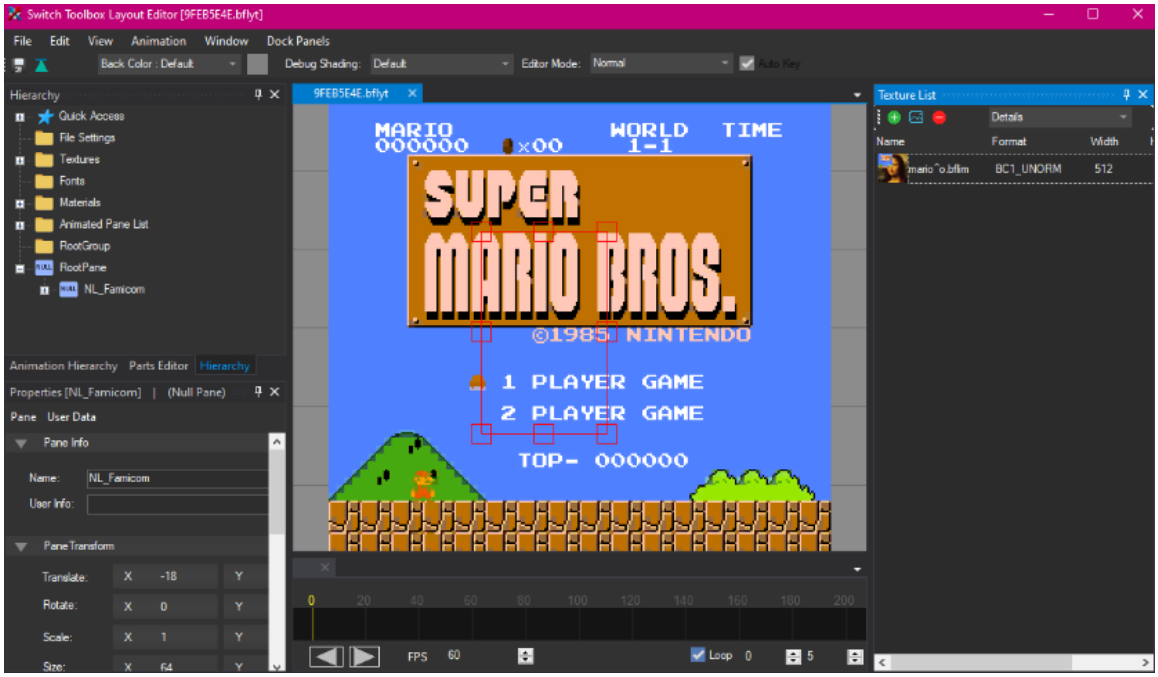

Fig 22. A look at NES Remix files (Source: @Katy_Mayy, 2021)

Fig. 23. The Super Mario Bros. menu built over residues (Source: @Katy_Mayy, 2021)

Residues can tell us multiple stories about the state of the gaming industry and video game creation practices. They can also reveal uncomfortable truths about Nintendo's design and production philosophy, challenging their narrative of "attention to detail." From the perspective of this thesis, reverse engineering is a practice that acknowledges forensic aesthetics and materiality; its practitioners act as mediators of these objects in various forums, whether technical or fan-based.

How, then, does reverse engineering work in a board game? When the board game is in digital format, it is possible to break down the program using established techniques to access information about the system. However, in analog games, this process requires additional steps. In this thesis, I have demonstrated that it is possible to recover residues from the game system through research-through-design techniques, such as reflexive digitization. By transferring *Juden Raus!* to a digital format, I captured information about game entities that, in the analog version, was outside the threshold of detectability and used it to create *Juden Raus! Revisited*, a critical artifact.

The use of reflexive digitization as a research technique has been valuable, but the guiding principle behind my work has been the forensic perspective. Although this forensic perspective is already present in the cultures of video game designers and hackers, I believe it can be integrated into the people and communities that work with analog board games.

6.3.2. Constructing Subaltern Narratives from Board Games

Designers and artists have used residues as inputs for game critique. For this thesis, I reviewed the work of the guerrilla design team Total Refusal, who "upcycle video games in order to reveal the political apparatus beyond the glossy and hyperreal textures of this media" (n.d.). The work of Total Refusal is a clear example of using residues from a digital game to challenge the game's discursive projects. Leonhard Müllner, one of the members of this collective, has presented "Bot-Appropriation" as an artistic and critical practice that involves intervening, appropriating, or manipulating the programmed behaviors and routines of NPCs (Non-Playable Characters) within digital games. Through this practice, artists deviate NPCs from their predefined programming to reveal the social, narrative, or ideological structures these characters represent within the game's logic (Müller, 2022). The short film *Hardly Working* (Total Refusal [Flock, Stumpf, Klengel, & Müllner], n.d.) uses the algorithmic and representational structure of *Red Dead Redemption 2* (Rockstar Games, 2018) to create a

narrative focused on NPCs. By using residues from the game as part of a narrative inquiry exercise, Total Refusal exploits the polyphony of the original game and builds a critical artifact that exposes how labor is represented in games created by major industry players.

