

The Role of Onlookers in Arcade Gaming: Frame Analysis of Public Behaviours

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Abstract

In this article we bring onlookers to front stage. Normally considered invisible participants in video game arcades, their multiple and fluid roles are key to establishing interactional frames in public gaming spaces. We identified three such frames – *showroom*, *gymnasium*, and *clubroom* – after analysing interactions and finding examples of self-presentation in Taipei's largest gaming arcade. According to our observations, the nature of gaming scenarios is largely determined by the relative skill levels of players and onlookers, with participants playing their roles in relation to the currently active frame. Onlookers provide cues that signal dynamic frame shifts, thereby collectively maintaining the gaming environment while distinguishing themselves from outsiders. Our study uses a social interactional approach as a complement to fun- and/or play-oriented game research.

Keywords

amusement arcade, gamers, gaming space, Erving Goffman, interactional frames, onlookers, presentation of self in public space, role-playing, video games

Introduction

The digital gaming experience is not limited to what takes place between gamers and screens, or among players who cooperate with and compete against each other in virtual or physical worlds. In this article we address the roles of *onlookers* – an important yet often invisible group of game participants – in shaping gameplay experiences in an amusement arcade in Taipei. Instead of

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examining the specific effects of emotional arousal in players, we will adopt a symbolic interactionist perspective based on Goffman's (1974) *interactional frames* to analyse how players and onlookers present themselves while negotiating and validating their identities in face-to-face encounters in a public gaming setting. Our main argument is that the technological and public space characteristics of amusement arcades facilitate specific interactions between player gaming experiences and social relations. Accordingly, the presence of onlookers and their relative skill levels encourage dynamic alternation among practice, recreation, and performance. As gaming situations change, interactions between players and onlookers also vary in subtle and sophisticated ways.

Our primary research concern is determining how the presence of onlookers affects gameplay. In a public playground – where audiences frequently consist of players waiting their turns, friends of players, or casual visitors attracted by performance – how do players define situations and act upon or react to them? By placing onlookers and bystanders in more prominent positions, we will define the roles they play in influencing player behaviours, identifying interactional frames, and shaping gaming experiences. Our goal is to achieve a better understanding of the social characteristics of gaming and of interactional structures in public spaces.

Literature Review

When investigating the relationship between players and other persons in their presence, researchers have generally focused on co-play relationships or performer-audience connections. Accordingly, onlookers have for the most part been pushed into the background in favour of elaborating on players' cognitive processes or describing player agency when dealing with out-of-game interactions. We will instead consider the complex and dynamic features of the player–onlooker relationship, based on our understanding of the social characteristics of game-playing. In our previous research on the writing, sharing, and use of game tips by console game players (Sun et al., 2006), we reported that even an 'imagined audience' can influence player choices and actions. Here we will use Goffman's (1974) tactic of observing onlooker behaviours in the context of recognized frames. Building on previous efforts to understand shifts in degrees of player immersion when audiences of either strangers or companions are present, we will look at (a) how player–onlooker social processes facilitate movement among several forms of enjoyment, and (b) the collective negotiation of gaming norms and interactional frames in public arcade spaces.

Player–Audience Relationship

Lazzaro (2004) emphasizes the perspective of gaming as a mechanism for players to produce social experiences. Through gameplay, players create opportunities for interpersonal interactions and societal connections. Almost three decades earlier, Mehrabian (1976) observed that the sense of fun triggered by interactions during gaming experiences is not limited to players, but also includes spectators, casual observers, and other outsiders. Group play can certainly encourage new gaming behaviours and rituals and add to the players' sense of excitement. However, we believe it is important to acknowledge the potential for enjoyment among onlookers as well as between players and audience members.

