Analysis of the Characteristics of Digital Content with High Freedom in Interactive AVG Games

—Taking *Melody from Harem* as an Example

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ABSTRACT: With the growth of the female economy, many games have emerged in recent years that specifically focus on female players as their main customer group. A new form of game, the interactive AVG game, offers players higher autonomy and interactivity, attracting a large number of female players. This paper studies a popular interactive AVG game, Melody from Harem, based on its rich digital content, such as digital storytelling, game mechanics, spatial properties and game goals, to investigate the design strategies of games with female target user group. AVG games are currently in a double marginal position in the game industry and academic, but they have a higher user retention rate beyond that of mainstream games. Therefore, the research on AVG games is of great significance to the development of China's female digital game market. The study found that interactive AVG games adopt the strategy of involving players in story narration, and through rich interactive game mechanics, appropriate setting of scenario element, both absolute and relative goals to ensure players' interactivity, autonomy, immersion and pleasure value in the game, and ensure that the game can gain high user stickiness with players' loyalty. With the development of women's games, the excessive sexualization of female images in traditional digital games has been corrected, but it has not completely disappeared, and female stereotypes can still be seen in some games.

1. INTRODUCTION

In the formation of digital game subculture, mainstream games have been dominated by male, and female gamers were in a marginal position [1]. However, in recent years, with the development of "female economy", the digital game consumer market for female has increased by leaps and bounds. According to the 49th Statistical Report on China's Internet Development by China Internet Network Information Centre, approximately 48.5% of Chinese Internet users were women [2]. In addition, the number of female game users in China has reached 300 million in 2019 [3]. The gender ratio in the game market tends to be balanced. A large number of female gamers come into the market, which makes the participants of digital game subculture gradually transition from male dominated to the whole people. Due to the great differences between men and women in preference game types, media habits and consuming behaviours, many games which are exclusively targeting young women have emerged in recent years, such as Mr. Love: Queen's Choice and Tears of Themis. This kind of games have gained a big amount of market benefits, showing the consumption potential and economic value of female gamers.

Dokific is an interactive reading game platform of NetEase, which focuses on female users, and mainly provides AVG games. The AVG games mentioned in the paper originated in Japan. The earliest gameplay is that players intervene in the process of the game through the branch option of action or dialogue of the character. It is also called interactive electronic novel. This kind of game is a type of interactive novel with visual symbols. The game has abundant static pictures and video clips of animation characters or real characters, as well as a large number of words. With the progress of technology, on the basis of this early generation of plot based AVG game, another new game form - Interactive AVG game has been developed. The game has both vivid plot and the gameplay of attribute cultivation, which provides players with various free choices and higher interactivity.

Since the Chinese version of Dokific was released in March 2018, it has attracted more than 10 million active users within a year and preeminent above the Orange Light Games, which had remained the brand leader of similar game platforms by a huge margin for many years. The success of Dokific was largely due to the high-quality and tremendous amount of game works on the platform. Up to now, more than 2000 AVG games have been launched on the Dokific. Among them, 15 of the top 20 games are interactive AVG games. The most popular game *Melody from Harem* has more than 700 thousand users likes and 1.3 million comments. Users can be seen discussing the game on various popular social platforms, such as Weibo, Xiaohongshu and Bilibili.

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Compared with similar interactive AVG games, *Melody from Harem* has made outstanding achievements. But in fact, in the whole game market, the market share of this kind of game is barely present. In Chinese game market, RPG (Role Playing Games), MOBA (Multiplayer Online Battle Arena) and STG (Shooting Games) are the mainstream. In other words, interactive AVG game is a kind of niche game in a marginal position. However, many female gamers of this kind of game said they would play repeatedly, and most of them have gamed lasted for hundreds of hours. It is far longer than the play time of users of some other mainstream games. The phenomenon that the higher user stickiness of interactive AVG games is of great research value.

