Exploring fishery history in game form: 'Never again April 18!'

Jørn Weines

Submit your article to this journal ⬚

View related articles ⬚

View Crossmark data ⬚

Routledge
Taylor & Francis Group

🔓 OPEN ACCESS 	Check for updates

Exploring fishery history in game form: 'Never again April 18!'

Jørn Weines 🆔

Resource Center for Teaching, Learning and Technology, UIT The Arctic University of Norway, Tromsø, Norway

ABSTRACT
This article studies the ways in which Norwegian fishery history can be explored through games. Using the 1989 closure of the Norwegian coastal cod commons as a case study, issues related to historical thinking and game studies are discussed. The main focus is on understanding history through serious games, but theoretical considerations for presenting the case in any game format are discussed. The case involves a historical resource crisis, and the article traces how a serious game can frame counterfactual imagination for questioning the institutional politics of resource management as well as for producing historical empathy with stakeholders in resource crises.

Introduction

Historical narratives are not limited to the medium of text. Historical films have been the topic of scholarly attention for some time, and the field of historical game studies is continually evolving. The focus of this article is on how a historical case can be presented in the form of a game, and the opportunities and challenges involved in doing so. Drawing on concepts of historical thinking and consciousness, the main lens for analysis is the teaching and learning of history, illustrated with a proposed design for a game for learning about a historical event. The broader goal is to illustrate how games of any form can offer paths to understanding a historical resource crisis.

CONTACT Jørn Weines ✉ jorn.weines@uit.no Resource Center for Teaching, Learning and Technology, UIT The Arctic University of Norway, Tromsø, Norway

In order to understand history, it is necessary to have an idea of what historical thinking implies. The book, *New Directions in Assessing Historical Thinking* (2015), edited by Kadriye Ercikan and Peter Seixas, offers a comprehensive examination of various models of historical cognition, and how they are assessed. In it, Catherine Duquette's chapter offers a model that addresses the relationship between the concepts 'historical thinking' and 'historical consciousness'. Her model illustrates the relationships between the historical perspectives ('establish historical significance; identify elements of continuity and change; analyze causes and consequences; develop historical empathy; and take into account the complexity of the past') and historical methods that facilitate interpretation and understanding of the past ('question social phenomena of the past; propose hypotheses; check available sources; analyze sources with respect to their reliability; and answer initial query') (Duquette 2015, 53). I have chosen to use this model to formulate intended learning outcomes for the proposed game as it serves to operationalize the concepts well.

For background, the article reviews the field of historical game studies and the use of games in teaching and learning and then, more specifically, goes on to discuss how a historical case from Norwegian fisheries history can be presented in the form of a game that facilitates historical understanding in a post-secondary education setting. The case is the surprising closure of the Norwegian coastal cod fisheries commons. On April 18, 1989, Norwegian fisheries management changed forever. For the first time, the Norwegian Government announced that all cod fishing had to cease as the total quota had been filled. This broke with earlier praxis, where the coastal cod fishers had been allowed to continue fishing, even after the total quota had been met. In the three decades that have passed, 'April 18′ has become an important event that represents a turning point for the entire Norwegian fisheries sector.

The primary research question of this article is how games can present the history of the 1989 closure of the Norwegian coastal cod commons. The secondary research questions are twofold: First, how can perspectives on historical thinking be implemented in a serious game about April 18? Second, what theoretical considerations are involved when presenting April 18 in game format of any kind?

History in games and games as history

Games have been present in human societies for thousands of years (Huizinga 1955), and video games are currently a prevalent cultural medium for all age groups (ESA 2018). Tabletop gaming, board games for example, is also currently experiencing a renaissance in terms of cultural impact (Pobuda 2018). History is a common inspiration and subject matter for games. The *Sid Meier's Civilization* series of video games (1991–2016) has been the focus of much previous research (Chapman 2013). Board games with historical settings are well represented in the rankings on the leading website for board games, Board Game Geek.[1] Among the current top 10 games, we find *Brass: Birmingham* (2018), *Through the Ages: A New Story of Civilization* (2015), *Twilight Struggle* (2005) and *Great Western Trail* (2016).[2]

Chapman, Foka, and Westin (2017) state that the field of historical game studies has passed the establishment phase and become increasingly delineated from the broader field of game studies. They define this field as

> The study of games that in some way represent the past or relate to discourses about it, the potential applications of such games to different domains of activity and knowledge, and the practices, motivations and interpretations of players of these games and other stakeholders involved in their production or consumption (Chapman, Foka, and Westin 2017, 362).

In addition to a shared ancestry with other presentations of history in popular media, Chapman, Foka and Westin (358–362) emphasize the connection of historical games with the diversifying processes that had an impact on the history discipline, such as memory studies, the linguistic turn and poststructuralist perspectives. A core element is that historical game studies combine perspectives on how games in themselves engage with the past, as well as the engagement of the people involved in playing or making them. Games are not limited to being vessels for traditional historical narratives but can be a distinct medium for history. Dawn Spring (2015) explores how popular video games have made use of primary research in their world-building and argues that games can create historical arguments and engage players in historical questioning. Wright (2018) examines the role of paratexts, such as promotional material, for historical games. McCall (2020) presents the Historical Problem Space Framework as a method for analyzing historical games specifically as *games* rather than as part of other media.

A common theme in the discourse on historical games is how mainstream games tend to perpetuate traditional, hegemonic representations of history, focusing on western European culture and white, European male actors (Fron et al. 2007). Many topics are underrepresented – for example, gender, geographical peripheries, ethnicities, or particular livelihoods. This is an important point, as serious historical games should consider what type of historical perspectives or narratives they reinforce or challenge. Hammar (2017) argues that games can offer opportunities for counter-hegemonic understanding. Chapman, Foka, and Westin (2017, 362–367) note how there is an unfulfilled potential in understanding the historical expectations of players and game developers. I consider this to be of interest when considering how to operationalize insight from historical game studies in making serious games. How do the preconceptions of history learners shape the way they interact with a historical game, and to what extent should serious historical games try to utilize – or counteract – this on the design level?

Kapell and Elliott (2013a) provide a thorough discussion of the relationship between history and games, and link theoretical issues of historiography with understanding of games as a medium that can be analyzed and engaged with historically. Their aim is to answer an old question from a new perspective: what is the role of historical representation in modern popular culture? They maintain that unlike media that are understood through passively experiencing a narrative, games are different because they require engagement in the activity of *playing* for them to be understood. It is therefore possible to consider games to be *processes*, not *objects*. This distinction is important when considering the connection to historiography – the process in which historians construct history through selecting facts, assembling them into a narrative, and presenting it in the form they choose (Kapell and Elliott 2013a, 5–9). In a game, the player is engaged through different types of agency: questions of what actions to take (or not take) and in what order, and their interaction with other players. In other words, the player– not the historian – controls how the facts are assembled. By allowing engagement with gameplay to complement (or replace) the assembly, games allow the player to have greater control of the narrative, including the possibility of creating counterfactual outcomes.

Apperley (2013) asserts how counterfactual imagination can be useful for examining both the past and the present. Counterfactuals can be a starting point for historical interrogation and reflection on multiple potential outcomes of past events. For his part, Chapman (2016,

chapter 9) rigorously examines counterfactual history in relation to games. He argues that games are not limited to depicting history but can promote reflection on why events unfolded the way they did. Chapman calls attention to the demands that counterfactual history in games places on both designers and players, focusing in-depth on the interaction between the agency of the players and the structures of the game. A typical pitfall relating to counterfactuals is to put too much weight on individual historical actors, but Chapman argues that the structure and rules of a game can alleviate this concern. In the context of serious games, engagement with counterfactual imagination provides a strong potential for illustrating contingency and causality, and thus for understanding professional historical practices. By providing a process where the elements of history (historical facts and processes) are made explicit and interact, the player engages not only with what they know *has been*, but also with potential *what ifs* (Kapell and Elliott 2013a, 9–17; Olwell and Stevens 2015).

