

**From Aesthetic to Epistemic Consumption: Analyzing Knowledge Practices in
Consumption Collectives**

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ABSTRACT

This paper explores the collective pursuit of quasi-scientific knowledge practices as a consumption activity. By comparatively analyzing focal knowledge practices in two highly-specialized consumption collectives we shed light on how consumers engage with epistemic knowledge. We thereby contribute to a better understanding of collective consumption in today's knowledge society.

INTRODUCTION

Inspired by consumers' current concerns with climate and health sciences, we follow the popular insight that we live in a knowledge society (Stehr 2012). This knowledge orientation even manifests in everyday consumption. Daily, consumers collectively create, legitimize, share, accumulate, and consume *epistemic knowledge*, i.e. explicit, tangible, and objective knowledge that manifests in data, facts, and information. Prior research acknowledges that knowledge is essential for collective consumption, but primarily examines a cultural conception of knowledge in a tacit sense focusing on cultural dispositions such as aesthetics or taste (cf. Kozinets, Patterson, and Ashman 2016; Maciel and Wallendorf 2016; Schau, Muñiz Jr, and Arnould 2009; Seregina and Weijo 2016). This paper explores the collective pursuit of epistemic (quasi-scientific) knowledge practices as a consumption activity. We present a comparative case study of two highly-specialized knowledge-intensive consumption collectives, game-breakers and drone racers, to show that practicing quasi-scientific knowledge can likewise drive and structure consumption collectives. Linking our findings to the rich literature on consumption collectives, we ask: *How is Epistemic Knowledge Practiced in Consumption Collectives?*

New insights into knowledge-intensive consumption collectives allow us to better understand consumption phenomena in contemporary consumer culture such as expert systems (Latour and Deighton 2018), nerd- or geek- cultures (Seregina and Weijo 2016), self-trackers (Etkin 2016; Lupton 2014), online forums and communities (Arvidsson and Caliendo 2015; Kozinets, Hemetsberger, and Schau 2008; Mathwick, Wiertz, and De Ruyter 2008; Stokburger-Sauer and Wiertz 2015; Woermann and Kirschner 2015), open-source movements (Arvidsson 2011; Hemetsberger and Reinhardt 2009; Ratto 2005), hacker cultures (Thomas 2002), fandom (Busse 2006; Kozinets 2001, 2007), and consumers communing around complex focal objects (Muniz and Schau 2005; Zwick and Dholakia 2006a, b). This literature has shown us that collective consumption is intertwined with knowledge practices and that there are no consumption collectives not pervaded by knowledge.

THEORY

We employ a practice-theoretical analytical approach (Reckwitz 2002; Schatzki 2002) to classify focal knowledge-practices in consumption collectives. We base our classification on the distinction between tacit cultural forms of knowledge (i.e. about aesthetics or taste) versus explicit epistemic forms of knowledge, as well as on collectives focusing on sharing versus crafting knowledge. Our simplified two-dimensional view emphasizes the interplay of epistemic and aesthetic collective consumption. Our analytical classes are not intended to be entirely orthogonal or exhaustive, and neither mutually exclusive.

