

Investigating the Elusive Role of Level Design

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Abstract— While level design is a concept commonly used in western game companies, it is veiled in a lack of clear conceptualization. Many research papers on the subject describe the role of level designer as elusive, and there is a great variation in the descriptions used in job listings for the role. This paper aims to identify a set of characteristics for the field of level design, by reviewing literature and analyzing responsibilities and requirements in job listings. To obtain more inclusive and cross-cultural results, interviews were also conducted with Japanese game developers to explain the concept of level design in their industry. By combining the qualitative data from interviews and literature analysis, with the quantitative data from job listings (n=33), the research highlights common denominators for the role of level design, but also demonstrate cultural differences and discrepancies between academia and industry. Thus suggesting gaps in current research as well as culturally. The findings aim to elucidate directions for future research, and promote focus towards the needs of the industry.

Keywords—game development, level design, japan, western

I. INTRODUCTION

As technology evolves, allowing game worlds to continue to grow and the complexity therein to advance, the role of level designer is all the more important for game companies[1]–[6]. There is, however, little formal understanding of the role, an issue that Schertler et al. claims is more pressing in the continuously growing game worlds [7]. The lack of formal understanding is suboptimal for the industry, as it potentially staggers production due to unclear objectives for level designers. Meanwhile, it also affects research negatively as the lack of formal understanding leaves certain gaps when discussing the field.

This paper aims to explore the role of level design to locate some of those gaps, thus incentivizing future research to acknowledge or explore them further. Existing literature discussing the process and definition of level design was selected and analyzed to procure the academic viewpoint. Data regarding video game companies' definitions of level design, was gathered using job listings for level designers. To complement this data, which was gathered from western game companies, interviews were conducted with Japanese game developers to evaluate their perspective on the role of level design. Thus producing broader and more inclusive results. Comparing all gathered data; frequently occurring elements of level design could be derived, as well as cultural

differences and discrepancies between academia and industry.

II. BACKGROUND

The game development process requires persistent collaboration between engineers, artists, designers, musicians, scriptwriters, and many other professionals to integrate scenarios, design interactivity, and to make sure quality standards are met [8], [9]. Most western game companies have thereby, over time, adapted a lateral development structure, employing specialists for most tasks and a close relation between each discipline on the development team. This has however proven more difficult to implement in Japanese game companies, due to their strict hierarchical structure [10]. Japanese companies usually apply more holistic roles, that are more firm-specific than task-specific [11]. While it is believed that the Japanese game company structure excels in rapidly producing smaller games, it struggles with larger projects, as opposed to the western AAA-game company structure that is created for large projects [10], [11]. The task-specific approach used in western companies subsequently emphasizes each role to know their specific responsibilities in the team.

In regards to clear responsibilities, the western role of level designer is one that stands out, as it is not always formally understood [7]. There are few papers containing descriptions of level design, and when mentioned, it is often described as elusive [2], [4]. This is also reflected in craft articles by industry professionals, such as *Who Are Level Designers?* by Mojang level designer Max Hergren, who portrays the ambiguity of the role:

“I think level design is a really hard role to nail down. [...] You're sort of poking at so many different disciplines just by the very nature of what it is you have to accomplish as a level designer. It's very hard to define where you draw the line and how you actually define what you do”. [12]

III. PROBLEM & METHOD

There is no uncertainty regarding the importance of the role of level designer, as researchers and authors describe it as one of the most important parts of a game production pipeline, saying it is vital for creating enjoyable games [1]–[6].

A. Problem

Since terminology regarding game development is an aspect which is continuously evolving in the industry [13], [14], a general overview of what defines the highly collaborative role of level design might thereby prove beneficial to researchers and educators within the field. It could also be valuable for the industry, since such an overview might distinguish areas of responsibilities when hiring new employees [5], [7], [15]. Although the role differs between companies and projects [4], [15], there should be some common denominators describing the role in general, otherwise it is not really a role, it is several. This paper aims to investigate the elusive role of level design by comparing descriptions from research papers, job listings and industry professionals.

B. Method

The method consisted of three steps: *Step one* was to review the data from gathered literature, to identify the academic viewpoints regarding level design. *Step two* consisted of analyzing data gathered from job listings for level designers, to procure role descriptions from the game industry. *Step three* consisted of triangulating the combined data with interviews at Japanese game companies, to get a more inclusive overview.



Fig. 1. Method phases used to reach a suggested description of level design.