Serious games for teaching and learning

In the context of games used to promote historical thinking, insights from the broader literature on game-based learning are relevant. Games take many forms, both analogue (trivia/board/card/roleplaying) and digital. Different formats have implications for how people experience, play or even define what games are (see Laas 2017). David Crookall points out that several terms are used to differentiate games used for learning from entertainment games, including game-based learning, simulations, educational games or serious games (Crookall 2010). Serious games are the most common terms, and I therefore use this term 'serious game' when referring to the use of games in the context of teaching and learning. In practice, a serious game of this sort has three phases. First, preparation (such as reading literature or attending lectures). Second, one or more sessions of gameplay. Third, structured post-game debriefing sessions, where the learning activity is connected to the overall context of the course. Ideally, the serious game is fully integrated into a course and not a standalone experience.

The academic study of simulations and games in learning activities goes back as far as at least the late 1960s (Wilkinson 2016). A common focus is on the combination of gameplay and intended learning outcomes (ILOs), and to a lesser extent on the entertainment of the players (Plass, Homer, and Kinzer 2015). Reviews of empirical evidence show that

games can be effective in promoting learning (Vlachopoulos and Makri 2017; Subhash and Cudney 2018). However, the effectiveness of game-based learning is debated. Tobias, Fletcher, and Wind (2014) point out a need for refinement in the processes for designing games that reliably fulfill their ILOs. Linderoth (2012), on the other hand, challenges the assumption that games (as complex systems) inherently facilitate learning, arguing that the connection between games and learning must be examined empirically. Berg Marklund (2015) examines the complexities of educational games and logistical challenges in implementing game-based learning in formal education, calling attention to the need for more research that engages with how these challenges can be solved in practical use of games for learning.

Using games to understand history

The use of games in teaching history is well established in the literature, particularly in the context of using digital games made primarily for entertainment purposes (McCall 2011; Chapman 2016; Kapell and Elliott 2013a). The use of non-digital serious games, such as role-playing games and board games has also received some scholarly attention (Olwell and Stevens 2015; Hoy 2018).

McCall (2016) offers an overview of theory and best practices for teaching history with games, reviewing the literature stretching as far back as the late 1960s. By considering how games present history in different ways, it is possible for educators to find games that match what they aim to teach. The historical presentations in games can be placed on a spectrum, from focusing on the perspective of an individual experiencing a given set of historical circumstances, to more abstracted perspectives attending to larger systems. Some broad categories for different approaches are *games* (characterized by dynamic, rule-based conflicts, and clearly defined goals and outcomes), *simulations* (focusing on rule-based models and the abstracted, yet realistic presence of recorded history) or hybrid *simulation games* that combine the elements of both (McCall 2016, 517–523).

McCall goes into more detail than Chapman, Foka, and Westin (2017) or Kapell and Elliott (2013a) in arguing why the characteristics that make historical games distinct from other historical media are relevant for teaching and learning. In particular, he highlights two features: First, that games let their players experience a systemic context for the actions they take. Second, that players can make choices that have consequences

for the context. Through allowing players to participate in, and repeat, this process, McCall proposes that games become 'lab-like, allowing players to explore historical contingency', and thus produce counter-factual narratives. An important skill for historical thinking is under-standing the interplay between causality and narrative (Førland 2017), and the systemic context games provide is thus an opportunity to practice this. Serious games offer an arena for engaging with this by creating situations where the players can compare the differences between the events of the game and the historical facts or accounts they invoke. Furthermore, as representations and interpretations of history, games must be approached critically by both learners and educators in the same way as any other material used in the teaching (McCall 2016, 524–526, 536).

One of the main challenges for serious historical games is the interface between recorded history (in the sense of the historical facts and accounts we can find in the sources) and the potential end results and outcomes of a game (which might be counterfactual or even ahistorical). Kapell and Elliott (2013b) argue that it is more important that games engage players in experiences that meet their expectations for what they feel is historical *authenticity*, than that they adhere fully to the facts in the historical record (historical *accuracy*). As they note, this is a controversial point that will be disagreeable to many professional historians.

Not all scholars agree on the merits of teaching history by focusing on what could have happened over historical facts. Central to this critique is that such engagements do not teach students about real people, real events or real processes (Robison 2013). O'Neill and Feenstra (2016) further discuss how the expectations of players can make them inclined to consider games as potentially less trustworthy sources of historical information. Beavers (2020), in turn, explores player perceptions on informal learning of history using video games. She finds that players often do not consider games as a viable way to learn, but also that games can contribute to understanding historical thinking. For their part, Beavis et al. (2014) point at the pitfalls for teachers who might overemphasize the appeal and motivating effects games will have in their classrooms, arguing that understanding the role and motivation of teachers is a critical component of the study of games in learning.

McCall brings up two core arguments for why, despite such criticism, games have merit in teaching history: first, that there is a connection between counterfactual thinking and understanding the reasons why historical events and processes had the outcomes they had, and, second,

that serious games are not intended to replace other teaching or interaction with historical source material (McCall 2016, 526–528). I agree with McCall's assessment of the merits of using games to teach history, and the proposed game in this article is built on the idea that games can engage players in experiencing historical processes from different perspectives and provide them with insights that are useful for developing historical thinking skills, both through gameplay and post-game reflection.

The use of games in learning is about creating learning experiences, which provides opportunities for situated learning by creating a relevant context for solving problems and reflecting on the application of knowledge in other contexts (Plass, Homer, and Kinzer 2015). A central point for the effective use of serious games is that the learning is not contained only in the gameplay, but that the experiences from the game are integrated in the instruction and drawn upon beyond the game session. An important stage of the serious game is structured debriefing, where the connections between the game context and the ILOs are made explicit. Nicholson (2012, 5) points at three essential characteristics of debriefing: 'what was done in the activity, how well the activity worked for the learner, and how the learning could be applied'. When considering serious historical games, debriefing is an interface between the counterfactual narratives produced and experienced in the game, and the historical ILOs, providing an additional arena for the players to engage with the complete game experience from historical perspectives and methods. Duquette's (2015) operationalized model of historical thinking perspectives is useful for structuring both the ILOs of the game, and the debriefing of the game sessions. When using games to understand history, the connection between playing and reflecting on the game and the overall course instruction is a best practice for using the games to promote the skill of historical thinking in the learners (McCall 2016). Apperley's (2013) work is also relevant, showing how after-action reports by players of historical games illustrate the tension between counterfactual imagining and the aspiration for historical accuracy.

Another critical issue, and one that mirrors Chapman, Foka, and Westin (2017) point about games having a bias towards hegemonic representations of history, is that games tend to focus on systems. This contributes to how games are often bound by clearly defined rules and roles as well as distinctly quantified game elements. This quantification has several implications for the experience of the players: they will often have defined goals to fulfill and they will have access to detailed information and control that surpasses what was available to historical actors

(McCall 2016, 528–529). Hoy (2018) provides useful insight in using board games in history classes, in particular on involving the people found in historical sources. His findings on games and historical empathy are relevant for mitigating the problems of systemic focus in games. In Hoy's game, *Policing the Sound*, players engage with the historical smuggling between British Columbia and Washington state in the nineteenth century. The game is based on archival research and players take the roles of either smugglers or customs inspectors. In the game, players engage in simulations of illegal behavior. In Hoy's pilot study, players demonstrated increased understanding of the importance of social context in relation to why people participated in smuggling. This differed from the more law-oriented perspective of smugglers as petty criminals that students demonstrated after simply reading the course curriculum (Hoy 2018, 13–14).

April 18 and the reform of the North-Atlantic cod management system

Fisheries are complex socio-ecological systems, where human activity and institutions (such as harvest and management) interact with the components that make up the ecosystem (such as fish stocks) (Syed, Borit, and Spruit 2018) and fisheries have played an important part of Norwegian history. Fishing has provided the material basis for the development of coastal settlements for thousands of years. The traditional springtime harvest of spawning cod in the Lofoten archipelago has been important for fishers from all parts of coastal Norway and is the largest cod fishery in the world. Dried cod was Norway's first export industry, and the fisheries were a driver in the development of long-lasting economic and social structures (Kolle 2017a, 2017b; Døssland 2017). The national importance of the fisheries also resulted in the development of science-based management in Norway in the mid-eighteenth century (Schwach 2013).

