4. From In-Game Photography to Playable Imaging

Marco De Mutiis

Practices of image captures within game worlds have challenged traditional understandings of the photographic medium, as well as questioned how notions of play and games can be transformed by the photographic act. The influence of photography on computer graphics can be seen through the development of photorealism, which has become an almost compulsory feature of contemporary AAA games. On the other hand, ideas of photographic capture, the camera apparatus and the role of the photographer have been shaped by different forms of play and specific relations to games. Not all game images are made equal: the game might encourage or hinder photographic endeavors, promote or resist the production and circulation of images, reinforce or undermine specific politics of representation as well as image economies. Images are not simply captured from a screen, they are "extracted" during a play experience, negotiated within the game boundaries.

The intersecting trajectories between game and photography – and the development of the multiple forms in which phenomena known as in-game photography or virtual photography have emerged and developed – show how image-making in computer games have become unique practices within discourses of digital and networked images. Not only the game image needs to be understood for its own properties and specificities, but it must be rethought through a relational approach that centers on the affordances and obstacles of the game object.

Yet this relation is not a static system among clearly defined stakeholders, but rather an evolving network of actors and forces with a long history. The history of game images is intertwined with the development of computer graphics, the evolution of videogames as a medium, as well as the transformations of image capture systems recording the screen and the digital and networked transformation of the photographic medium. The activity of taking pictures of games changes and evolves together with the development of game hardware

and software, with the evolution of game culture and is affected in turn by the transformations of the photographic image and systems of capture that are attached to these computational systems. While the term in-game photography only appears in the early 2010s, the larger history of game and photography is inextricably connected to the history of computers, video games, computer graphics, photography and networked images.

This chapter offers a brief overview of the relations between photography and computer games from the 1950s until today, reflecting upon the different roles in which games and play have shaped different image practices, and their social and political implications. How is the photographic medium transformed, reclaimed and reshaped by the game and through acts of play? Can we rethink in-game photography as a form of playable imaging and what does that reveal about the politics of contemporary digital and networked images?

Screen Images, Polaroid Evidence, and High Score Photography

Analog photographs of computer screens are employed in the early days of computers[1] as a way to document computational outputs and graphical user interfaces. These photographs are part of a broader history of photography that media scholar Winfried Gerling traces to the German notion of *Schirmbild* (screen-image). Gerling defines screen-image photography (*Schirmbildfotografie*) as "the photo-technological capturing of illuminated screens (screen images) using a photographic apparatus,"[2] and points to their complex status: at once a photograph of a monitor's surface while simultaneously a copy of the image displayed on the screen. He traces the origins of this practice to the mass-screenings of x-rays in the 1930s. Brazilian physician and scientist Manuel de Abreu is the first to implement a way to photograph the image of x-rays on an illuminated screen with a small-format camera. While the first digital computers were completed in the early 1940s, it took almost another decade for the first computer games to emerge. The earliest forms of computer games, such as Josef Kates' *Bertie the Brain* or Robert Dvorak's *Tennis for Two*,

1 The first digital computers were completed in the early 1940s, but graphical user interfaces only appear with Sutherland's 1963 Sketchpad program.

2 Winfried Gerling, "Photography in the Digital," *Photographies*, vol. 11, no. 2–3 (2018), 149–167.

mostly served as public spectacle to demonstrate the capabilities of computers to mass audiences or simulation systems for warfare and military training. Projects from this era originated almost entirely from military fundings and were not made accessible to the general public. Therefore, available images of these early computer games are mostly photographs used to promote the potential of computers.[3] They show the large game screen and computer apparatus next to the player, rather than focusing on the screen image itself (Fig. 4.1).

4.1 Life magazine photo of comedian Danny Kaye standing in front of Bertie the Brain at the Canadian National Exhibition in 1950.

Photo: © Bernard Hoffman for Life Magazine.