Fig. 24. A dramatic scene from *Hardly Working* showing the laundress character in action (Screenshot by author).

Performing this exercise with analog board games is difficult, though not impossible. The characteristics of the medium and the design traditions governing its construction limit designers' access to the voice of the dominated. There is a practical barrier to accessing information on subaltern actors in board games, as this information is often lost due to analog games' limited processing, recording, and storage capabilities. Furthermore, due to board game design traditions—even in those that simulate wars—violence is abstracted so as not to "disturb players" (Train & Ruhnke, 2016) and to allow for the discursive unfolding of the game, as seen in cases like *Afrikan Tähti* (Mannerla, 1951; Harrer & Harviainen, 2022) or *Santa Maria* (Aporta Games, 2017; Sedelmeir & Baum, 2022). Counterforensic ludology integrates experimental game research methodologies, such as narrative inquiry and reflexive digitization, to reconstruct the subaltern texts of the game.

In this work, I have used reflexive digitization as a tool to reconstruct residues about the simulation of violence in the game, and I have employed narrative inquiry as a method to

recover the game's subaltern texts. The result of this exercise has been a network of critical artifacts that challenge the dominant texts produced in board games in relation to state violence, exposing the victims' stories.

In conclusion, I believe that the counterforensic approach can drive critical game design by providing creators and activists with a starting point for exercises aimed at subverting the ideological projects of games, especially those addressing the simulation of state violence. Furthermore, this practice has the potential to strengthen the development of critical thinking in game designers.

6.4. Next steps

Finally, considering the advantages of counterforensic ludology for critical work with board games, I present two lines of work that emerge from this project.

6.4.1. To Activate Forums

The first line of work is the intervention and activation of forums where state violence is legitimized. The counterforensic device is political by design. This theoretical and practical exploration arises from the need to understand and challenge how discourses of violence are conveyed in board games. This challenge occurs "internally" within the intervened games: the algorithm is manipulated to subvert the game's rhetoric. However, this challenge must necessarily be transferred to forums where state violence is legitimized, that is, to the ideological apparatuses of the State, such as schools, media, public institutions, the State itself, museums, and others. The work of subverting games like *Juden Raus!* is not complete until new discourses emerge among players that question state violence, whether in academic (research), pedagogical (learning sessions), or political (petitions) contexts.

In this sense, the next step of this project is to identify and activate forums where *Juden Raus! Revisited* can resonate with viewers and creators interested in critical work on state violence.

6.4.2. Contributing to Pedagogies for Critical Game Design

Throughout this thesis, I have shown how counterforensic ludology is framed within postcolonial critical traditions that study political violence and the subversion of cultural objects. In particular, in my region, Latin America, hacking, subverting, and reclaiming

technologies, including games, has been an essential characteristic of the creative work of game designers in recent years (Penix-Tadsen, 2019; Wong, 2021)[12].

I would like to highlight a third critical tradition relevant to critical game design: the pedagogy of the oppressed, a form of critical pedagogy developed by educator Paulo Freire (Freire, 1992). This pedagogy seeks to create spaces for teaching and learning where students develop tools to understand and question their own sociocultural and political structures, with the goal of transforming them toward the common good. In Latin America, Freire's ideas have influenced the creation of educational projects and the development of liberating pedagogies. Nevertheless, despite the growth of game design programs in the region in recent years, the limited presence of these critical pedagogies in their curricula is notable (Cibertec, 2024; Toulouse Lautrec, 2024)[13].

What is the potential of counterforensic ludology to foster the development of critical thinking in game designers? Creating a game from this perspective requires knowledge in sociology and history, as well as systemic thinking skills. Additionally, it requires establishing safety frameworks to protect creators exposed to complex content and ethical frameworks to manage the creation of such content. It is also necessary to validate the work with the communities represented in the games. All of this implies developing critical thinking skills in game designers. In this sense, I believe that counterforensic ludology can be integrated both into the training processes of game designers and into those that use game design as a learning methodology.

6.5 Chapter Summary

In this chapter, I presented my reflections on the counterforensic ludology exercise with *Juden Raus!* and the contributions and limitations of this approach for the critical study and design of board games.

