

Do You Know Where Your Games Come From? Artificial Intelligence and Game Development

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ABSTRACT

This paper was written to explore the possible effects of artificial intelligence being implemented in the design pipeline of video game development. In it, we will explore a history of artificial intelligence, from its early imaginings in books and philosophy, to its current iterations, such as ChatGPT and other popular engines like Midjourney and Stable diffusion. We will also discuss steps in game development so as to understand where the potential implementations of artificial intelligence can, will, or does occur. Following those explanations, we will explore the three methodologies of Marxism, Psychoanalysis, and Cultural Studies as ways of examining the idea of artificial intelligence implementation in the development pipeline of video games, and from these different methodologies, the resulting insights of their given theory/method. After full use of these methodologies, we will conclude with that examination of the question: “Which of the following methodologies: Marxism, Psychoanalysis, and Cultural Studies, best enable us to understand the effect of Artificial Intelligence in the Game Development pipeline?” based on what we previous discussed.

Key words: Artificial Intelligence, video games, Marxism, Psychoanalysis, Cultural Studies, game development

Video games have been used in multitudes of ways, from relaxation tools, competitive outlets, education and simulators of varying kinds. Over the last 40 to 50 years, they have become a cultural force that has helped influence popular culture through the advancements (Metuarau, 2017). From the earliest ideas stemming from military simulations (Metuarau, 2017) and Atari's *Pong*, great changes occurred as developments came and technology improved, eventually giving us the grand systems and styles of video games that we have today.

Artificial intelligence that comes to mind with the advancements of technology. Many believe that artificial intelligence has been a product of newer technologies, when actually, it has been around much earlier than that. Philosophers have used the possibilities of intelligent machines as a literary device to help us define what it means to be human, while science fiction writers used the possibility to advance the intelligence of nonhumans and to make us think about the characteristics that make us human (Buchanan, 2017). Authors, such as Jules Verne, Issac Asimov, and L. Frank Baum, were very influential to researchers of artificial intelligence (Buchanan, 2017). Baum, the author of *The Wizard of Oz*, gave us TikTok in 1907, an "Extra-Responsive, Thought-Creating, Perfect-Talking Mechanical Man...Thinks, Speaks, Acts, and Does Everything but Live" (Buchanan, 2017). Robots and other artificially created beings, such as golems from the Jewish tradition or Frankenstein from Mary Shelly's book of the same name, have always captured the imagination of the masses, in part by the fear of them they had (Buchanan, 2017). In the 1700s, clockwork animals and human-like "dolls" showed that they weren't to be feared because of the limitations (Buchanan, 2017). In the 18th and 19th century, when chess was known as the game of intelligence, chess playing machines were popular testing artificial intelligence, with the most famous of them being "The Turk" (Buchanan, 2017). Great advancements in electronics, and the 20th century, post WW2, rise of the modern computer

brought many of them into universities and laboratories all over America and Europe and were dubbed “Giant Brains” due to their calculating power (Buchanan, 2017). Artificial Intelligence wasn’t all about robots, though. It was also “about understanding the nature of intelligent thought and action using computers as experimental devices” (Buchanan, 2017). This can be seen more recently in the developments of ChatGPT, an artificial intelligence program that analyzes data and produces responses to questions asked of it, and text-to-image ai generators like Midjourney and Stable Diffusion.

In the development of video games, there are many things that work in tandem to each other to achieve the best product that can be enjoyed by others. These can be broken down into five stages: pre-production, production, quality assurance, launch, and post-production (Game Ace, 2023). Pre-production is the idea phase and where a lot of data is collected. Project managers and owners take the reins and line out the game’s objects and make clear the fundamental concept the game is to have. (Game Ace, 2023). Major aspects for this phase include market and competitor analysis, who the target audience is, choosing which platform to use, allocation of resources, the concept art, how things will be monetized, risk analysis, and marketing strategies (Game Ace, 2023). Production is the heart and backbone of game development, as it is the most labor-intensive part of the the development cycle. Major aspects of this phase include prototyping, visual content creation, level designing, detailing the game’s logic or how things run in the game, adding immersive elements such as sounds and music, and coding (Game Ace, 2023). Quality assurance is the final look over before launch to ensure that the gamer’s journey is seamless, attempting to catch as many issues/bugs as possible and refining things that may not work as planned (Game Ace, 2023). Launch is the grand release of the the game into the hands of the public, who take the game and explore what was made and help to