The 1950s are "a decade of false starts for the video game. Almost as soon as anybody [starts] exploring the idea they [walk] away, convinced it [is] a waste of time."[4]

3 See for an example the *Life* magazine photo of comedian Danny Kaye standing in front of *Bertie the Brain* at the Canadian National Exhibition in 1950 (accessed April 22, 2024). https://en.wikipedia.org/wiki/Bertie_the_Brain#/media/File:Bertie_the_Brain_-_Life.jpg

4 Tristan Donovan, *Replay: The History of Video Games* (Hove: Yellow Ant Media Ltd, 2010).

In the 1960s, computer screen-images were produced as photographs of computer monitors, created "to make the work on the first interactive CAD computers visible to a larger audience than the scientists working directly with these computers."[5] With the advent of the Graphical User Interface (GUI) at Xerox PARC (Palo Alto Research Center), interaction designers and developers used Polaroid to document their work. Computer engineer Bill Atkinsons' work on the Apple II and Apple Lisa remains a notable example of screen-images from the late 1970s, taken by the author to record "his prototypes by taking Polaroid photos of the screens, annotating them, and storing them in binders,"[6] documenting the development of new ideas, prototypes and work in progress through photographic records. Specific camera apparatuses were developed with a dedicated camera hood to achieve "sharp focus, fram[ing] the image, and block[ing] ambient light."[7] Polaroids of game screens start becoming popular in the 1980s, with players taking pictures of arcade machines and early game consoles. Typically, players would submit photographic evidence of their high scores, to be officially featured in top player rankings and gain rewards. Game scholar Mikael Jakobsson discussed how Activision, a US video game publisher, encouraged players to achieve special milestones by providing rewards in exchange for photographic evidence.[8] Activision introduced unique challenges for its Atari 2600 games, printing them in the game manuals. "If a player managed to beat a challenge, they could send a letter to Activision, normally with a photo of the TV screen included as a proof, who in return would send a decorative fabric patch together with a form letter congratulating the player and welcoming them to 'the club'"[9] (Fig. 4.2).

5 Gerling, "Photography in the Digital," 149–167.

6 Bill Moggridge, *Designing Interactions* (Cambridge, MA: MIT Press, 2006), 99.

7 Advertisement for Polaroid CU-5 Hard Copy Camera for CRT terminals, ca. 1970, accessed April 22, 2024, https://www.laboiteverte.fr/wp-content/uploads/2014/10/vintage-screenshot-capture-ecran-ancien-07.jpg

8 See a picture of Jeff Sparkman standing next to his high score of over 112000 points in the game Seaquest which he submitted as a proof to obtain an Activision club patch, August 22, 2005, archived on Internet Archive on November 23, 2021, https://web.archive.org/web/20231121190311/https://siftin.blogspot.com/2005/08/great-moments-in-human-achievement.html

9 Mikael Jakobsson, "Achievements," in *Debugging Game History: A Critical Lexicon*, eds. Henry Lowood and Raiford Guins (Cambridge, MA: MIT Press, 2016), 7.

4.2 Photo of Jeff Sparkman in April 1983, standing next to his high score of over 112000 points in the game Seaquest (Steve Cartwright, Activision, 1983), which he submitted as a proof to obtain an Activision club patch.

Courtesy of the photographer

David Crane, co-founder of Activision, reported in an interview that "that was typically done with Polaroid pictures of the screen." Crane also added that most of these images, while being considered objective proofs to determine achieved high scores, were not archived and preserved, and are now lost: "As far as I know, none of those were saved for much more than a few weeks – certainly not 35 years. Photographic evidence definitely existed at one time, but it has most certainly been lost for decades."[10] This is partly due to the widespread consideration of computer games as trivial toys and consequently of these images as being unworthy of being properly stored and archived. Popular game magazines like *Nintendo Power* also accepted photographic evidence and included players' names and highest score in a dedicated section.[11] Additionally, these

10 Jesse Collins, "Dragster Designer David Crane Has No Doubts Of Todd Rogers' Record [UPDATED]," *Twin Galaxies* website, January 23, 2018, 10:20 PM, archived on Internet Archive on November 9, 2020. https://web.archive.org/web/20201109032951/https://www.twingalaxies.com/feed_details.php/87/dragster-designer-without-a-shadow-of-a-doubt-about-todd-rogers-record/1

11 See the section "NES Achievers" on *Nintendo Power*, Sept/Oct 88, page 103, for reference: http://transience.paragonsigma.com/nintendo/Nintendo%20Power%20002%20-%201988%20Sep-Oct.pdf. Page 104 also contains an illustration to instruct play-

magazines contained lots of pictures of gameplay too, taken by the authors to accompany texts to guide the players through the game missions, or showing the reader how to access secret areas and special game mechanics and states.[12] Screen-images of games also started to appear in print advertisements, although photographs of players engaging with the game were often employed as well. Both the Polaroids of developers and interaction designers, as well as the photographs of game scores taken by players and of gameplay on magazine columns can be considered as 1:1 copies of the screens, documentation and evidence rather than artistic usage of the camera or of the content on the screen that could be manipulated by the player. Media scholar Jacob Gaboury contested the objectivity of these screen-images as mere proof, and claimed that some of the scores they show appear ridiculous and in fact point to "a form of non-normative play whereby players exploit a game glitch to maximize points."[13] In the 1990s, this form of documentation gave space to more personalized accounts of play, and magazines stopped publishing high scores in favor of portraits of players in front of their television screens and consoles. These images do not only capture a moment of gameplay or a numerical achievement, but can be considered self-portraits attached to a personalized experience of play, what Gaboury describes as anachronistic forms of "screen selfies."[14]