Goffman (1961) addressed the topic of play and interaction among spectators when using games as a defining example of social encounters. With their fun-oriented elements of roles and rules, gaming encounters help signify focused gatherings in which ordered interaction occurs. Goffman

(1981) used such settings to establish an insightful analytical framework for studying interactions among players (by-play), among spectators (side-play), and between players and spectators (cross-play). Using Goffman's paradigm, Simon (2006) further distinguishes between play-next-to-other and play-with-other contexts in both digital and face-to-face gaming situations, and analyses various social contexts in which players assume their specific positions and roles. After describing three scenarios (playing at a LAN-game-party with hovering spectators, sitting side-by-side with other players in an internet café, and playing in the presence of others who are neither gaming nor spectating), Simon points out that gaming encounter scope goes beyond the model of the game in question. However, since onlookers are still considered peripheral within such encounter frameworks, they can either enhance or detract from the participants' engrossment, yet never take centre stage.

Social Facilitation/Choking

Researchers have used social facilitation theory to examine the effects of audience presence/absence on players, noting that audiences can promote positive performances among good players and inhibit them among poor players. Taking game complexity into account, Kimble and Rezabek (1992) found that when playing a simple game such as pinball, the good players they observed frequently performed worse and poor players better under audience pressure. However, when playing a complex game such as *Tetris*, all participants played worse regardless of skill level. In addition to positing the presence of a 'social choking' effect in such situations, Kimble and Rezabek suggested that good players tend to be more self-conscious and self-evaluative, that self-attention is an interfering factor during play, and that good players are therefore more likely to underachieve in the presence of audiences.

Social facilitation theories for gamers have been derived from theories about performer–audience relationships in traditional competitive arenas or performance theatres. In arguing that social presence by itself is insufficient for explaining the effects of social context in gaming, Jakobs et al. (1997) considered the effects of social characteristics (e.g. co-experience, emotional display, communication potential, and opportunities for monitoring performance) on shaping participant emotions in certain social contexts. They suggest that overt emotional displays exert greater impact compared to the simple presence of others. More recently, de Kort et al. (2007) have suggested that the ways in which onlookers make evaluations are highly dependent on their relationships with players and their ability to monitor performance.

Arcade Gaming

Game machines in amusement arcades are open to public performance to varying degrees that shape player–onlooker relations. One of the most 'radiating' game types – dancing machines such as *Dance Dance Revolution* (DDR) – have received a great deal of research attention owing to their characteristic of attracting onlookers, which transforms play into performance. Noting that successful DDR experiences are highly dependent on onlookers, Smith (2006) considers them examples of public demonstration and competition. In arguing that DDR is more than a game, he notes that visitors to game boards and websites divide DDR players into the categories of technical and freestyle dancers – the latter referred to as 'real dancers.' While technical dancers are skilled in terms of accuracy, freestyle dancers introduce upper body movements, directly face their audiences, and purposefully express their own artistic styles in order to create extra excitement.

Healey and Light (2007) have investigated arcade gaming in the London area – especially DDR and *Para Para Paradise* (PPP), a dancing game with a strong focus on hand motions – and commented on several known features of expert player communities. They report that players belonging to different levels tend to use the machines at different times of day, with experts choosing peak hours to ensure the presence of large numbers of onlookers. Each arcade has its own expert player community, with members being aware of each other and their performances, even if they do not compete at the same time. Other researchers have observed that the social contexts of these kinds of communities go beyond arcades. Andrews (2006) describes DDR players as having their own online meeting places for discussing style, courtesy and special dance patterns. Behrenshausen (2008) has analysed performer–audience negotiation in parallel with identity formation, bodily competition, and meaning-making – all based on a clear delineation between performers and audience members.