On April 18, 1989, the status quo in Norwegian fisheries management changed. After several years of crisis in the cod fisheries, the harvest of coastal cod was halted when the total quota was filled. The complex process leading up to the closure of the cod commons, and the lasting effects that the changes to the management system that followed had on Norwegian fisheries and society have been comprehensively reviewed by scholars. The two main works that give an overview of April 18 in English are the chapter entitled 'Never Again April 18!'[3] by Holm, Finstad, and Christensen (2014) and another, 'April 18, 1989: The acceptance of overfishing in Norway', by Holm and Finstad (2020).

In the years leading up to 1989, the catch of cod had been poor. The scientific authorities tasked with stock assessments (the Institute of Marine Research) had issued warnings about the declining cod stocks. The notion that coastal fishing with traditional gear did not impact the regeneration of the stock had been commonly accepted, but the small-scale fishing fleet accounted for as much as 20% of the total cod catch (Maurstad 2000). The catch efficiency of the small-scale vessels had steadily increased with the introduction of modern equipment. The crisis in the northeast Arctic cod stock, and thus the environmental dimension of sustainability, was the rationale for closing the cod fishery.

In 1989, the health of the fish stock had become the main concern for management, but the economic and social dimensions of sustainability are also key in analyzing the historical significance of the closure as a turning point in Norwegian fisheries management. The new policy was based on new developments in maritime law. It represented a shift in focus towards prioritizing the protection of the resource over other concerns, such as the need for employment and settlement on the geographical periphery. The result was the swift introduction of a vessel quota system for the cod fisheries. Initially intended as a temporary measure, it became a permanent feature, as well as the main management model for the other major Norwegian fisheries. This represents a big change: From 1990 onwards, the historically open coastal commons became closed, and managed through quotas. As a break with continuity, this meant that the main objective of the management system was no longer to protect the coastal fishers, but the fish. The social dimension, and the clash between the perceptions of legitimacy by managers and local population, is also key. International relations played a role, as the North-Atlantic cod stock was jointly managed by Norway and the Soviet Union from 1975 and onwards. Norway's participation in the European Economic Area also had implications for the subsidy system that supported the coastal fleet.

Even though the powerful Norwegian Fishermen's Association organized most of the fishers, they were a homogenous and harmonious group. There were tensions between coastal fishers and open sea trawlers, especially in discussions of who were responsible for the overfishing that contributed to the stock collapse. The belief that traditional gear did not have an adverse effect on the fish stock was still prevalent among the coastal population. The management reform resulted in the commons becoming closed, replaced with a vessel quota system with a clear distribution between the small-scale and sea-going

fleets based on the total allowed catch, named the 'Trawl Ladder' (Armstrong 1999). On top of this, international agreements caused a dismantling of government subsidies to fisheries. With the closure of the coastal fishing commons, and a switch in focus towards sustainable fish stocks as the main guiding principle, Norwegian fisheries policy was completely transformed, increasing the recognition of the sea-going trawler fleet. The fisheries management had been characterized by a large degree of trust and collaboration between the state and the fishers, contributing to the high legitimacy of the system. The corporative system of fisheries management in Norway entered a new phase. The status of the industrial fisheries was strengthened, and the traditional position and identity of the small-scale fishers were challenged by a management system where they now shared the responsibility for sustainable fish stocks. Early in 1989, a new Coastal Fisher's Association was established, which over time grew and challenged the established position of the Norwegian Fishermen's Association (Grytås 2014).

The new vessel quota system also had large impacts on the fisheries in the traditional fishing areas of the Sami, the region's indigenous people (Evjen 2014; Brattland et al. 2019). In other words, the closure of the cod commons was an event that had consequences for a multitude of stakeholders. What started as a crisis in the cod stock set off a chain reaction that reshaped the management system, as well as the basis of existence for many coastal communities. The cod stocks eventually regenerated to a healthy size, but the deep societal changes lasted (Holm, Finstad, and Christensen 2014; Holm and Finstad 2020). The break with the previous tradition went against the public understanding of small-scale fisheries' effect on the fish stocks, and the resulting public and academic debates brought up issues relating to the tragedy of the commons[4] and sustainability (Jentoft 1993).

Envisioning the historical event of April 18 as a serious game

The closure of the cod commons provides plenty of material for assembling an exciting historical narrative: Actors and stakeholders, resources and industry, national and international politics, tensions between the center and the periphery, and a break with tradition. Several approaches in the scholarship on historical games and serious games are useful for exploring April 18 in the format of a serious game intended for use in post-secondary education.

McCall (2020) presents the Historical Problem Space (HPS) framework as an analytical method for comprehensively exploring the dynamic relationships between components in historical games; looking at why games represent history in the way they do. While HPS focuses mainly on digital games, I find it to be useful for structuring the design of an analogue serious game. HPS's emphasis on dynamics highlights Kapell and Elliott (2013b) point that the power of games lies in offering players experiences that feel historically authentic, even at the cost of historical accuracy when the outcomes diverge from the facts in recorded history. Regarding April 18, it is my opinion that the experience of participating in counterfactual negotiations can feel authentic for the players, even if the stakeholders and arguments that are emphasized are different from the historical outcomes. By playing out the process of management reform, the players experience historical perspectives related to the historical significance, complexity and cause and consequence of the April 18 event.

HPS defines the core components of a game's historical problem space as player agents (the historical actors controlled by the player); goals; the virtual gameworld (the historical setting) and elements that enable and constrain the players (agents, minions, resources, obstacles and tools); and the strategies, choices and behaviors available to the players in navigating the gameworld. The shape these components take are influenced by the conventions of the genre of the game (McCall 2020).

Further, Peters and van de Westelaken (2014) outline a design model that concisely presents the process of making serious games:

(1) The reference system is defined, which is understood as a complex real-life situation that serves as the basis of the game, and thus defines the ILOs.
(2) A schematic representation of the reference system is created, which identifies the relevant elements and connections to include.
(3) Implementation of the schematic representation as a game (meaning the parts that make up the schematic are mapped onto game elements, such as the rules, mechanics and components).

This process i,,,,s described using the terms *reduction* (deciding what parts of the reference system will be present in the schematic), *abstraction* (defining the level of detail or simplification the parts that are present will have) and *symbolization* (parts of the reference system that are represented in a new way) (Peters and van de Westelaken 2014).

I have chosen to combine the HPS-framework and Peters and Westelaken's model in order to define and describe the central elements of April 18 that are necessary to include as game components, and the form in which they should be present in the game world. The reference system of April 18 is the break in the continuity of the coastal cod commons, and factors that exerted pressure on the resulting process of fisheries management reform. In order to abstract these factors, the three dimensions of sustainability are used. Sustainability is commonly understood as the balance between the economic, environmental and social spheres.[5] Sustainability is a useful framework for broadly categorizing the different aspects of April 18 as a resource crisis, as the fishery as a socio-ecological system represents a connected human-biophysical system (Kotchen and Young 2007). A simple schematic presentation of April 18 outlining the broad factors that influenced the process is presented in Figure 1.

Before describing the implementation of the schematic representation using the HPS framework's components, the choice of genre must be considered. In essence, April 18 is a situation where actors are involved in institutional politics. Dave Bridge (2014) points out that since institutional politics are structured by the 'rules of the game', they are well suited for being simulated in games. This is because a game's rules can be modified to mirror the rules that govern the simulated institutional processes. McCall's (2016) definition of *simulation games* – combining clear rules with a well-founded model of a past event – is also useful. The key historical actors are the stakeholders involved, making their presence
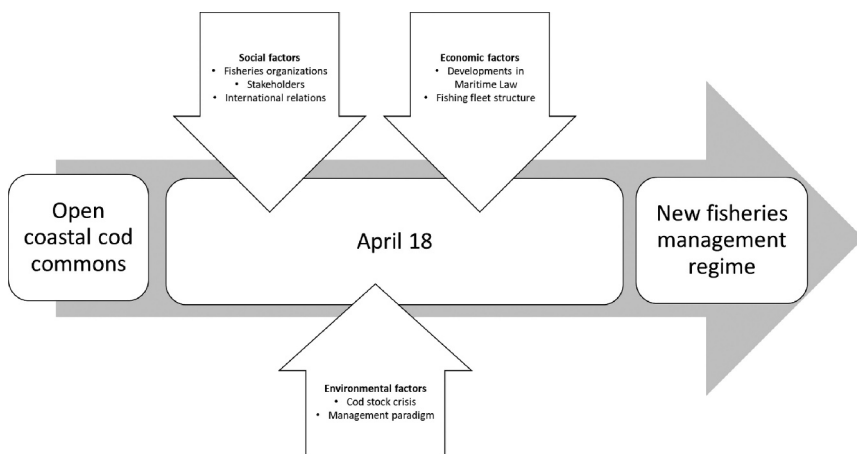