Screenshots and Game Tourism Snapshots

Media scholar Matthew Allen traced a trajectory from the emergence of this conventional form of screen-image photography in the 1960s to the development of the screenshot in the mid-1980s.[15] The screenshot function allows to

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ers on how to take pictures of their game screens ("place your camera on something steady", "make sure you don't use a flash," "the camera should be about a yard from the TV"...).

12 See *Nintendo Power*'s columns like "Classified Information" where strategies and tips were shared accompanied by game screen-images.

13 Jacob Gaboury, "Screen Selfies and High Scores," *Still Searching...* blog, Fotomuseum Winterthur, 2019, https://www.fotomuseum.ch/en/2019/07/05/screen-selfies-and-high-scores/

14 Ibid.

15 Matthew Allen, "Representing Computer-Aided Design: Screenshots and the Interactive Computer circa 1960," *Perspectives on Science*, vol. 24, no. 6 (2016), 637–668.

create "an image of the interface unable to be optically differentiated from its appearance."[16] Screenshotting were developed by different operating systems, with Apple introducing the screenshot with the release of the Macintosh in 1984 – through a combination of keys (Cmd, Shift and 3) being pressed simultaneously – and IBM keyboards introducing a dedicated Print Screen button on their hardware. At the same time, the golden age of game arcades between the late 1970s to the early 1980s was replaced by new generations of home consoles and personal computers.[17] Screenshots from computer games were only possible on computers, and became commonplace in the 1990s and early 2000s, as images of game worlds that were taken to save memorable, bizarre, meaningful or funny moments. In 2002, scholar Betsy Book compared screenshotting practices within games to tourists snapping pictures offline. Book wrote of a form of virtual tourism and explained that "virtual tourists take photos for the same reasons offline tourists do: to commemorate their travels, obtain a visual record of enjoyable experiences, and show evidence of their experiences to friends and family."[18] These screenshots are often intimately connected to the player's experience in the game, with on-screen chats appearing overlaid on the game screen, documenting interaction with other players, with software interfaces included in the picture or accompanied by captions contextualizing the players' visual memories with information about the gameplay experience at the time the picture was taken. Sharing of these screenshots in the 1990s happened with the early development of the internet and with personal players' homepages featuring their game images, commemorating special moments experienced in a game or creating alternative narratives and fan fictions.[19]

These screenshots are radically different from the screen-images of the past, and not simply because of their technical difference. While screen-images can be understood as copies of the computer display, game screenshots

16 Gerling, "Photography in the Digital," 149–167.

17 Video game journalist Steven L. Kent, places it between 1979 to 1983. See Steven L. Kent, *The Ultimate History of Video Games: From Pong to Pokémon* (New York: Three Rivers Press, 2001).

18 Betsy Book, "Traveling Through Cyberspace: Tourism and Photography in Virtual Worlds," paper presented at the conference Tourism & Photography: Still Visions – Changing Lives in Sheffield, UK, July 20–23, 2003. http://dx.doi.org/10.2139/ssrn.538182.

19 The Sims became a popular game to screenshot and use to create alternative narratives, see this archived Geocities page for an example: http://www.geocities.ws/sistergirl555/Chapter6pt2-4.html.

are inextricably connected to the experience of the player who is capturing the image. These images are in fact taken *during* gameplay, rather than at the end of the game – for example in the case of high scores documentations – and show the potential creative qualities of game image-makers. Furthermore, players became able to appropriate and modify computational technologies thanks to access, knowledge and sharing possibilities offered and facilitated by the spread of the internet. Movements like net art and – more specifically in the context of computer games – the birth and rise of modding culture and machinima of the same era, are the neighboring practices and communities of game screenshotting phenomena. The communities that emerged around photographic practices in games share an artistic approach and a creative spirit of appropriation of game-images which differ substantially from the idea of employing photography as a mere proof.