Goffman in Play

In contrast to the tendency among researchers to treat onlookers as ‘others’ who exist outside of clearly marked gaming spaces, we will purposefully put onlookers in the forefront in order to better understand the inter-subjectivity that exists between them and players. Gaming arcades are not just public spaces for strangers to share momentarily. Their specific settings, player communities, and community histories shape the characteristics and constraints of participant interactions. It is likely that arcades have one or more *frames* – defined by Goffman (1974) as organizational principles that govern events and our subjective involvement in them – that provide both regular and occasional participants with the required structure to quickly assess the situations they encounter and to adjust their roles accordingly. In addition to positing that multiple overlapping frames are characteristic of more sophisticated situations, Goffman has observed that social structure exerts a strong influence on which frames are adopted by a community. Along this line, we will investigate why some frames are triggered and others suppressed in video gaming arcades.

Furthermore, we will use Goffman’s (1959) perspective on the presentation of self as our basis for analysing onlookers as performers in amusement arcades, focusing on their use of signals such as cues, texts, hints, expressive gestures, and status symbols within a recognized social structure so as to avoid embarrassing both players and onlookers. This fits well with Goffman’s insight that when individuals enter spaces filled with the physical presence of others, they immediately take on character roles¹ and begin to perform. As game genres, machinery, and spaces develop, the presence of special props and costumes² are used to identify onlooker characters and movement. Other more mobile and transitory ‘sign vehicles’ (which Goffman identified as posture, speech patterns, facial expressions, and bodily gestures) are also indispensable when investigating flexible and fluid relations in amusement arcades.

Data and Methods

Our primary data collection method was participant observation in amusement arcades,³ supplemented by on-site interviews with players and electronic discussions on related game boards and websites. Our field of observation was *Tom’s World*, the most popular arcade in Taipei,⁴ located in the city’s old downtown district and in a shopping building primarily aimed at adolescent consumers. Except for weekday mornings, it is usually filled with players in their teens and early 20s. On weekends it is usually packed from opening to closing with a more diverse group of players and

onlookers. The two authors and two research assistants visited this arcade separately during April and May of 2008, at different times on weekdays and weekends. Each visit lasted from 90 minutes to 2 hours, for a total observation time of 26 hours. Since the two authors do not match typical player profiles, our appearance was very noticeable during non-peak hours, thus attracting attention from the arcade staff. We therefore limited our visits to peak hours and gave intensive observation training to our assistants, who visited the arcade at all other times.

After learning that game machine interface and genre determined the presence and composition of onlookers, we selected six motion-sensing music video games as our focus: *DDR*, *PPP*, *Guitar Freaks* (GF), *Drum Mania* (DM), *Drum Master* (aka TAIKO), and *Rock Fever 5* (aka DJ). Our rationales for these choices were two-fold. First, certain game genres require specialized knowledge thresholds in order for onlookers to appreciate player performances. This characteristic excludes all casual ('pure') onlookers – that is, audiences for these games tend to consist of companions of the current player or of people waiting their turns.⁵ Strategy and fighting games fall into this category.

Second, some games are inconvenient for watching. For example, experienced players of racing games are the only participants who can feel the flow and excitement of play, meaning that onlookers are mostly limited to player friends. Another example is fighting game machines, which occupy small spaces and therefore drastically reduce opportunities for watching. In contrast, motion-sensing games are 'large' in terms of both machine space and player movement, which explains why they are generally placed in the centre of arcades, where they attract the greatest attention. For these games, player movements are considered the spectacle, rules are simple and easy to follow, and the background knowledge required to appreciate performance is minimal. Onlookers can judge players' skills from their footsteps, other physical movements, and from the 'combo values' indicated on game screens.

We met one significant challenge when making our observations: since we wanted to investigate how the presence of onlookers affected players, we needed a situation with no onlookers for comparison. This was not possible due to arcade game design and space layout; even during off-peak periods, our presence constituted an audience. We took two actions in response. First, upon our arrival we made a special effort to locate players who had started playing in the absence of onlookers, then compared their song selections and performances at those times with later songs and performances in front of audiences. Second, we used player discussions on game boards and blogs to gain insights into feelings and thoughts during gaming experiences. We also interviewed three players who were waiting for their turns to play in order to gain a better understanding of interaction rules and player reactions to audiences.