round out some rough edges that may have been missed, giving feedback, and thus, we reach the last stage of post-production. The development team takes the feedback from the gamers and use that information to refine and enhance the gameplay experience (Game Ace, 2023).

Now, what if artificial intelligence was incorporated into the development of a video game? Where would it best be used? What would the effects of its use be on the teams developing the games? To explore the possibilities of these questions, we can turn to Marxism, Psychoanalysis, and Cultural Studies to see which may better explain what the combination of artificial intelligence and video game development could look like.

Marxism can be defined as a political philosophy and method of socioeconomic analysis. Created by Karl Marx, this method maintains the author of a worker's class and prevailing ideology which determined what is produced by them (Barry, 2009). In his book, *The Communist Manifesto*, Marx advocated for the working class, who had been exploited during the Industrial Revolution, to rise up and seize power and distribute the wealth of the workers amongst everyone, creating a classless society with common ownership of production (Barry, 2009). Applying this to game development and artificial intelligence can be done in a few ways. The applying of artificial intelligence can occur during pre-production, production, and post-production. In pre-production, it could be used as a way gathering data that is specified and neatly put it together and done so more quickly than a team of people could do just by the aspects of what artificial intelligence can currently do. This can also be said for the concept art creation. Now that text-to-image generators are here, they can be used to quickly put down the ideas for a concept and produce numerous options in a shorter amount of time than an individual artist can. Thus, these can indicate a potential shift when it comes to the time that could be saved by implementing artificial intelligence into these areas. "What are the symptoms of this social

transformation? They can be seen whenever a company like Microsoft outsources a call center from Redmond to Bangalore, or in the new medical surveillance networks scanning global health databases for the next outbreak of SARS” (Galloway, 2006) is a quote that I feel best represents the ideas behind this. Saving time is important, but the idea of being able to use people that don’t have as much specialized training/knowledge in certain areas, allowing “normal people” to be able to have access to the creation process is, in a way, very similar to the sharing of the means of production and losing the “classes” that are there of “artist” and “non-artist.” Yet, work still can flow well within the production pipeline. Leon Trotsky, in his book *Literature and Revolution*, would say that with the more people able to work in the pre-production aspects of development, which would achieve faster results, that “Art needs comfort, even abundance. Furnaces have to be hotter, wheels have to move faster, looms have to turn more quickly, schools have to work better” (Trotsky, 1924). The more we can produce, the more we can achieve.

Psychoanalysis is defined as a form of therapy and theory that was developed to help cure mental illnesses by exploring the interaction between the subconscious and conscious mind (Barry, 2009). Sigmund Freud is the German theorist that developed the first therapeutic methods of psychoanalysis. One main aspect of this was the idea of “the fear of castration,” the loss of male genitalia that was seen as a symbol of power (Freud, 1900). This is also seen in his idea of Oedipal complex, the attachment of a male child to their mother which included envious and aggressive feelings toward the father; these feelings are hidden away in the subconscious for fear of displeasure or punishment (Freud, 1900, Barry, 2009). This is something that can be explored in the integration of artificial intelligence in video game development, for the role of the artificial intelligence would be to replace some work that people currently do. While this could be used to speed up production times and cut costs, this could invoke the sense of loss or castration that

Freud talks about amongst the artists/workers that are replaced by artificial intelligence. In 2023, a strike was held by the Screen Actors Guild-American Federation of Television and Radio Artist, or SAG-AFTRA, that was about achieving better pay and work conditions but also to include provisions on artificial intelligence and its uses in recreation of aspects of actors/workers without permission or compensation (CBS News, 2023). There were also lawsuits that were held regarding artists suing artificial intelligence generators that were potentially trained to create artwork based off of some of their works without the explicit permission of these artists (U.S. Copyright, 2023). These two occurrences depict the aggression and negative feelings that have occurred from the uses of artificial intelligence outside of game development and proves that there is a high probability of its occurrence there too.