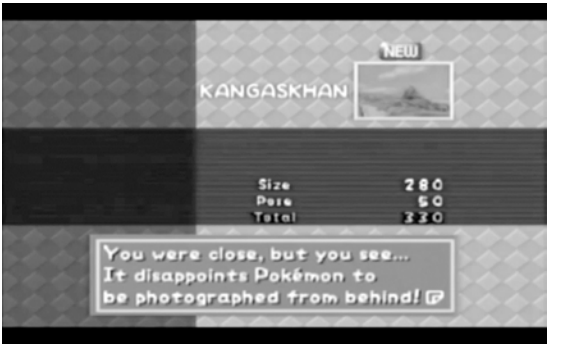
Photorealistic Images and Photography Simulation Games

In the 1990s, the increased computational power of the time marked a development in graphics that evolved from limited pixel based 2D representations – sometimes rather abstractions – of the 1970s and 1980s to the first forms of 3D graphics. Photographs were used as texture sources, as image portions to be added to the surfaces of the game 3D models. Usually, game elements were created using photographs from stock image databases available on CD-ROMS, applied as textures of early games employing 3D graphics.[20] It is interesting to observe that when photographs started being used by developers to implement higher level of graphics and more realistic 3D models, on the other side of the screen players started taking more and more "photographic" screenshots of game worlds. As players act more and more as photographers, some games even start to incorporate the photographic act in their own game mechanics, turning the act of capturing images into a core part of the gameplay itself. That was the case for *Pokémon Snap* (HAL Laboratory, Pax Softnica, 1999) (Fig. 4.3),

20 Recently, a phenomenon called "Texture Archaeology" has seen communities like the one around Render96 Wiki, who look for the original photographs that were used to create game texture from the 1990s. See for reference the GitHub page "Material Dictionary Volume 6: Four Seasons Nature (SSBM)" to see the corresponding photographs of game elements of nature: https://github.com/Render96/Render96Wiki/wiki/Material-Dictionary-Volume-6%3A-Four-Seasons%E3%83%BBNature-%28SSBM%29

Afrika (Rhino Studios, 2008), *Wild Earth* (Super X, 2006), and many other photography games in which the player was tasked to take pictures of wild animals and creatures and is subsequently evaluated based on the aesthetics of their shots.

4.3 Marco De Mutiis. Screenshot from Pokémon Snap (HAL Laboratory, Pax Softnica, 1999).



Media scholar Seth Giddings, analyzing the photographic missions in the game *The Legend of Zelda: the Wind Waker* (Nintendo, 2002), noted that these game images "do not serve, as they have traditionally done, as trophies or displays of aesthetic accomplishment, rather they function as correct solutions to challenges or puzzles, tasks to be rewarded with maps or tokens useful in the player's progress through the game. Photography here is instrumental, answering the demands of the game, it is not an aesthetic or performative practice."[21] Image-making here is no longer an external act that captures a moment of the game screen or intervenes temporarily to document the play experience. Photography is gamified: it is simulated and broken down into game mechanics where the player is tasked with producing images which are then algorithmically quantified and evaluated through game points. Game scholars Alexandra Orlando and Betsy Brey analyzed *Pokémon Snap* (HAL Laboratory, Pax Softnica, 1999), specifically looking at the way the player is given scores depending on aesthetic evaluations processed by software based on size, technique

21 Seth Giddings, "Drawing without light: simulated photography in videogames," in *The Photographic Image in Digital Culture*, ed. Martin Lister (New York: Routledge, 2013), 41–55.

and pose. The two authors claimed that the game shapes a specific idea of a successful photograph, in favor of other styles and visual cultures. The gamification of the photographic act creates a standardized notion of what a successful photograph can be, promoting what Orlando and Brey call a kind of "photographic colonialism—the limitation to a single viewpoint at the expense and extinction of others by a controlling power outside of the immediate environment."[22] Whether the player is tasked with photographing Pokémon, wild animals or models, all photography games enforce what could be called a "safari gaze." Players are taught to perform the role of the photographer as the hunter, reproducing problematic politics of representation which have been widely critiqued in the field of photography.[23] Performing this colonial safari gaze is rewarded through points that allow the player to move further in the game towards the goal of winning, with players being shaped as subjects that are taught to see the world as a space to be organized and dominated.

