Data-driven game design - an opportunity to create engaging experiences, or a threat to the role of the game designer?

It is now easier than ever to collect feedback from consumers. In fact, in a world that is more connected than ever it would be difficult to avoid it. For videogames particularly, this feedback does not have to be in the form of consumer reviews. If this data is not used however, will the reviews that follow make game designers wish they had?

Player tracking can provide extremely useful data to game designers, and can take many forms including gameplay, community and customer metrics (El-Nasr, et al., 2013). Perhaps the most commonly used is numerical data derived from player actions in the game. This allows designers to balance the game correctly, which is often key to keeping players in flow and motivated to play (Rigby, et al., 2010). It is not just balancing that gameplay metrics can be used for however, as knowing how players are behaving in game can let you change aspects to promote other, more desired behaviour. You can also measure player’s emotional response to the game, ensuring they are affected the way you wish. This can be used to change player behaviour too, both inside and outside the game. In fact, games being used as a persuasive tool has proven to be highly effective (Steinemann, et al., 2015).

Of course this is not the only type of player data that can be collected. Data on game performance, such as framerate, can obviously have a positive effect on the user experience. Community metrics show the social behaviour of the game community, particularly important with online games. Community behaviour can significantly impact an individual’s behaviour in an online environment, perhaps encouraging teamwork (Cole & Griffiths, 2007). Or maybe the game design can impact the community, competitive aspects often leading to aggression (Adachi & Willoughby, 2011) and in turn toxic behaviour.

Finally, data on the player themselves can affect a game’s design. For example, data on how long player’s play before leaving the game can be used to provide incentives to continue playing at the right moment (Kim, 2014). This may not make the game better however, simply more addictive, and that should be considered too when designing. Of course, this could be the intention. Many loot-based RPGs such as World of Warcraft intentionally reduce loot drops slowly so players must play longer but do not notice the immediate change.

Demographics are also used frequently by game designers, as they can tailor their design to their target-audience (Bateman & Boon, 2005). Though if the target audience is the current audience of the game, changing the design to please them skews the demographic in their favour. To give an example, if your game is primarily played by people over the age of 45 and you design the next iteration to please them, it will appeal less to players under the age of 45, and reduce the amount playing. As a result, the design may start to put off potential players as it becomes almost niche.

Despite the benefits of designing around the results of game analytics, they can have a negative impact on game design. Innovation and evolution can suffer when they start designing simply to please consumer’s current tastes, and leave them empty-handed when consumers grow bored. Plus, there are occasions when less successful design decisions may make the game better as it becomes an important part of the experience for the player. For example, the fighting game Ultimate Marvel vs Capcom 3 is an extremely unbalanced game. Certain combinations of characters and abilities are almost unbeatable. However, the community does not simply use one of these combinations for every fight, instead they work together to find ways of combatting anyone using them. The community believes this is an important part of the experience, and also means the game is played competitively despite its flaws. On the other hand, the data could be used to ensure the experiences the game designer deliberately creates work as intended. In addition, data-driven design could be used to reduce the time designers must spend on tasks such as balancing, and allow them to focus on the “art” of the game, which could lead to more positive experiences in the long run.

Another issue of data-driven design is the moral and ethical implications of recording player data. It would be considered by many to be an invasion of privacy, especially data on themselves and their playing habits. It is also an ethical issue to use the data to influence a player’s behaviour, particularly outside the game. This may also lead to unexpected consequences, at which point is the designer not responsible?

The statistics in game analytics can be a liability themselves (Matcham, 2014), perhaps because it is a relatively new field. A good example is the difficulty in removing outliers in the data, as player actions are often unexpected and can vary wildly. Without removing these outliers the data of the players you actually wish to design for can be deceiving. Another example is that much of the data is presented in a highly visual way such as heat maps. These can be extremely useful, especially in helping people understand the data collected. However, a lot of detail can be lost in this process, so more qualitative data is recommended to accompany these charts (El-Nasr, et al., 2013).

In conclusion, game analytics are a powerful tool for game designers. It is how that tool is used that will determine whether the impact is positive and negative. Designers should be wary of over using data-driven design, but for uses such as balancing and ensuring players are responding as intended it can be invaluable.

References

Bateman, C. and Boon, R. (2005*) 21st Century Game Design*. Charles River Media, Inc.

El-Nasr, M.G., Drachen, A. and Canossa, Z. (2013) *Game Analytics: Maximizing the value of player data*. Springer Science & Business Media.

Cole, H. and Griffiths, M.D. (2007) Social interactions in massively multiplayer online role-playing gamers. *CyberPsychology & Behaviour*, 10(4), 576-583.

Przybylski, A.K., Rigby C.S. and Ryan, R.M. (2010) A motivational model of video game engagement. *Review of general psychology*, 14(2), 154.

Steinemann, S. T., Mekler, E. D. and Opwis, K. (2015) *Increasing Donating Behavior Through a Game for Change: The Role of Interactivity and Appreciation.* In: *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play,* London 5-7 October, London England; ACM, 319-329.

Adachi, P.J.C. and Willoughby, T. (2011) The effect of video game competition and violence on aggressive behavior: Which characteristic has the greatest influence? *Psychology of Violence,* 1(4), 259.

Capcom, Eighting (2011) *Marvel vs. Capcom 3: Fate of Two Worlds*. Capcom.

Kim, J. (2014) The Compulsion Loop Explained. [blog entry] 23 March. Available from http://www.gamasutra.com/blogs/JosephKim/20140323/213728/The\_Compulsion\_Loop\_Explained.php [Accessed 14 November 2015]

Matcham, T. (2014) Big Data, Big Problems: A Mathematician’s Take on the Current State of Game Analytics. [blog entry] 29 July. Available from http://www.gamasutra.com/blogs/TomMatcham/20140729/222113/Big\_Data\_Big\_Problems\_A\_Mathematicians\_Take\_on\_the\_Current\_State\_of\_Game\_Analytics.php [Accessed 14 November 2015]