Uncovering the (Hidden) Co-Creativity: Ethnographic Streaming for a Game Design Praxiology Research Project

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ABSTRACT

In this paper, we reflect on a research project in which streaming gameplay on Twitch was utilized as part of data collection for a game design praxiology study. The project was conducted in Spring 2021 as a collaboration between Aalto University and The Finnish Museum of Games. It involved various sources of data collection to gain a comprehensive understanding of the development of the PC game *Noita*. The research project employed journalistic interviews, developer notes, sketches, early prototypes, multiple builds of the game, interviews with the development team, and community engagement activities. One of these activities was publicly streaming the gameplay of *Noita* on Twitch. This ethnographic streaming had a multi-faceted impact on the research project. It deepened our understanding of *Noita* as a streamable game, and provided insights into the game without requiring extensive playtime. It also uncovered the co-creative part of the development process: content creators, community managers and modders within the *Noita* community all impacted the designed experience of *Noita*. As one of the ethnographic approaches utilized in this game design praxiology study, streaming turned out to be in an important epistemic role. However, the process was also time consuming and involved several technical challenges as well as created an interesting gameplay experience bias.

Keywords

streaming, Noita, indie games, Twitch, game development, game design praxiology

INTRODUCTION

Understanding games as creative works is important for the larger understanding of them as cultural artifacts. Games are no longer a single phenomenon, but they manifest a multitude of phenomena that all deserve attention and affect the way games exist in our cultural fabric. Games cannot be disregarded as a cultural or

technological niche anymore. But at the same time, they have become harder and harder to grasp comprehensively (Stenros and Kultima 2018).

As interactive artifacts (and often audio-visual), games are hard to understand without engaging with them. A scholarly understanding of games requires playing them, one way or another (Stenros 2015, Mäyrä 2008, Aarseth 2003). Researchers need to engage in purposeful playing of games in order to analyze them. For Aarseth (2003), the academic engagement with games can be divided into "superficial play", "light play", "partial completion", "repeated play", "expert play", and "innovative play". These refer to the progression within the game and relate to the skills of the player. For some scholars, such as Myers (2010), it is the expert play that matters, as a game can be only fully understood via repetition and mastering the system. Stenros (2015) has explored this facet of game studies as "scholarly play", but also criticizes how the views of Myers and Aarseth are limited to only certain kinds of game experiences. This debate is connected to the implied ontology of games: how we argue what is essential for a game experience - or how we define them as processes or artifacts.

One of the fascinating facets of contemporary (video) gaming cultures is the rise of *performative play* and the consuming of others' gameplay experiences via *spectating* (Fernández-Vara 2009). The recognition of games being experienced not only through direct engagement but also through indirect means has become more apparent. Content produced as a form of gameplay videos and live streams allows us to immerse into game realms that would require mastery unattainable for us due to lack of resources or skills. Via recordings we can even experience games that are not available for play anymore. Community made Let's Play videos have been explored as a way to preserve the history of games in heritage institutions (Nylund 2015), and as a way for institutions to directly interact with the play community and to provide them with opportunities for preserving their play (de Vos et al. 2017). Spectating games has become a big part of the *ludosphere* (see Stenros and Kultima 2018) and professional playing has become a possibility due to modern services.

There are various platforms that enable streamed experiences for the consumers and enjoyers of playful cultures. While Youtube has been a dominant platform for different kinds of gaming related videos, including Let's Play videos, Amazon-owned Twitch.tv as a streaming platform focusing on live game content has gained a huge popularity over the years. Twitch was born as a spinoff service from Justin.tv which was launched in 2007. The spinned-off product eventually outlived Justin.tv itself, which was shut down in 2014. The popularity of Twitch streaming service has grown from its public beta launch in 2011 into service with millions of monthly broadcasters in 2020. The rising popularity of the platform has also awakened the interest of the game scholars and studies have covered surprisingly rich variety of aspects of the service from understanding the design of the platform (Anderson 2017), the aesthetics of personal live-streaming (Karhulahti 2016), utilizing the platform for game education (Guajardo 2019), understanding Twitch's speedrunning communities (Scully-Blaker 2016), examining the gender issues in streaming cultures (Guajardo 2022), to even highlighting a phenomenon of live game development on Twitch (Consalvo and Phelps 2021), just to name a few.