Figure 1. Schematic representation of April 18.

in the game important. Roleplaying is therefore a good choice of game genre. An established format for live-action historical roleplaying is *Reacting to the Past* (RttP). Olwell and Stevens (2015) describe RttP as a flipped-classroom approach where students embody roles in a historical setting and attempt to gather support for their factions.[6] Another well-known format for a roleplaying game for simulating institutional politics is the Model United Nations, where students act as delegates in UN conferences and discuss topics and formulate and vote on draft resolutions.[7]

With these considerations in mind, April 18 can be envisioned as a roleplaying game, where the players take on the roles of different groups of actors engaged in institutional politics: stakeholders involved in negotiations about fisheries management reform in light of the ongoing cod crisis. Will the fishery continue with 'business as usual', or move towards a new order of management? This setting is ahistorical in that such negotiations did not happen, but serves as a venue for players to explore the positions of stakeholders who were affected by the closure of the cod commons. Table 1 shows the core game components of April 18 and their level of abstraction.

In the proposed game, the instructor will serve as gamemaster, facilitating the game session and provide players with feedback from the gameworld. An important task for this role is to maintain the players' feeling of historical authenticity without undermining their opportunities for counterfactual gameplay. A situation that would break with both authenticity and accuracy could, for instance, be one where the small-scale coastal fishers decide to argue for measures that benefit the open sea trawlers at great expense to their own group. By not allowing such events to happen, gameplay options would be limited. In situations like these, one option for exerting control is to inform participants that the players in the role of the small-scale fishers are meeting pushback from other members of their groups.

The overall flow of the game is that the players are first assigned to the stakeholder faction they will play and allowed to prepare for their roles by researching the historical positions and arguments of the faction they are embodying. The players in each faction discuss and agree on their objectives and strategy for the negotiations and play out a series of negotiation sessions in a plenary, where they present their arguments. The gamemaster provides feedback from the gameworld (from actors not being embodied by players, for example, or regarding elements that constrain the negotiations). The status of the gameworld is abstracted by framing any changes in terms of how the proposed decisions are

Table 1. Core game components of April 18 and abstraction level.

HPS core components	April 18	Abstraction level
Player agents (represented in a combination of *specific historical agents* and *historical collectives*)	Groups of players play as factions of stakeholders. Stakeholders in the cod fishery: • Small-scale fishers • Open sea trawlers Stakeholders in fisheries management: • Directorate of Fisheries • Scientific authorities (Institute of Marine Research). Institutional stakeholders: • Norwegian Fishermen's Association • Representatives of interest groups (coastal communities, Sami fishers).	Low level of abstraction; the stakeholder factions will be based on players examining historical information to define their roles.
Goals	Gaining support for players' stakeholder group's interests in the reformed management system.	Abstracted, symbolized through the sustainability dimensions.
Virtual gameworld	The Directorate of Fisheries are arranging negotiations for reform of the fisheries management system in response to the ongoing cod stock crisis.	Symbolized through a counterfactual negotiation.
Agents	Stakeholder factions not played by groups of players.	Symbolized through feedback by the game master.
Minions	Interest groups that are not party to the negotiations but support different stakeholder groups.	Symbolized through feedback by the game master.
Obstacles	International relationships that constrain the negotiations: • Joint Norwegian–Russian Fisheries Commission • European Union.	Symbolized through feedback by the game master.
Resources Tools	Arguments and positions presented in negotiations. Information used by the historical stakeholders. Information on the cod fishing industry (stock assessments, catch data, economic reports). Demographic data (population, employment).	Low level of abstraction from historical data, but also quantified in game effects through the sustainability dimensions.
Strategies Choices Behaviors	Define goals for stakeholder faction. Selecting and presenting arguments in negotiations. Negotiating with other stakeholder factions about acceptable compromises.	Level of abstraction is driven by players and their interaction with the game components.

expected to impact the economic, environmental and social dimensions of the cod fishery. The players representing the Directorate of Fisheries will propose a course of action for how the cod crisis will be handled. All player factions vote if they are for or against the proposed action, but the

decision is made by the Directorate of Fisheries. The gamemaster prepares a new scenario for how the proposed changes play out, including feedback from the non-player elements of the gameworld (such as constraints from demands made by foreign diplomats). The factions then prepare for a new round of negotiations taking place after a year has passed in the gameworld, based on the feedback and new information on the state of the gameworld.

In addition to the in-game objectives the players attempt to complete, the serious game has defined intended learning outcomes. These shape how the players engage with the game's historical basis and engage in historical thinking. Table 2 shows the ILOs of the game, and links them to Duquette's (2015) operationalized model of historical perspectives and methods.

Throughout the serious game (preparation, gameplay sessions and debriefing), players engage with the historical perspectives and methods of Duquette's operationalized model. In preparing for their roles, the players must check available historical source material pertaining to April 18 and assess their reliability (for example scientific advice from the Institute of Marine Research, opinion pieces in the newspapers, or catch and sale statistics from the fisheries industry). The gamemaster can provide some sources as a starting point for the player's preparation. Evaluating how the historical source material will inform their roles is also tied to the historical thinking perspectives for considering causes and consequences and questioning the process of management reform.

Table 2. Intended learning outcomes and ties to historical thinking.

Intended learning outcomes	Historical thinking perspectives and methods employed
Explain the historical events that led up to the closing of the Norwegian inshore cod fishery common.	Establish historical significance, analyze causes and consequences.
Compare and contrast the different stakeholders involved in and affected by the closing of the inshore cod commons, especially in the context of 'the tragedy of the commons' and the impact of management systems on different parts of the fishing fleet.	Analyze causes and consequences, develop historical empathy, question social phenomena of the past.
Reflect on the closing of the inshore cod fishery in terms of break or continuity in Norwegian fishery and coastal history and fisheries management systems.	Identify elements of continuity and change, propose hypotheses.
Appraise the importance opinions and scientific knowledge play in institutional politics.	Check available sources, analyze sources with respect to their reliability.
Apply the dimensions of sustainability (economic, environmental and social) when analyzing social change in historical processes.	Question social phenomena, propose hypotheses.

This roleplaying game format can be beneficial for players' engagement with historical thinking. Hoy's (2018) findings on the potential of games to strengthen students' sense of historical empathy are relevant. RttP has likewise shown increased understanding of historical contingency and empathy (Olwell and Stevens 2015). The debate on the impact the closure of the commons had on Norwegian coastal communities was uncompromising when it took place in the 1990s, but current discourse is mainly focused on the acceptance of a sustainable harvest of the fish stocks as the overall goal of management (Holm, Finstad, and Christensen 2014). The goal of studying the historical events surrounding April 18 is thus to learn to understand the complex process of management, not engage in moral judgements about sustainability. In terms of historical empathy, this means gaining understanding of the fact that the different positions in the contemporary debates were deeply connected to questions of identity and to how the role of the small-scale coastal fisheries was understood (both by the fishers themselves and society at large). The stakeholders that opposed the closure of the commons were not opponents of sustainable management but had concerns about how the status of the Norwegian coastal fishers was being transformed. With players taking on the roles of stakeholders with conflicting interests, they can explore historical empathy through the internal motivations of groups that are undergoing far-reaching changes to their material basis and the manifold social processes connected through the closing of the coastal cod commons. In terms of historical theory, this plurality is a good way to facilitate multiperspectivity in how the players reflect on the event (Stradling 2003).

Through the simulated negotiations, players have agency in the narrative, allowing them to decide how the factions they embody attempt to safeguard and further their particular interests. If a faction is unable to agree on a consensus decision, some players might leave and make a new faction. If, for instance, the above-mentioned situation arises in which the faction of the small-scale fishers deciding to accept a proposed division of quotas between the costal and sea-going fleets that heavily favors the trawlers, some members of the small-scale fisher faction could leave and start their own faction to work for their rights. Another such possibility could be related to the indigenous dimension, where a minority group is marginalized by the majority (in the case of April 18, where the Sami small-scale fishers were not initially given distinct consideration in the vessel quota system). Players who want to put more emphasis on indigenous rights could also form a new faction to bring more attention to it.

