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From Pandemic to Populism: Transferring a Proven Game Concept to a Learning Game

Heinrich Söbke ^{1,2,*}, Jannicke Baalsrud Hauge ^{3,4} and Christian Springer ⁵

¹ Bauhaus-Universität Weimar, Goetheplatz 7/8, 99423 Weimar, Germany

² Hochschule Weserbergland, Am Stockhof 2, 31785 Hameln, Germany

³ BIBA GmbH, Hochschulring 20, 28359 Bremen, Germany

⁴ Royal Institute of Technology, Kvarnbergagatan 12, Södertälje, Sweden

⁵ University of Applied Sciences Erfurt, Altonaer Str. 25, 99085 Erfurt, Germany

* Correspondence: heinrich.sobke@uni-weimar.de

Abstract

The design of learning games requires the combination of game mechanics and learning content in a manner that makes the game both appealing and educational. This is a complex task, especially when resources are limited. An alternative approach is utilizing commercial entertainment games that have already proven their appeal. Accordingly, in this work-in-progress article, we present a conceptual study of the pandemic management simulation *Plague Inc.* and argue that the game concept can be transferred to the topic of populism while largely retaining the factors that make the game appealing. Methodologically, we analyse the specific features of *Plague Inc.*, such as the inverted goal structure used and its diverse applicability as learning media. Furthermore, we identify core principles of *Plague Inc.* and transfer them to a populism simulation game. Thus, this article provides a starting point for further conceptualization and subsequent implementation of a learning game that seems suitable for raising awareness of populist strategies in the political discourse.

Keywords: resilience; society; education; democracy; serious game; *Plague Inc.*; inverted goal

1. Introduction

Even though learning games have a long history of usage in formal educational settings, many of these are criticised for not being sufficiently engaging and playful or sufficiently well supporting the learning [1,2]. Consequently, we see that entertainment games are re purposed for educational purposes [3–6]. Thus, for more than ten years, researchers have explored what learning games can adopt from entertainment [7,8]. It is often claimed that the success of entertainment games partly lies in their budget [9]. However, there are several examples of low-cost entertainment games that have achieved enormous popularity. An example of such a game is *Plague Inc.*, a single-player real-time strategy simulation game [10] in which the players control a pathogen. The game design is inspired by games like *Pandemic* [11,12], but while the goal of *Pandemic* is to heal the world, the objective of *Plague Inc.* is to roll-out the pathogen and to create a pandemic causing harm to the humanity (*Inverted Goal Structure*). When it was first released in 2012, it fast became a top seller [12]. Analysing the game mechanics shows that these are quite simplistic but allow the player to make several decisions. We find similar decision options in traditional learning games [7], so the question remains why are games such as *Plague Inc.* so successful?

According to Grudpan et al. [13], negative premises is a much stronger motivational driver than playing the good guy, and this may be one of the reasons why *Plague Inc.* became more successful than *Pandemic* Marsh et al. [8] conclude, that there is a lot the designers of learning games can learn from entertainment games. In a time where trustworthy knowledge is hard to identify [14] and populism increases [15], we want to build upon our previous work and examine the game mechanics of such a successful game.

Populism is defined as “a political philosophy or movement that represents or is claimed to represent the interests of ordinary people, especially against the Establishment” [16]. Populism often has negative connotations and manifests itself differently in different regions [17]. Potential autocratic tendencies are described as the dark side of populism [17]. Accordingly, populism is widely seen as a challenge to democracy [18,19]. Aware that there is no single definition, we refer explicitly to this democratic-challenging form of populism in this study. Populism can be actively countered [20], including through the support of media [21], which also includes digital games [22]. Accordingly, the research question examined here is **whether it would be possible to transfer the game principle of *Plague Inc.* to a populism simulation game** with the working title *The Populist*. Such a game could also be used in formal learning settings to raise awareness about the mechanisms of populism for gaining democratic legitimacy, i.e., approval in elections.

2. Method

Thus, in this conceptual study, we follow the steps below: In step 1, we analyse the game *Plague Inc.* based on a game review and literature review. We are guided by the following questions: (a) What are the elements of the game? and (b) Is learning supported by *Plague Inc.*? In a second step, we analyse populism strategies based on a literature review for identifying typical elements that could be used in a simulation. The aim is to map these elements to the game principles of *Plague Inc.* for outlining a game concept for *The Populist*.

3. Findings

3.1. *Plague Inc.*

Plague Inc. is discussed in the literature from a variety of perspectives. Below, we present perspectives that we consider relevant for transferring the concept to another topic.

Game Concept. In *Plague Inc.*, the player takes control of a pathogen, such as a bacterium or virus, with the goal of infecting and exterminating the entire humanity before a cure is developed. Game decisions include selecting the pathogen type (each type has different characteristics and game mechanics) and the starting country. Furthermore, the pathogen can be further evolved so that symptoms, transmission routes and resistances change. As the game progresses, countermeasures can be taken – after discovery, the humanity begins to research a cure – in order to achieve the winning condition (humanity is exterminated).

