

‘I Never Imagined I Would Work In The Digital Game Industry’

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Abstract—The deep gender gap present in the digital games sector can be seen as a revealing function of gendered spaces. As such, it is essential to analyze the genderization’s micro-processes in these specific contexts. This paper will explore the possible causes of female under-representation in the gaming sector through data collected in the qualitative research conducted with students and professionals employed in the Portuguese gaming industry. This study’s main aim was to identify the factors that condition the professional (non) choice in Portugal’s digital games area and how these differ according to the individual’s gender. We conducted empirical research with students and professionals in Portugal’s digital games sector, namely focus groups with students and interviews with professionals. In presenting and discussing the data, we prioritized the participants’ narratives, using excerpts to illustrate the chosen analysis categories. In the analytical process, it was possible to identify that the professional (non)choice in digital games goes through the contact with video games since childhood, the experience of creating their games before entering college, family influence, and differs according to the gender. The results of this research suggest at least three different fallacies: 1) the fallacy of programming; 2) the fallacy of digital games’ “unviability”; 3) and the fallacy of digital games as a gendered artifact. Overall, this study offers a contextualized analysis of the processes and practices that result in (and produce) gender inequalities in the digital gaming industry, specifically how these inequalities impact career (non) choice.

Keywords—career, digital game, gender, industry, Portugal

I. INTRODUCTION

Worldwide, many educational programs in the digital game sector have emerged since the late 1990s, particularly in North America and Europe [1, 2]. Although Portugal followed this trend only in the late 2000s, the educational offer in this area increased significantly in this country in a decade, going from one educational program to fifteen, including six bachelor’s degrees, four master degrees, five technical short cycle degrees. Furthermore, several Portuguese educational institutions offer shorter courses that do not confer an academic degree.

Despite following the international trend of creating degrees and short courses in this area [3, 4], the awakening towards the creation of study plans in gaming focused exclusively on the area of digital games was motivated by

the opening of new educational programs in Portuguese higher education institutions after the officialization of the Bologna Process (Decree-Law 74/2006 of March 24), as well as by the changes in the development and consolidation of the professional community of developers during the first decade of the 21st century [5].

As a sector that brings together knowledge from different fields of study (such as arts, design, communication sciences, computer sciences, humanities, social sciences, technologies, and engineering) [6], “interdisciplinarity is at the core of videogame development, and as such it needs to be presented this way, not merely as a world dominated by engineers” [7].

In Portugal, training in digital games is linked to the area of computer science, electronics, and automation (6 degrees) and the area of audiovisual and media production areas (9 degrees). Having training opens doors to jobs in video game programming, game design and art, digital animation, and multimedia content production [6, 8].

Although it is a creative and collaborative practice in which artists, programmers, social communicators, and designers work together, digital games education is still mistakenly equated with software development. According to O’Donnell [7], “many educational programs even call themselves ‘game development’ programs and focus only on the software development (often referred to as “software engineering” or “programming”) aspects of game development” (p. 16). Understanding how this impacts career choice in the field of digital games is one of our research purposes.

Previous studies have identified low female participation in digital game degrees and courses in the gaming industry [6, 8]. In research done with Portuguese game producers and companies, Romeiro et al. [6] identified many male workers. In the 73 companies that participated in the study, between 76% and 99% of the total workers were male. According to these authors, “this characteristic certainly relates to a greater presence of the male gender in higher education associated with technological areas, from which the human resources of this sector come” (p.40). In addition, Gouveia [9] alerted about a possible exclusion of

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both women and the arts in the history of video games in the Portuguese context.

This paper will explore the possible causes of female under-representation in the gaming sector through data collected in the qualitative research conducted with students and professionals employed in the gaming industry. This study's main aim was to identify the factors that condition the professional (non) choice in Portugal's digital games area and how these differ according to the gender of the individuals.

II. THEORETICAL FRAMEWORK

A. Cyclical model of exclusion and sexism

Digital games have a long history of construction as a male medium [10, 11]. The creation of a primarily male and youth culture around this medium helped it to establish itself in a world of constant technological change. However, this same culture has become a limitation to integrating women and other minorities into the gaming industry, such as the possibility of these groups building a career in this sector.