In the first subchapter, I explained that counterforensic ludology enables, from a research perspective, the exposure of power operations in board games, which occur when design

[12] Situating this project in Latin America reflects my position as a Latino. This does not limit the possibility of replicating this practice in other contexts.

[13] A systematic review of these programs is still pending; however, based on my experience in the community of game design educators in Peru, I can confirm the still incipient reach of the critical and ethical perspective in the curricula aimed at training future game designers.

mechanisms are used to suppress and omit information about dominated groups. By recovering the game's residual information, it becomes possible to reconstruct the operations that generated and suppressed this information. I also noted that this approach allows for the construction of networks of residual signifiers as subaltern texts of games, providing access to the perspective of entities dominated by the game's ideological apparatus.

In the second subchapter, I addressed two limitations mentioned during the presentation of this project. The first, the abstraction of the player, refers to players being considered in abstract terms within the analysis exercises. I explained that this is addressed by complementing the analysis of the game system with a review of the representational and performative layers. The second limitation, the speculative component of the analysis, is mitigated by using the game's original algorithmic structure. This ensures that the "subverted" versions of the game are built on the procedural logic of the original material.

In the third subchapter, I presented two contributions of counterforensic ludology to critical board game design. The first contribution is demonstrating that it is possible to retrieve and use residual information from analog board games. This process is slowed and limited by the inherent capacities of analog board games; therefore, I noted the benefits of digitization as a way to facilitate research tasks. The second contribution is enabling the emergence of subaltern texts centered on the victims, with the potential to contest the games' hegemonic narratives. This practice is typically restricted to digital games, but I presented a concrete case where the residual information from a board game can be used for a speculative exercise centered on the subjects dominated within the game's model.

Finally, I outlined two lines of work that stem from this project. The first is political and involves the activation of forums. I explained that counterforensic work should aim to participate in all forums where the truth about state violence is contested. Furthermore, I noted that if such spaces do not exist, it is necessary to build networks with other actors interested in game subversion to create new forums. The second line of work is more local and relates to pedagogies for critical game design in general, and board game design in particular. I explained that Latin America has a tradition of game subversion and critical pedagogies aimed at liberating oppressed subjects. However, despite the growing availability of game design programs, curricula do not reflect this knowledge. In this regard, counterforensic ludology can contribute to building a critical pedagogy for game design in the region.

7 CONCLUSIONS

In this project, I have explored how board games circulate discourses that legitimize state violence through their models. My literature review revealed that critical analysis of these games often focuses on their hegemonic discourses, neglecting the subaltern elements present in these games but hidden below the threshold of detectability for players and analysts. In critical digital game design, these residual elements have been addressed to subvert the ideological projects of the original games, but such work is still scarce with board games.

In response to this context, the objective of my thesis has been to explore ways to examine and question hegemonic discourses in board games, specifically those that legitimize state violence against civilian populations. To this end, I introduced counterforensic ludology as a critical approach for studying and subverting these games. This approach examines and challenges representations of state violence in board games and is rooted in the tradition of resistance and subversion of thinkers and designers from postcolonial countries. In this work, I present the theoretical, practical, and political foundations of this practice, as well as procedures for carrying it out while ensuring practitioners' safety.

To demonstrate the benefits of this practice, I conducted a counterforensic exercise with the game *Juden Raus!*. This exercise showed that incorporating a counterforensic perspective into game studies makes it possible to expose the power operations within games that suppress subaltern voices. It also demonstrated that these voices can be recovered using object-oriented research techniques, such as narrative inquiry and reflexive digitization, which I explain in the appendix of this work. Through the collection and analysis of residues from the game, I was able to reconstruct the trajectories and experiences of underrepresented characters, giving voice to those who were originally silenced.

The creation of *Juden Raus! Revisited* was a crucial step in this process. This version of the game, developed for the thesis project, uses the original game's residues to articulate counterhegemonic narratives that challenge its own rhetorical frameworks. By reconfiguring the game from the perspective of the victims, I sought to subvert its hegemonic discourse and foster critical reflection on state violence and its representation in games.

Based on the project results, I identify the contributions of this practice to game research and critical design, namely, that it exposes the internal power operations within games, enables the

articulation of subaltern texts centered on victims, and facilitates critical practices in board games using residues.

Finally, I propose two next steps for this project. First, to participate in and intervene in forums with this project, especially those that circulate discourses legitimizing state violence against civilian populations. Second, to explore the integration of counterforensic ludology into emerging game design pedagogies, which currently lack components aimed at developing critical thinking.

In conclusion, counterforensic ludology is a powerful tool for analyzing and questioning hegemonic discourses in board games that legitimize state violence, allowing for the recovery and amplification of voices that have been silenced.