Findings and Discussion

Our findings can be summarized as follows.

1. Player and onlooker identities in amusement arcades are flexible and fluid, with few 'pure' onlookers. Note that players become onlookers when waiting their turns to play.
2. Relative skill levels between players on stage and onlookers do much to determine the nature of gaming scenarios: performance, practice, or recreation. When actively engaged, skilful players can transform a personal recreational event into a performance stage, create an audience consisting of people waiting their turns, and interact with 'apprentices' wanting to learn.

When less skilful players take the stage, relationships quickly revert to someone practising and others waiting their turns.

3. Players and onlookers demonstrate behaviour patterns and models that correspond to the characteristics of the gaming scenario in question. Each party has responsibility for maintaining that situation.
4. Three primary frame types support arcade participant interaction references: *showroom*, *gymnasium*, and *clubroom*. In showroom scenarios, conventional interaction rules are adopted by performers and their audiences. In gymnasium scenarios, participants waiting their turns use props or gestures to send out messages to current players that queues are forming. In clubroom scenarios, members are more at ease, chatting casually and sharing knowledge and experiences. We noted that participants collectively identified frames, adjusted their roles accordingly, and re-evaluated frames and behaviours each time a new participant appeared.
5. For convenience of analysis, we divided players into three categories based on skill level and position in specific game communities:
 - *Experts*, who appear frequently and express near-perfect skills. Some are considered ‘legends’ in player circles and achieve high levels of fame in arcades.⁶
 - Intermediate-level *apprentices*, who also visit arcades on a regular basis, sometimes with friends. They know who the top players are and which experts have certain specialties.
 - *Newbies* and *outsiders*, who feel pressure when playing in front of others and who are generally unaware of invisible interactive rules. They are more likely to visit arcades on weekends and to react strongly and openly to good performances by experienced players.

In the following subsections we will analyse instances of arcade interaction and self-presentation in terms of several dimensions, and discuss their symbolic meanings. Bracketed statements indicate our interpretations of those meanings.

This is my Place

We observed that experts and apprentices alike frequently gave hints expressing an idea common to all members of any inner circle: ‘I know this place well.’ The most common way of conveying this message was carrying large amounts of game tokens, yet we never directly observed experts or apprentices approaching staff desks or token machines to buy them (we frequently watched casual visitors purchasing tokens). When their turns came, experts or apprentices took their tokens or token bags from their backpacks and placed them in highly visible locations on game machines (the meaning being ‘I’m a regular, not an occasional player’). Experts need fewer tokens because they consistently earn bonus rounds for their performances, yet we noticed that they still tended to carry large amounts of tokens – perhaps evidence of their long-term devotion to a game, or proof of their unwillingness to break their concentration to complete a task as mundane as purchasing more tokens.

We also noted differences between experts/apprentices and beginners regarding how they used gaming spaces. Experts were more likely to place their bags in places that did not interfere with gameplay, but that were clearly part of the gaming space – for instance, right beneath a machine. Other times we observed them giving more aggressive signs of their status by leaving their bags near game machines even when it wasn’t their turn, only retrieving them when leaving the arcade (‘I treat this space the same way I treat my own home’). We noticed that casual visitors and newbies always carried their bags, sometimes even when dancing, with some asking friends to hold

their bags while they played. If they did place their bags in a public space, they rushed to retrieve them once their turns were completed.

We also observed experts and apprentices sharing local knowledge with other members of their insider circles. By sharing such knowledge, they demonstrated their ongoing relationships with the gaming space. For example, we witnessed an intermediate-level player stepping on one corner of a DDR platform while his friend was playing, declaring aloud, ‘This helps to stabilize the machine and makes it easier to dance.’⁷

Strong Awareness of Spectators

With the exception of experts, we noticed that all players were very aware of the presence of an audience. Because of the large number of machines in an arcade, it is not easy for players who are facing the screen to determine the presence of an audience behind them. Almost all non-expert players took quick glimpses before starting a new round to confirm the direction of nearby onlookers’ gazes, and perhaps to determine whether or not they were being watched by experienced players. Once the presence of an audience was confirmed, they quickly refocused on their performances, giving the impression that they were impervious to onlookers. No further eye contact occurred until the end of the round, when another glimpse confirmed the presence or absence of onlookers.

