Approachable puzzle-platform design in Nuts & Bolty

Summary

Introduction

This document's purpose is to report and analyze the puzzle-platform design process in Nuts & Bolty, how to make the design approachable, and how players' feedback has a positive impact on it.

This document will first give an overview of the game and explain the core system underlying the puzzle design, explaining the purpose behind its design.

The focus will then be on how to realize effective approachable puzzles by explaining points deduced by the experience, following the thought process behind the puzzle-platform design with examples, and how impactful players' feedback can be on the development.

Nuts & Bolty Overview

Nuts & Bolty is a cartoony pixel-art puzzle 2D platformer in which players control the character "Nuts" who can:
- Move;
- Jump;
- Place an automatic turret "Bolty" facing left or right directions.

Players can interact with Bolty by:
- Jumping on it to jump higher and make Bolty shoot in a straight line;
- Bolty has a weight that the player can take advantage of to activate pressure plates

Players are invited to explore the Bolty system and its interactions with the platforming system to overcome puzzles and platforming sections.

Puzzles can include the necessity to strategically place Bolty to spring players on higher platforms while shooting at enemies or specific blocking elements to destroy them.

The game features a linear progression level system. P players can pick up special collectibles that push them to approach harder sections of levels to be collected promoting a risk-reward approach.

Upon death, players must restart the level, death counter visible only at the end of the level set increases, translating players' death into a lightly punishing mechanic that pushes players towards mastery and flawless runs.

The game takes inspiration from Celeste by Maddy Makes Games for its platforming controls and progression.

The Project

The project was to create a level of a 2D platformer game in 3 months or less, going through a small development cycle, coming up with a pitch, creating a pitch document, prototype, and eventually a vertical slice. This will use classic platforming action at its core but must include at least one unique mechanic.

Purpose of design: Approachability

After the ideation phase, it was clear that the design of the game should have revolved around the unique system and its interaction with the platforming to create a system-centric game with an approachable difficulty that could let players enjoy the familiarity of platformers and explore the new system.

The design purpose was to set the game as a showcase for the new system instead of a challenge to master the system, creating an enjoyable experience for the players in the short development time available that could portray the potential and future possible development of the game.

## How to make an approachable puzzle-platform design

The design process to make an approachable puzzle-platform design followed helped deduce some key points that apply to all puzzle development and these points are:

Simplify

Simplify puzzles at their maximum to not overwhelm players with things to keep track and let them explore a single mechanic or interaction.
Puzzles can be simplified to the maximum creating levels where the player is just shown the mechanic or interaction without a puzzle or a challenge to overcome improving tutorialization.

The following 2 images show the simplification process from the early prototype consisting of a single level to the multiple levels in the following versions of the game.
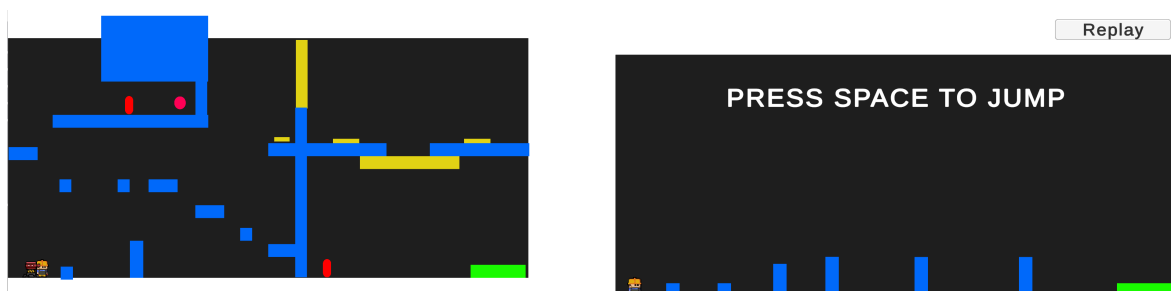
On the left players (first prototype version) are exposed immediately to all mechanics in the game after a simple command screen. The experience was rushed and clamped and players didn't get to enjoy the experience.
On the right (second prototype) players now have multiple levels to learn and practice each mechanic and interaction before being exposed to a new one and we can see how Simplify puzzles often correspond to spacing out content.
When simplifying make sure to always show the core idea and something new.

Reduce possibilities

Having a puzzle that can be approached from multiple angles and offers multiple solutions is ideal, but making it, so players feel lost, is not the right choice. Reducing possibilities and solutions in a puzzle can help the design be more comprehensible and approachable helping players achieve the intuitive solutions the puzzle was made for.

The following images show how reducing possibilities can give more identity and improve the purpose of some puzzles, also giving the chance to use the trimmed part of the level in other levels.

This is a level that players encounter before being introduced to Bolty and spring jumps and its purpose is to make the player choose which path to take the one for the gem or the one on the bottom. In the image on the left, the small platform and the gap were placed there as a replayability feature to allow players to come back to this level and collect the gem in an additional way as opposed to the purpose of the puzzle design. This setup for the level wasn't optimal due to multiple reasons such as:

- Making players think they could reach the gem in some way from the bottom platform creates an effective roadblock since they miss the knowledge to do so
- Accidental solution alternative finding

For these reasons on the right, the platform and the gap are removed to limit this approach to the player giving clear direction and information to players on the choices they have to make and true replayability to the level now having 2 distinct paths.

Create a smooth learning curve

To create an accessible experience is important to create a smooth learning curve to:

- Gradually introduce players to each mechanic and interaction
- Let players practice and achieve mastery allowing the design of more complex puzzles to offer
- Pace out the game
- Manage playtime

To achieve such a smooth learning curve the design can opt for different approaches such as:

- Patching up conceptual leaps, and creating levels and puzzles that can smooth out the introduction to new mechanics.
- Improving tutorialization and clarifying misunderstandings.
- Reinforcing knowledge by giving a second chance to learn.