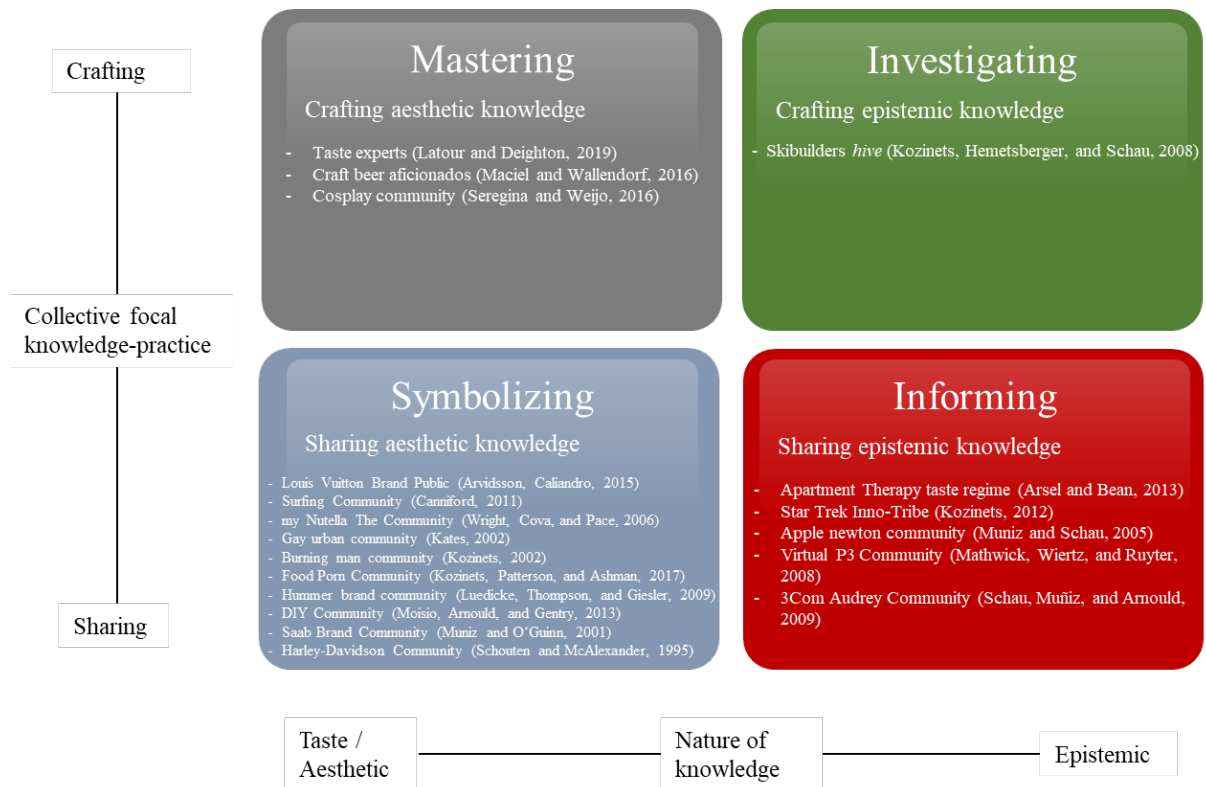


Figure 1: Focal knowledge-practices in consumption collectives

The two-dimensional structure yields four ideal types of focal knowledge-practices in consumption collectives: *Symbolizing*, *Informing*, *Mastering*, and *Investigating*.

We determine *symbolizing* as the focal practice of consumption collectives that share knowledge of taste or aesthetics. These consumers primarily engage in collective consumption to define their identity and/or to establish interpersonal relations. Here, the focal object is perceived as a carrier of (cultural) meaning symbolizing identity and status (Arnould and Thompson 2005). Consumption collectives sharing taste and/or aesthetic knowledge are studied diversely and profoundly in the rich literature strand of *Consumer Culture Theory* as most literature in this research stream falls into this broad class.

We further identified *informing* as focal knowledge-practice in certain consumption collectives. Consumers share epistemic knowledge in the form of *peer-to-peer* problem solving to build social capital (Mathwick et al. 2008) and hereby idealize the focal consumption object (Muniz and Schau 2005; Schau et al. 2009). As in the consumption collectives focusing on *symbolizing*, in this class, the object primarily serves as a carrier of meaning. However, its complexity is perceived as high due to the epistemic character of tangible knowledge that consumption with the object yields. Research has partially covered collective consumption phenomena whereby an analytical focus is on continuing discontinued market offerings (Kozinets 2007; Mathwick et al. 2008; Muniz and Schau 2005; Schau et al. 2009).

Consumption collectives focusing on *mastering* practice taste or aesthetics to craft knowledge. Here, the focal objective in collective consumption is to become *connoisseurs*. Knowledge is generated through the endeavor of reaching or approaching *mastery*. As with consumption collectives focusing on *symbolizing*, knowledge is defined in a Wittgensteinian sense of (sub)cultural competence (Schatzki, 1996; Warde, 2005) and thus of a tacit nature. The focal object is perceived as a complex carrier of information that can be analyzed and interpreted.

