

Project Warp - A Puzzle Platforming Game That Everyone Can Play

John Bentley, John Mai, Daniel Pagharion, and Sri Kurniawan

Jack Baskin School of Engineering

University of California, Santa Cruz

1156 High Street, Santa Cruz, CA 95064

{jwbentle | jxmai | dpaghari}@ucsc.edu, sri@soe.ucsc.edu

ABSTRACT

In this paper, we will discuss the development of *Project Warp*, a new video game aimed at making the platforming genre more accessible to the average person. *Project Warp* draws inspiration from games like *Super Meat Boy* and *Portal*, two games that have set the standard for speed running (attempting to beat a level or game in record time) and solving challenging puzzles in games, respectively. For *Project Warp*, we have based our design around the central mechanic of shooting a bullet and then warping to it, or ‘schwarping’. When the player begins the game, they are introduced to this mechanic, and must master it in order to make it through the entire game. The game, then, must prove itself a good educator of this mechanic to those who may have never played a platformer before and experienced gamers. We intend to test this through a series of playtests amongst both students of UCSC and the people of Santa Cruz.

Project Warp is playable on a web browser, preferably Google Chrome. The game was written in Javascript using the MelonJS engine, which proved to be a strong contributor to the success of the game, as it allowed us to easily add resources into the game, edit levels, and program new object entities into the game. Web and mobile development of games has grown exponentially, and having *Project Warp* launch on this platform is the best way to ensure that as many people can play the game as possible.

Categories and Subject Descriptors

K.8.0 [General]: [Games]

General Terms

Design, Experimentation, Games.

Keywords

HCI, platforming, games, warp, javascript, html5

1. INTRODUCTION

In the long list of platforming games produced for video game consoles in the last thirty years, any may capture the essence of gaming. Most, however, can be somewhat difficult to play for the non-average gamer. *Project Warp* is attempting to change that, by allowing anyone to pick up the game and be instantly drawn into it. Stemming from the simple mechanics of the game (movement, ‘schwarping’), the game itself is simple enough to draw people in, but leaves a challenge that keeps people coming back to the game. In an attempt to keep the game simple, the controls of the game have been simplified, menu systems have been streamlined to feature only the essentials, and the game teaches most of what the player needs to know in a very short amount of time.

Current platforming games aesthetically beautiful and fun, but do not match the simplicity of *Project Warp*. Games like *Limbo* and *Super Meat Boy* are both simple in design and fun to play, and match with the theory of design for *Project Warp*. By creating an easy-to-understand mechanic, the game iterates on it’s own level design with each subsequent level, tweaking puzzles and adding challenges. This creates a dynamic experience that is both fun and challenging to the player. While *Project Warp* lacks the number of levels as some of these games have, the polish presented in the game is enough to make the game feel like a fully developed game.

2. RELATED WORK

Games that are similar to *Project Warp* are *Super Meat Boy* (2010) and *Portal* (2007). Both of these games include puzzles that are challenging, yet rewarding to solve. Both of these games also utilize the speed running dynamic, which is a player-addition to video games that emphasizes completing levels as fast as possible. While technically brilliant, neither of these games seem to really reflect the simplicity that non-gamers need to start playing platforming games. In *Project Warp*, we present the game on a web platform so that everyone can play the game (providing they have Internet access) without the need for a console. Some things that the aforementioned games provide that influenced *Project Warp* are numerated below.

1. The simplicity of the instructions given to the player in game assist in both explaining the controls of the game, and insuring that the player will master the controls before advancing to the next part of the game.
2. The streamlined menu systems of the games work well in allowing players to repeat levels they fail to complete easily, and explain necessary information in the most easily communicable language available. This is particularly true for *Super Meat Boy*,

whose control scheme is simple, and thus explaining in just three pictures.

3. The puzzles designed for each of the games iterate on each other, gradually ramping up the challenge of the game until the end. In *Super Meat Boy*, the player may be challenged to first perform a simple task, but later on asked to perform the same task with some sort of obstacle stopping them. In *Project Warp*, the player will experience some small challenges early on, that get harder and harder as the game progresses and adds more obstacles.