Kowert et al. [12] proposed a model of female exclusion in the video game industry based on the socialization processes of girls and women in a culture where male-centered activities and processes predominate and are produced mainly by men (see also [13, 14]). According to these authors:

the first two components (i.e., gender socialization processes and the lack of females in the video gaming industry) directly contribute to lower rates of active participation in, and motivation for, interacting within video game playing communities and industries among females. Consequently, these processes of exclusion are also likely to contribute to the sexist and misogynistic cultures that have come to characterize many online gaming communities. This third component of the model (i.e., exclusionary gaming communities) may be the crux for why gender differences in video game engagement within gaming communities and industries persist despite the popularization and growth of the medium (p.208).

Besides, the deep gender gap present in the digital games sector can be seen as a revealing function of gendered spaces, so it is essential to analyze genderization's micro-processes in specific contexts. In this paper, we focus exclusively on the Portuguese scenario.

B. Forms of exclusion of women in gaming: issues to be investigated

Although a large corpus of research has examined the different ways in which the female gender is excluded, both in the industry and in online gaming [15, 16], there is no same eagerness for analyses that focus on professional choice in this area [17], with many questions still to be explored. For example, how the curricula (formal and informal) of educational programs in digital games exclude women or how gender stereotypes influence attitudes and behaviors of developers, teachers, and students in the training context.

The most recent IGDA survey on digital game developers' satisfaction indicated that only 24% of the professionals who took on game developer positions were women [18]. This same survey also found that 33% of the producers perceive that this industry does not offer equal

treatment or opportunities. Overall, the data showed that these professionals are primarily young, white, male, and without children or eldercare responsibilities. Also, they are highly skilled, and most have training in specialized programs relevant to game design or development.

In turn, a qualitative study on gender distribution within Sweden's video game industry conducted by Nilsson [19] found that women were underrepresented, especially within production, tech, and leadership. There was an unequal gender distribution in occupational categories in the Swedish gaming industry, with most women working outside of production and being even less represented in leadership roles than the occupational roles themselves.

A mixed-methods study by Weststar et al. [20] also indicates the same phenomenon at work in the American digital game industry, identifying factors such as the average age of minorities inside the industry as an indicator of their relatively recent entry into this workforce. This study showed that besides women being more strongly represented in less programming heavy occupations, women in the digital games industry in the U.S. and Canada are also present in fewer positions of power than men, as well as reported receiving smaller financial remuneration regardless of their job or hierarchical position in the company.

Several factors underlie these critical situations, predominantly cultural [21], which show how cultural biases influence the way genders are distributed across the labor market, and how their work is valued in different fields, given the crystallization of gender stereotypes in the minds of individuals.

The initial formation of a masculine culture around video games, aided by the conceptions that technologies are inherently male, aided in the sectoral gender segregation in the video game field, which is still present today. However, the existence of women in this industry, albeit weak, indicates that more and more women are entering it. Some feminists, who celebrate gender differences, feel that women could contribute something unique to society [21] by providing new insights into, for example, video game narratives. Also, the increased representation would help minimize offensive content towards women and other groups discriminated against in this sector.

III. METHODOLOGICAL DESIGN

We conducted empirical research between 2018 and 2020 with students and professionals in Portugal's digital games sector, namely focus groups with students (three face-to-face focus groups) and interviews with professionals (via Zoom and Skype).

Two different open-ended question guides were developed, one applied to students and the other to professionals. The focus group with students focused on their gamers' experiences and their viewpoints on the relationship between gender asymmetries and gaming culture. The interviews with professionals focused on their experiences in the industry. In addition, all of them addressed their career choices.

The sessions were audio-recorded, and some were filmed. The participants were given as much time as they need to answer the questions freely, making the duration of each session (focus groups and interviews) ranged from 36

minutes (minimum) to 120 minutes (maximum). We transcribed each recorded session verbatim, and data were analyzed with the support of the NVivo software, using thematic analysis [22] to identify recurring themes and patterns.