2. LITERATURE REVIEW

With the rising popularity of digital game, the research in academia of games have been gradually mature, many scholars have studied on digital game content models. Malliet believed that the elements of video games can be divided into elements of representation and elements of simulation. Based on the two elements classification, he developed a general analysis scheme with seven topics, namely audio-visual style, narration, complexity of controls, game goals, character and object structure, balance between user input and pre-programmed rules, and spatial properties of the game world [5]. Tang and Hanneghan proposed a new game content model based on the work of GOP, RAM and NESI which provides a reference for game designers to standardize the game structure. The model consists of ten interconnected core definitions that best represent the mechanics, gameplay, and aesthetic symbol content of digital games. They are Game Structure, Game Presentation, Game Simulation, Game Rules, Game Scenario, Game Event, Game Objective, Game Object, Game Player and Game Theme [6]. Hendrikx and three other scholars focused on the field of PCG-G and a six-layered taxonomy of game content was introduced thoroughly, which consists of bits, space, systems, scenarios, design, and derived [7]. In addition, some scholars have conducted case studies on virtual reality game which also provided references on the dimensions of digital game content research. Nijdam studied a game called *Gufihtara eallu*, which could provide the gamers with interactive narrative experience like AVG games. She introduced the game with the digital storytelling, interactivity design, game mechanics, and user experience [8].

In the above literature review of content model studies, most scholars would discuss the content of digital games from the aspects of digital storytelling, game mechanics, spatial properties, game goals and so on. In terms of digital storytelling, Oliver explored the relationship between play and digital storytelling and indicated that enjoyment of players can be enhanced through interactive play to engage players in storytelling, where gamers are both creators and protagonists of an ongoing story plot [9]. Some scholars focused on the field of education and studied the role of storytelling in educational video games. The conclusion is that digital storytelling is not only a motivational element, but also a reward [10]. They proposed the organize components of digital storytelling including the Educational and Ludic Contents, and the Story General Dictionary (SGD) with Scenarios, Zones, Regions and Characters [11].

Many of the research on game mechanics focuses on how to apply it to non-game contexts, and few scholars pay attention to the characteristics or design of game mechanism itself. The related fields generally involve education, interactive urban regeneration design, e-health and so on. When studying digital games and learning, Clark and his team concluded that the effect varied according to the game mechanics characteristics. And they emphasized the key role of design beyond medium [12].

In the element of spatial properties, many scholars focus on the impact of game scenario on players. Aranha's study found that the game scenes can influence gamers' engagement [13]. Through the research on Seeker, Toma found that the lack of scene ordering and the limited number of provided hints may bring negative game experience to players [14]. Ermi and Mäyrä used a scenario-based player study to inform the player-centered game design approach could provide useful information and inspiration for design [15]. Wang believes that the game scene has become a new carrier of culture and art, and by adding buildings with regional cultural characteristics to the scene design, it enhances the cultural attributes of the game and the sense of immersion of players [16].

In addition to the above three elements, another concept related to digital game content is game goal. Elverdam found that a game can feature both types of goals. One is the absolute goals whose outcome is quantifiable without considering in the subjective player(s) playing the game or the specific events. Another is called relative goals which means that the goals are not necessarily the same in different games, or even between different players [17].

Another research fields related to this paper is interactivity of digital game. Many scholars have found that the interactivity of digital games will directly affect the game enjoyment and the enjoyment promotes user satisfaction [18][19]. Hefner propose that the identification of game characters, that is, the self-perception of gamers who change during the game play, is as the mechanism of computer game enjoyment. And game interactivity is seen as a key driver of strong identification [20]. Merikivi concluded that continuous digital game use, that is, player stickiness, is driven to a very large extent by enjoyment, which is primarily driven by the interactivity, visually attractive and playability attributes of ease of use [21].

The above research helps to understand some background information content. However, there are still some scientific research gaps. Most of the research on game digital content is to explore the function of educational game in students' learning, but few studies have been conducted on the content of game itself. In addition, there is a lack of research on AVG games. For example, the researcher searched terms of "AVG game" or "Orange Light Games" on CNKI, and only 29 literatures

studied AVG games. Most of them focused on the development and design of such game applications in the field of education, and there was a research blank on the characteristics of highly interactive AVG games. Although the AVG game is in a double marginal position in the game industry and academic, the discussion of such games is of great significance to the development of Chinese female digital game market. This research will study the most popular game *Melody from Harem* of the game platform Dokific, and explore the game behaviours preferences of female players by studying its game characteristics, in order to put forward some feasible suggestions for women to the game design strategy.

3. RESULT AND DISCUSSION

3.1. Digital Storytelling: Gamers are both creators and protagonists of their own game story

Interactive AVG games provide players with a participatory experience through digital storytelling and the behaviours of gamers constitutes an important part of game narration. The theme and principal line of this narrative based on player selection are uncertain. It forms a way of "nonlinear narration" [22]. Specifically, it is to let players participate in the creation of the ongoing game plot. Players are not only the protagonist, but also the screenwriter of their own story. It can not only ensure the enjoyment of players' experience, but also increase the sense of immersion and substitution by allowing players to create stories of virtual avatars similar to their own real self-concept and experience.