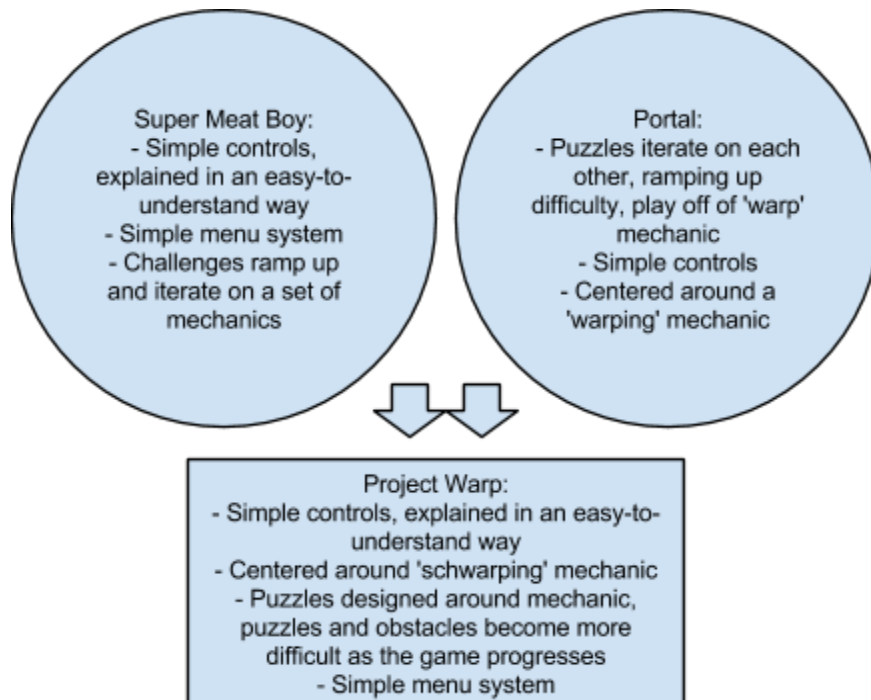


Figure 1: *Project Warp*'s

influences

3. Early Prototyping

Initial prototyping began with some simple sketches of different levels of the game, which focused on the different types of puzzles that we could devise with such a mechanic as 'schwarping'. Below, you can see sketches of early concept design and level design (Figure 2). In our early design, we focused more on the mechanic of the game, as well as level design. Later on, we began to conceptualize the look of the game, including character and menu design. Some of the challenges of early prototyping began when we first began to implement our core mechanic, as collision detection was difficult to program and maintain due to the high degree of freedom of movement given to the player in the game. Once we solved the initial problems associated with designing our mechanic, we were slowed down by more collision problems after introducing different objects in the game. The obstacles that formed the puzzles of the game were also difficult to program in the beginning, simply because the entire team had to adjust to using a completely different game engine than we originally started with. This game engine, however, allowed us to develop our game at a rapid pace, to the point where several good builds of the game would be released in a day.

Figure 2: *Project Warp*'s menu screen and gameplay during early prototyping

High-Fidelity Prototyping

Our first high-fidelity prototype of the game included a menu system, several different levels, instructions for the controls of the game, and improved sprites/animations. The game was well-received by UCSC students, our core audience in developing the game. The prototype demonstrated the full capability of our mechanic, and just how versatile it could be in level design. Our playtesters encountered some problems with the game such as collision detection, confusion caused by the controls, and frustrating levels. To resolve these issues, we designed a tutorial level that assists players in getting used to the controls for the first time. Also, we improved our tilesets and object entity classes by managing collision detection across one solid object, instead of multiple small objects. In other words, the bullet could no longer travel through tiles, as the entire tile is supported by collision detection. Finally, to fix the level of frustration caused by the levels, we simply edited parts of the levels that we deemed quite difficult to make them easier, and reordered the levels. Reordering the levels in the final product gives the game an extra feel of polish and completeness, as the player will feel accomplished after finishing the final levels of the game.

Figure 3: Project Warp's menu screen and gameplay during high-fidelity prototyping

5. Conclusion

While there is still work to be done in playtesting, our game has proven to be fun for most average gamers. We have successfully built upon the innovation and clever design of previous puzzle platformers, achieving unanimous praise from gamers who have experienced earlier puzzle platformers. Our game must still be tested on non-gamers, however, which will prove to be a challenging yet rewarding experience. As we have shown in our level design, games can be fun to play not just because they deliver a great sense of agency to the player, but also because they allow the player to master levels. This level mastery takes place in sections, as the player must first grasp a section of a level before advancing to the next part. These parts, when strung together, form a completed level, and bring forth a sense of achievement to the player that is unique to video games. By allowing the player to work with and without risk in a constrained environment, we present challenges and allow the player to overcome them through their own determination.

6. Future Work

The future work on *Project Warp* that needs to be done can be separated into both user testing, gameplay, and accessibility. For user testing, we plan to test the game on a wide scale, gathering information from players of all different ages and familiarity with video games. This will allow us to determine what changes we must make to the game in order to make the game more accessible to a wider audience, while still retaining the level of difficulty that gamers enjoyed in our high-fidelity prototype. For gameplay, we plan to add several more object entities to the game, that will increase and decrease the level of difficulty in some levels, and allow for a much larger variety in level design in the game. Lastly, we plan to port the game onto multiple platforms, namely consoles. The game would work well on the Xbox 360, due to its strong user base and controller. The mechanics in the game would map perfectly to the controller, and with the addition of Xbox Live, we would be able to finally implement leaderboards into the game- a core feature that would truly define the game as a puzzle platformer that emphasizes speed running.