We provided each participant with detailed information about the research, the conditions of participation, the guarantee of confidentiality, and the responsibility for disseminating the analyses carried out. All participants consented to the recording of the sessions. The data collected followed the privacy and confidentiality principles recommended by the H2020 Ethics Self-Assessment.

A. Participants

A total of 20 students participated in the three focus groups conducted (four students from a Graphic Design undergraduate degree, two from Industrial Design degree, and 14 from the technical short cycle degree in Game Design and Digital Animation). Of this, 9 were women, ranging from 18 to 35 years old (see Table 1). All of them were from a public Portuguese higher education institution. Participation was voluntary and did not follow any recruitment criteria.

TABLE I. FOCUS GROUP PARTICIPANTS

FG n°	Gender	Age	Degree title
FG1	Female	21	Graphic Design
FG1	Female	22	Game Design and Digital Animation
FG1	Female	35	Game Design and Digital Animation
FG1	Male	21	Game Design and Digital Animation
FG2	Female	19	Graphic Design
FG2	Female	26	Graphic Design
FG2	Female	20	Industrial Design
FG2	Female	21	Industrial Design
FG2	Male	26	Graphic Design
FG3	Female	18	Game Design and Digital Animation
FG3	Female	19	Game Design and Digital Animation
FG3	Male	18	Game Design and Digital Animation
FG3	Male	19	Game Design and Digital Animation
FG3	Male	19	Game Design and Digital Animation
FG3	Male	21	Game Design and Digital Animation
FG3	Male	21	Game Design and Digital Animation
FG3	Male	22	Game Design and Digital Animation
FG3	Male	25	Game Design and Digital Animation
FG3	Male	26	Game Design and Digital Animation
FG3	Male	28	Game Design and Digital Animation

Regarding the professionals, work experiences in the digital games sector were the only inclusion criterion. All of them were contacted through their professional emails provided by the Portuguese Society of Video Game Sciences and through the social networks Facebook and

Twitter. A total of 17 participated in this study, 9 of whom were women. Their ages ranged from 21 to 48 years old.

It was a rather heterogeneous group regarding educational level, the area of training, and the role they performed (see Table 2). Most of them had a bachelor's degree (10 participants), and the others had master's degrees in different areas (8 participants). Only one professional had a degree in sociology (female, 48 years old), and another had a degree in social communications (female, 33 years old). The others had degrees in multimedia art, 3D animation, computer science and IT, advertising, and marketing. Most of the women were game artists, and only one participant was a programmer (26 years old). As for the men, most were programmers, and only one of them with an occupation not directly related to game development.

TABLE II. INTERVIEW PARTICIPANTS

Gender	Age	Education area and level	Job role
Female	48	Sociology, Bachelor's Degree	Game developer
Female	33	Social Communication, Bachelor's Degree	Marketing lead
Female	31	3D Computer Animation, Master's Degree	Game artist
Female	29	Multimedia Art, Bachelor's Degree	Game artist
Female	28	Game Design, Master's Degree	Game developer
Female	26	3D Animation and Games, Bachelor's Degree	Game artist
Female	26	Digital Game Development Engineering, Master's Degree	Programmer
Female	25	Digital Marketing, Master's Degree	Marketing manager and streamer
Female	23	Digital Games and Multimedia, Bachelor's Degree	Advertising
Male	35	Computer Science and Engineering, Bachelor's Degree	Programmer
Male	30	Computer Science, Master's Degree	Game developer and Teacher
Male	30	Multimedia Art, Bachelor's Degree	Game developer
Male	26	Game Design, Master's Degree	Programmer
Male	25	Advertising and Marketing, Master's Degree	Marketing lead
Male	24	Computer Science and Engineering, Master's Degree	Programmer and 2D Art game designer
Male	23	Games and Apps Development, Bachelor's Degree	Game developer
Male	21	Computer Science and Engineering, Bachelor's Degree	Game audio programmer

IV. DATA ANALYSIS

In the analytical process, it was possible to identify that the professional (non) choice in the area of digital games goes through the contact with video games since childhood, the experience of creating their games before entering college, family influence, and differs according to the gender of the participants.