In-game situations like these can be conducive to illustrate theoretical concepts such as Foucault's governmentality, the relationship between the governed and government, in the context of fisheries (Jentoft and Johnsen 2015).

These questions relate to historical empathy and how the preconceptions of the players can impact their behavior in the gameworld. Can a serious game about April 18 help develop understanding of the social dimension, in contrast to the economic and environmental concerns, which had been strengthened by the shift in legal focus leading up to 1989? A key point here is that 'assessed by today's standards for sustainable resource management, the 1989 resolution does not appear problematic in any way. "When the quota is filled, the catch must stop"' (Holm, Finstad, and Christensen 2014, 186, my translation). It is possible that contemporary players have a bias towards emphasizing environmental sustainability more strongly than the stakeholder groups they embody in the game. This could make it harder to empathize with the small-scale fishers and local communities that depended on the fishery for their material basis. In this way, I think it is prudent to ask if a historical game can run the risk of acting as an arena where the past is colonized by current understanding of the subject matter. Central to this is Kapell and Elliott's (2013a) point that simulations allow players to experience contingency by seeing possible outcomes informed by current perspectives, which were not necessarily available to the historical actors at the time. Through playing the game and possibly making counterfactual decisions, players explore possible outcomes that are different from recorded history. This provides an opportunity to explore how the pre-existing expectations of the players influence interactions within the game. If a game session ends with the players favoring arguments and solutions that are skewed towards environmental sustainability, the counterfactual reasoning can be continued during the debriefing phase and focus on historical reflection about the economic and social dimensions. Connecting the results of the game to historical hindsight also allows the game activity to facilitate understanding multiple perspectives. These are not limited to only the stakeholders involved on April 18, could but allowing also for geographical and temporal scaling through comparison with other resource crises in other places and times. For debriefing and post-game activities to achieve this, they must attempt to go beyond the deliberations or consensus of the players and connect with source material from the post-closure fishing industry. A relevant question to discuss, and one tied to historical thinking, could be that of whether the decisions

made by the players would have accelerated or avoided a stock collapse and what the other economic and social effects would have been? Debriefing and post-game reflection on the events in the game offer opportunities for historical reflection on the real-world April 18: Why were the inshore cod fisheries not closed earlier, given that the problems with overfishing had been known and continuing for years? Why did the Russians not demand that the inshore fisheries close at an earlier stage in the Joint Norwegian-Russian Fisheries Commission's negotiations?

The potential outcomes of the closure of the coastal commons are also important. Will there be a new order in Norwegian fisheries management? If the game is to fulfill the ambition of letting players experience a systemic context for their actions (McCall 2016) and make use of counterfactual outcomes to promote historical thinking, the players must also engage with the results of their actions. By abstracting the impacts of the decisions made by players through the concept of sustainability, the gamemaster can give the players feedback on how their actions have affected the gameworld. Through multiple sessions of negotiations, the players will re-evaluate their strategies and goals based on the evolving situation. This adds a sense of temporality and contingency to the experience, illustrating that management reforms are complex and take time.

Theoretical considerations in exploring the history of April 18 in game form

The process of presenting April 18 in the form of a game makes several theoretical considerations visible. In the context of a serious game, links to historical thinking are particularly important. This section discusses how different formats could open other lines of exploring the history of April 18 in game form. As Kapell and Elliott (2013a) point out, the agency of players in a game can replace or complement the historian's act of assembly, meaning that close attention should be paid to the opportunities for agency a game offers to players in constructing a historical narrative. Chapman (2016) asserts the tension between agency and structure. In the case of April 18, the central theme involves the changes and adaptation of the structures of commercial fishing and the agency of the individual groups in this transformation. The core issue is the interplay of factors that resulted in a major change to the established management system – and how this transformed the entire understanding of Norwegian fisheries management; the goal was no longer protection of

the coastal fishers but of the fish. It is therefore my position that for a game to engage with the history of April 18, the agency of players must be framed in light of the structures of fisheries management.

When presenting a complex event through a game, the designer must prioritize which elements to include. Historical events like April 18 are complex and, in order to make a game that is manageable to both design and run, the virtual gameworld needs to be a simplified representation of the core elements (cf. Peters and van de Westelaken 2014 earlier). Details are important for conveying nuance as well as the presentation of facts. For a game to feel like an authentic experience for players there needs to be a level of detail that adds realism without being too complex. Finding the right level of detail is tied to the game's format and the question of which elements of the reference system it wants to highlight. The HPS-framework offers a taxonomy to describe and frame the different aspects of a historical setting and the way that the game's genre and components shape the forms they take. April 18 could be envisioned in the form of a business simulation game where a more detailed representation of commercial fishing is necessary. The player agent, operating a small fishing vessel, engages with a gameworld where the rules they operate within change due to the commons becoming closed. The player would have to make choices in order to adapt to the new quota system, experiencing how a sudden change affects the strategies they have previously employed successfully. This would cast the other stakeholders in different roles, serving as agents or minions that enable or hinder the player.

For a serious game dealing, elements that are not a part of the game can be included through preparation and debriefing. Digital games often include in-game encyclopedias with complementary information about the different game elements. This way of inserting historical facts and narratives in a game can be useful, but I think it can be argued that this is not making full use of the game format by embedding the historical arguments in the gameplay experience. Spring (2015) shows how the videogame *Red Dead Redemption* (2010) immerses the player in a well-researched historical argument about the transformation of the Old West frontier in the early twentieth century. The player agent is a former outlaw roaming the Old West. Through conversations between characters, often not connected to the game's main narrative, different cultural, social and political elements of the ongoing transformation are brought to light. Commercial fishing has been featured in recent simulator games such as *Fishing: Barents Sea* (2018) and *Fishing: North Atlantic* (2020). These games engage players in the realistic operation of different

commercial fishing vessels and gear types. It is possible to imagine a more narrative-oriented version of these simulator games. The player could be embedded in the events of April 18 in an entertainment videogame, much as with *Red Dead Redemption*'s use of the Old West setting. The player agent would move around the Norwegian coast in the early 1990s, operating a fishing vessel. Throughout the game, the player would interact with characters and be presented with their thoughts on the ongoing situation in the fishery as well as the ways in which society is changing.

In the serious game proposed, the focus is on the stakeholders and their interactions, while most of the non-stakeholder elements are abstracted and symbolized. Stakeholders with conflicting interests are central to April 18, but the institutional politics are entangled with different facets of the resource crisis. Different courses of action can give different outcomes for the three dimensions of sustainability. The economic sphere can be adversely affected by loss of access to resources. The social sphere can suffer if coastal communities that rely on small-scale fishing for employment are barred from fishing. If the fish-stocks continue to be overexploited, there is a risk of long-lasting loss of resources and other adverse effects on the ecosystem. The tragedy of the commons, meaning issues arising from open access resources and lack of measures to prevent overuse as well as the possible adaptations and actions to preserve a shared resource are important when reflecting on the history of April 18. These concepts provide opportunities for the counterfactual imagination described by Apperley (2013). Players are not limited to considering what will happen if a resource is depleted, but also engage with the possibility space of what happens if the resource is successfully conserved – and not only in relation to the environment but also to the economic and social spheres. Reflecting on all three dimensions can offer opportunities for questioning the institution of fisheries management and for exploring different scenarios.[8]

The framing of a resource crisis like April 18 has implications for the types of game formats and gameplay that suit the subject matter. The narrative of April 18 is one of institutional management: The dramatic closure of the commons was contingent on a crisis in the cod stock that functioned to kick off the reform of the management system. Although there were other structural challenges such as overcapacity in the fishing fleet and uncertain profitability, the sharp decline in the cod stock was instrumental in triggering the break in the continuity of the management system. How the fish stocks (or fishing vessels) are represented as a game element can be implemented in different ways that give agency to players.