There is no main plot preset by the designer in the *Melody from Harem*. Players can freely choose which scene to go to, which NPC to interact with or which attribute to improve. In order to enrich the game play, the architect added some branch plots. However, players are also free to choose whether to start the branch plot. In the branch plot, players can go for different branches to different endings as well. The narrative structure is similar to the game narrative proposed by Bremond [23]. For example, in the siding story of supporting character Liang Chengbi, protagonist can opt for whether to make her a concubine through dialogue with the emperor. In the follow-up, the player will have several random plot dialogues with Liang, in which can understand her temperament, background story and so on. If gamer want to trigger the ending plot, some certain conditions should be met, that is, the protagonist becomes the empress and Liang's position reaches the second-rank or above. In the finale of this branch plot, different choices will determine Liang's different ending. If the empress decides to execute Liang, gamer will get five skill points which are used to improve the avatar's attribute. Players can also let her go and demote her as a slave, and then they will not get other rewards.

In addition, in the narrative, the designer will ensure that players can be fully immersed and put the reality to virtual avatars through the presentation of some details.

Officially entering the game, gamers will know the era background and the protagonist identity through the voice-over guidance, that is, they will become the emperor's concubine through the draft. In the follow-up, such narrator guidance will no longer appear, and the work of reminding players of action will be replaced by more reasonable supporting roles such as eunuchs and palace maids. At the same time, supporting roles in *Melody from Harem* are divided into random ones and fixed ones. The names, attributes, characteristics and character animation of random supporting roles are randomly generated, that is to say, exactly the same supporting roles cannot be found between players, or even in different game rounds of the same player. Some players will associate the story through the attributes and family background of the random supporting role. And some will associate her story through the similarities between the supporting role and the role of harem struggling TV plays, so as to put the story of the characters in the film and television drama into the supporting role of the game. Such randomness gives players more associative space and surprises in the process of playing.

Moreover, there is another kind of specific supporting role in *Melody from Harem*, and the story is set by the game author. By showing various stories of female supporting roles, designers can also enable modern young women to find identity in the game background of ancient feudal society. Although the character's story is carried out by the plot present by the author, gamers are more likely to resonate when they encounter characters similar to their own experience, personality or other aspects. The author shows a variety of female role portrayals through the stories of these female supporting roles. When the modern female consciousness is presented in the context of ancient feudal society, these roles with more modern thinking can be recognized by modern young female gamers.

The priority of AVG games targeting female users is to construct a story that women can identify with, and then through immediate feedback, let the players fall into the narrative pre-determined by the designer step by step as the plot progresses to achieve a deep sense of immersion. The design of players participation in digital narrative makes the player's choice behaviours in the game autonomous and arbitrary. The autonomy refers to the fact that the player can manipulate the behaviours of the virtual avatar according to his own will within the framework set by the game developer. This autonomy and sense of control based on the self-determination theory are intrinsically motivated by the external incentive of participating in the creation of the story, which effectively ensures the attraction to the player. And randomness allows for more possibilities in the game narrative, increasing the sense of unknown and mystery of the game. Through this continuous and dramatic game story experience, players seem to have experienced a real life, exploring more possibilities in the repeatable virtual space of the game, so as to realize their personal value.

3.2. Game Mechanics: Enrich the player experience but solidify stereotype of female social roles

Unlike the early generation of AVG games, which focus on the design of plot, interactive AVG games such as *Melody from Harem* paid more attention to the design of game mechanism. Architects will design a variety of interactive gameplays, which really enrich the game experience and pleasure of players. However, almost all elements of games express the author's understanding of realistic cultural. Inevitably, the game mechanics meticulously designed by developers also reflect the cultural orientation of the real society. Therefore, some gameplays in the game will also reflect the inherent stereotype of female social roles and the unequal relationship between men and women in social culture to a certain extent.

At the beginning of the games, each player will create a game avatar, set the address and other characteristics for it, such as age, family background and so on (these characteristics do not have to be consistent with the gamer's real information). Gamer's regard virtual avatars as an extension of themselves in the game [24]. Attribute cultivation is one of the indispensable gameplays of *Melody from Harem*. When playing the game, gamers will project their internal expectations onto the game characters and carry out short-term self-construction in the virtual environment. Therefore, players will pursue the improvement of the attributes of the virtual avatar. For example, if the player wants herself to be beautiful, she will pursue that the attribute value of the protagonist's appearance is high. In *Melody from Harem*, the attributes of the characters include appearance, temperament, body shape, and proficiency of calligraphy, dance and other talents; however, the design of these attributes is related to society's inherent image of female. Due to the influence of a historically patriarchal society, men have to some extent treated the female body as an object of aesthetics and consumption. Therefore, even in games, appearance is still considered the most important trait for women compared to character and ability.