APPENDIX - Reflexive digitization

In this appendix, I present *reflexive digitization* as an experimental research method for investigating board game design. First, I introduce the concepts and definitions I use to frame this practice. Then, I present reflexive digitization as an experimental method and detail its procedures.

Concepts and definitions

I begin this section by clarifying the concepts of *game design*, *game design research*, and *experimental game design research*, which are fundamental to the practice of reflexive digitization.

In this thesis, I refer to game design as a representation of the form and function of a ludic artifact constructed under specific ideals, conventions, and technologies. Game design encompasses more than the descriptions, data structures, and operational schemes that designers may create to explain how a game behaves or should behave; this can be expressed in a game design document (GDD), a voice message, a patent, or a diagram on a whiteboard. Sometimes, a single game element is enough to evoke the entire design of a game: *"I loved this mechanic! What a great game design."*

In this work, games are approached as designed systemic artifacts, and *game design research* is the study of game design. *Game design research* has been defined as a practice aimed at "to uncover new facts and insight about game design, design processes, or games as designed objects; that is, to gain new knowledge and understanding about game design" (Lankoski & Holopainen, 2017, p. 1). One way to conduct game design research is through design itself, known as *experimental game design research*, which is "a way to, through designing, understand more about design principles for games" (Waern & Back, 2015, p. 341). This perspective has also been presented as *game research through design*:

> Research through design, on the other hand, is an approach to produce different kinds of design knowledge, including conceptual frameworks and design theories. As the name implies the outputs are developed through actively engaging in producing designed artifacts. (Lankoski & Holopainen, 2017, p. 2).

Research through design is an approach that employs design theory and practices as methods for academic inquiry (Zimmerman, Stolterman, & Forlizzi, 2010, p.1). The logic is that, when a practitioner constructs or reconstructs an artifact during a design process, they acquire knowledge and develop skills that allow them to understand the design of the artifact in question more deeply (Zimmerman, Forlizzi, & Evenson, 2007). When these design processes are conducted rigorously and reflectively, they produce knowledge about the designed artifact and its epistemological field, which can be used for academic purposes.

This approach has three aspects that benefit research. The first is that it allows for the exploration of *unknown unknowns*, which are aspects of objects that are not evident a priori, either because they are deeply embedded in their components or because they have not previously been addressed in a research field (Recker, 2015, p.4). Second, a research through design process results in a concrete artifact that embodies the knowledge generated during the design process. This artifact can also be analyzed and scrutinized by the scientific community to replicate and validate the knowledge it contributes. Finally, research through design produces *knowledge objects* such as diaries, code, and design documents that can be used as inputs for studying the object (Zimmerman, Stolterman, & Forlizzi, 2010, p.310). These materials enrich research by providing traceability of the thinking and decisions made during the design process, allowing other researchers to analyze, replicate, and validate the knowledge generated.

Research through design also faces limitations that hinder its consolidation as a robust research paradigm. One of the main barriers is an idealized view of design held by practitioners, which distances it from a rigorous and systematic approach, as it is not considered a “rational” or “logical” process. Likewise, standardizing documentation of the process is crucial to enable the formalization of theories, as it facilitates tracking how the framing of problems and proposed solutions evolve throughout the project. Added to this is the scarcity of examples and critical analyses, as well as the need for more publication venues and increased financial support for this type of experimental research (Zimmerman, Stolterman, & Forlizzi, 2010, p.316).

Board game research through design is the application of the research through design approach to the academic field of board games; namely, investigating board game design through the active practice of game design (Hook & Coulton, 2017, p.99). Although in the literature review for this thesis I did not find exact references to the term "board game research through design,"

there are mentions of this approach in the context of digital games (Lankoski & Holopainen, 2017, pp.2, 158). This suggests that, although the specific concept for board games is not formally established, the fundamental principles of research through design can be effectively adapted and applied in this field. Therefore, I define *board game research through design* as an experimental practice that enables researchers to gain an in-depth understanding of their object of study, produce documentation of the research knowledge acquired, explore *unknown unknowns*, and construct critical artifacts (Zimmerman, Stolterman, & Forlizzi, 2010, p.1; Lankoski & Holopainen, 2017, p.2; Jones, Liapis, Lykourentzou, & Guido, 2017).

Reflexive board game digitization as research

In this section, I introduce *reflexive digitization* as an experimental practice in board game design research. I begin by framing board game digitization as an established practice in game design. I then explain the need for this practice, followed by a discussion of its foundations, benefits, and limitations. Finally, I detail its procedures, basing my approach on reflections from my own experience with reflexive digitization and an exploratory literature review.