The fish stock might be highly abstracted in the form of quotas, with players attempting to increase their division of the total quota. Some game formats offer ways to include various elements of socio-ecological systems like fisheries in less abstract forms than what is possible in an analogue game. Digital games can simulate the impacts of harvest pressure on fish stocks at a far higher level of detail than analogue games. A detailed simulation of fish stocks can be found in *Fish Banks Ltd.* (Meadows, Fiddaman and Shannon 1993), for example, where a computer model tracks fish stocks and their regeneration, which lets the players (who buy vessels and decide where they fish) control whether the fish stock decreases or increases. Overfishing illustrates cause and effect, but direct player agency in unsustainable fishing might not be required for exploring the historical problem space of April 18. The cod stock must be in a critical state for the process of reform to start, but it is not necessary that the players have caused the collapse before they try to amend or adapt to the situation.

April 18's emphasis on institutional politics between stakeholders with conflicting interests draws attention to two central issues in historical game studies: first, the way that games tend to focus on systems and, second, how they perpetuate traditional understandings of history (McCall 2016; Chapman, Foka, and Westin 2017). In a game that models the relationship between different groups with stakes in a shared but limited resource, the game's perspectives on power are important. How the actors are framed is important for how the players develop historical empathy for their positions. When designing, running or debriefing historical games, reflection on possible inherent biases is a way to manage their effects on how the experience engages with history. Is the game built with a bias towards defaulting to the hegemony of the governmental management systems, or ideals of environmental sustainability, as more important than the survival of traditional local communities in the coastal periphery? Alternatively, is there a bias towards romanticized representations of small-scale fisheries that paint an unflattering image of industrial trawlers? The way that power is present in the game can serve to reinforce loops of legitimization of the current status quo. In the context of April 18, these perspectives can illustrate phenomena like path dependency in the fisheries sector, where the inertia of existing structures is a barrier to new approaches. When scarce resources are re-distributed, the processes can often be experienced as creating winners and losers, as in the case of the impacts the closure of the commons had on areas with many indigenous Sami coastal fishers. In these areas, many fishers left the

profession as a result of the vessel quota system and later, in 2011, an extra quota was given to vessels in these areas (Evjen 2014; Brattland et al. 2019). The bias of the game or players affects how the game's narrative is assembled and understood. A game designed from current views in Norwegian fisheries management would, to a larger extent, focus on the developments in Sami rights and the turn to stronger emphasis on the sustainability of the fish stocks than a game that is built on views that were prevalent in 1989.

Conclusion

In this article, I set out to answer how the history of the April 18, 1989 closure of the Norwegian coastal cod commons can be presented in the form of a game. The main venue for exploring this question is through the design of a serious game that allows players to explore different facets of the April 18 event. The field of historical game studies offers much insight on how games can engage with history. Inspired by these insights, the proposed game applies McCall's (2020) Historical Problem Space-framework and Peters and van de Westelaken (2014) model of serious game design in defining and adapting the core elements of the April 18 closure of the commons that must be present in the game.

The historical narrative of April 18 is one of fisheries management and institutional politics. The premise of the game is to explore the positions and arguments of the involved stakeholders through a series of counter-factual negotiations in which players can engage with the historical facts and reassemble them through proposing alternative outcomes to the abrupt closure that took place in real life. The tension between counter-factuals and historical facts is one of the central tensions in discussions of historical games. I tend to agree with scholars like Kapell and Elliott (2013b), who emphasize historical authenticity, meaning that games can provide players with experiences that meet their historical expectations and feel authentic, over focusing on every historical detail being accurate.

I take this position because, in the context of a serious game, the game experience provides opportunities for practicing historical thinking skills and reflecting on history as a process. This leads into my secondary research question – that of how perspectives on historical thinking can be implemented in a serious game about April 18. Operationalizing historical thinking perspectives in the form of intended learning outcomes serves to structure the goals of the game as a learning experience and guides the choice of format and gameplay activities. By engaging with the historical

break in continuity and exploring the perspectives of multiple stakeholders with conflicting interests, the game setting allows the player to experience the complex process of management reform, offering opportunities to engage with counterfactual outcomes and to question how and why the Norwegian fisheries management system was transformed. The premise of negotiations between the stakeholders is ahistorical but, through immersing themselves in their roles, players come closer to the arguments and positions of their historical counterparts. Players can take counterfactual actions during the game, however, and while there was no forum for the coastal fishers to voice their objections to the Director of Fisheries before he made his decision in 1989, the act of presenting their arguments in the simulated negotiations can still feel authentic.

A central element of a player's experience is the development of historical empathy. Hoy's (2018) findings show how embodying historical roles supports a more nuanced understanding of the motivations of people in the past. This is directly applicable to April 18 as many of the stakeholders at the time had positions that, when judged by current standards, might be considered unreasonable. The counterfactual inclusion of stakeholders who were not considered at the time also opens the way for reflections on how the structures of power have changed since 1989. An important part of a serious game is the debriefing, the reflection that takes place after a gameplay session. I think it is important to emphasize debriefing as a crucial phase of the complete serious game experience, not something that is disconnected from the game. It provides a venue for continuing with the counterfactual reasoning and imagining that happens during game sessions as well as for discussing the preconceptions and biases players have that shape their feelings of historical authenticity and considering these in relation to the facts of the historical record and the processes that led to April 18 transpiring as it did.

The proposed game is not very complex, but it demands a great deal from the instructor who runs it. The gamemaster is tasked with ensuring that players are equipped to embody their roles and providing the appropriate feedback from the gameworld based on the decisions players make. This involves formulating responses from stakeholders and structures not embodied by players as well as coming up with the abstracted impacts of the decisions made by players, framed as effects on the economic, environmental and social dimensions of the fishery's sustainability. A concern here is to not undermine the agency players have in making counterfactual decisions or limiting their experiences of

authenticity. However, events that happen in the game that radically diverge from the historical events can provide good starting points for discussions in the debriefing phase.

The final part of the article deals with theoretical considerations relating to presenting the history of April 18 in any form of game. I consider the structures of fisheries management to be key in framing the agency of players in a game that aims to engage with the history of April 18. Games can accomplish this in different ways, both in the venue of entertainment games and simulations that focus on more detailed representations of various components of the fisheries complex. Digital games can provide more comprehensive simulations, offering players agency in how they interact with fish stocks and overfishing. My main point is that a historical narrative about a resource crisis like April 18 needs to consider how it presents power in the institutional politics of management and how current perspectives differ from those that were prevalent in the historical setting. In closing, I hope this article has provided insight on how the history of events like April 18 can be explored through the format of games and can be useful for other historians who want to try similar approaches on other historical resource crises.

Notes

1. https://boardgamegeek.com/browse/boardgame, visited 04.07.2021
2. These games deal with diverse historical topics; the industrial revolution in England, the development of human civilization from ancient times to the modern age, simulation of the cold war between the United States and the Soviet Union, and the development of the US cattle industry and railways in the nineteenth century.
3. The quote is from the Norwegian Director of fisheries at the time, Viggo Jan Olsen. It states his expectation that management reform would avoid a similar situation in the future (Holm, Finstad, and Christensen 2014, 199). The statement it mirrors is 'Never Again April 9!', which refers to the 1940 invasion of Norway. Following the closure, stakeholders used 'Never Again' to state their understanding of the 1989 closure, such as coastal fishers expressing disapproval of the lasting effects on coastal communities and the fishing industry. The 2016 Norwegian Official Report on the quota system also makes use of the term to describe the broad agreement that a shock like this should never occur again (Official Norwegian Report NOU 2016, 26, 17).
4. 'The Tragedy of the Commons' is an important concept in resource management and deals with issues of overuse of shared resources when there are not measures in place to prevent unsustainable use (Hardin 1968; McCay and Jentoft 1998; Ostrom 2009).

5. Purvis, Mao, and Robinson (2018) provide a thorough review of the origin of the concept of the three pillars of sustainability.

6. Katie Stringer Clary summarizes the RttP game structure thus: 'Students are assigned distinctive roles and victory objectives that they pursue in alliance with some students and in competition with others. Students win through successfully persuading their classmates using historic arguments, ideas, research, and texts' (Clary 2019).