Artistic In-Game Photography and Networked Game Images

In the 2000s, with the development of photorealistic rendering and 3D graphics, game worlds started becoming increasingly similar to the visual quality of cinematic and photographic technologies, affecting the practice of screenshotting the game. From a merely touristic snapshot to preserve a personal memory, game images were transformed into pictures created with a photographic mindset and with knowledge of composition, lighting and aesthetic qualities similar to cinematic and photographic traditions. Writing in 2006, media scholar Cindy Poremba pointed to screenshotting practices in video games as carrying elements of analog photography. Poremba wrote about the logic of remediation[24] – or the representation of an older medium in a

22 Alexandra Orlando and Betsy Brey, "Press A to Shoot: Pokémon Snap-shots and Gameship Ownership," *First Person Scholar*, 2015, http://www.firstpersonscholar.com/press-a-to-shoot/.

23 Most famously Susan Sontag wrote that "hunters have Hasselblads instead of Winchesters; instead of looking through a telescopic sight to aim a rifle, they look through a viewfinder to frame a picture." Susan Sontag, *On Photography* (Maleny: Rosetta Books, 1977), 11.

24 Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA/London: MIT Press, 1999).

subsequent one – of traditional photography, which occurs in digital games in both technical and cultural modes. According to Poremba:

> The remediation of photo aesthetic can be seen in the composition of the shots … and can be inferred by the way the game interface is conspicuously absent in the displayed game images. The removal of visible interface elements is particularly revealing in terms of remediated photo aesthetics, as a more accurate visual depiction of a game image would be to contextualise the screenshot within the interface a particular game. Images without interfaces to some extent deny their origin, instead referencing how an image is supposed to look—like a photo.[25]

Also thanks to the development of faster and more widespread internet connections and the advancement of Web 2.0 technologies, platforms of image sharing like Flickr allowed communities of players to easily exchange their images. Flickr became a popular platform for amateur and professional photographers to host high resolution pictures and create a global community of player-photographers who interacted through dedicated online groups. It was the rise of amateur in-game photographers who shared their screenshots with each other online, but it was also the moment when game screenshotting became a profession. This is best exemplified by the case of Duncan Harris, also known as Dead End Thrills, who started working as professional in-game photographer, creating images for marketing and communication for the release of many major computer games. In 2010, the Dead End Thrills Flickr Group was created by Harris, with the purpose of "celebrating the beauty and imagination of videogames via clean and evocative screenshots."[26] The group description proceeds to state that "Anti-aliasing is preferred and HUDs[27] are not, while anything that shows a game in a new or unexpected light is encouraged. Oh, and no Second Life, please, there's quite enough of that on Flickr already."[28] The early

25 Cindy Poremba, "Point and Shoot: Remediating Photography in Gamespace," *Games and Culture*, vol. 2, no. 1 (2007), 51.

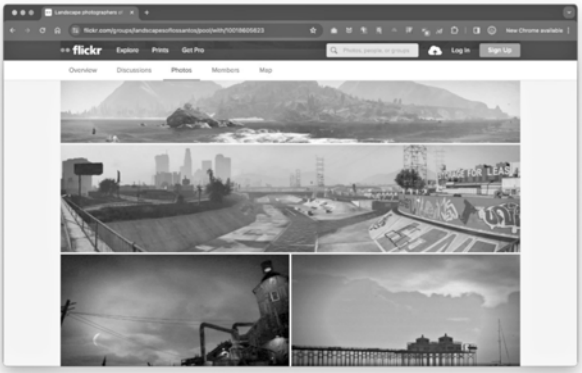
26 Dead End Thrills Flickr Group Page (Now Undeadend Thrills), archived on Internet Archive on May 30, 2010, https://web.archive.org/web/20100530083418/https://www.flickr.com/groups/deadendthrills/.

27 HUD stands for Heads Up Display and is the interface area where players can see relevant information about the gameplay, e.g. character's current health, bonus attributes, armor level, ammunition count, and more.

28 Ibid.

rules of the group revealed the shift in attitude from players as tourist photographers to in-game photographers: aesthetic concerns about images took over the affective and personal value of earlier screenshot culture – encouraging the use of anti-aliasing techniques to improve the rendering of the images, and the removal of the overlaid game interface or HUD. Another important shift was the role of the player-photographer as someone able to offer a unique view, adding an artistic quality to the game screenshot – encouraging the idea of showing the game image through a different angle and promoting a sense of uniqueness by denying content from games like *The Sims*, which was a major title used by "player-tourists."