The general atmosphere around a motion-sensing game is one of performance, giving the impression of ‘everyone is good at dancing (or drumming, or playing)!’ Although we witnessed experts and beginners mixing while waiting to perform, poor players usually faltered and only occupied stages for short time periods, often without attracting much attention. In contrast, experts consistently earned bonus songs, thus making themselves highly visible, giving beginners the feeling that ‘we are surrounded by good players’, and heightening the general awareness of skill level and audience–performer context. In addition, experts consistently gave the impression that they had somehow magically entered a space – jumping onto performance platforms, not glancing at onlookers, selecting songs decisively, dancing immediately on the first note, and leaving the moment the game ended, often expressing no signs of physical exertion (‘I was just passing by and decided to have some quick fun; this is effortless for me, and I don’t care whether or not there is an audience’). They neither hesitated nor made eye contact with onlookers, but instead of interpreting the absence of such behaviours as evidence of nonchalance, we viewed them as statements that whenever they took the stage they were sure to attract audiences. On one occasion we noticed that four of eight high school students who were watching the performance of two players turned and left. Although the onlookers left quietly, one player turned his head and gave a quick glance in their direction. We view this as evidence that experts do in fact care about having witnesses to their performances.

Presentation of Status: Choosing a Song

Arguably the best example of how the presence of onlookers affects gameplay is in apprentice song selection. The primary concern for any insider player is deciding between songs for practice and songs for performance. Players cannot progress if they do not choose more difficult songs for practice, but choosing complex and unfamiliar songs sharply increases the potential for failure. According to our informers and the website postings we read, regular players frequently download software to their own computers in order to familiarize themselves with the rhythms and step

patterns of available songs, and then practise in private before testing themselves on arcade machines.⁸ We found that the appearance of an audience influenced many apprentices to de-emphasize practice in favour of performance: they selected songs they were very familiar with and/or songs with better performance impact, and refrained from picking the most difficult songs or challenging themselves by trying something new. The unwritten rule guiding such situations is to select a song with the highest difficulty level that still allows the player to give a perfect performance. On one occasion we watched two junior high school students playing DJ in front of some onlookers; they stuck to safe songs at levels 4 or 5 (with 9 the highest level of difficulty) and performed perfectly. They only felt comfortable experimenting with songs at higher levels when no one was watching. On another occasion we observed two DDR players give failing performances on songs they had chosen upon our arrival. A third player appeared and took his turn, after which the three alternately traded perfect performances. Our assumption is that the first two players were practising to some unfamiliar songs, but switched to performance mode when an element of competition was added.

Audience influence on song selection does not apply to experts and newbies. To the untrained eye, an expert's practice and performance dances are indistinguishable when done perfectly, and whereas apprentices can choose songs to match different situations, newbies do not have new-and-unmanageable versus old-and-familiar alternatives available to them. In situations where two consecutive players are in direct competition, chances are the second will pick more challenging songs if the first has played well. However, restraint is a valued quality among players. A poster on one game board criticized 'arrogant' experts for selecting the exact same song used by the previous player, but with a much higher degree of difficulty ('I used your song to beat you, I'm much better'). Our impression is that the general arcade gaming community looks down on this kind of player.