Board game digitization

In technical language, digitization refers to the "transformation of the analog into discrete data, that is, values within a system of values clearly distinguishable from one another" (Koch, 2017, p.1). From a computational and ethnographic perspective, digitization is defined as the cultural practice of encoding culture through informational digital objects such as hardware or software. To digitize is to translate an object that is presented in the world as an integrated entity—a landscape—into another object that represents the first—a photograph of the landscape through a data structure that is interpreted by software and hardware.

Digitizing cultural artifacts offers significant advantages for their preservation, distribution, and practical use. Examples of cultural digitization include transforming a manuscript into an eBook, recording a folk song, or algorithmically representing the behavior of a group during a social event. At the same time, the digitization of cultural artifacts has two fundamental implications for the digitized object itself, as well as for its audience. The first implications relate to the embedded meaning of the transformed artifact. To digitize something, it is first necessary to interpret it and deduce its meaning within the culture. Thus, digitization, as a

cultural practice, imprints the resulting cultural object with new signifiers tied to the ideas and values of the agents responsible for its transformation. As Koch explains:

> During the design process, the cultural is inscribed in the devices, programmes, and infrastructures, which – while they do not determine the use – set up a particular framework, although it is not immediately visible but works unnoticed and insistently. These cultural inscriptions in digital technologies can be made visible through analyses of the materiality of hard- and software (Koch, 2017, p. 4).

The second implication relates to the ecosystem of texts and interpreters where the digitized object is displayed. By converting a cultural artifact into digital technology, it amplifies its reach and connects with networks of actors and settings in which it is discussed and scrutinized:

> The unique attributes of digital media affect the whole process of recording, description, reconstruction, interpretation, deduction and dissemination of cultural heritage. (...) Digital technologies have divided the audience of cultural heritage, creating different ways of viewing, receiving and participating in the interaction. The cultural nature and content of cultural heritage are also understood in different ways. Different audiences also have different perceptions and interpretations of digital heritage, and these perceptions and interpretations also interact with each other (i.e. the intertextuality of heritage). Intertextuality brings more possibilities for the interpretation and interpretation of cultural heritage (Yin & Liu, 2022, p. 7).

Based on the above, we can affirm that the digitization of material culture involves transformations that affect the integrity and very essence of cultural objects, as well as the practices associated with their consumption.

Digitization is an established practice in the design and practical study of board games (Brathwaite & Schreiber, 2009, p. 59). In the context of this work, I define it as the cultural practice that partially or fully transforms an analog game into a digital artifact (Rogerson, Gibbs & Smith, 2015). This practice involves recording, describing, reconstructing, interpreting, deducing, and disseminating the source material in a new value system; namely, that of digital board games. Digitization dates back to the early days of the digital game industries. Games like *Solitaire* (Cherry, 1990) and *Mahjong* (Brodie Lockard, 1981) have been transformed from their analog format into computer programs on multiple occasions. In fact, it is no exaggeration to say that, by now, most plays of these originally analog games have taken place in front of a screen. Today, board game publishers adapt popular games like *Wingspan* (Monster Couch, 2021) or *Root* (Dire Wolf Digital, 2020) to the digital format. Board game designers continually digitize their own designs, facilitating their design and testing processes, as well as their distribution. It has been observed that digitization streamlines tasks related to design and testing

of game concepts and prototypes (Rogerson, Sparrow & Gibbs, 2021), allowing designers to build design knowledge and learn about game design (Waern & Back, 2015, p. 158). This is also a long-standing practice among hobbyists and hackers, who adapt board games to digital formats to experiment with and play them to their liking.