In the current era of game cultures, developers have to consider whether their games are fit for the streaming, or whether they are not part of that sphere of play. For a comprehensive scholarly understanding of games, a mere playing is not enough: Kultima (2018) makes a claim that in order for us to fully understand games, we need to also understand how they have been made. In game design praxiology (Kultima 2018), the development process and design situations are in focus. In order to

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understand games fully, we need to have a better understanding of the work that goes into developing them. The practice of game development is contextualized with constant changes: platforms are evolving, the audiences shift from one trend to another, new business models and regulations are emerging, and almost anything can change within a single production (Kultima 2018). It is hard to keep up with the changes in the industry, but at the same time, the change is what can motivate the creators (Kultima 2018). Designing a product for spectatorship calls for yet another lens for game design and the required expertise for a game maker.

Apart from the study by Consalvo and Phelps (2021), there is a very little reflection on how streaming could be used as part of the studying game development and production practices (cf. Kultima 2018, Sotamaa and Svelch 2021). In this paper, we are reflecting on a research project tracing the development path of an indie game from the initial idea to its launch, in which streaming was utilized as part of the data collection. We argue that including streaming or observing others stream, could be epistemically valuable also in game design praxiology projects.

NOITA

Noita is a rogue-like PC game with a fantasy theme. It is developed by Nolla Games, a company consisting of three Finnish indie game developers Petri Purho, Olli Harjola, and Arvi Teikari. The name of the game, *Noita*, is Finnish and it translates into "wizard" or "witch". The protagonist of the game is a mysterious character with a purple cape and the player can move the character around affecting the environment by shooting spells with a modiable wand (see Fig. 1). The game is built on a unique game engine, Falling Everything Engine. In *Noita*, all the pixels of the game are simulated, and they all have "physical" properties. This means that if for instance a structure in the game environment is destroyed, the behavior of the pixels is based on their given properties (for instance water flows down and mud sticks to the ground). The interaction is built in each pixel, instead of animations of the assets. That also means that everything is destructible and the game affords a lot of emergent content. Furthermore, the environments of the game are procedurally generated, affording unique playthroughs for each session: every round of the game is different. *Noita* features perma-death, so the player will always start anew after perishing in the game. The game features multiple levels, where the player is by default ascending from the top to reach a portal at the bottom of the level to transform to a space where they can replenish health and modify their wands, as well as create new combinations of spells that can be purchased from the shop using gold that is collectible from dead enemies and wrecked environments. The game also has lots of secrets facilitating explorative play and boss-fights to encourage players to build strength to their character.

Figure 1: Noita's gameplay view.

Noita was released on 15th October 2020. It entered Steam's Early Access (EA) on 24th September in 2019. However, the initial idea for Noita was born somewhere between 2005 and 2007 in a discussion between one of the creators, Petri Purho, and his friends. The development process was lengthy: game engine work started as early as 2011 and the game design work in January 2013. The development of the game stretched over ten years - ending to the dispatch of final fixes of the game in April 2021 (see Fig. 2). The development process involved many shifts and turns and the design was impacted by, not only various encounters with peer developers (at casual events, conferences and fairs), but also the modding community and feedback from the community when the game was in the Steam's Early Access program.
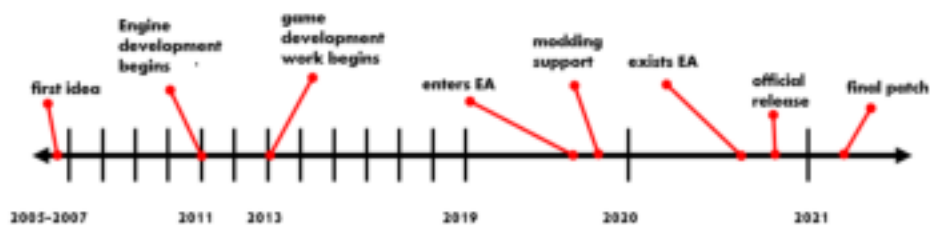

Figure 2: A rough timeline of the game's development.

The game was also intentionally designed to fit the culture of content creators and modders. In October 2019, *Noita* was shared to the community of modders (and later, in February 2020 as official support for Steam Workshop). The initially single-player game gained a variety of new content, including multiplayer functions and streaming support (current count of *Noita* items at Steam's Workshop is 934). As an example, one of the mods "Flesh Biome" (see Fig. 3) even adds new levels and characters to the game. Whilst the multiplayer aspect was never turned as part of the features of the official game build, the developer team of *Noita* added an official support for streaming integration in February 2020, to support the community of content creators on Twitch.

