Cauldron Chaos

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ABSTRACT

For the V1_VIREIL Virtual Reality course this paper describes the design and impelemntation of a potion mixing game for the HTC Vive.

1 INTRODUCTION

This paper

2 DESIGN

When designing a VR game it is crucial to understand the inherent nature of the medium. By addressing the strengths and weaknesses of VR already in the design phase, we can avoid many of the pitfalls that plague VR games.

2.1 Possibilities are Restrictions

The HTC Vive features a vast set of interactions. Controllers, buttons, touchpads, all fully tracked. Although this is a great strength, it also means that the player has a lot of freedom.

Often, freedom leads to confusion. To counteract this the decision was made not to limit the player, but to engineer towards their intuition and expectations. Leading to the following design decisions:

- **everything** should be interactable

- controls should be intuitive and minimal

- the player should be able to move around freely

2.2 Core Gameplay Loop

The game is quite simple to learn. Throw ingredients into the cauldron in the correct order to create the desired potion. One player is the alchemist (in VR) and the other is the assistant (on the computer).

By navigating through a brewing graph the assistant can find out which ingredients are needed and in which order. The alchemist can then search for the ingredients in the room and throw them into the cauldron.

2.3 Ingredient System

Every ingredient is made up of *parts*. Each part has a *material* and an *amount*. Together they make up the composition of the ingredient.

Materials follow a hierarchy. An example provides 1.

2.4 Engineering for Intuition

The alchemist is immediately thrown into the game. Instinctively, the first thing they will do is **orientate themselves**. This is why the game starts with the alchemist standing in the middle of the room as seen in figure 2.

After 5 seconds an **audible and visual cue** delivers the first task. After communicating with the assistant a new problem promptly arises for the alchemist: "What are ingredients?".
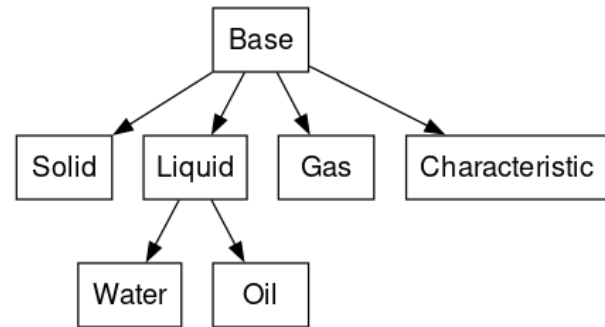
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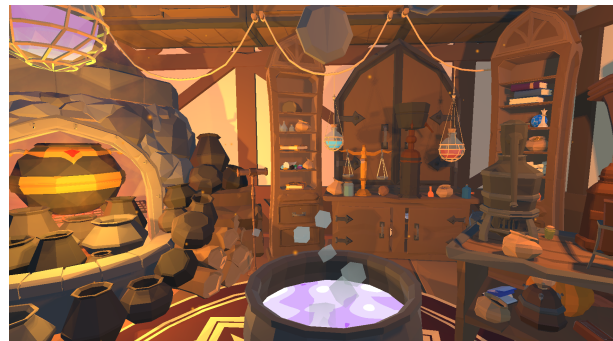Figure 1: An example of the material hierarchy.

Figure 2: The initial view for the alchemist.

Intuitively, the alchemist will try to pick up the first thing his brain classifies as "pick-up-able". Because almost everything in the room is an ingredient this will work.

Having the object in his hand the alchemist will most likely either throw it into the cauldron or come to the next problem: "How do I know what to throw into the cauldron?".

While working out what materials are needed, the alchemist needs to scout the house for ingredients. This is where his curiosity will lead him to try and interact with the **Ingredient Inspect Station**.