Note that we have not provided a detailed description of the coded themes due to this article's purposes (including

page limits) and better intelligibility of the analysis data. We integrate them into the overall analysis of the results. Also, we have chosen to make recurrent use of the excerpts from the focus groups and interviews.

A. Gender socialization process: video games as (serious) toys

The contact with video games since childhood was mentioned by almost all the participants in the study. One point of divergence identified in this category is related to how they were introduced to video games. While most of the women (students and professionals) had their first leisure contact with games through male figures (fathers, brothers, cousins, or neighbours), some male participants said they “awakened” to video games autonomously, without needing someone to include them in this process. The excerpts below illustrate this result:

My parents didn't want to... uh, actually they never bought me consoles, uh, so my first contact with games was, like, on the computer, when there was that old Windows, with that one, you write with C:// (laughs), and then you write the name of the game. However, they never bought me a console, for example, because they were afraid, I would get addicted (laughs). What happened? I went to my friend's house to play, so (laughs), or to my cousins' house (...) (female, 33 years old, professional, marketing lead).

(...) you end up realizing that much of your experience in video games, that is, my story that I had with my cousin many other girls have with... maybe it was their boyfriend who introduced them to games, or it was their brother or their father, so that's the story that I often see (female, 25 years old, professional, marketing manager and streamer).

(...) my father who saw me playing and has played with me since I was a kid (...) (male, FG3, 18 years old, student of game design and digital animation).

This result was a trend also found by Schott and Horrell [23] when they conducted a qualitative exploratory study with girls and women gamers. In their results, they characterized girl gamers as “watchers”. Thus, “by adopting the position of ‘watcher’ girl gamers appear to reinforce the positive association between masculinity and technology, which in turn elicits a sense of female inferiority in relation to gaming competence” (p. 42). A reality that leads girls to adopt a position of distancing themselves from the gaming culture [24], as we can confirm in this extract from a Graphic Design student: “my brothers wake up earlier on weekends to go play and can be all day at it and now, on top of that, they can play online with other people they don't know, forget it...” (female, FG2, 26 years old, student of graphic design).

One consequence of playing when one is “authorized” by others (identified more in the excerpts from the female participants) is to discourage the “passive” player from being a co-creator [25]. In this case, video games serve only as play objects.

In male professionals' interviews, it was possible to identify that video games were much more than toys. It was common for them to experiment with creating their games, as we can see in this excerpt from a professional:

(...) I've been experimenting a little bit with the idea of making games, maybe since I was 13, 12 - more around that time, uh, where I had several projects. I didn't necessarily have the necessary knowledge to execute them. However, there was already this idea of playing with tools like game engines, like Game Maker,

uh, tools that already had some accessibility, that didn't necessarily require technical knowledge to use them, but that was already able to execute some ideas with basic knowledge (male, 23 years old, professional, game developer).

In contrast to most of the girls and women interviewed, who just played or watched others play, the male participants said they also enjoyed modifying or creating their games. We found that this was a decisive factor for some of them to choose degrees related to technology and computer science, as this professional highlights:

Since high school, I had been making games like that, for, for game jams and stuff and... and then I thought, 'ok, maybe it's something', I'd like to try, but I still didn't want to get 100% involved, so I went to Computer Science; to learn how to program. Uh... even though... ok, I didn't know the career path to follow, uh, but I didn't look for it either, so I wanted to have an alternative in case it wasn't a viable career path (male, 24 years old, programmer and 2D art game design).

Therefore, while boys have been modifying and creating games since childhood or adolescence and may even have participated in game jams before going to college, we do not identify these same experiences in girls' and women's accounts.

B. Gender socialization process: family influence

Besides being a professional choice based on “viable” career paths that enable them to develop their games (said by the male professionals), this choice is also determined by family influence.

