

# From DOOM to Duty: The Evolution of Design Patterns in First Person Shooters.

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## Introduction

This paper presents preliminary work in analysis of first-person shooter (FPS) games through use of design patterns. This work adopts existing taxonomies in an effort to establish whether new models are required and how well existing literature holds across the FPS genre. Motivation for the research is driven by a need to further understand patterns of FPS play and the constraints applied to them. This in-turn would allow not only for continued research in automated game design (and notably procedural content generation) of FPS games, but also establish whether existing research in other genres would prove useful for this domain.

The FPS genre is typified by combat mechanics in a three-dimensional (3D) environment that the player views and interacts with from the perspective of their avatar. The genre is typified by the likes of *Wolfenstein 3D* (id Software, 1992) and *DOOM* (id Software, 1993) to more contemporary titles such as *Halo: Combat Evolved* (Bungie Inc, 2001) and *Call of Duty: Black Ops III* (Treyarch, 2015). Given the continued development of level design and mechanics in the FPS genre, we aim to assess the genre through use of design patterns. Design patterns are a useful tool for the analysis of games by expressing design concepts at varying levels of abstraction: from small-scale and precise definitions (micro- or meso-patterns) to larger and more abstract (macro-)patterns.

The motivation for this analysis stems from existing research in design patterns for both FPS and other genres - notably platforming games, dungeons crawlers and roguelikes [2, 1] - in an effort to establish a formal understanding of first-person shooters as a genre. This would aim to establish what relationships exist between FPS and other genres and how strongly they hold over time. We believe this analysis could prove useful in pattern-based and search-based procedural content generation: allowing for autonomous systems to generate levels or even entire games that adhere to established tropes, principles or sub-genres.

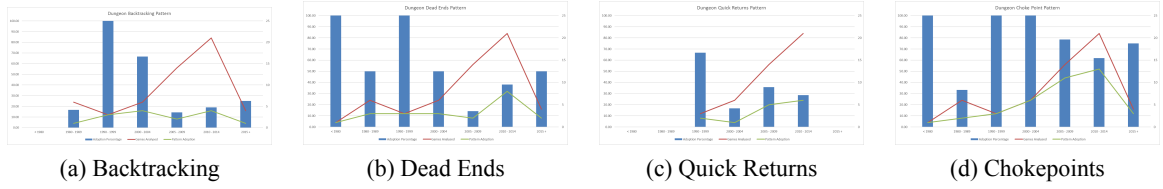


Figure 1: Analysis of the dungeon patterns from [1] shows inconsistent adoption in FPS games.

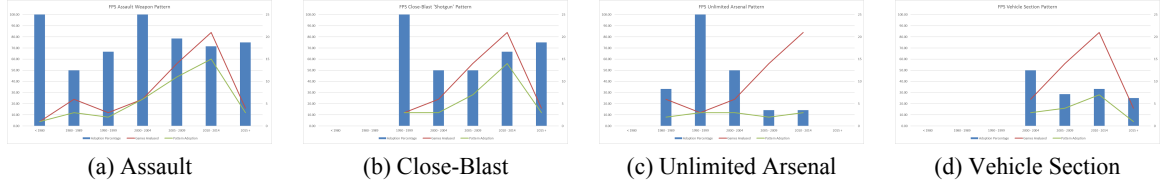


Figure 2: Examples of FPS patterns from [3] with varied levels of adoption.

## Preliminary Analysis

The adoption of existing taxonomies detailed in [1] and [3] combined with new design patterns focussed on health systems has been assessed across approx. 60 FPS games through brute-force incremental analysis. This collection omits electro-mechanical, combat fighter, light-gun, space-simulation and role-playing games from consideration; resulting games from the mid-1970's to 2016 being assessed against over 50 design patterns.

While this analysis is still ongoing, there is evidence that pattern adoption from both the FPS ontology from [3] as well as the dungeon-based collection in [1] vary over this 30+ year period. The adoption of specific patterns from each collection ranges with some proving less popular over time (Figures 1a, 1b 2c) with others appearing consistently throughout (Figures 2a, 2b 1d). This presents an interesting opportunity to establish ‘profiles’ of FPS games. Such profiles may prove useful in identifying sub-genres or popular franchises within the genre or indicating common traits within specific time periods. This could provide interesting opportunities in both procedural generation and automated game design research: focussing on the creation of specific components to entire games that are reflective of these design pattern profiles. At time of publication this analysis process is ongoing, with the aim to establish a portfolio of FPS pattern profiles once this dataset is complete: leading to further analysis and potential outlets for subsequent projects in FPS level and game generation.

## References

- [1] Steve Dahlskog, J Togelius, and S Björk. “Patterns, dungeons and generators”. In: *Proceedings of the 10th Conference on the Foundations of Digital Games*. 2015.
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- [3] Kenneth Hullett and Jim Whitehead. “Design patterns in FPS levels”. In: *proceedings of the Fifth International Conference on the Foundations of Digital Games*. ACM, 2010, pp. 78–85.