

PLAYING WITH THE PAST TO UNDERSTAND THE PRESENT: THE POTENTIAL OF USING NUSFJORD (2017) TO TEACH ABOUT THE COMPLEXITY OF FISHERIES AS SOCIO-ECOLOGICAL SYSTEMS

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Extended Abstract

Games are vehicles that transport their players between different realities (Peters & Westelaken 2014). By doing this, they have the potential to provide many different benefits for their players, such as relaxation, excitement, social interaction, and learning. Higher education is increasingly trying to capitalize on this potential and many teachers now make use of different forms of game-based learning and serious games (Plass et al. 2015). Some educators design their own games (Weines et al. 2017), while others either use existing serious games (Qudrat-Ullah et al. 1997) or try to repurpose commercial off-the-shelf video games (Whitton 2010) or board games (Bridge 2014). Following suite, at our own department we count on the assumption of enhanced learning through games and we are currently exploring the potential of repurposing various entertainment board games (e.g. *Nusfjord*, *Dominant Species*, *Evolution*) in the context of interdisciplinary bachelor's and master's programs in fisheries and aquaculture science. These programs combine biology, economics, and social sciences with a taste of history and technology.

Building on previous research suggesting that the use of games in teaching students deeper knowledge about complex concepts such as sustainability is promising (Blanchard & Buchs 2015), in this study, we analyze the potential of the game *Nusfjord* by Uwe Rosenberg (Rosenberg 2017) to be used as an additional learning tool for teaching about fisheries as socio-ecological systems. When teaching about such systems, the complexity of achieving economic, environmental, and social sustainability is an important part of the current discourse (Charles 2001). It is considered that when trying to make sense of this complexity, critical thinking, problem solving, and key interdisciplinary themes that connect these, such as global awareness and different literacies play a crucial role. As such, these skills are recognized as extremely relevant for the 21st Century learner (Binkley et al 2012). Recent reviews indicate that games are useful in teaching these skills, especially when making use of design-activities as part of the teaching (Qian and Clark 2016). Thus, we intend to pilot the use of *Nusfjord* with fisheries management students in late 2018/early 2019. This pilot activity will inform our design of possible game customizations and pre/post game activities that are needed in order for the game to contribute to increased achievement of intended learning outcomes.

Nusfjord is a competitive strategy type of Eurogame with an economic development theme, where

the players are cast as the owners of a major fishing company in Nusfjord in the Lofoten archipelago in Norway. The goal of the players is to develop and expand the harbor and the surrounding area. Exploiting natural resources and using basic market mechanisms, in addition to considering the advice from the local community (i.e. “the elders”), are the main tools of each player. On BoardGameGeek.com, where users have ranked more than 87,000 board games and extensions, this game is in top 400 strategy games, with more than 1,600 votes (date of visit: 16.10.2018). To our knowledge, *Nusfjord* is one of the very few board games with commercial fisheries as the main topic, something that makes it an excellent candidate for our endeavors of using entertainment games in fisheries education.

Nusfjord invokes the traditional fisheries in the Lofoten Archipelago, which is an important part of Norwegian coastal and fisheries history. This is the annual fishery on spawning cod that takes place in the late winter-early spring (February-April). Dating back as far as recorded history goes, this fishery attracted fishers from the entire country and was an important part of both subsistence and commercial fisheries. This has resulted in the Lofoten fishery becoming symbolic of coastal culture in Norway. While the scope of the fishery has decreased over the past decades, this activity is still an important part of the regional economy and food culture. Furthermore, Lofoten’s importance, both as a spawning ground and basis for small-scale fishers, makes it topical in ongoing discussions about tourism development (Henley 2016) and potential petroleum exploration in the area (Pedersen 2013, Kolle et al. 2017).

In this study, we build on the growing body of previous research on historical games (e.g. (Chapman et al. 2017; Borit et al. 2018)), on using games to teach history (e.g. (McCall 2011, 2016; Hoy 2018)), as well as how games construct understanding on our own past (Begy 2017). As such, we analyze the denotative and connotative meanings of game rules, game mechanics, artwork, and game components of *Nusfjord* in an attempt to assess their potential for transporting our students between the past reality of the Lofoten fisheries and the current reality of discussions about overexploited fisheries and sustainable marine and coastal management. We investigate how the game presents the history, social structures (including ethnic dimensions and gender), modernity, and ecology of the Lofoten fisheries and relate it to the current understanding of fisheries as socio-ecological systems. We answer questions such as: How does the game engage with historical realities? Is the reality to which players of *Nusfjord* are transported a reality that is representative of the one documented in historical works, or the present? Are the biological, social, and economic models present in the game suitable for use in the training of future fisheries/aquaculture industry professionals and managers about the complexity of sustainable fisheries? What are the game elements that are suitable for learning in our fisheries and aquaculture context, and what post-game activities are needed for adapting the game for use in game-based learning?

This interdisciplinary study lies at the intersection of learning in higher education, (historical) game studies, and natural resource management research and contributes to the ongoing discussion on meaningful play in the 21st Century higher education.

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