Most research in this field explicitly focuses on taste (of high-class beverages) yet (Latour and Deighton 2018; Maciel and Wallendorf 2016).

Finally, we identify consumption collectives that craft explicit epistemic knowledge with the focal objective of *investigating*. Consumption collectives in this class unite around a focal knowledge project that is complex enough to generate questions and to be unfolded and explored (almost) indefinitely. Consumers enjoy the intellectual challenge of collectively and creatively exploring complex (technical) consumption objects to overcome limitations and to achieve novel and clever outcomes. Thus, as opposed to the other classes, we define the collective innovation orientation in terms of crafting *new* knowledge as high. Compared to consumption collectives interested in *symbolizing* or *mastering*, taste and aesthetics are rather unimportant for these consumption collectives. Since *investigating* is the focal practice in these consumption collectives the structuring forces of knowledge are exceptionally high.

Having organized focal knowledge-practices in consumption collectives, we conclude that knowledge practices decisively shape collective consumption. We see that collective consumption is intertwined with knowledge and that there are no consumption collectives not pervaded by knowledge practices. However, most research focuses on knowledge in a Bourdieuan sense of accumulable field-specific disposition (Bourdieu 1984) or in a Wittgensteinian sense of (sub)cultural competence (Schatzki 1996; Warde 2005) (as it is the case with consumption collectives interested in *symbolizing* and *mastering*). Inspired by consumption collectives crafting epistemic knowledge we spot a research gap. With this study we propose an analytical *knowledge-based* approach to studying, categorizing, and understanding knowledge-intensive consumption collectives.

CONTEXTS

To study the focal knowledge practice of crafting epistemic knowledge in consumption collectives, we comparatively analyze two highly-specialized knowledge-intensive consumption collectives where epistemic practices are vividly exposed.

First, we studied drone racing, a competitive team sport notable for its demand for engineering skills, scientific understanding, and highly-intense adrenalin-drenched races at the intersection of e-sports and real-live racing. Drone racing or ‘FPV’ (first-person view) racing is one of the “fastest-growing sports in the world” (Stock 2015) where pilots control their small quadcopters remotely while wearing goggles which display the video signal from a small camera mounted to the drone in real-time. In races, up to ten pilots compete against each other. The race track is usually built out of various kinds of gates which the drones have to pass reaching speeds up to 130 km/h (Rohe 2017). Crafting and advancing the racing drone is not only directly linked to a competitive advantage in races but also a crucial step in legitimizing oneself as a member. As practitioners research, tinker, test, and experiment, community-specific knowledge is created, bundled, and shared. Ultimately, much more time, energy and resources are invested in crafting drones as compared to racing them.

Second, we studied game-breaking, a highly demanding activity of crafting understanding of games through collaborative quasi-scientific processes with the goal of optimizing for speed, minimum number of a-button presses, or the like. What they all have in common is that they do not operate within the logic of the game intended by the designers, but follow their own arbitrary rules. Therefore, we define game-breaking as a metagame, a game of optimization that transcends outside of the prescribed intentions of the video game. *Game-breakers* are well-connected and engaged technology enthusiasts who are keen to experiment. They enjoy the intellectual challenge of creatively exploring the game to overcome limitations and to optimize playthroughs. To reach their goal of optimization they collectively, dedicatedly, patiently, and

persistently engage in, sometimes painstaking, quasi-scientific processes for hundreds over hundreds of hours of exploring, analyzing, and deconstructing the focal object. To craft understanding, game-breakers commonly figure out how games are programmed to reverse-engineer them and break them apart aiming to solve the *puzzle* of finding the most optimal way to *beat* it. Game-breaking exists since video games have been around. However, once an underground hobby conducted by videogame players exchanging footage through obscure internet forums, since 2010 it has become an ever more rapidly growing global phenomenon, having occupied a significant place within game culture, reaching broader public attention, and even influencing the multi-billion dollar video game industry (Escobar-Lamanna 2019; Ford 2018; Lewis 2020; Scully-Blaker 2016; Warman 2019). Worldwide, game-breakers actively discuss in forums and via livestreaming platforms and stream and upload videos, with the most popular videos viewed tens of millions of times.

