Annotated Bibliography

# Depth vs Complexity

* Harkey, A. (2014) *Complexity & Emergent Gameplay*. Available at: <https://www.gamesprecipice.com/complexity-emergent-gameplay/> (Accessed: 19 November 2022)

An online article published on a website that focuses on board game design. It contains discussion on the tradeoff between depth and complexity much of which is very applicable to video games. The article goes over several methods by which to reduce complexity or expand depth. Some of these methods require some thought to translate into a video game context but the process of that translation can give its own insights.

The article also touches on emergent gameplay, social interaction, and minimalism as mechanisms of achieving a good depth to complexity ratio.

This project is about exploring a potential new avenue for deriving depth from a complex game world without making that complexity as much of a burden on the player. This article provides useful context with its board set of examples of other approaches to balancing the same scales.

# Simulation Games

* Adams, T. (2015) ‘Simulation Principles from Dwarf Fortress’, *Game AI Pro*, 2, pp. 519-521. Available at: <http://www.gameaipro.com/GameAIPro2/GameAIPro2_Chapter41_Simulation_Principles_from_Dwarf_Fortress.pdf> (Accessed: 18 November 2022)

This book chapter from the second volume of the Game AI Pro book series is an excellent and concise summary of the simulation principles that helped to guide the development of Dwarf Fortress. The four principles can be further summarised as 1: don’t overplan just start building, 2: break down your systems to their most basic elements and interactions, 3: don’t add unnecessary complexity or try and simulate things that are inconsequential or invisible to the player, and 4: root your systems in the real world because we know that works.

Written by the creator of Dwarf Fortress this chapter is clearly grounded in strong expertise. Dwarf Fortress is quite unique but the principles are high level and clearly applicable to most, if not all, simulation games, including this project.

# Multi Agent Systems

* Marín-Lora, C. et al. (2020) 'A game engine to make games as multi-agent systems', *Advances in Engineering Software*, Volume 140, doi: 10.1016/j.advengsoft.2019.102732. Available at: <https://www.sciencedirect.com/science/article/pii/S096599781930376X> (Accessed: 24 November 2022)

This paper gives a clear and rigorous definition of multi agent systems (MAS) and proposes a game engine that would follow that formal specification. The paper provides several examples of how games could be implemented in such a game engine, focusing on how the behaviour of agents would be specified.

The specific proposal of a new game engine fundamentally distinct from existing engines is clearly far beyond the scope of this particular project. However, the definition of MAS, and the examples of how games would be constructed in such an engine, together provide a strong conceptual framework that should prove very useful.

# Player Experience Testing Questionnaire

* Wiebe, E. et al. (2014) ‘Measuring engagement in video game-based environments: Investigation of the User Engagement Scale’, *Computers in Human Behavior*, Volume 32, doi: 10.1016/j.chb.2013.12.001. Available at: <https://www.sciencedirect.com/science/article/pii/S0747563213004433> (Accessed: 27 November 2022)
* IJsselsteijn, WA., de Kort, YAW. & Poels, K. (2013) *The Game Experience Questionnaire*. Technische Universiteit Eindhoven, Eindhoven. Available at: <https://research.tue.nl/en/publications/the-game-experience-questionnaire> (Accessed: 28 November 2022)

In their article *Wiebe et al* (2014) sought to develop and refine the User Engagement Scale that was developed by O’Brien and Toms into a games-based environment. It contains examples of questions that could go into a questionnaire and methods of analysing responses on a four factor scale.

*IJsselstejin, de Kort, and Poels* (2013) provide a modular game experience questionnaire aptly named “The Game Experience Questionnaire”. The questionnaire consists of many questions answered on a five-point scale that are then scored into seven categories assessing the players feelings of competence, immersion, flow, tension, and challenge among others.

Both of these sources will be used to help with the construction of the user testing questionnaire for this project.