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Figure 3: In the mod "Flesh Biome" the player can play a community member created level entering into something that looks like the intestines of a horrible creature, with scary meaty new enemies inside.

THE RESEARCH PROJECT

Our research project was conducted partially as an academic project, and partially as a research project for a museum exhibition. The main goal was to bring awareness to the intricacies of the reality of game development for the general public. While the pedagogical goal for the museum project was to cater for wide audiences of the local game museum, we focused especially to those visitors who would be interested in understanding how games are made, and furthermore expected to provide a special treat for the fans of the *Noita* game due to the focus of the museum in covering Finnish games.

The research process started in January 2021 and was concluded in June 2021 when the physical work for the exhibition setup started. The results were introduced in the museum exhibition at The Finnish Museum of Games in the Autumn of 2021 for a duration of three months. The focal point of the exhibition were seven timeline images (see Fig. 4) that mediated the long journey of a game idea. The exhibition also featured multiple objects and two playable versions of the game: an early prototype of *Noita* (unreleased) and first version of the game that was released for the Steam's Early Access program in 2019 (now inaccessible version of the game) (see Fig. 5).

Figure 4: These seven timelines presented the results of the research project at the Finnish Museum of Games. Each timeline depicts a phase in the development process of the game *Noita*.

Figure 5: Noita - The Long Journey of a Game Idea exhibition setup at the Finnish Museum of Games.

The research team consisted of three researchers: two museum researchers from The Finnish Museum of Games (one as freelancer) and one postdoctoral researcher at Aalto University. In order to understand and represent the game as richly as possible, we gathered the materials of the project from multiple sources. First we went through material available in the popular press (such as journalistic articles, interviews of the developers, and public recordings of talks of the creators), we played the game (on the stream and privately), we acquired a rich material of developer notes (physical and digital), explored developer diaries, tested prototypes and development builds of the game, examined concept art, conducted interviews with the developers (via Zoom and via Discord), as well as engaged with the fan community. One of the methods for community engagement was a small survey inquiring the fans' wishes for the exhibition, but we also utilized fan-created contents (such as game wikis) (cf. vrt. Sköld 2015), and furthermore engaged them via Twitch and Discord. As part of our

ethnographic approach to understanding *Noita*, one of the researchers engaged in live streaming of *Noita's* gameplay. In this paper, we especially focus on the role of the utilization of Twitch streaming for our game design praxiology project, while the rest of the results of this research project is explored elsewhere.

As *Noita* had Twitch integration as an official feature already in 2021 when the research project started, we decided to include streaming as part of our research goals. Through this ethnographic approach, we wanted to make sure that the research project would capture *Noita* as thoroughly as possible. The project results were planned to be presented in the form of a public museum exhibition, which we anticipated to be of a special interest of *Noita's* fans. We were not aiming to only superficially cover *Noita*, even though our own understanding of the game was limited. We anticipated that we would not be able to become well versed with the game within the schedule of our research project, in order to gain a comprehensive understanding of *Noita* via first-hand playing. We assumed that this could potentially impact what we would come up with as our interview questions for the developer team as well as how well we would be able to interpret the other material, such as sketches and builds of the game.

From the praxiological point of view, we were not able to observe how the game was made (cf. Whitson 2018, Godin et al. 2020), as it was already on its final stage once the research project started. For these reasons, we wanted to probe the community of *Noita* players - as they had already invested extensive hours into playing the game and had been following the development of it throughout the Early Access phase. We were interested in which parts of the *Noita's* design journey they would like to know more about. The research team started streaming for the purpose of connecting with the community as well as deepening the understanding of *Noita* as a streamable game. In the following section, we introduce our approach and reflect on the lessons that were learned while including streaming in our game design praxiology research project. It is important to note, that streaming was only one part of the research work and the rest of the results of this project are beyond the scope of this paper.

STREAMING NOITA

To facilitate our study, a member of our research team created a Twitch stream specifically dedicated to playing *Noita*. This stream took place once a week and lasted for approximately 1-2 hours. The researcher already had some experience with streaming games on Twitch, which included a small following and technical familiarity with streaming software and setup. The purpose of these streams was twofold: to connect with experienced players and gain a deeper understanding of how the game translated to a streaming experience. Additionally, streaming served as a means to ensure regular gameplay through the social pressure of public (and scheduled) streams. Some of the streaming sessions were recorded, and the observations were documented in the project diary. The streams were not extensively promoted, mainly relying on the social media platforms of the streaming researcher. As a result, viewer numbers remained relatively modest due to the brevity of the streams and aligning with the researcher's existing follower base. Nonetheless, engaging in regular streaming provided several benefits.