Game appeal. A relevant aspect is appeal, i.e. the attraction for potential players to actually play the game. Among other things, the success of *Plague Inc.* is explained with, players' latent fear of apocalyptic pandemic scenarios [23]. A game analysis [23] is focussed on elements of a pandemic narrative, in particular *politics of global scale*, i.e. the entire world is always considered, its *viral realism*, i.e. the simulation model seems realistic, and its *visual culture of contagion*, i.e. the infection rates are visualised. In another analysis [24], the MDA framework [25] is applied: The **Mechanics**, i.e., the rules, are traced back to realistic systems – though the player is able to control the mutation of pathogens. The **Dynamics**, i.e., the behaviour of the game based on player input, are represented by a real-time simulation of infection and mortality rates. Player input consists of collecting DNA points by clicking on infections, which can then be used to generate pathogen mutations. The **Aesthetics** are represented by challenge and discovery. One of the challenges is to select pathogens that develop the necessary harmfulness but do not immediately trigger countermeasures that stop their spread. Further, it is discussed that the inverted goal structure creates an ambivalence in the actual perception of human dominance over microorganisms [26].

Education. An aspect that frequently appears in the literature in connection with *Plague Inc.* is education. *Plague Inc.* is seen to increase motivation and thus indirectly improve learning success [27]. As examples, the game is used to address critical ethical thinking [28] or used to teach the conditions of disease transmission [29]. The learning approaches supported by *Plague Inc.* are described as problem-based learning, model-based reasoning and creativity [24].

Simulation model. Almost every game is based on a simulation model, which often originates from real systems but frequently includes some changes to increase entertainment value. The simulation model of *Plague Inc.* also appears to have been modified to the advantage of the pathogen, including pathogen mutations being immediately available everywhere, infection rates being adjusted, and 100% susceptibility in the population [24]. The scientific interest in the simulation model [30] and its use during the COVID pandemic [31] demonstrate that it nevertheless close to reality.

3.2. The Populist: Basic Game Concept

In the following, a basic game concept of *The Populist* is proposed based on common findings regarding populism [17,21,32,33] and in analogy to the analysis of *Plague Inc.* mentioned in the previous section. The goal of the game is to achieve democratic legitimacy for populist positions (analogue to pathogens in *Plague Inc.*) in all democratic societies around the world. The benchmark for democratic legitimacy is the election results (analogue to infection rates), which are calculated using a simulation model that incorporates populist actions of the player. Actions are offered to the player on various populist measures (Table 1). Successful measures may inspire or spread to other societies, e.g., by campaign appearances.

Table 1. Examples of measures to enhance election results.

Measure	Examples
Crisis narratives aim to communicate uncertainty and present populists as solution.	Migration, inflation, pandemic
Direct communication / media bypassing through social media	Twitter, SocialTruth, Youtube
Enmity construction	„Drain the Swamp“ (Trump, USA) [34], „Altparteien“ (AfD) [35]
Language of “Popular Sovereignty”	Will of the people

If the majority of votes has been won in a democratic society, the player can start taking actions to maintain power, i.e., to prevent possible loss of votes in the next elections, for example by changing electoral laws, strengthening control of the media or weakening democratic institutions such as the judiciary. The takeover of governmental power also allows for the support of populism in other societies. An example of such an action is the imposition of tariffs on societies that are critical of populism.

4. Discussion and Conclusion

Basic Game Concept. The previous section outlines a basic game concept that requires further refinement, particularly in terms of designing a detailed simulation model. For example, it must be decided whether the simulation model will also include economic variables in order to be able to incorporate the example of customs tariffs as a supporting measure. However, the example and history of *Plague Inc.* demonstrate that it is possible to implement an attractive and educational game even on a small budget.

Illustrating the Impact of Populism. While in *Plague Inc.* the consequences of the spread of a virus can be easily displayed via infection rates, visualising the consequences of populism is more difficult. Election results can certainly be presented in quantitative terms, but this does not reveal the genuine issues posed by populism, namely the undermining of democracy. Accordingly, a clear representation of the consequences of populism is needed.

Inverted Goal Structure. Reversing the goal of the game, i.e., taking a destructive position, appears to be a highly motivating element [12,26], which is also popular in other games, such as

Papers, Please or *Dungeon Keeper*. However, the influence of an inverted goal structure on the learning process still needs to be conclusively clarified [36,37].

Conclusion. In this work-in-progress article we presented a conceptual study, which investigated whether it could be possible to transfer the successful game principle of *Plague Inc.* to a game designed to raise awareness of populist strategies in the political discourse. We outlined a basic concept of such a game and believe to have laid the foundation for a prototype that has to be implemented in future work.

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