

I Don't Want to Live in this Reality Anymore, an update on Project Astaire

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We need to address how the hardware, control schematics, and the gaming literacy of an uncertain generational audience plays into the development of our HTC Vive dance game.

First, let's clarify the goals of this game before we jump into considerations. We all want this game to be a ***spectator experience, co-located***, and a ***game***.

Spectator Experience: A significant strength of virtual reality is that it creates an entertaining experience for the audience. It doesn't require specific knowledge of the game beforehand, and spectators do not have to focus on the screen to enjoy simply being an audience member rather than a player.

Co-located: Virtual reality is, by nature, isolating in its current medium forms. Once you put on a headset, you voluntarily shut yourself out from the rest of the world to be engage with a different reality. We want VR games to be played with other people locally within a designated space. This means we have to adjust the rules and hardware to make sure those outside of VR feel like they're important parts of the game as well.

Game: This is for you researchers invested in the idea of dissecting the design process. During our ideation phase, once you start throwing in ideas of having projectors or having the audience start participating by tossing balls at players, we start making something else. This becomes a one-time thing in a specific spot that can't be enjoyed elsewhere unless we take pains to set it all up again. Normal players can't or won't buy the needed equipment to play this, and it becomes an art installation. **Do not make this an art installation.** People on steam should be able to buy this and play it as long as they have some form of VR.

Now that we've clarified these goals, let's move on to the data results.

Cool data stuff

I ran user evaluations with 5 different graduate students, all from some STEM related field, between the ages of 23-25, and completely new to virtual reality technology (e.g. has not ever fiddled with any form of VR, including phone ones). Due to the nature of their studies, all of them are strongly familiar with technology. The purpose of these studies was to see how fluid or interactive the hardware/UI of the HTC Vive is. It would inform our creation process by working around certain parts that players did not like.

I gave the users a set of easy tasks, with the hypothesis that new users would take **around 3 minutes to complete all tasks**. They were told to turn on Steam VR, move around for 1 minute using a mixture of teleportation and physical movements, and finally turn on google tiltbrush from within virtual reality. It took me, a semi-experienced VR user, 1 minute and 38 seconds to do all this, so I thought it would be fairly easy.

I was wrong.

The average time to complete all the tasks was **5 minutes and 23 seconds**. However, due to the lower number of users gathered for this specific task, the confidence interval is quite large. Running a single sample t test using a 95% confidence interval showed that the true population mean was somewhere **between 176.95 seconds and 450.25 seconds**. Obviously, this is an enormous interval and I can't safely reject my hypothesis, but it lies so close at one end of the spectrum that, with more users, I am certain that the population mean time is higher than 3 minutes.

What does this say?

Well. Nothing, just yet. I mean, it could say any number of things: graduate students are dumb, the overall experience gives poor feedback on whether an action is registered, I wasn't clear enough. Data is just data until we start connecting dots. The mixture of video taped observations and surveys gave me enough information to parse key points and code the intel. I've given an excerpt below from my poster to give an idea of what might have the biggest issues for player. These responses were given to the question, "**What piece of hardware would you change, and why?**", which in turn, was given to all players that answered yes to the question, "**Would you change any hardware (e.g. wires, cameras, controllers, headsets)?**"

Responses	Type of responses	# of reponses
Controller	“controller, button use is not intuitive based on button location”	4
Headset	“the headset needs to be more adjustable (I have a fat head) and it needs to be more fluid”	3

Those with glasses all answered that the headset needs to be more adjustable, but there’s nothing we can do about that except change some of the game’s rigidity towards following rules, or lower down the amount of fine details that players need to see to be able to play. It was interesting to see that even though the question implied that users should only put one piece of hardware down, some of them chose to put multiple objects. I don’t want to take time to bore you all with the data, so I’ll cut this short.