4.4 Marco De Mutiis. Screenshot from "Landscape photographers of In Game Worlds" Flickr Group.



The phenomenon of in-game photography kept gaining popularity with many similar communities on Flickr, all establishing rules for submissions to their online groups, resonating with the more artistic attitude of the DET group (Fig. 4.4).[29]

29 See the Flickr group "Landscape photographers of Los Santos and Blaine County" (now renamed "Landscape photographers of In Game Worlds") – created in 2013 by Phil Rose: https://www.flickr.com/groups/landscapesoflossantos/ .Its rules page state: "please do not upload photographs that are purely of cars or of people. ... This is a group for landscape photographs specifically" and defines in its rules "no 'selfies'. No crotch shots. No dead animals. No shootings or killings. There are plenty of

In 2012, in-game photography was first featured as a term on Rainer Sigl's blog "Videogame Tourism."[30] In the blog post, Sigl wrote about the emergence of a practice by players who would capture moments within the virtual spaces inhabited by players and highlighted the appearance of "the photographic gaze, that eye for composition and purely visual aesthetic, [which] finds ample opportunity for snapshots in these virtual spaces."[31] Comparing this new image culture to the previous practice of screenshotting games, Sigl added that "it's surprising that in-game-photography – for purely aesthetical reasons as opposed to documenting victories or snapping a pic of an impressive vista for use as a desktop wallpaper – is still as unexplored a country as it still seems to be."[32] The blog post featured a number of practitioners like the previously mentioned Duncan Harris, and "his ultra-stylish, high-gloss pictures of games tweaked to look their very best to still photography in movie production" and James Pollock's "breathtaking" game-photography. One of the main aspects of in-game photography as narrated by Sigl and other journalists covering the phenomenon in the 2010's, is the aesthetic qualities of the game image, their connection to photographic and cinematic tradition and the development of photorealistic rendering technologies which allow such connection. In his conclusion Sigl prophetically stated that "it seems obvious that, with constantly increasing photorealism and the popularity of open-world-games, more and more photographers will also look for inspiration and picture opportunities in virtual worlds."[33]

Finally, it was the blog post title that might be most revealing about some of the aspects of in-game photography that are most interesting in relation to

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places for those! This is a place for landscape pictures only. They can be rural or urban. The ideal is that people will grab a screenshot, take it into Photoshop (or your favourite editor), do their best to make it interesting/beautiful/easily mistaken for reality and then upload it here. So post processing is important though not as important as location, time of day, weather and composition considerations." The "Video Games Photography" Flickr group, created in 2018, claims to be a space "for video games high quality screenshots with a photographic, artistic vibe. More than just simple gameplay captures." https://www.flickr.com/groups/4524127@N23/

30 Rainer Sigl, "The Art of In-Game Photography. Video Game Tourism," July 25, 2012 (accessed April 22, 2024) http://videogametourism.at/content/art-game-photography.

31 Ibid.

32 Ibid.

33 Ibid.

the photographic medium: "The Art of in-game Photography." The game image was consecrated as a form of art and – thanks to its photorealistic 3D rendering graphics – could be inserted within the art historical canon of twentieth-century art photography. Unlike screenshots of 1990s games, in-game photographs of the 2010s were ambiguous images that can be interpreted through an aesthetic and semiotic analysis applied to analogue photographs from the modernist tradition of landscape photography, architecture photography, or street photography.

Photo Modes and Camera Simulations

In-game photography became such a popular phenomenon that led computer game console PlayStation to completely modify its policies related to exporting and copying images from its hardware, when Sony's PlayStation 4 console was released in 2013. While its predecessor PlayStation 3 made it impossible for players to export image and video data without recurring to external and unofficial devices that would enable them to capture the content of the screen, PlayStation 4 added the possibility to export images directly from the controller, with the introduction of the share button. The share button can be considered equivalent to the print screen button of a computer, with the added feature that by default the image can be automatically shared on Twitter or Facebook. The game image is not only extracted by the software, but is now encouraged to leave the game and travel as a networked image on social media platforms. Furthermore, game studios start implementing spaces for in-game photography within the game software, introducing so-called photo modes. Photo modes are a function integrated into videogames that first appeared in 2004,[34] but became most popular after the game *The Last of Us* (Naughty Dog, 2013) was remastered for the newly launched PlayStation 4 in 2014. Photo modes allow players to pause gameplay in order to save an image of a moment within the game world. Unlike a normal screenshot, players can

34 *Gran Turismo 4*'s (Polyphony Digital, 2004) Photo Travel and Replay Photo Mode can be considered the grandfathers of contemporary photo modes. While they differ from photo modes in their relation to the game play (Photo Travel could be considered a separated photography mini-game and Replay Photo Mode can be used during replays, only after the race has been played), they are the first simulation of the analog camera within a game, allowing players to compose and save their images.