One DDR apprentice posted a description of an embarrassing experience on a game website. When his turn came and he started to play, the two experts who had immediately preceded him did not leave (as is usually the case), but stayed to watch. Shortly after selecting his second song and starting to dance, he noticed that the two experts were laughing, which unnerved him. The two experts later replied to his post, explaining that they had predicted which song he would choose next (i.e. repeating the first song but at the highest difficulty level), and were laughing because their prediction was correct. They apologized for affecting his performance, adding, 'One should choose new songs on a new machine. We are all DDR fans, no one will make fun of you = √ =.'¹⁰

Speed in song selection is another signal of skill and status. One clear mark of newbies is hesitating to pick a song; they tend to listen to short samples of many songs one by one ('I'm not good at this'). In one case we witnessed a player listening to short segments of many songs, but selecting the same song he had played just a few minutes before. We noted that the longer the song selection process, the greater the likelihood of 'pure' (non-player) onlookers leaving to visit other parts of the arcade.

Presentation of Status: Performance

In an amusement arcade, all visitors want to play their roles well. When true newbies are on stage, their awkward movements and repetitive errors make the gameplay atmosphere one of pure recreation. When apprentices perform, their body language and non-verbal signals reveal nervousness and self-criticism: constant sighing, head shaking, occasional glimpses toward onlookers and so on. Apprentices constantly alternate between practice and performance, and those who give

less-than-perfect performances in front of audiences express apologies through their body language ('I know I'm not doing this very well; I'm actually much better than this').

Except for those uncommon situations when others at the same master level are present, almost all expert performances are given in front of onlookers who are less skilled. As with public performers in many other settings, they tend toward exaggeration in their movements so as to increase the effects of their performances, to show off their talents, and to create new challenges. Individual experts have their own tricks for enhancing their presentations: in order to express a lack of need to see the game screen, they may close their eyes and/or lower their heads, use the DDR invisible mode, or dance with their backs to the screen. We even witnessed one master player making small talk with a friend while performing at the highest level of DDR difficulty ('I have memorized the entire song'). Even when they are practising, experts appear to be concerned with performance. For example, even though PPP scores only reflect skill in hand movements, we observed several full-combo PPP players practising their footsteps again and again in order to make their performances even more spectacular.

Companion Functions

Companions can enhance their enjoyment by acting as cheerleaders, providing cues for play, and reinforcing a player's sense of achievement. We also discovered that they serve an important function by conveying spoken and unspoken pieces of information to other onlookers, thereby mitigating performance pressure. Newbies frequently visit arcades in groups to overcome the sense of unfamiliarity and embarrassment they feel. On one occasion we witnessed a group of junior high school apprentice DJ players; one female played alone, with a male friend hitting the set of game buttons next to her, even though they were not activated. When the boy started to leave, the girl cried out, 'Don't go, or I'll lose.' The boy had done nothing to help her, but by asking for help the girl sent out a message to her audience ('I'm not really very good at all, don't expect a first-rate performance'). At the other end of the player spectrum, companions provide another means for experts to show off their status: after some performances we saw experts lingering on DDR performance floors, leaning on the machine handles and chatting with companions.

Waiting for One's Turn

Rules for lining up to play a game are complex, unspoken, and difficult for outsiders to decipher. Because of spatial limitations in arcades, actual waiting lines are impractical. 'First come, first serve' is the only principle that we could clearly observe; all other guidelines emerge via player consensus. While quarrels are not unheard of, they are surprisingly rare for such a complex, noisy environment operating according to ambiguous rules. Getting access to the most popular games requires considerable patience;¹¹ 30-minute wait times are common during peak periods. It is difficult but crucial to distinguish between real onlookers and waiting players. For some games, placing a pile of tokens near the token slot is sufficient for holding one's place; for DDR, players can pre-insert tokens into a machine for the same purpose. Again, restraint is appreciated: aggressive acts of token pre-insertion that might affect the current player are frowned upon, especially when a game is in progress.