When we asked them about the (non) choice of the digital games area (training and job market), we verified how stigmas related to the gaming sector by family and friends influenced boys and girls differently in the choice of their professional careers. The fragments below summarize the family's influence on this choice:

(...) I, for example, when I told my parents that I wanted to come here, they... my mother didn't understand me because, you know, but my father, who has always seen me play and has always played with me since I was a child, understands where this could lead me. When my grandparents said that I was coming here to do nothing, like X said, “to make cartoons,” my father was the first one to contest and say that this is what is going to get me jobs in the future, not medicine, law, psychology, it's this degree basically (male, 18 years old, student of game design and digital animation).

(Before) I attended Architecture because my mother said “you're going to Architecture” and, you know, that's how it is. My mother, for example, encouraged me to draw, but she didn't encourage me to play games. Nobody encouraged me to play games. When I said, uh, when I started saying that I liked to go into games, into college, uh... practically nobody told me that it was a good idea (female, 26 years old, professional, game artist).

Overall, these results suggest that “at home, boys reportedly receive more support and encouragement from parents to use computers and technological products” ([26], p.303). This trend was also found in some research, such as Wong and Kemp [26], Archer et al. [27], Vekiri and Chronaki [28]. For example, in the research developed by Archer et al. with 160 parents and children aged 10 to 11 years [27], these authors argue that:

children's aspirations and views of science careers are formed within families, and these families play an important, albeit complex, role in shaping the boundaries and nature of what children can conceive of as possible and desirable and the likelihood of their being able to achieve these aspirations (p. 902).

Furthermore, some family members seeing game-specific degrees and courses as a “waste of time” or “just learning how to make cartoons.” We found that gender stereotypes within the family were mentioned as determinants in the participants’ career choices. For most of the men interviewed, a degree in Computer Science or IT is a “safer” choice [26] to attain job roles in the gaming industry. In turn, some female professionals “bypassed” their career aspirations in the digital gaming sector by first going for “acceptable” degrees or courses within the family, such as Art, Architecture, Design, or Marketing. These stereotyped discourses were also reinforced by friends, teachers, and the media.

C. The fallacy of programming

Another aspect highlighted was a false idea that it is necessary to know programming to make digital games. The extracts below exemplify this aspect:

I thought about game design because, you know, I also really liked to play games, and I confess that I thought about the programming part and I've never been very good at math either, so it was one of the limitations... I confess that when I thought about it, I immediately said “programming? No” (laughs), maybe I don't like it either (another female participant adds “that's what crossed my mind too”) (female, FGI, 21 years old, student of graphic design).

If, for example, a pair of siblings, a girl and a boy, the boy can stay playing until late, and that's normal, and a girl also wanting to play until late is seen as something different... of degree, this also discourages women from wanting to enter a course like this, or this type of degrees, because they will think, “ah there will always be someone better than me.” Especially if the degree is much more focused on programming because there you go, it's also the image sold to us from a young age, which affects our decisions... (female, 23 years old, professional, advertising).

The emphasis on programming appears to discourage them from specific degrees in digital games, besides being a way to fool young people who want to be game developers, as said one professional:

Learning to program video games is an excellent way to trick young people into motivating them to do something they like... which is games (...) I think that creating video games is not engineering. I disagree with this classification. Portugal is one of the few countries in Europe where video game production is part of the technological industry and not an expression of the cultural (female, 48 years old, professional, game developer).

In the Portuguese context, although there are more degrees with an emphasis on game design and arts (audiovisual and media production area) [6], the advertising of these courses seems to be more focused on the computational technical component than on the artistic and creative one. A female professional addressed this:

How are colleges advertising these courses, where are they getting people from? That is my question, because if the advertising... if the way to make games is... is... to come to computer science, I don't know, if you know how to program, comes (...) I think that this is what scares many times (female, 28 years old, professional, game developer).

In Portugal, digital games’ multidisciplinary nature is not fully assumed in higher education institutions’ degrees [29]. A multidisciplinary curriculum’s focus could be a strategic action to enhance this knowledge area, avoiding its narrowing into partial visions, such as solely computational, technological, artistic, or communicational visions. The immediate effects of degrees and vocational courses

effectively focused on this multidisciplinary character could change, for example, the game development profession’s perception.