Following are some examples on how these 3 points were integrated in the design during development:
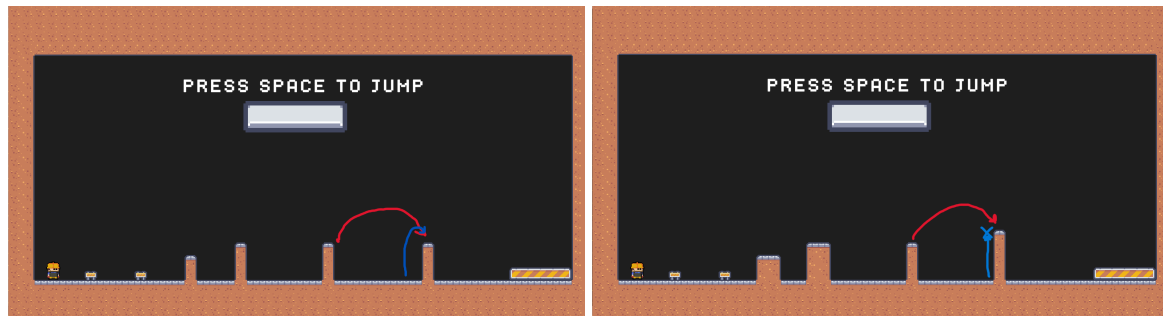
On the left, on the last jump, the player could learn about coyote time by performing a precise jump from the first platform but also totally ignoring it and simply jumping from the ground. On the right, the arriving platform has been lifted to prevent players from jumping from the ground correctly tutorializing coyote time and jumping length clarifying the misunderstanding.
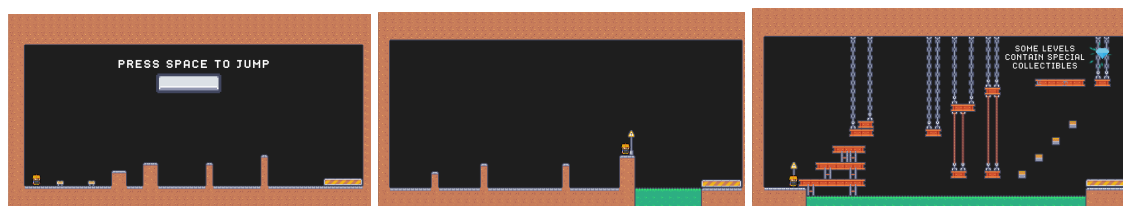
From left to right 3 levels that incrementally introduce the player to the jump, going from a completely safe playroom where the player can experiment with the mechanic, to the introduction of the first danger to a level to test the learned mechanic.
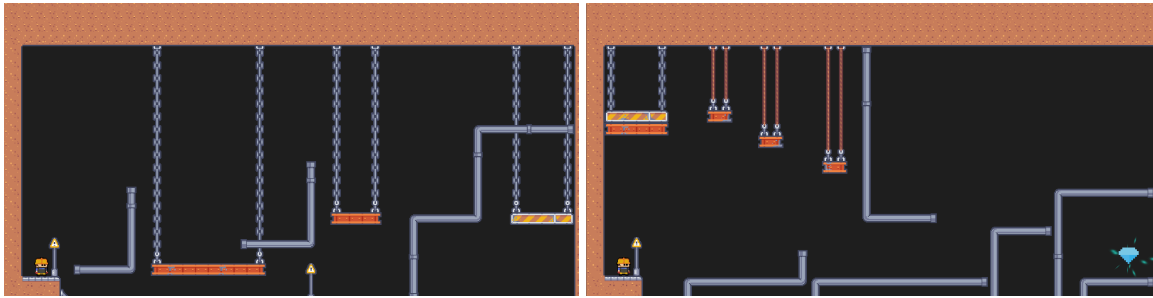
The following images show levels where players must use Bolty's spring jump mechanic while shooting at metal pipes that block their paths to destroy them. In previous versions, players were presented immediately with the level on the right, demanding them to understand and master a mechanic in one level making it one of the most difficult levels. The level on the right was introduced in the game to make players safely explore and practice the interaction before presenting them with the true challenge on the right.

The importance of playtesting and player feedback

All the successful design choices taken during development are attributable to playtesting and player feedback. During each iteration, the game has been tested by at least 2 playtesters to collect data about their playtesting and their feedback. Playtesters had to be fresh and non-expert to ensure the approachability of the game.

In each playtest session, playtesters were asked to think out loud and these sessions to:

- See how players attempted puzzles and platforming sections
- Hear their theories about solutions and emotions while playing
- Give attention to mental models to clarify misunderstandings
- Measure time taken to understand mechanics get to the solution, complete the level and complete the game

Each design solution previously listed is the result of extensive playtesting where each small obstacle and obstruction was treated as a design problem to solve reaching a satisfying level of polish for the small time available to develop the game.

At the end of the 3 months of development, the game was tested 15 times.

Conclusions

This experience was important to understand the importance of players' feedback and how to respond to certain design challenges that can emerge from puzzle-platformer design.

The goal for this project was to create an approachable puzzle experience to showcase a system introduced in a well-known genre such as a platform.

To do so development needed to focus on polishing and smoothing the learning curve using playtesting and players' feedback for design choices.

The final product has 8 levels and has a lot of margins to get better, some levels didn't reach the level they needed to be to satisfy the approachability of the game but applying recursively the points listed in this document makes it possible to achieve that level. The game certainly needs more levels to explain its systems, how they interact, explore more in-depth these interactions, and a more refined puzzle design.