We also noticed considerable flexibility in queuing behaviour, which involves some negotiation of playing rights. One guiding principle is the acknowledgment that experts are capable of giving performances that everyone can enjoy, therefore queuing rules are sometimes set aside when an

expert is on stage. At such times, waiting players become part of the audience. Another unwritten rule seems to be that no one should place a token on a machine when an expert is playing.¹²

We noticed the use of body language to send signals about one's status as either a 'dedicated audience member' or 'indifferent waiting player'. During high-level performances, common apprentice behaviours include staring at the performer and screen, keeping rhythm with head or foot movements, playing 'air drums', taking pictures or videos, and giving silent applause when the performance is over. When the current performer is at a lower level, waiting apprentices eliminate any behaviours that might identify them as audience members, and instead express behaviours that mark them as waiting their turn or being more skilled. One way of showing indifference to a performer is talking to friends about the best moves for the current song, or directly commenting on the current performance.

When waiting for lower-status players to leave the stage, apprentices have ways of expressing the idea of 'being there, but not making the effort to be an onlooker'. These include watching players of other arcade games, playing with their Rubik's Cubes or portable game consoles, or using their cell phones. By doing so, onlookers express two messages simultaneously: 'We are not watching your performance, we are just waiting for our turn to play,' and 'I am waiting my turn, don't cut in line.'

Newbies and lower status apprentices give many signals that they are not comfortable on stage. They spend a great deal of time making sure no one is waiting behind them and looking around to see who is watching. They often intentionally leave game platforms after one round, and wander through the arcade until they are certain that no one is waiting before returning for another round. After repeating this pattern several times, one DM player moved toward the exit, seemingly intent on leaving the building. At the last moment he took one more look around the area and returned to play another round. Such actions seem to be aimed at luring 'waiting players' to present themselves. Only when they are certain that their audiences consist of pure onlookers are they willing to reclaim their positions as players.

Conclusion

Social interactions among gamers and onlookers in amusement arcades are complex and dynamic. The presence of onlookers, their behaviours, and their skill-based rankings shape the interactional frames that surround game platforms. Onlookers assist in enhancing and expanding gameplay when they accept the roles of focused audience members or learning apprentices, thereby turning play into public performance and supporting the showroom frame. They also use their gesture repertoires to highlight their positions as uninterested players waiting their turns, thereby activating the gymnasium frame and redefining gameplay as an activity limited to the current player and game machine. They are also positioned to collectively trigger a clubroom frame via the co-appearance of apprentices and masters, conversation between newbies and apprentices, and interaction among masters, thus forming a sophisticated network of ranked social relations.

Showroom, gymnasium, and clubroom social relations extend well beyond circles of acquaintances, with strangers and acquaintances alike sharing public spaces for certain periods of time. The current frame determines whether they have on-going relations and what features their relations emphasize. In the gymnasium frame, the lack of observable connections is the result of the players' concentration on practice rather than other participants. In the showroom frame, a unidirectional, all-to-one relationship exists between audience and performer. In contrast, clubroom frames are marked by many-to-many relationships among ranked members, newbies, apprentices,

and masters – the best example of Huizinga's (1938) 'magic circle' concept. Combined, the three frames sort out participants and distinguish them from outsiders by determining proper behaviours for each. Gameplay may look the same in all three frames, but the meaning of play evolves according to a combination of proper participant role and frame alternation dynamics.

On-stage gaming activities are products of social interactions between players and onlookers rather than personal player behaviours. Based on their understanding of relative skill and status levels, players and onlookers negotiate access to play, what to play, and how to play. In a similar manner, being part of an audience is much more than merely 'being there'. Through the use of gestures and body language, onlookers shift back-and-forth between their roles as concerned audience members and as uninterested players waiting their turns.