D. Stumbling into the gaming industry

Another category identified refers to the desire to work in the gaming industry. While the Game Design and Digital Animation students recognized that the Portuguese industry was small and could do freelance work or even do other academic training, the professional women told us that, although they enjoyed gaming, working in the industry was unexpected. When talking about their entry into the gaming industry, many of them used the expression “by accident”:

I never imagined that I would work in this industry. I fell here a little bit by, by accident. However, I've been playing since forever, and I think it's one of my main sources of, of entertainment today for me (female, 25 years old, professional, marketing manager, and streamer).

I started working at a company that made serious games. We made games more geared towards the senior audience, and... it was-it was kind of by accident (laughs). It was, I got out of college, and I was looking for a job, and they had an opening at that time, and that's when I joined (female, 26 years old, professional, programmer).

Previous research suggests that exclusion and sexism in video game culture are socialized from an early age, with different expectations and interests encouraged for boys and girls [11, 24]. By saying, “I never imagined that I would work in this industry,” these women are expressing how the micro-processes of exclusion and sexism in the digital game sector have repercussions on their career aspirations. This exclusion cycle can also drive them away from tech and digital careers. According to Wong and Kemp [24], “in terms of digital career aspiration, the heterosexual matrix can shape the ways in which boys and girls consider (or not) particular digital careers as more suitable for their respective gender, which is governed and shaped by dominant gendered discourses” (p. 303). These are questions that we intend to explore in future research.

V. CONCLUSION

The under-representation of women in the digital games industry is still a persistent and cross-cultural phenomenon. Although it is an empirically proven phenomenon in many countries, we do not see consistent research in Portugal.

This study offers a contextualized analysis of the practices that result (and produce) gender inequalities in this sector, specifically how gender stereotypes and the exclusion model of women in gaming culture have repercussions on professional (non) choice.

In this paper, we prioritized the participants’ narratives using testimonies to illustrate the analyzed categories for data presentation and discussion. By giving visibility to students’ and professionals’ narratives about what conditioned their professional aspirations in the digital games area, we highlight women’s micro-processes of discrimination persisting in the Portuguese context.

The results of this research suggest at least three different fallacies: 1) the previously mentioned fallacy of programming; 2) the fallacy of digital games’ “unviability”; 3) and the fallacy of digital games as a gendered artifact.

Starting with the last fallacy, although digital and video games are commonly associated with boys and men, the women interviewed also showed that these artifacts were an essential part of their leisure times during their childhood and teenage years. The identified “awakening” vs. “introduction” to digital games and gaming in both men and women serves to show how gendered the use of this medium is in our society, in such that male figures in these women’s lives were their gateway into the world of digital games. In contrast, the men showed that they were left to discover this same world by themselves. This “need” to introduce girls to games and gaming may be related to the cultural idea/stereotype that technologies are inherently related to the male gender. As such, the female gender is naturally pushed away from exploring it on their own.

The second fallacy is related to digital games’ perception as “unviable,” i.e., unprofitable professional choice. As seen in the interviewees’ accounts, male participants show more significant support from their relatives in picking the digital games sector as a profession, despite the existence of stigmas related to gaming culture and industry. In turn, most of the female participants were rarely encouraged and, most of the time, told to follow a different career.

Finally, the fallacy of programming tells us that digital games are perceived as merely (and sometimes exclusively) technological and, as such, a career that integrates the ideals and skills attributed to men by western societies. This means that men are perceived as more well-equipped to build a career in this sector than women.

This gendered perception of abilities combined with a lack of knowledge of the multidisciplinary that comprises the digital games industry, acts in order for these families to perceive this career as more male appropriate than female appropriate, contributing to the cycle of exclusion of women and girls from academic, educational and professional circles in the digital games sector. This then shows that the main factor for the (non) choice of this sector as a professional option relates to the perceived gendered social constructs combined with the stereotypes that arise due to a lack of knowledge of the digital games sector.

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