1) Step one, Literature Review

Papers on level design were mainly gathered from Scopus, through a title-abstract-keyword search for "Level design" in conjunction with "game". This generated a result of 248 papers. This was complemented by browsing Google Scholar using key words "level design + game". The 248 papers were examined, and eventually narrowed down to 12 papers mentioning defining factors for level design, or discussing functionalities and the theories surrounding the practice itself [3], [16], [17].

2) Step 2, Analyze Job Listings

Most job listings were gathered using LinkedIn's job portal, *gamejobsdirect.com*, and *se.jobble.org* (2020-02-07), searching for "level designer" in both cases. This was complemented by browsing through job ads and observing the Swedish Facebook group *Spelutvecklarambulansen* (2019-10-01 to 2020-02-10), which main purpose is for game developers to hire new employees. A total of 33 listings were coded based on job requirements and responsibilities, using the coding software *MaxQDA* [18].

3) Step 3, Triangulation with Japanese Game Companies

As the previous steps only focused on data from western game companies, interviews were conducted with Japanese game developers to evaluate how the tasks related to level design are distributed in the Japanese company structure. Thus opening up the possibility for a broader and more inclusive

definition. Two interviews were conducted for this short paper, the questions were based on the categories produced in the job listing analysis. The respondents consisted of a CTO of a large game company, and a former level designer, now CEO of a small game company. Data collected from the interviews, was subsequently compared to the data collected from the literature review and the analysis of job listings.

IV. RESULT

A. Literature review

Kremers [5] states that trying to define level design could be problematic, as many tend to confuse it or try to compare it to game design, causing the role of level design to lose its sovereignty. He continues to urge for analysis of level design functions rather than trying to define the role itself. Replicating this mindset, many researchers have derived descriptions regarding what level designers do [2], [3], [16], [19]. Looking at level design as a result of game design, rather than a part of it, can for instance help distance the two [3]. Collectively amongst the papers discussing level design this way, several, sometimes coinciding, theories can be found. One frequently mentioned task connected to the level designer is to balance difficulty throughout levels to keep an ideal flow, claiming that a level designer should have a good grasp on flow theory to keep players motivated [3], [16], [20]. Another recurring function is to guide the player correctly through a level with clever usage of lighting, color and object placement [2], [3]. This suggests that a level designer could benefit from a basic understanding of affordance principles [3], [17], [21]. Descriptions from industry professionals suggest a more player-oriented point of view, focusing on play testing and analyzing successful games to get an idea on what the players want to get out of the level design [17], [22], [23]. Another viewpoint was presented at a GDC session where Bleszinski [15] claimed that the role of a level designer varies between projects. Explaining that even though many design elements are universal and can be carried between genres and technologies, there is an economical factor. For instance; in some projects the level designer might have to know or learn basic 3D-art or at least texturing to be able to fix faulty or missing art assets on the fly to avoid bottlenecks. An ability to either assist the artists or actually create art singlehandedly is sometimes also stated as a level designer proficiency in literature by former level designers. Either as a requirement [6], [24] or a preference [4], [16].

In summary the researched literature suggests that a level designer's job is to combine elements of engineering, design and art into their final form, being sort of the glue that holds everything together [1]–[3], [14], [19]. A deeper analysis shows that the role entails functionality-based, theory grounded, player-centric, project-bound and proficiency-reliant elements. Meaning that a level designer, whilst their general focus is to create levels from game assets, also needs to focus on:

- theories on how to guide players and produce fun and engaging content as well as the ability to create these functionalities [3], [16], [17],
- being aware of player interaction and preferences and be able to meet their requests [17], [22], [23],
- having experience in or the ability to adapt to different types of projects [4], [15],
- understanding and having some proficiency in art and aesthetics. [4], [6], [16], [24]

B. Job descriptions

A total of 33 job listings were analyzed, 19 North American, 14 European. Responsibilities and requirements were coded in four main categories: Design, Art, Programming, and Evaluation, each containing a number of more specific sub-categories. The frequency of appearance in listings was calculated and sub-categories were reviewed and sorted in order of occurrence.

TABLE I. RESPONSIBILITIES IN JOB LISTINGS (N=33).

Job listings	Responsibilities			
	Design – 94% of listings	Art – 24% of listings	Engineering – 18% of listings	Evaluation – 48% of listings
Task	“Collaborate with disciplines to create levels”	“Set dressing”	“Perform scripting”	“Organize or perform play test”
	“Build/Block-out 3D-levels”	“Balance aesthetics with technical limitations”	–	“Analyze/Use metrics to improve game”
	“Take levels from concept to completion”	–	–	–
	“Author and review design documentation”	–	–	–

The most frequently occurring responsibilities in the job listings were design related tasks, but tasks focused on art, engineering and testing was also apparent in several listings.