navigate this frozen scene: they can position their virtual camera anywhere and move freely around their subject at 360° to find the perfect framing before taking the picture. Once the player decides to end their photographic activity, the game is resumed from the exact moment it was left off. This photographic production at the level of the game software is combined with the addition of the share button at the level of the console hardware. On PlayStation 4, once photo modes are activated and the player is ready to take their shot, pressing the built-in share button on the controller takes, or rather *shares*, the picture. If photorealism and online circulation shaped the phenomenon of in-game screenshotting in the 2000s, photo modes provided a transformation of the tools of image capture at the disposal of the players, after their popularization in 2014. Soon after the release of the remastered edition of *The Last of Us Remastered*, the online edition of *Time Magazine* commissioned real-life war photographer Ashley Gilbertson to document the conflict in the game. In the article, Gilbertson recounted his difficulties to adjust to the role of in-game photographer. As was noted in an article written by Sebastian Möring and Marco De Mutiis, "the anecdote illustrates that … Gilbertson, who is not a regular video game player, was unable to cope with the surges of enemies in the game, which limit his freedom as a player, but, even more so, his freedom as a photographer."[35]

Photo modes were introduced on computer versions of games as well, and engines for advanced in-game content captures were developed to run on PCs. In 2016, graphic card company NVIDIA released their game capture system Ansel, named after photographer Ansel Adams. The company in the launch event clearly named in-game photographers as the target users of Ansel, and celebrated the "art of in-game photography"[36] citing some of the artists from the Sigl blog post four years previous. NVIDIA Ansel continued the narrative of the analogue photographic apparatus in its parameters, while providing the player with algorithmic tools that move beyond the idea of a mere screen capture: enhancement, manipulation and even the addition of visual information

35 Sebastian Möring and Marco De Mutiis, "Camera Ludica: Reflections on Photography in Computer Games," in *Intermedia Games – Games Inter Media: Video Games and Intermediality*, eds. Michael Fuchs and Jeff Thoss (New York: Bloomsbury Academic, 2019), 69–94.

36 NVIDIA, "NVIDIA Special Event: NVIDIA Ansel and In-Game Art (Part 1)," YouTube video, May 7, 2016, https://www.youtube.com/watch?time_continue=260&v=nanaE-vnjo8

that was not in the original game image. Poremba claimed that these game images became a further abstraction from photography's reference as "Ansel's actuality is not found in showing the game as it does look, but as it can look."[37] At the same time, the photographic activity of players was also shaped by photo modes and Ansel, as these platforms co-construct "in-game photography practices, in ways which align with … corporate interests, and in particular skew towards monetization potential, like the training of professional in-game photographers on Ansel, the centralization of user-generated content, the integration of its hardware into desired practices."[38] Players, who stop their gameplay in order to enter a space for photographic activity in photo modes and Ansel, are turned back into a regulated space – in what could be aligned to what Alise Tifentale and Lev Manovich call "competitive photographers."[39] What is hidden behind these simulated camera systems are algorithmic and networked imaging systems that recapture the value of in-game photography activities for advertising purposes and within structures of online attention economy on social media. The subversive potential of screenshotting practices and forms of photographic play against the game and its boundaries is turned into a form of manageable image production that is allowed and even encouraged by imaging systems that are structurally connected to the game.

Non-Human Game Photographers and Virtual Photography

In 2016, *Fantasy XV* (Square Enix) introduced a non-playable character named Prompto, who would accompany the player, "taking pictures" within the game world on their behalf. The player is presented with the pictures from Prompto at the end of each game day, and is given the ability to select and share the images on social media platforms. These game images are taken (or rather, created) algorithmically and without the player's possibility to intervene or take part in the capture process. They are served as outputs generated by the game,

37 Cindy Poremba, "Ansel and the (T/M)aking of Amateur Game Photography," in *Screen-Images: In-Game Photography, Screenshot, Screencast*, eds. Winfried Gerling, Sebastian Möring, and Marco De Mutiis (Berlin: Kadmos, 2023), 223–243.