7. Model United Nations website: https://www.un.org/mun

8. Environmental history can provide a different vantage point than this article's focus on institutional politics. Environmental history can be useful for jointly analyzing the combination of issues related to policy, nature and science found in the resource crisis (Payne 2013; Schwach 2013). The part non-humans play in agency is discussed in historical theory (Asdal 2005; Mitchell 2002). The paradigm shift in Norwegian fisheries policy after April 18 can be viewed through the lens of how several entangled heterogeneous networks, material and immaterial, shaped Norwegian fisheries at a critical point in time. Elements that might be included could be international relations, governance, science and technology, traditions, fishing gear and practices, center-periphery conflicts, indigenous rights, the North-Atlantic cod stock, and the structure of the fishing fleet. Through exploring these networks in a game the role of the non-human elements and how they share in agency and shape a situation can be highlighted through game rules and elements.

Acknowledgments

Disclosure statement

Notes on contributor

Jørn Weines is a historian by training, with experience in working with local ecological knowledge as source material for historical research. He defended his PhD on the use of game-based learning in interdisciplinary fisheries education, focusing on serious games for sustainable resource management in September 2021. He currently works as a researcher at UiT The Arctic University of Norway's Resource Center for Teaching, Learning and Technology.

ORCID

Jørn Weines ⓘ http://orcid.org/0000-0002-8368-4617

References

Apperley, Tom. 2013. "Modding the Historians' Code: Historical Verisimilitude and the Counterfactual Imagination." In *Playing with the Past: Digital Games and the Simulation of History*, edited by Matthew Wilhelm Kapell and Andrew B. R. Elliott, 185–198. New York: Routledge. doi:10.5040/9781628928259.ch-012.

Armstrong, Claire W. 1999. "Sharing a Fish Resource-Bioeconomic Analysis of an Applied Allocation Rule." *Environmental and Resource Economics* 13 (1): 75–94. doi:10.1023/A:1008255332482.

Asdal, Kristin. 2005. "Miljøhistorie Som Politikk- Og Vitenskapshistorie. Franske Forbindelseslinjer." *Nytt Norsk Tidsskrift* 22 (3): 301–311. doi:10.18261/1504-3053-2005-03-05.

Beavers, Sian M. 2020. "The Informal Learning of History with Digital Games." PhD diss., Open University. doi:10.21954/ou.ro.0001111f.

Beavis, Catherine, Leonie Rowan, Michael Dezuanni, Christie Mcgillivray, Joanne O'Mara, Sarah Prestridge, Colleen Stieler-Hunt, Roberta Thompson, and Jason Zagami. 2014. "Teachers' Beliefs about the Possibilities and Limitations of Digital Games in Classrooms." *E-Learning and Digital Media* 11 (6): 569–581. doi:10.2304/elea.2014.11.6.569.

Berg Marklund, Björn. (2015). "Unpacking Digital Game-Based Learning: The Complexities of Developing and Using Educational Games." PhD diss., University of Skövde, Skövde. http://urn.kb.se/resolve?urn=urn:nbn:se:his:diva–11805

Brattland, Camilla, Einar Eythórsson, Jørn Weines, and Knut Sunnanå. 2019. "Social–Ecological Timelines to Explore Human Adaptation to Coastal Change." *Ambio* 48: 1516–1529. doi:10.1007/s13280-018-1129-5.

Bridge, Dave. 2014. "You Sunk My Constitution: Using a Popular Off-the-Shelf Board Game to Simulate Political Concepts". *Journal of Political Science Education* 10 (2): 186–203. 10.1080/15512169.2014.894363

Chapman, Adam. 2013. "Is Sid Meier's Civilization Jistory?" *Rethinking History* 17 (3): 312–332. doi:10.1080/13642529.2013.774719.

Chapman, Adam. 2016. *Digital Games as History*. New York: Routledge. doi:10.4324/9781315732060.

Chapman, Adam, Anna Foka, and Jonathan Westin. 2017. "Introduction: What Is Historical Game Studies?" *Rethinking History* 21 (3): 358–371. doi:10.1080/13642529.2016.1256638.

Clary, Katie Stringer. 2019. "Reacting to the (Public) PastTM: Innovations in Public History Pedagogy." *International Public History* 2 (1): 8–14. doi:10.1515/iph-2019-0005.

Crookall, David. 2010. "Serious Games, Debriefing, and Simulation/Gaming as a Discipline." *Simulation & Gaming* 41 (6): 898–920. doi:10.1177/1046878110390784.

Døssland, Atle. 2017. "Fisheries Vitalise the Coastal Communities, 1750-1880." In *Fish, Coast and Communities - A History of Norway*, edited by Nils Kolle, Alf R. Nielssen, Pål Christensen, and Atle Døssland, 151–178. Bergen: Fagbokforlaget.

Duquette, Catherine. 2015. "Relating Historical Consciousness to Historical Thinking through Assessment." In *New Directions in Assessing Historical Thinking*, edited by Kadriye Ercikan, and Peter Seixas, 51–63. New York: Routledge.

Entertainment Software Association. 2018. "Essential Facts About Video Games." 1–17. http://www.theesa.com/wp-content/uploads/2018/05/EF2018_FINAL.pdf

Ercikan, Kadriye, and Peter Seixas, eds. 2015. *New Directions in Assessing Historical Thinking*. New York: Routledge. doi:10.4324/9781315779539.

Evjen, Bjørg. 2014. "Åpning for Sjøsamiske Rettigheter?" In *Norges Fiskeri- og Kysthistorie, Bind IV: Havet, Fisken og Oljen, 1970-2014*, edited by Pål Christensen, 251–280. Bergen: Fagbokforlaget.

Førland, Tor Egil. 2017. *Problems of Causation in Historiography" in Values, Objectivity, and Explanation in Historiography*. New York: Routledge.

Fron, Janine, Tracy Fullerton, Jacquelyn Ford Morie, and Celia Pearce. 2007. "The Hegemony of Play." In *Situated Play, Proceedings of DiGRA 2007 Conference*, 309–318. http://www.digra.org/dl/db/07312.31224.pdf

Grytås, Geir. 2014. "Maktkamp, Nye Reglar Og Fleire Spelarar." In *Norges Fiskeri- og Kysthistorie, Bind IV: Havet, Fisken og Oljen, 1970-2014*, edited by Pål Christensen, 185–214. Bergen: Fagbokforlaget.

Hammar, Emil Lundedal. 2017. "Counter-hegemonic Commemorative Play: Marginalized Pasts and the Politics of Memory in the Digital Game Assassin's Creed: Freedom Cry." *Rethinking History* 21 (3): 372–395. doi:10.1080/13642529.2016.1256622.

Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162: 1243–1248. doi:10.1126/science.162.3859.1243.

Holm, Petter, and Bjørn-Petter Finstad. 2020. "April 18, 1989: The Acceptance of Overfishing in Norway." In *Too Valuable to Be Lost: Overfishing in the North Atlantic since 1880*, edited by Álvaro Garrido and David J. Starkey, 109–128. Oldenbourg: De Gruyter.

Holm, Petter, Bjørn-Petter Finstad, and Pål Christensen. 2014. "Aldri Mer 18. April!" In *Norges Fiskeri- og Kysthistorie, Bind IV: Havet, Fisken og Oljen, 1970-2014*, edited by Pål Christensen, 185–214. Bergen: Fagbokforlaget.

Hoy, Benjamin. 2018. "Teaching History with Custom-Built Board Games." *Simulation & Gaming* 49 (2). doi:10.1177/1046878118763624.

Huizinga, J. 1955. *Homo Ludens: A Study of the Play-Element in Culture*. Beacon Press: Boston, MA.

Jentoft, Svein. 1993. *Dangling Lines: The Fisheries Crisis and the Future of Coastal Communities: The Norwegian Experience*. St. John's: ISER Books.

Jentoft, Svein, and Jahn Petter Johnsen. 2015. "The Dynamics of Small-Scale Fisheries in Norway: From Adaptamentality to Governability." In *Interactive Governance for Small-Scale Fisheries: Global Reflections*, edited by Svein Jentoft and Ratana Chuenpagdee, 705–723. Cham: Springer. doi:10.1007/978-3-319-17034-3.

Kapell, Matthew Wilhelm, and Andrew B. R Elliott. 2013b. "Conclusion(s): Playing at True Myths, Engaging with Authentic Histories Narratives." In *Playing with the Past: Digital Games and the Simulation of History*, edited by Matthew Wilhelm Kapell and Andrew B. R Elliott, 357–369. New York: Bloomsbury Academic. doi:10.5040/9781628928259.ch-023.