The other two important game mechanics in *Melody from Harem* are to improve the goodwill of non-player characters and to have royal children and raise them. Under the gameplay of raise the favourability of NPC, the protagonist, as one of the emperor's concubines, in addition to raise the emperor's favour value, gamer can also raise the goodwill of other concubines by giving them gifts. It seems to carry out a friendship with NPCs, but in fact, in this part of the gameplay, the protagonist is replacing the role of the emperor and transposing into a male to gaze at other female characters. In fact, female players are still in the discursive mode of traditional video games that cater to male players' interests. The visual pleasure and gender political discourse that female players get by gazing at the supporting characters still remain in the male-dominated gender discourse and logic of desire. The other game mechanics is to have children and cultivate children. The protagonist can also arrange a marriage partner for the child when he or she reaches adulthood. It is undeniable that such game design enriches the gameplay, but at the same time, it is also a reflection of the phenomenon that marriage in Chinese society is more interfered with by parents, and a hint and reinforcement of the social role of women as "mothers". Even in the game, women cannot escape from the social responsibility of bearing the next generation and the family responsibility of raising children.

In addition to the novel-like plot setting, the game also adds the function of virtual socialization with other characters, which can enhance the players' game stickiness. At this time, players are no longer simply immersed in the simple game, but can also increase their reality by communicating and interacting with the supporting characters. Although the protagonist and some specific supporting characters have certain pre-determined plot settings, they do not have any subjective thoughts and emotions themselves. Therefore, players project their own thoughts and subjective emotions onto the characters in the game process, and the characters become the virtual selves presented by gamers through the performance process, and players will unconsciously compare their virtual selves with their real society selves. Virtues such as kindness and diligence of the characters will motivate players to aspire to be similarly excellent in real life and have a positive impact. However, at the same time some game mechanics that would solidify the traditional social image of women, creating a false utopia of gender political discourse for female players, can also have a negative impact on the development of mass female consciousness to some extent.

Although the interactive AVG game represented by *Melody from Harem* has multiple game mechanics, it is still essentially an interactive novel containing visual elements. And whether it truly belongs to the category of games is still controversial. In addition, with the strict control of the game license number by the State Administration of Press, Publication, Radio, Film and Television of China, only games with single content can be approved and issued with a game license number. The nature of the platform of Dokific's collection of AVG games has already determined that it is not qualified to apply for a game license number, and therefore Dokific has been removed from all major application stores in China, and players can only enter through the web portal to play. At the same time, due to the increasingly strict government censorship of game content, game containing rumor-mongering and poisonous gameplay may be considered not to be well-oriented to values. Therefore, interactive AVG games such as *Melody from Harem* on the Dokific face the risk of being rectified, and their development prospects are unknown for the time being. Based on the situation, Dokific launched an overseas version for the European and American markets in March 2022, but at present the games on it are basically carried directly from the domestic version. Except for the English translation of the introduction of the work, most of the game content is still presented in Chinese. It seems that the current user group is only overseas Chinese, and the future development is yet to be examined.

3.3. Spatial Properties: Appropriate number of scenes ensures enjoyment and ease-of-use

The spatial properties in the game create a virtual world from the material level through the design of various environmental details such as landscape, architecture and props. Because the work content of game scene design has two key points [25], including the construction of the material world and the embodiment of the situation, it will affect the playing experience of gamers in both visual level and game operation. The designers of *Melody from Harem* attached great importance to the design of game scene. In terms of perspective selection, in the *Melody from Harem*, the architect chose to present the front view in the specific scene space, while in the game map, he chose the top view, and the size of each palace is similar, which puts more emphasis on the plane space form of the game scene. The space scene is displayed in two-dimensional plane space rather than depth of field space, which is more in line with the visual preference of female users [25]. In terms of element presentation, in order to reflect the space-time background of the ancient court, the scene and UI design of *Melody from Harem* are of ancient style. In addition, for the sake of making players feel more immersed, when the time and season in the game change, the scene will change accordingly. For example, the indoor scene is dark outside the window at night, and the lights in the palace are on; In the winter scene, there are snowflakes whirling about in the sky. In terms of the number of scenes, the game map of *Melody from Harem* includes 14 specific scenes. Most interactive gameplays can be realized in the protagonist's palace. In addition to it, there are no more than two interaction mechanisms in other scenes so that players clearly know which actions can be taken in which scene. The arrangement of scenes is clear and easy to understand, which ensures the ease of use of the game.