Streaming for playing

Overall, the active streaming of *Noita* lasted from February to June 2021 with some exceptions to the schedule. While the streaming was mostly conducted by one of the researchers, in some of the sessions the other members of the research team followed the stream passively or engaged via Twitch chat. Overall, the streaming researcher

clocked around 100 hours of *Noita* gameplay, almost all under the public eye on the weekly streams.

Streaming to understand a streamable game

Perhaps a bit trivial, but yet an important outcome of playing the game on a public stream was to understand the game as an artifact that was meant to be streamed (whilst not focusing on this aspect solely). *Noita* is designed to be emergent, and the multitude of the dyings as well as procedurally generated environments in the game, makes it interesting to spectate. The researcher was also able to open up the Finnish words used in the names of the enemies in the game, which worked as a unique part of the stream within the dominance of non-Finnish streamers.

The public and performative nature of the streamed gameplay exposed a unique gameplay experience where one was constantly forced to externalize the gameplay thoughts, while engaging with the chat and trying to maintain a lighthearted and entertaining atmosphere. As an inexperienced player, this was a hard task. *Noita* does not explain almost anything to the player, which makes it challenging to learn while voicing out your thoughts at the same time. While a player can do a lot in the game just by shooting around with the wand and avoiding hostile characters, mastering the game requires concentration and logical thinking. One of the key features of the game, the wandcrafting, requires more static game time to figure out what each statistic menu means and how to build better combinations of the spells. It was hard to compete to get audiences to our streams, as the biggest streamers had clocked in over 1000 hours of gameplay - and their audiences came to Twitch to see their speedruns, insight on game secrets, or mastery of modifying the wands. However, this experience in playing the game helped us to ask relevant questions from the developer team - and affected the inclusion of community events as part of the game's creation journey. It impacted the praxiological framing of the project: we ended up touting the community as part of the creators of *Noita* as a holistic experience, instead of limiting us to the conventional understanding of games as made.

Acquiring all of the gameplay hours via streaming, created an interesting distortion or bias for the game experience. The streaming researcher was not exploring the game in silence like they were used to, and it was hard to concentrate on understanding everything in the game. On the other hand, it also extended the duration of the gameplay sessions, forcing the researcher to continue playing even though the game felt too hard, or even discouraged, in the beginning. However, this bias did not impact the research project in a negative manner, as the team had different game experiences for the game: one researcher had been playing *Noita* actively since its entering into Early Access, and another researcher played the game privately during the Spring of 2021 when the game was already out from the active development loop. These three different game experiences complemented the better understanding of *Noita* as a whole.

Streaming as a probe for social capital

One of the outcomes of the streams was to have viewers in the chat commenting on *Noita* sharing their own player experiences. The viewers were happy to share their tips and tricks and explain what was important or entertaining for them when they played the game. They also got interested in the exhibition project that was advertised on the stream. Some of the viewers were friends or acquaintances of the researcher, but some were just part of the *Noita* community and random viewers. Allowing and welcoming the players of *Noita* to share their gaming capital (cf. Consalvo 2007) on *Noita*, contributed to the research project, but also to the visibility of the exhibition.

Technical challenges as a major factor

Streaming a game requires a surprising amount of technical skills and resources. One needs to have a powerful computer and good internet connection, as well as a good microphone and potentially a decent camera. Several sessions of *Noita* were late from the schedule as there were struggles with slowed down performance of the game when the game was run at the same time with a popular streaming software OBS. This cut sometimes the play time of the game to a shorter session, as it was a timeboxed event in the calendar of the researcher. One of the persistent issues was that the researcher was running the stream on an otherwise powerful laptop, but the integrated graphics card was not fully compatible with OBS streaming software. It took several weeks to even identify the problem, and this impacted the quality of the streams. Eventually the later streams were easier to run, due to finding optimal settings for the given stream setup and the game.

The technical challenges also caused a lot of stress for the streaming researcher, and as the streaming itself requires a lot of energy to maintain a presentable mood (even after a masochistic continuum of embarrassing deaths), it was more draining than what was originally anticipated.