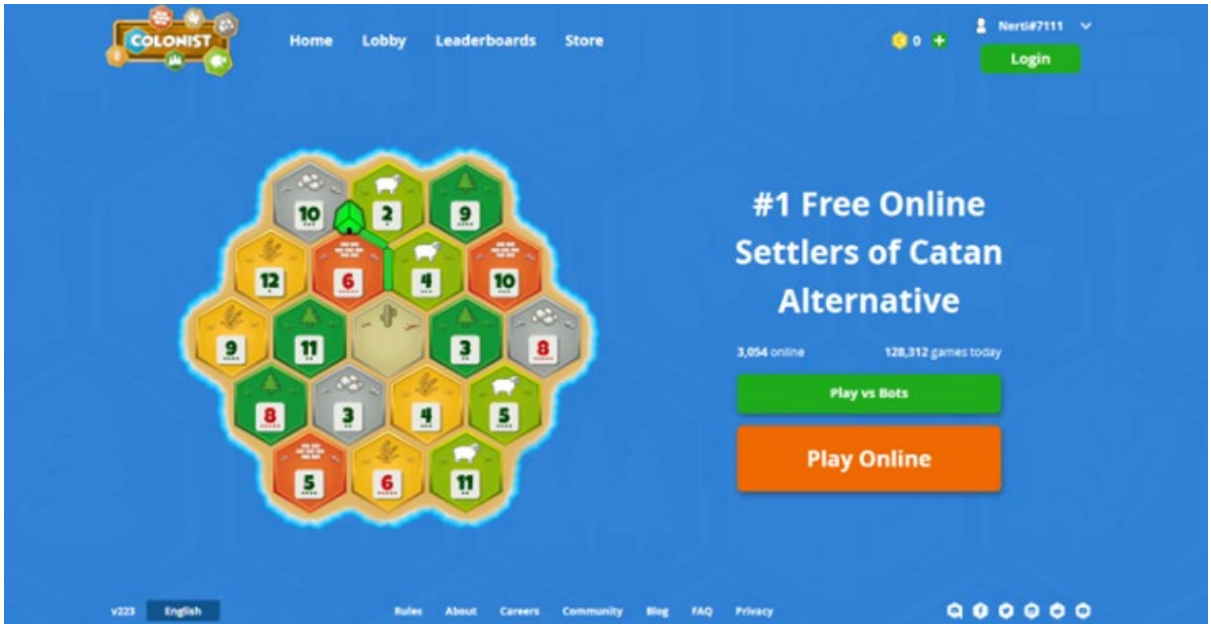

Fig. 25. Main screen view of Colonist.io (Yilmaz & Yilmaz, 2017). This game is a free digitized version of Settlers of Catan (Screenshot by author).

Fig. 26. View of the Catan Universe page (Endava & SuperNimbus, 2017) on the Steam game distribution platform (Steam, n.d.). This game is a paid digitized version of Settlers of Catan (Screenshot by author).

Players engage with digitized or hybrid games differently than they do with their analog versions, transforming their practices of consumption and interpretation. Kankainen (2016) presents this activity of play as a holistic pastime that includes both digital and analog versions, enabling new points of contact between the player and the game:

> (...) it seems that playing *Blood Bowl* can be seen as holistic pastime, where material and digital aspects have different, although sometimes overlapping, roles. It can be understood as a collection of separate but interlinked activities i.e. as a pastime. In this case the pastime also contains playing the digital version, as it offers a way to practice tactics and offers the opportunity to play in different ways than with only material version of the game. (p. 6)

Rogerson, Gibbs, and Smith have observed the transformations that a game's materiality undergoes when digitized in terms of loss. In this regard, the authors highlight the communicative role that game materials play in their analog version (Rogerson, Gibbs, & Smith, 2016, 2020) and warn that by reducing or eliminating the game's housekeeping tasks (enforcing rules, recording game information), players lose opportunities for engagement with the game, which could limit their learning of its rules and mechanics.

For my project, I am interested in understanding the possibilities for play and game interpretation that are enabled when the game's algorithmic components undergo transformations. In this sense, I reflectively value what is lost during digitization, but I focus on what emerges when the game is translated into a new medium.

My needs as a researcher

When researching board game design—especially those that address themes of political violence—I have identified safety and practical factors that limit my work.

The safety factor arises when analysis focuses on games that depict disturbing elements or situations. Analyzing a game involves playing it analytically to explore and define the space of possibilities it permits. In doing so, I must familiarize myself with its rules and theme, and, more importantly, apply the algorithm dictated by the designer (Galloway, 2006, p. 90), which

may potentially entail interpreting problematic roles and situations. Unlike digital games, the functioning of a board game depends entirely on the player; this implies that the player must develop a close relationship with the rules, both in terms of understanding and in ensuring their correct application (Ambrosio & Ross, 2023, p. 4). For these reasons, it is important to recognize that when analyzing board games that model political violence, I am exposed—implicitly or explicitly—to representations of social trauma or *difficult knowledge* (Pitt & Britzman, 2003).

Regarding practical factors, these relate to the characteristics and behaviors of analog board games, especially those that model political violence. To analyze these games from a ludological perspective, I need to observe their entities and systems in action and be able to experiment with them to facilitate the emergence of procedural rhetoric. It is common for certain simulation scenarios to activate only when multiple factors converge, such as player decisions and luck. For example, in *Shining Path: The Struggle for Peru* (Train, 1999), it is difficult to meet the conditions to trigger the scenario where the United States invades Peru:

> War on Drugs: The Government Player may roll once without DRM penalty or added debt (but added Corruption) on both the Economic and Military columns of the Foreign Aid Table, or he may choose to have his EP or AP debt wiped out as above. The Government Player also immediately conducts a Purge of the organization with the highest Corruption Level and does not gain any further APs from the cocaine trade while this policy is in effect (but he does gain the Corruption, if he has any units operating in the Huallaga Valley). If, in the Random Events Phase of any turn this policy is in effect, Government Political Support is 30 or less, the Government player must roll 1d6 to check for US Military Intervention. If he rolls a 5 or 6, the United States invades Peru for its own good and the game ends immediately with a Sendero player victory (Train, 1999, p. 7).