On the whole, inappropriate or too few game scenes cannot fully reflect the situation described in the game world outlook and game story, and would reduce the players' sense of immersion, resulting in a negative game experience. Too many scene visual element arrangements or scene space settings will lead to too complicated in vision or operation, affect ease of use, and also reduce the pleasure of players. Therefore, only an appropriate amount of scene setting and element layout can ensure ease of use, interactivity and enjoyment of gamers at the same time.

3.4. Game Goals: Have both absolute and relative goals, induce gamers to play repeatedly

Game goals can generally be divided into absolute goals and relative goals. For example, in MOBA games, players take winning a single game as their goal, and this quantifiable result is the absolute goal. In most stand-alone games, such as Tetris, players pursue higher game scores, which is the relative goal. Most games can only include one goal, but interactive AVG games include both goals. *Melody from Harem* provides gamers with four initial identities, which can be freely selected. Gamers can be a concubine who are drafted by the emperor and enter the harem, the princess is sent by neighbouring countries to make political marriages in order to cement relations with Central Plains Dynasty, a concubine pardoned from the cold palace or the empress who has taken charge of the harem. The difficulty of the game is different by different beginnings. Although there is no main plot in *Melody from Harem*, due to the gameplay of rank promotion (except the opening with initial identity of empress, the protagonist is at a lesser position at beginning, which can be promoted by increasing prestige), when the prestige attribute value reaches 2200, the result of becoming the empress can be quantified. So, it has become the absolute goal of most players. Training the son to become the crown prince and playing until the protagonist dies a natural death can also be part of the absolute goal of this game. But at the same time, players are not required to achieve these quantifiable results. These absolute goals that can be quantified are different in each game because of the gamers' choice. The player can abandon the branch spot of a supporting role in the previous game and complete the branch story in the next game to reach the ending. Therefore, the players' game goal is a relative goal in this case. To sum up, the players' motivation includes both cumulative achievements and free exploration, that is, the player not only expects to make quantifiable progress through challenges and continuous investment, but also wants to explore the game content without restrictions within the scope specified by the game designer. Therefore, the game objectives of players at the operation level include attribute growth, content unlocking, discovering the unknown and free action. Including both absolute and relative goals in the game can not only ensure that players have the motivation to play in one game, but also be inspired to explore more content in the next game. This is undoubtedly one of the reasons why interactive AVG games such as *Melody from Harem* have ultra-high user stickiness.

4. CONCLUSION

The research investigates one of the most popular interactive AVG games on the Dokific, *Melody from Harem*, which is an interactive digital novel with rich visual symbols, both moving plots and attribute development gameplay, providing players with higher autonomy and interactivity. The researcher investigates the characteristics of the rich digital content in this game, i.e., digital storytelling, game mechanics, spatial properties and game goals, in order to explore the design strategy of the game with female target user group and to make some feasible suggestions. The paper argues that in terms of digital storytelling, allowing players' game behaviours and developers' design to jointly constitute the game narrative, creating a female-identified story and a game experience rich in continuity and dramatic can effectively achieve a deep immersion for players. The varied interactive game mechanics enhance the player's sense of reality, and the player presents the virtual self in the game by projecting her own internal expectations onto the game character for short-term self-construction. The virtual and real selves interact with each other and have both positive and negative effects. Inappropriate space

scenes may lead to negative game experience for the player. The right amount of scenes and elements can ensure ease of use, interactivity and pleasure at the same time. Including both absolute and relative goals in the game means that players' motivation to play at the operational level includes attribute growth, content unlocking and discovery of the unknown, and freedom of action, which can increase users' play time and loyalty and ensure that the game can obtain high user stickiness. Based on the case study of this paper, the researcher found that games with female players as the main customer group have a wide market in China. Meanwhile, by developing the game genres that set female protagonists, stereotypical images of female characters can gradually disappear and the excessive sexualized female images in traditional digital games have been corrected. But at the same time, the design of such games also needs to avoid the solidification of stereotypes of women's social roles. Bringing in a feminist perspective to promote gender equality at the intersection of online virtual and offline reality.

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