Content analysis showed that controllers were the most disliked, but not for the precision, (though that was mentioned), but because they were **unintuitive to use**. There’s a severe lack of gaming literacy that informs players how they’re supposed to handle the controllers. Between the button icons not resembling anything that users had seen before, and their unusual locations around the controllers, players fumbled their way around this. During the videos, it was apparent that they were the issue as well. Users did not recognize when controllers were on and could not figure out where some of the buttons were, even after looking at them.

Players were also fidgeting with the wire that ran along the top of the headset. Even though this was a tertiary complain at best, this kind of obstruction could prove dangerous for a dancing game. We need to address this later, probably mention that nothing should be on the ground for this. Finally, the precision of the remotes has been noted as too good, detecting even small tremors of the wrist. This could actually be beneficial depending on how we want to map movements to the controller.

I think the most important point to focus on is, **how does this information help us create a co-located social dancing game?**

Here are some suggestions:

1. A dance game doesn’t require that you be able to notice fine details, which means we can use a **laxer gesture rigging** than we might typically allow. Using 3D character animator, we could rig the gesture to some of the models dancing in the background to

give players something to follow as well, instead of motions in the air that they might miss.

2. **We use, at max, 1 button for the whole game.** Since the game will be all gesture and motion based, we don't necessarily need the system to understand button inputs.
3. **Minimalism is key.** The less we have invested and reliant on the system itself, the better the game will be, according to the data. We don't need extremely fancy stuff within the VR space. Cool visual feedback to correct movements and motions might be a reward in and of itself. We should test this at a later phase.

These suggestions might make the game more appealing to players who've never tried the HTC Vive before. With any luck, jumping straight in requires almost no instructions. I would need to further test the effects of dance-like locomotion in VR to see if it makes people ill. I think our original idea of placing an avatar model over one controller would be enough of a frame of reference that rapid movements within a short span wouldn't have a severe effect on players.

Conclusion and future usability/research goals

TL;DR: Controllers and buttons for the HTC Vive are bad; make game using not too many buttons and make sure movement detect is more relaxed in how they see motion. Game should be easy, but fulfill the idea of 'dancing' so that players are still satisfied with the experience.

But we're not entirely done yet! This was just to bring you up to date with what the data says and what I think we should do. With this kind of project, we'll need at least 3 more data collection phases: one for when we have movement gesture rigging fully in place, one more when all models are set-up and gameplay groundwork has been laid, and a final one for a working prototype that has all the moving parts added.

We still need to figure out how exactly we want the game to function, and I think it's a good idea to see this game as something of a cooperative blindfold game. The headset removes one player from the current world by exchanging his/her sight with something else. To get some inspiration, **we'd need to do further literature review of games that have included blindfolds as well as review videos of partner dancing (Fred Astaire, ballroom dancing, salsa, etc.).**

There's also issues that will need to be addressed later. You can't see your feet in VR, making it possibly difficult to dance. This is why movement should be laxer and as long as players are still fulfilling this generalized motion, it should be accepted as valid. Also, having NPC's dance a certain way to portray that style of dance, like avatars ballroom dancing in the background, gives players a sort of creative control over what they do, but still have some form of guidance. We need to decide if we want to somehow fix this 'problem' or give players more metaphorical room to work with.

I've already started the literature reviews and am adding resources to the VR SETlab group folder. The actual full qualitative and quantitative analyses are on the paper titled 'FullReport' inside the folder. Also, I'll add the videos of the sessions later if anyone feels the need to run through them as well. Finally, I'll have a working JIRA management group for us set up by the time break ends, with sprint sessions of around 2 weeks, and a Freedcamp timeline that we should try to follow so Katherine and Elena can give us their opinions on progress before the quarter ends. Jared Duval and I will work on getting 3D character animator set up for the motions. I've recruited Batu and Yi to help us on the engineering side, and Jared Pettitt for art. Everyone else should currently be multitasking, dipping their toes in various parts of the project. We should split up into subgroups at some point, to work on features, because everyone here has hybridized strengths.

I'm going to be conducting one more round of user testing, but with 10 people this time to try to reduce the confidence interval and get more input.

See you in a month for another update!