The expected benefits of the streaming project were cut from the impact of the stressors in the streaming. The technical struggles cut hours from preparing for additional content for the streams. For instance, the researcher started testing out mods only on a later part of the project. Using mods as part of the streams would have been more fitting content for an intermediate player. On a later phase of the weekly streams, the researcher also discovered their own "cheats" with the integrated Twitch feature. The official Twitch integration of *Noita* allows the streamer to set up intervals of random events for the game, of which the viewers can vote for simply by typing numbers on the stream's chat. The game picks three random events for the vote, but the streamer can choose the selection of the events from which the voted selection is picked from. Our streaming researcher discovered that one can pick a group of very limited positive events, and that the combination of those events can result in an overpowered character making the playing remarkably easier. With the help of this cheat, the researcher finally reached the final boss of the game. If that would have been discovered earlier, it would have been allowing a repeated, yet unique, approach for speedrunning the game on stream: the aspect that would have brought in more viewers as the regular audience's interest was revolving around speedruns.

Watching others stream

The streaming researcher also engaged in almost daily stream watching. In the mornings, the researcher would put the Twitch on, and watch *Noita* streamers while working on other tasks. The popularity of *Noita* streams varied a lot based on who was streaming and what time of the day it was (see Fig. 6). Watching the streams frequently also revealed the most popular streamers, such as DunkOrSlam, who was streaming *Noita* speedruns almost daily on that time of the day. This insight became useful later on when needed to interpret the community survey responses, which also featured some mentions of popular streamers. Occasionally the researcher engaged with the streamers via chat asking such questions as how long the streamer had been playing *Noita* or what they thought were the most enjoyable parts of the game. Many of the streamers highlighted the *Noita* wandcrafting as their favorite feature, something that the streaming researcher only started to understand at the latter part of the 100 gameplay hours. Viewing the daily streams was important for the preparations of the weekly streams, but also valuable in terms of understanding the parts of the gameplay that the researcher would not have time to delve into.

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Watching others stream also revealed gameplay tactics and provided understanding on the role of mods for the streaming community. The watching of the streams revealed for the researcher a very active community operating the official *Noita* Twitch account and the Discord server(s). These aspects might have been left uncovered by mere interviews of the developers as they themselves were less engaged with all the activities of the community (especially in the Spring 2021). At an early phase of the project, we set up a survey for the members of the *Noita* Discord server, to gather their favorite questions for the developer team (see Fig. 7). Later on, we also engaged in one-on-one Discord chat discussions with modders and other community members to check details of the mods, community events, or other mentions in our timelines.
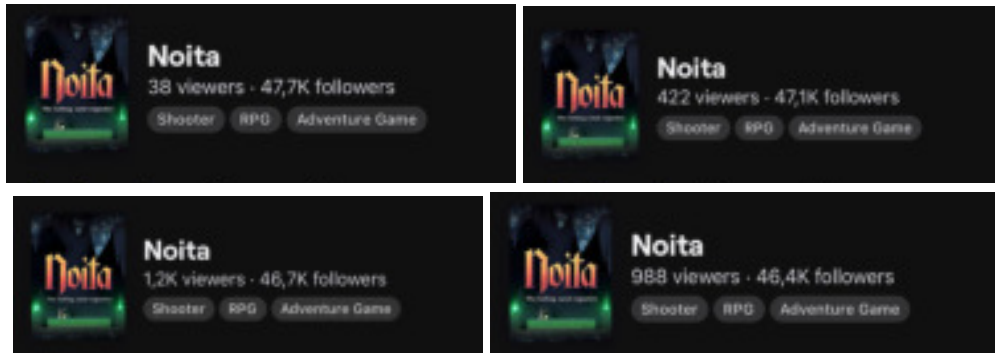

Figure 6: Screen captures from Twitch's mobile app of how many viewers the game had when the researcher watched the streams. The viewer count fluctuated a lot based on time of the day and who was streaming currently.
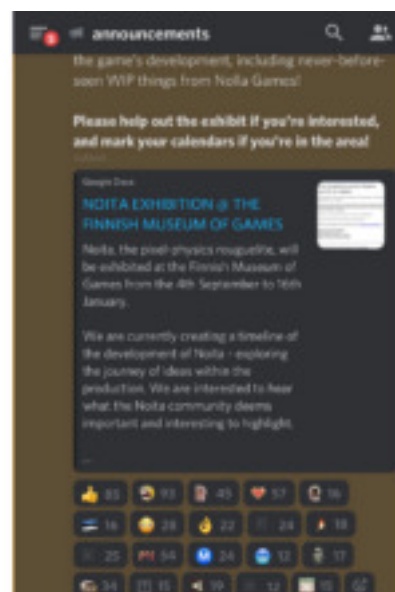

Figure 7: *Noita* community's admins advertised our survey on their Discord server.