38 Ibid.

39 Alise Tifentale and Lev Manovich, "Competitive Photography and the Presentation of the Self," in *Exploring the Selfie: Historical, Analytical, and Theoretical Approaches to Digital Self-Photography*, eds. Jens Ruchatz, Sabine Wirth, and Julia Eckel (London: Palgrave Macmillan, 2018), 167–187.

with the player-photographer now only able to decide whether they are to be shared online or not – or, in the words of Prompto's developer: "it takes effort to take a good screenshot. However, with Prompto's snapshot it's all 'auto'. To share or not to share is the only question you have left."[40] In-game photography – as claimed by Möring and De Mutiis in a provisional mapping of the phenomenon in 2019 – should be understood as

> a multitude of practices and technologies in which photography and video games interact. These practices and technologies do not share a single set of characteristics, but they show family resemblances in the Wittgensteinian sense. Thus, we refrain from offering an ontological definition of in-game photography. Instead, we describe different types of 'in-game photographies.'[41]

This plurality is necessary to break from the idea implied by the narration of photography in photo modes and game capture systems, which solidify the analogue medium through simulations that produce photorealistic game images that follow the trajectory of advertisement photography and the production of image capital. At the same time, photographies – even in its plural form – remained anchored to the analogue medium and prevents from focusing on the specific properties that make image-making in games possible. The majority of the possible photographies allowed in game spaces are in fact constructed upon algorithmic ways of seeing, computational images made of models and textures, and networked circulation regulated by online platforms with their own mechanics. These can be better addressed through an idea of imaging, although a specific kind of imaging that is connected with and shaped by the play experience with the game object.

Conclusion: Playable Imaging

This overview has shown the complexities of the game image and its interconnected relations to the development of videogames, computer technologies, visual network cultures, play activities, image economies and ecologies. The

40 Prasert Prasertvithyakarn, "Prompto's Facebook – How a Buddy AI Auto-Snapshots Your Adventure in FFXV," presented at Game Developer Conference 2017.

41 Möring and De Mutiis, "Camera Ludica: Reflections on Photography in Computer Games," 69–94.

image moves throughout the years from the surface of the computer screen to the textures that make the game worlds, and from the screenshot copy that documents the game experience to a creative and artistic creation isolated from gameplay. The actors and authors of the photographic act also move between developers documenting interfaces to players commemorating game moments, and from photographers creating stock images to players using photo modes to make photorealistic images from game worlds. Finally, the apparatus itself transforms from film and polaroid cameras to basic screenshot functions and then software simulating the analogue dispositif within the game. The picture, the apparatus and the photographers all seem to move, over the years, from a clearly demarcated "external world" to the inside of the screen, within the machine, while becoming inseparable from the game and enmeshed in the act of play.

In-game photography practices and images develop in parallel to the transformations of the photographic image in the digital and networked turn described by the discourses of image studies. At the same time, in-game photography requires interaction with the game object through the experience of – or the absence of, or resistance from – the act of play. In-game photography incorporates the issues of the digital image discourse from the last thirty years, but it also expands these tensions as it is inherently connected to the relation between the player and the game they operate (and are simultaneously operated by). The photographer, the apparatus and the images that are produced within in-game photography practices must be understood by analyzing them within the context of play: this reveals how the space of play and the affordances of the game allow, encourage, or resist the formation of different image practices. The game object, in other words, is not merely providing a screen for an external photographer to take pictures of, but negotiates with the player the possibility to create images. In doing so different forms of image systems emerge, shaping different forms of player-photographers, image aesthetics, as well as social configurations, economic systems and politics of the game image. Play here is to be understood as an act with very serious consequences, conforming to the rigid rules of the game, or resisting and transforming the game itself.

For these reasons, studying in-game photography cannot ignore notions from the field of play and game studies, in order to analyze the photographic acts and the different photographic agents and game images it produces. Therefore, researching in-game photography, while situated within the discourse of image studies, can be better understood through an idea of playable imaging. Playable imaging is suggested as a term that on one hand highlights

the agency of play in relationship to the act of taking pictures of the game world, while on the other proposes the idea of imaging to counter the traditional understanding of photography as a medium that is merely remediated in ludic spaces. The shift from in-game photography to playable imaging not only takes a distance from corporate interest in which the phenomenon has been appropriated by the game industry, but also allows the research to focus on the specificities of play activities connected to forms of image-making and invites the reader to critically rethink the role of both games and photography within discourse of algorithmic and networked images.

The implications of game and play in the role of the game-image open up ramifications that connect the study of games to the field of visual culture. They require many different approaches, and a framework that is able to unite the tensions of image making practices between game and play with the gamification and ludification elements in the expanded ecology in which these images are inscribed. Playable imaging is therefore used as a starting point for exploring photographic forms of play and what meaning they produce. It understands play as an activity that is not disconnected from the social, political, and economic role of the image in contemporary visual networked culture.