In this sense, it is necessary to have tools that facilitate the examination of these scenarios during an investigative process.

Another practical factor relates to conducting game state logging tasks during play. Games include tools that allow for recording the state of entities and game components during gameplay, which operate manually. During analytical play, querying the game state and logging its changes are essential for understanding system behavior, but these tasks slow down

play and affect player immersion. More importantly, the logging that the game itself performs is incomplete, focusing only on certain aspects of the game—the dominant ones. For example, in *Shining Path*, we observe that the provided logging tool omits the number of fallen units during play or the number of times the GOVERNMENT player has committed abuses against the civilian population. This omission serves a rhetorical function—to sanitize the acts of violence simulated in the game—and additionally hinders analysis of the game's progress.

Thus, my critical practice requires an approach that, on the one hand, protects my mental health when exposed to *difficult knowledge* and, on the other, facilitates tools for examining and logging game systems without distorting the procedural rhetoric of games that model political violence.

Defining reflexive digitization

Reflexive digitization is an experimental research practice in board game design research that uses digitization as a means to analyze the behavior of its components and systems and to generate resources that enable critical intervention. The logic is as follows: by digitizing a board game, I develop expert knowledge about its structure and forms of expression, and create tools that facilitate analysis and subsequent intervention. In design research, practices like *reverse engineering* respond to the questions: "what is this made of? how does this work?" Within these processes, researchers dismantle and reconstruct artifacts to examine in depth the characteristics and behaviors of their design (Kuys, Anderson, Jackson, & Melles, 2009). In board game design research, the questions are "what is this game made of? how does this game work?"

One aspect that distinguishes a process of reflexive digitization from any adaptation of board games to digital format is the reflection on the practice itself. Schön (2017) characterizes the *reflective practitioner* as someone who thinks critically and adaptively to address problematic situations that arise during the work process, analyzing their own experiences critically to improve their practice and learn more about their field. In an exercise of reflexive digitization, the knowledge developed through reconstructing the game is essential for achieving the objectives of critical research and intervention. By documenting this reflective process, I develop tools that can later be used to enrich other processes of analysis and design, whether in game production contexts, experimentation, or academic research.

Based on my experience, I observe that reflexive digitization meets the research needs identified in the previous section. First, this approach ensures my safety as a researcher by freeing me from exposure to descriptions and representations of violence. As I demonstrated in the exercise with *Juden Raus!*, digitization allows me to maintain a deep connection with the complex theme in a dispassionate way, without the obligation to perform roles. By digitizing a game, I gain a deep understanding of its algorithmic structure without the need to experience simulated violence scenarios. Even when gameplay testing is necessary, I can choose to present game components with descriptions and illustrations that are not problematic.

In terms of facilitating game examination, implementing it in a digital format allows for a detailed record of gameplay, including all player actions, generated events, and the state of game components. The *game state*, which in the analog version is an abstract entity, can be materialized in various ways to facilitate analysis. For example, in a *Chess* game in tabletop format, it is difficult for players to precisely remember the position of each pawn on every turn. In a digital version, the analyst can access information about each entity in real-time via the *game log* and then download it as a document. In the same vein, digitization facilitates experimentation with board games because it enables the setup of actual game scenarios where one can test and observe the behavior of the system and its components. As I have been outlining, reflexive digitization also generates tools derived from the original game, such as documents, or even technologies like modules, debuggers, or interfaces, which can be used not only for research but also for critical intervention with the game.

An additional benefit of reflexive digitization is that it enables the emergence of *unknown unknowns*, unexplored aspects of the original material that reveal themselves during the work process. By transferring board game entities to a new medium and language (the programming language of a game engine), the practitioner witnesses the emergence of new behaviors and properties of these entities. Galloway (2022), after reflecting on his own practice as a digitizer, has recognized that when digitizing a board game, "emergent mysteries" arise; namely, properties and behaviors of the game's entities and systems that are only detectable when observed in a different environment.

> To win means to know the system. And thus to interpret a game means to interpret its algorithm (to discover its parallel "allegorithm"). (...) I suggest that video games are, at their structural core, in direct synchronization with the political realities of the informatic age. There really are things that you will never experience or never discover

> unless you have a tactitle or tangible or craft or production engagement with the material. (...) There are all sort sort of things that I wouldn't have discovered about the game simply by interrogating the historical record and looking at archives and reading his published work if I hadn't tried to restage the rules of the game in software. And in doing that it led to a whole bunch of things that emerged (Galloway, 2022).