REFLECTIONS

The research project was finalized in June 2021 when the opening date of the exhibition was approaching. At this point, we did not feel like we had uncovered all that there was to fully understand *Noita*, but we had learned that the game had much richer experiential context than we initially imagined. This was important for our goal of understanding also the creative process of *Noita's* developers. We ended up creating seven timelines (see Fig 4 & 5) of the development path of *Noita,* and decided to include the impact of community activities in the creative journey of the game. While we initially thought that streaming would function primarily as a platform for advertising the exhibition and creating a social pressure for keeping up with the game playing, streaming gave us a much wider window for understanding the multitude of creative inputs from the *Noita's* community. Our ethnographic path uncovered the co-creative nature of a development process of a single game, potentially typical also for other games utilizing Steam's Early Access model.

Witnessing and participating in the streaming of *Noita*, exposed how the design of the game was catering for the experienced players - as one might perhaps expect for a rogue-like; but also how multiple design decisions made in developing the game was building towards an active fan community. While the watching of the playing of other *Noita* streamers was giving us more information of the intricacies of the game, and showed a path towards the active community; the gameplay as public performance on Twitch also made it very clear that it is not the same to play *Noita* as a performance as it is to play it as a private experience. The public play prevented the immersion that the streaming researcher had been used to, but in return gave insight to the design decisions of the developers supporting the content creators (such as streamers and modders). Eventually *Noita* cannot be solely understood as a private single-player experience: it is also a streamable game designed for community-driven social experiences. We are assuming that similar games might have similar features in their development processes.

Overall, the decision of including active streaming to our research project ended up being a defining factor in discovering the full experience of *Noita*. This aspect was not well covered in the other public sources, such as journalistic articles, or in the conference talks by the developers. It only surfaced in our interviews with the developer team and the freelancers contributing to the development process. While the released game *Noita* was a product of the creative process of the core team of Petri Purho, Arvi Teikari and Olli Harjola: the full *Noita* experience was a result of a more collective creative journey. It includes the journey of the modders, but also community managers, and streamers creating content by mixing the official game with mods and their personal ideas for the streams. This impact is not necessarily bidirectional: some of the developers did not follow the works of the community (such as mods), or purposefully even opted out from following the discussions of the fans. *Noita* designed by the core team is not the same *Noita* that the community is playing and consuming. This is one of the reasons why praxiological studies cannot limit to developer interviews only. The main creators do not necessarily even understand what kind of game they have created.

Depending on a game, we need to be more systematic in including streaming into the future game research projects - also in praxiological studies. In the case of studying *Noita*, the revelation of the importance of streaming as a research approach came only after-the-fact. It might not be always visible to the surface to which game streaming is relevant. And while streaming has been acknowledged as an impactful phenomenon in gaming cultures, including streaming into the palette of research methods is not limited only for understanding game playing. Streaming as a research approach

should be included also into the study of the practice of game development. Creative process of making a game might not be limited to the credited developers, especially when a game is designed to be streamed and modded. And they might not be included in the public developer narratives of the games either.

As a recommendation for anyone engaging in deep reading of modern games that have the aspect of streamability, or active streaming communities: we advise that the researchers engage in the streaming cultures by streaming for research or observing others stream. This is not just for understanding the game as a streamable experience, but also for discovering experiences and creative inputs related to the game that might be otherwise hidden. Furthermore, modern ludosphere, cannot be fully understood without engaging into performative, and public play.

CONCLUSIONS

In this paper, we have explored the utilization of Twitch streaming as a part of a research project on the development of an indie game. Our conclusion for this experiment is that while playing a game as a streamer can be a limiting experience, it is also an important aspect in understanding games as a whole. The streaming experience of *Noita* did not only make it visible for the research team how the game's streaming features were working, but it also exposed the creative community of content creators, community managers and modders around the game, shaping the experience of *Noita* for other players (in co-creative fashion). Furthermore, watching the experienced players streaming *Noita*, opened the layers of the game that would have been hidden for such intermediate players that our research team consisted of. Streaming as part of the research project was important for widening our praxiological understanding of the creative process of making *Noita*.

ACKNOWLEDGMENTS

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