Based on Goffman's (1974) observations, definitions, and elaborations on experience organization and frame formation, we looked at why and how participants shift among frames in the context of a specific social space. We observed that when players agree on the nature of the current frame, everyone feels at ease. For instance, when one onlooker takes out his Rubik's Cube and starts to play, he is giving a signal that a gymnasium frame is in force; other onlookers who recognize the same frame enhance it (for instance, by playing an 'air drum'), which makes it clear to newcomers that a queue is forming around a particular gaming machine. Frame identification in gaming arcades is pivotal, since several frames can overlap and influence multiple interpretations of the same cue. One onlooker's audible discussion of gaming techniques with friends may enhance a clubroom frame that emerges when a master player takes a break, stands on a stage, and makes small talk with his companions, but such actions would not be acceptable within a gymnasium frame. These and other mobile and transitory sign vehicles are best analysed from a frame perspective.

Our results confirm that Goffman's frame construct contributes to game studies in at least three ways. First, he chose game encounters as a defining example of general social encounters, pointing out that social interaction could be best comprehended in a gaming context. Gaming rules, roles, and corresponding orders clearly illustrate manoeuvring in social interactions. We believe that Goffman's approach not only endows game research, but also underscores how game studies can contribute to social interaction studies. Second, he reminded us that the meaning of gaming activities is in social interaction (including identity formation and social relations) instead of play as such. He thus established a sociological approach toward game studies built on mainstream perspectives primarily based on immersion, fun, and play. Third, he gave us a theoretical framework and valuable analytical tools – for instance, his concept of 'transformation rules' in social encounters (Goffman, 1961), which precisely captures boundary-crossing phenomena in gaming activities, not only between players and audience in a traditional sense, but also among the three onlooker frames we identified.

We believe this study makes three contributions to game and social science research. First, we demonstrated the use of Goffman's theories in an authentic, everyday gaming context, which supports a better understanding of how frames appear and operate. Second, by bringing onlookers to the forefront for analysis and by addressing the fluidity of player/onlooker roles, we added additional layers and subtlety to frame analyses. Third, our findings (neither confined to gaming contexts nor limited to face-to-face social interactions) signify several important factors that influence social interactions in public spaces, including onlooker body language and cue visibility, the spatial characteristics of locations where interactions occur, and the mediating functions of artefacts used in social actions. We noticed that participants collectively negotiated rules for interactions within the gaming space and as part of the interplay among these factors, with any

change in preconditions resulting in social action variation in terms of content and form. Even in a computer-mediated communication context, both active participants (practitioners) and inactive participants (lurkers) employ social behaviour cues that support and represent various technological interfaces, thus revealing their collective power in shaping an electronic social space.

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Notes

1. Characters include 'pure' onlookers when a gaming contest is taking place, waiting co-players (teammates and opponents), competitors who do not want to directly confront other players, passers-by who casually drop in to the arcade, and fans of players (cheerleaders).
2. Examples include personal drumsticks, professional dancing shoes, and sets of game cards.
3. Our roles bordered between observers-as-participants and complete observers.
4. There are only five amusement arcades in Taipei. We chose two for this project, but learned that one had much smaller crowds because of its remote location and older versions of gaming machines.
5. Certain machines have special interface designs that further limit observation. For instance, the sloping screen of SANGOKUSHI TAISEN requires onlookers to stand right behind the player to see what is going on.
6. We learned later that several master-level players were national tournament champions.
7. We observed this situation, but did not understand its meaning until we interviewed the player on-site.
8. For instance, the Step Mania simulator.
9. See two postings from forum.gamer.com.tw: delis1424, posted on 14 December 2007 11:48:19; and seed0925, posted on 1 January 2008 19:43:02. (Site accessed: 5 July 2008.)
10. See posting from forum.gamer.com.tw: YOKOV3, posted on 28 August 2007 23:42:20, and responses written by hasmetou, STEALTH2. (Site accessed: 5 July 2008.)
11. According to posts on game discussion boards, DDR players at the study arcade can wait as long as 30–60 minutes to play, even on weekdays.
12. Since inserting tokens when others are playing can block the machine's screen and reduce player scores for difficult songs, there is general agreement in the DDR community that waiting players should wait until a song or round is completed.

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