EMPIRICAL APPROACH

We conducted a comparative case analysis to discern similarities and differences of context-specific knowledge practices to develop our key theoretical themes with coherence and consistency.

In the fall of 2017, we joined a racing drone collective where we conducted a two-year multi-sited ethnographic study (Belk, Fischer, and Kozinets 2013) including participant observations on many different occasions like test sessions, building meetings, race practices, social gatherings, and competitions. Additionally, throughout the project, we derived a multi-sited netnography (Kozinets 2009) from publicly available user-generated content (e.g., posts of various kind in social networks like *Facebook* or *Instagram*, on discussion boards, on blogs, and on *YouTube*), as well as from content published in (semi-)private contexts like closed Facebook groups, closed Instagram profiles, or private messages.

Additionally, we followed game-breakers for two years online as well as on fairs, resulting in numerous hours of netnographic investigation, as well as in ten ethnographic interviews and eight recorded in-depth interviews. Since knowledge practices are hidden in socio-structural characteristics of both consumption collectives, we combined various methods such as ethnography, netnography, in-depth interviews, ethnographic interviews, photo, video, and audio recording in natural settings that can be used for an in-depth analysis of practices around knowledge (Canniford and Shankar 2013; Gobo 2008; Valtonen, Markuksela, and Moisander 2010).

FINDINGS

Building on Lévi-Strauss' (1966) pioneering analysis of human (problem-solving) thinking, we emphasizing the collective (questioning) mindset "that uses knowledge, experimentation, and speculation to solve problems and reach goals" (Maciel and Wallendorf 2016) in consumption collectives. Hereby, we find that the consumption collectives we studied craft, legitimize, archive, and disseminate knowledge. Our data show that drone racers and game-breakers use epistemic knowledge (e.g. in the form of complex formulas or advanced theoretical understanding), epistemic practices (such as conducting controlled tests and/or experiments), and epistemic tools (such as simulation software or data analysis programs). Engaged in an enduring cycle of theorization/hypothesizing and testing/experimenting drone racers and game-breakers successively unfold the focal object and gain explicit knowledge (Zwick and Dholakia 2006a, b), which is incorporated back into the local respectively the global collective. Hereby, a finely-meshed network of circulating knowledge flows evolves. Although we define both as epistemic consumption collectives, they are fundamentally different. Both have in common that they center around a knowledge project. Further, the focal

knowledge project is never ultimately finished but remains in a permanent *beta*-state in the constant process of becoming a future aspiration (Zwick and Dholakia 2006a, b). However, both collectives differ in structure. Even though racing drone pilots inform themselves online and engage in online communities, they primarily practice epistemic knowledge offline in their local community. Their *knowledge system* is rather closed as they maintain crafted knowledge within the community and only share knowledge which is of a general nature and does not directly lead to competitive advantage. In contrast, game-breakers primarily engage online with the worldwide community. In this open knowledge system, game-breakers share (almost) all acquired knowledge publicly, including specialized cutting-edge knowledge. In other words: While drone racing collectives have sealed knowledge systems operating in parallel, game-breaking collectives constitute one common unrestricted open knowledge system. Due to the nature of the knowledge system, the focal knowledge project is discrete in racing drone collectives while it is joint in game-breaking collectives. Further, we find that drone racing pilots engineer the drone by adding, changing or manipulating components, while game-breakers reverse-engineer the focal game by breaking and unfolding it. In both approaches to crafting epistemic knowledge weak-points are identified as starting points for further investigation. However, while drone racers identify weak-points by evaluating them against the background of the current technological possibilities and aspire to diminish them, game-breakers try to further expose and exploit them¹. To advance their focal knowledge project drone racers are partially dependent on the market (i.e. they wait for better batteries to be developed). In contrast, game-breakers are independent of the market as they work against market development.