Cultural Studies is a study that revolves around the idea that there is always a more dominant group in any society or circle that you may look at throughout history, and that no matter what we do, we cannot escape the fact that if we aren't a part of that culture, we can't truly know it or that we can separate culture from the politics of the times of that culture (Barry, 2009). This could include the strikes and artists suing artificial intelligence generators since these don't have many laws or regulations as of yet. Their uses can, at times, be seen negatively and unjust, thus the politics of the time, massive use of artificial intelligence and lack of guidelines for their conduct, led to the cultural feelings of negativity toward artificial intelligence (CBS News, 2023, U.S. Copyright, 2023). Some would argue that these AI generators aren't causing much harm but are bringing the access of creativity that was previously out of reach, sometimes, without training or schooling. A quote from Paul Valéry in Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction*, can help back that idea: "Just as water, gas, and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort, so we

shall be supplied with visual or auditory images, which will appear and disappear at a simple movement of the hand, hardly more than a sign” (Benjamin, 1969). But it could also be argued on the other side that these generators are just replicating things over and over again and “even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be” (Benjamin, 1969). Are the ideas that are produced by the generators just replicas of previous works that the generators have been fed or studied? Would they constitute as their own works by these methods because they would be created in their own time and place in the sense of the generators’ production of them?

Cultural studies can also examine the natural ecosystem of the development pipeline by the people working in the company and then on that specific project. This line of thinking can be shown in the article, “Little Big Scene: Making and Playing Culture in Media Molecule’s LittleBigPlanet” by Sara Grimes. In the article, Grimes explores the social system that was created by players of the game LittleBigPlanet where they were able to use aspects of the game to create their own iterations of the game that they could share with others and interact with what others had produced on an online forum made by the company Media Molecule (Grimes, 2015). Now, I think that, in a similar way, one could apply this and explore the circles of each stage of production and then break it down into smaller circles, i.e. data collection, concept art, narrative direction, and then, once those are defined, implementing artificial intelligence into a section and seeing how that influences the social system, including the positives or negatives of the culture in those circles after artificial intelligence has done it’s designated job. I believe Trotsky said it best, “The social whirlpool will no calm down soon. There are decades of struggle ahead of us...” (Trotsky, 1924).

CONCLUSION

We have explored the history of artificial intelligence, from the literary and metaphor to the evolution of ChatGPT and Midjourney and Stable Diffusion. We briefly laid out the steps and intricacies of a game development pipeline. With those under our belt, we explored the three methodologies, Marxism, Psychoanalysis, and Cultural Studies, and applied them to the combination of artificial intelligence and game development. Marxism brought out the ideas of sharing the spotlight of creating art or delegating tasks that normally would have taken others longer to do and takes away the lofty idea of “the artist,” allowing for the work to be more accessible to the common person. Psychoanalysis pointed out that there could be some issues from people feeling negatively about artificial intelligence integrating into the development of video games, as it could take away their “power” and bring back out repressed feelings of aggression and jealousy indicative of the Oedipal complex. Cultural Studies explored the ideas of the political and social aspects that artificial intelligence could play in the development of video games and the others included in it. This includes exploring the social circles in the development process and the political situations of the time, such as artificial intelligence lacking in guidelines and repercussions, as well as the vast majority now using these generators and downplaying the works of others by the recreations or renditions of works through these generators. All of these methodologies have substantial merit that can be used in relation to artificial intelligence and video game design. More research and examination are required and highly recommended in these methodologies regarding artificial intelligence and video game development.

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