TABLE II. REQUIREMENTS IN JOB LISTINGS (N=33).

Job listings	Requirements			
	Design – 94% of listings	Art – 53% of listings	Engineering – 44% of listings	Evaluation – 0% of listings
Request	“Experience as a level designer”	“3D software experience”	“Experience in visual scripting”	–
	“Deep understanding of level design theory”	“Strong visual aesthetics”	“Experience in scripting language”	–
	“Understanding of flow theory and pacing”	–	–	–
	“Experience as a game designer”	–	–	–

The requirements section did not contain any aspects of evaluation, but instead listed more general development

requirements, such as “Game engine experience”, “Strong communication skills” and “Published titles”.

C. Cultural differences in job descriptions

Dividing the listings by continents, while showing many similarities, also suggested certain discrepancies. Though some differences could be derived even between countries, the most significant was shown when examining the different continents.

TABLE III. MOST PROMINENT DIFFERENCES BETWEEN NORTH AMERICAN (N=19) AND EUROPEAN JOB LISTINGS (N=14).

Responsibilities and Requirements	Comparison	
	North America	Europe
Level building	74%	36%
Balancing gameplay	21%	36%
Art responsibilities	26%	14%
Art requirements	63%	38%
Engineering responsibilities	21%	14%
Engineering requirements	37%	54%
Play testing/Analyzing data	63%	29%

This comparison shows that North American job listings generally request more from the applicants than the European listings. It also suggests that North American companies has a higher demand for artistic proficiencies, while European companies are more inclined towards engineering requirements. European companies also value level building less, while pushing more for balancing gameplay. This still, however, only reflects a western perspective of the industry.

D. Japanese perspective on level design

Respondents explain that, as the Japanese game company structure often differs from the western, the role of level designer is not used to the same extent. One informant explains that in some cases, where the term “level design” does occur, its meaning refers to *difficulty* level design. Meaning; the task of balancing the difficulty of the game. The tasks conducted by level designers in western companies are instead spread out amongst the work force. In Japanese game companies, most of the level is implemented and put together by a director and planners. The Japanese role of *planner* is responsible for defining parameters and map for a specific scene or a specific game function. Thus a planner performs tasks that would apply to both game designers and level designers in western companies. The Japanese structure could derive from the history of the Japanese game industry, which partly evolved from the manufacturing industry, via arcade games [11]. Consequently, a more sectionalized development strategy, compared to western game companies, was adopted. However, according to the informants, as games are expanding in size and complexity, and especially for open-world games, the western role of level design is applied in some Japanese game companies as well.

V. DISCUSSION AND CONCLUSIONS

Data gathered from both the literature review and job listings suggests that a large part of level design is to collaborate with other disciplines to create levels. Interdisciplinary collaboration is, however, not exclusive to level design, as it is prominent throughout the western game development pipeline [4], [8], [9]. The uniqueness of level design, rather seem to be the expectation of insight or expertise in several areas of development. Job listings, as well as reports and books written by industry professionals, for instance mention an expectation of art proficiency [4], [6], [15], [16], [24], while several job listings also requested engineering skills from the level designer. Both research papers and job listings also claim knowledge about design theories, such as flow [3], [16], [20] and affordances [2], [3], [21], as requirements for level designers. Focus on testing or evaluating the product is also a prominent feature, especially in North American job listings. This task is, however, not mentioned in research papers, apart from being performed by researchers themselves when dissecting level design.

For Japanese game companies that has not adopted the western company structure, the tasks mentioned above, would be distributed among each team member, rather than being performed by a specific person [11]. There are plenty of Japanese game companies working this way that still produce what is considered to be good level design. Thus, the necessity of the level designer role could be questioned. However, without further research, it is difficult to tell whether the level design quality or production effort would be affected if a level designer was involved.

A. Limitations of research

As this short paper merely aims to elucidate directions for future research, a deeper analysis of existing gaps in both research and the definition of level design has not yet been performed. With a limited amount of analyzed job listings, research papers and informants, it is problematic to assert significant conclusions. Thus the produced result is treated as a conceptualization for future research, discussing findings as indicative rather than definitive.

B. Future work

Given the discrepancies between academia and industry regarding the role of level design, further research might be beneficial for reducing the gap. Investigating different approaches to level design, might facilitate pinpointing discrepancies between cultures and companies, thus bridging the cultural gap and sharing knowledge from each point of view. A valuable next step could be observation of game development processes, analyzing level design workflow, to locate pitfalls and areas that would benefit from research.

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