

FOCUS ON YOUR PLAYERS – PSYCHOPHYSIOLOGICAL PLAYER EXPERIENCE

LOGGING AS A POWERFUL TOOL FOR GAMEPLAY ANALYSIS

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The question what players enjoy games so much has been around since the time people have first started to play games. Designing a satisfactory player experience is one of the few fields and has hardly been touched by the growing body of game research; still it is one of the most interesting areas to be explored. Current game design is done rather intuitively or using approaches described in what we call “cookbooks” for junior game designers [6, 9]. However, academia and industry are both very interested in a correct comprehension of the methods, principles and tools that enable designers to create engaging entertainment experiences [1, 2, 4, 7].

With a recently gained emphasis on new input devices and interaction techniques, like gestural movement [11], eye tracking [10] and biofeedback [3], designers of tomorrow will have to think far beyond what we call games in a classical sense today. Gameplay becomes a more immersive experience, a space of fun decoupled from the experience of using a computer. The benefit of using these new input devices is that they also enable a more precise and empirical measurement of gameplay. Thus, from an academic side it becomes more interesting to research the effect a game has on players than to focus on the game as an entity itself. By understanding how players experience games, we can then reflect and use this gained knowledge to enhance specific design aspects of games. What remains most interesting from a research side is the methodological approach to evaluate game usability.

In contrast to usability of regular software, in games it is more important to look at factors of interaction and enjoyment when conducting gameplay analysis. In the following we will propose a method to conduct psychophysiological player analysis.

1. When designing a level events have to be logged that could be of importance for improving gameplay within the level. Such events could be the number of player deaths [5], but also lighting conditions at specific places in a level or locations in which designers are uncertain how the player will master the designed challenge. Invisible trigger mechanisms need to accurately log the time a player spends within such an area.
2. In a system that we designed for Half-Life 2 (Valve Corporation), we can already log such data directly to our psychophysiological recording system [12], so that we can correlate these events with biofeedback data. We can then hypothesize how specific in-game events trigger emotional [8] or cognitive reactions.
3. Using the knowledge we have gained from analyzing psychophysiological responses from players, we can apply this evaluation to the game design process.
4. Through iterative repetition of designing and testing new features in the way described above, we have a new measure of quality for gameplay and a very objective feedback on the perception of gameplay features.

Analyzing gameplay experience in this way goes far beyond mere quality assurance as it also enables the creation of adaptive games. By integrating measurement techniques as direct feedback systems into digital games, gameplay becomes reactive to the player. Emotional reactions can be amplified or cognitive effects can be precisely measured (the latter being specifically interesting for the rising trend of learning and serious games). This feedback loop still needs to be explored in more detail as not all psychophysiological responses can be precisely mapped to emotions or thoughts. Another challenge will be the real-time deletion of artifacts occurring in the recording process. With the falling cost of psychophysiological measurement tools and interaction technology (for example eye trackers), these tools become more interesting for a mass market and the knowledge on how to create meaningful entertainment experiences with them is valuable knowledge for future game designers.

In conclusion, the main interest of ongoing game research in this field is to classify the different measurement approaches that can be used to assess the player experience. While the method we presented here is certainly a very novel and comprehensive approach to gameplay analysis, there are many other methods used in industry and research today that will need to be compared this approach. The question that remains is whether or not an integration of all game measurement approaches makes sense. It might also be good to create guidelines for explaining which methods are most appropriate for which game designs. This is a field, where industry and research have to work together closely to create compelling games in the future.

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