One of these *emergent mysteries* is the residual information produced by the game system, which is a valuable resource for analysis and critical work, as I have explained in the body of the thesis (5.2).

Procedures

Reflexive digitization involves a preliminary preparation process and two main processes: the reconstruction and deconstruction of the game. These processes are carried out iteratively until the research and design objectives established for the intervention are achieved. Below, I provide a brief description of these processes, based on my experience as a practitioner.

Preparation and analysis

The first step in reflexive digitization is to gain an in-depth understanding of the source material. This initially involves playing the game analytically[14], focusing on understanding how the game works rather than enjoying it (Mäyrä, 2008). Playing the board game analytically is essential for gaining an initial understanding of the game's design and observing its systemic functioning (Booth, 2021). This approach also informs research objectives and questions, prompting adjustments if necessary.

The second step is the formal analysis of the game's elements. For this process, I examine the game's formal elements (Järvinen, 2008; Fernández-Vara, 2019), paying particular attention to those directly related to its algorithmic structure; namely, the rulebook, the charts and tables, the counters, and the board. In certain cases, it is also useful to examine these elements through the lens of game analysis and design models. For example, in preparing the digitization of *Shining Path*, a simulation game, I complemented my formal examination of game elements with the simulation game design model proposed by Volko Ruhnke (2022), which allowed me to understand the game in the terms defined by its designer. In my experience, this process

[14] In some cases, this is not possible because the game is unavailable or because its content affects the researcher's safety.

involves creating a dictionary of all elements involved in the game, describing their properties, behaviors, and relationships with other elements.

The third step is constructing a "reverse engineered" design document. This document functions as a Game Design Document (GDD), a standard document in game design practice that “contains the design guidelines for a game.” As I mentioned earlier, designers create this document with the understanding that it is an ideal representation of the game’s design, useful for communicating design objectives to clients or the production team.

In my experience, this exercise allows me to gain a broad understanding of the game, which informs the reconstruction and experimentation process. Additionally, everything learned is recorded in analysis documents, research journals, diagrams, and other resources, which are essential for validating the results of the exercise.

Reconstruction

In design research, reconstruction is the process of implementing new versions of an object to analyze it and conduct experiments; additionally, reconstruction allows for re-creating the design process of its authors and interpreting their decisions during this process. In the specific case of board game digitization, this process involves implementing digital versions of the game or its subsystems.

From my experience, I can assert that this exercise produces at least two outcomes. The first is becoming an expert in the game, specifically in its simulation engine, which facilitates subsequent analysis tasks. From a proceduralist ludological perspective, the main area of interest in game research is understanding how the game functions systemically; that is, how its components relate and behave to create expression. In this sense, the aspect of board game design I focus on is its algorithmic structure. This algorithmic structure can be read and interpreted through different paradigms. In my case, working from a proceduralist paradigm, which addresses the procedural rhetorics of the game, I focus on the game's entities and units (Bogost, 2008; Lundblade, 2019). The second outcome is that it produces knowledge objects—code, development journals, documents, logs—that enable a critical intervention of the game.

To prepare for the reconstruction, I define the criteria and rules for conducting the process, as well as the characteristics of the resulting artifacts. For example:

- Are the original rules kept intact?
- What game processes should be automated?
- What type of information should be recorded in the digital system?
- How is the original game art translated into the digital version?

As I discussed in the previous section, digitization is a cultural practice that transforms the original object and imprints the values of its practitioner onto it. For this reason, it is important for the epistemological oversight of this experiment to document and justify each design decision made.

With the process objectives established, the next step is to choose a tool that facilitates this reconstruction process. In my case, I have chosen Construct 3 because it is a game development engine I am familiar with and provides tools, such as the event system and objects, that simplify the reconstruction of game models.

The final step is to iteratively create adapted versions of the original material. In my practice, this exercise has primarily aimed to explore the functioning of the game model and retrieve residual information—evidence—from the algorithmic representation of violence.

Summary

In summary, reflexive digitization of board games meets my needs as a researcher by ensuring my safety and facilitating game analysis. This method allows me to gain deep knowledge of the original material without direct exposure to representations of violence. During the process, I generate knowledge objects such as code, design documents, and logs that enable informed critical intervention. Furthermore, digitization reveals residual information from the game system, providing valuable evidence for analyzing the game's ideological tensions and recovering its subaltern voices, as demonstrated by the counterforensic exercise presented in this thesis.

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