Kapell, Matthew Wilhelm, and Andrew B. R. Elliott. 2013a. "Introduction: To Build a past that Will "Stand the Test of Time"—Discovering Historical Facts, Assembling Historical Narratives." In *Playing with the Past: Digital Games and the Simulation of History*, edited by Matthew Kapell and Andrew B. R Elliott, 1–30. New York: Bloomsbury Academic. doi:10.5040/9781628928259.ch-001.

Kolle, Nils. 2017a. "The Norwegian Coast - Nature's Offerings." In *Fish, Coast and Communities - A History of Norway*, edited by Nils Kolle, Alf R. Nielssen, Pål Christensen, and Atle Døssland, 13–38. Fagbokforlaget: Bergen.

Kolle, Nils. 2017b. "Between Tradition and Modernity, 1880-1945." In *Fish, Coast and Communities - A History of Norway*, edited by Nils Kolle, Alf R. Nielssen, Pål Christensen, and Atle Døssland, 179–206. Bergen: Fagbokforlaget.

Kotchen, Matthew J., and Oran R. Young. 2007. "Meeting the Challenges of the Anthropocene: Towards a Science of Coupled Human–Biophysical Systems." *Global Environmental Change* 17 (2): 149–151. doi:10.1016/j.gloenvcha.2007.01.001.

Laas, Oliver. 2017. "On Game Definitions." *Journal of the Philosophy of Sport* 44 (1): 81–94. doi:10.1080/00948705.2016.1255556.

Linderoth, Jonas. 2012. "Why Gamers Don't Learn More: An Ecological Approach to Games as Learning Environments." *Journal of Gaming and Virtual Worlds* 4 (1): 45–62. doi:10.1386/jgvw.4.1.45_1.

Maurstad, Anita. 2000. "To Fish or Not to Fish: Small-Scale Fishing and Changing Regulations of the Cod Fishery in Northern Norway." *Human Organization* 59 (1): 37–47. doi:10.17730/humo.59.1.q0242m112x223862.

McCall, Jeremiah. 2011. *Gaming the Past: Using Video Games to Teach Secondary History*. New York: Routledge. doi:10.4324/9780203831830.

McCall, Jeremiah. 2016. "Teaching History with Digital Historical Games: An Introduction to the Field and Best Practices." *Simulation & Gaming* 47 (4): 517–542. doi:10.1177/1046878116646693.

McCall, Jeremiah. 2020. "The Historical Problem Space Framework: Games as a Historical Medium." *Game Studies* 20 (3). http://gamestudies.org/2003/articles/mccall

McCay, Bonnie, and Svein Jentoft. 1998. "Market or Community Failure? Critical Perspectives on Common Property Research." *Human Organization* 57 (1): 21–29. doi:10.17730/humo.57.1.372712415k227u25.

Meadows, Dennis L., Thomas Fiddaman, and Diana Shannon. 1993. *Fish Banks, Ltd. A Micro-computer Assisted Group Simulation that Teaches Principles of Sustainable Management of Renewable Natural Resources*. 3rd ed. Laboratory for Interactive Learning, 757-758. Durham: University of New Hampshire.

Mitchell, Timothy. 2002. "Can the Mosquito Speak?. " In *Rule of Experts: Egypt, Techno-Politics, Modernity* , edited by Timothy Mitchell, 19–53. Berkeley: University of California Press.

Nicholson, Scott. 2012. "Completing the Experience: Debriefing in Experiential Educational Games." *The 3rd International Conference on Society and Information Technologies* 11 (6): 117–121. http://scottnicholson.com/pubs/completingexperience.pdf

Norwegian Official Reports. 2016. *NOU 2016: 26 Et Fremtidsrettet Kvotesystem*. Oslo: Ministry of Trade, Industry and Fisheries. https://www.regjeringen.no/no/dokumenter/nou-2016-26/id2523539/

O'Neill, Kevin, and Bill Feenstra. 2016. "'Honestly, I Would Stick with the Books': Young Adults' Ideas about a Videogame as a Source of Historical Knowledge." *Game Studies* 16 (2). http://gamestudies.org/1602/articles/oneilfeenstra

Olwell, Russell, and Azibo Stevens. 2015. ""I Had to Double Check My Thoughts": How the Reacting to the past Methodology Impacts First-Year College Student Engagement, Retention, and Historical Thinking." *The History Teacher* 48 (3): 561–572.

Ostrom, Elinor. 2009. "Design Principles of Robust Property-rights Institutions: What Have We Learned?" In *Property Rights and Land Policies*, edited by Gregory K. Ingram, and Yu-Hung Hong, 25–52. Cambridge, MA: Lincoln Institute of Land Policy, .

Payne, Brian. 2013. "Local Economic Stewards: The Historiography of the Fishermen's Role in Resource Conservation." *Environmental History* 18 (1): 29–43. doi:10.1093/envhis/ems115.

Peters, Vincent A.M, and Marleen van de Westelaken. 2014. *Simulation Games - A Concise Introduction to the Design Process*. Nijmegen: Samenspraak Advies. doi:10.13140/2.1.4259.1367.

Plass, Jan L, Bruce D. Homer, and Charles K. Kinzer. 2015. "Foundations of Game-Based Learning." *Educational Psychologist* 50 (4): 258–283. doi:10.1080/00461520.2015.1122533.

Pobuda, Tanya. 2018. "Assessing Gender and Racial Representation in the Board Game Industry." *Analog Game Studies* V (IV). http://analoggamestudies.org/2018/12/assessing-gender-and-racial-representation-in-top-rated-boardgamegeek-games/

Purvis, Ben, Yong Mao, and Darren Robinson. 2018. "Three Pillars of Sustainability: In Search of Conceptual Origins." *Sustainability Science* 14 (3): 681–695. doi:10.1007/s11625-018-0627-5.

Robison, William B. 2013. "Stimulation, Not Simulation: An Alternate Approach to History Teaching Games." *History Teacher* 46 (4): 577–588. 10.2307/43264159?ref=search-gateway:1f75191320a713c3d7a0ccdc911e632f

Schwach, Vera. 2013. "The Sea around Norway: Science, Resource Management, and Environmental Concerns, 1860–1970." *Environmental History* 18 (1): 101–110. doi:10.1093/envhis/ems107.

Spring, Dawn. 2015. "Gaming History: Computer and Video Games as Historical Scholarship." *Rethinking History* 19 (2): 207–221. doi:10.1080/13642529.2014.973714.

Stradling, Robert. 2003. *Multiperspectivity in History Teaching: A Guide for Teachers*. Strasbourg: Council of Europe.

Subhash, Sujit, and Elizabeth A. Cudney. 2018. "Gamified Learning in Higher Education: A Systematic Review of the Literature." *Computers in Human Behavior* 87 (February): 192–206. doi:10.1016/j.chb.2018.05.028.

Syed, Shaheen, Melania Borit, and Marco Spruit. 2018. "Narrow Lenses for Capturing the Complexity of Fisheries: A Topic Analysis of Fisheries Science from 1990 to 2016." *Fish and Fisheries* 19 (4): 643–661. doi:10.1111/faf.12280.

Tobias, Sigmund, J. Dexter Fletcher, and Alexander P. Wind. 2014. "Game-Based Learning." In *Handbook of Research on Educational Communications and Technology*, 485–503. New York: Springer New York. doi:10.1007/978-1-4614-3185-5_38.

Vlachopoulos, Dimitrios, and Agoritsa Makri. 2017. "The Effect of Games and Simulations on Higher Education: A Systematic Literature Review." *International Journal of Educational Technology in Higher Education* 14 (22). doi:10.1186/s41239-017-0062-1.

Wilkinson, Phil. 2016. "A Brief History of Serious Games." In *Entertainment Computing and Serious Games*, edited by Ralf Dörner, Stefan Göbel, Michael Kickmeier-Rust, Maic Masuch, and Katharina Zweig, 17–41. Cham: Springer. doi:10.1007/978-3-319-46152-6.

Wright, Esther. 2018. "On the Promotional Context of Historical Video Games." *Rethinking History* 22 (4): 598–608. doi:10.1080/13642529.2018.1507910.