CONCLUDING DISCUSSION

Consumption in game-breaking and drone racing collectives is fueled by epistemic knowledge. We extend the state of research as we identify crafting epistemic knowledge as focal practice for certain consumption collectives. Hereby, we learn (1) how individuals communize² around knowledge-intensive domains provoking complex consumption activities, and (2) how the epistemic dimension of consumption decisively shapes collective consumption practices. By focusing on knowledge practices in the epistemic sense (Knorr Cetina 1999) we contribute to the analysis of *know-how* (Maciel and Wallendorf 2016; Seregina and Weijo 2016), of consumption knowledge (experiential expertise) (Clarkson, Janiszewski, and Cinelli 2012), and of tacit knowledge (Arsel and Bean 2012) in consumption collectives. We uncover that consumers craft *epistemic knowledge* in quasi-scientific ways internally in consumption collectives. Building on the vast literature strand interested in consumption collectives focusing on sharing a tacit cultural form of knowledge (i.e. about aesthetics or taste) we show that consumption collectives focusing on crafting epistemic knowledge do not only practice knowledge for building social status (c.f. Kozinets 2001; Schouten and McAlexander 1995), for establishing interpersonal relations (c.f. Cova 1997, 1999), or for defining their identity (Arnould and Thompson 2005) but that crafting epistemic knowledge itself (at least partially) guides their passion.

To acknowledge this accelerating consumer movement, we propose studying consumption collectives practicing (epistemic) knowledge. Our data show that knowledge-intensive

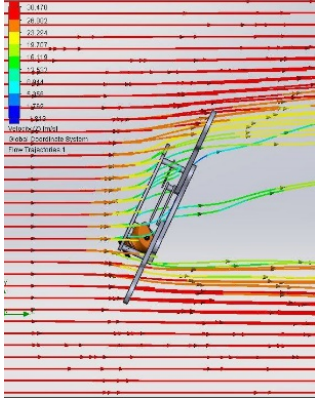
¹ Game-breakers refer to these weak-points as *bugs*, *glitches*, or *exploits*.

² Translated by Schatzki, Theodore R. (2002), *The Site of the Social: A Philosophical Account of the Constitution of Social Life and Change*, University Park: Pennsylvania State University Press., original: *Vergemeinschaftung* Weber, Max (1922), "Wirtschaft Und Gesellschaft, Tübingen," *Max Weber im Kontext*. InfoS-oftWare Karsten Worm, Berlin, 2.

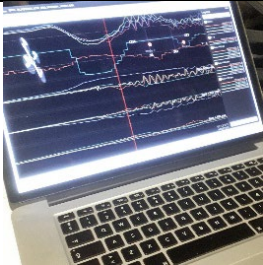
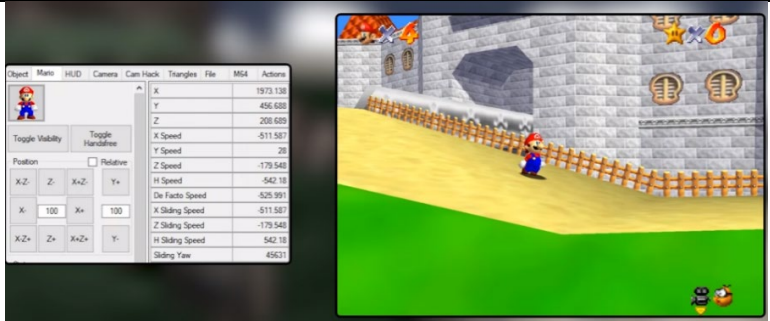
consumption collectives decisively challenge the market as they shape and co-create market offerings through developing, improving, or breaking the focal object or project and thereby continuously push the market boundaries. Through joining individual expertise and engaging in epistemic practices of crafting understanding, a finely-meshed network of circulating knowledge flows evolves. The goal of collective consumption is to continuously improve understanding of a focal consumption object at the hub of the community.

This study sheds light on (epistemic) knowledge practices in consumption collectives. In this way, we contribute to a better understanding of consumption in today's knowledge society, where collectively produced epistemic knowledge constitutes a basis for certain consumption practices. Furthermore, by understanding how consumers engage with epistemic knowledge we shed light on some of the current challenges of a knowledge society in which conspiracy theorists such as vaccination opponents or deniers of the climate change collectively produce *their own* knowledge just as quasi-scientifically as drone racers and game-breakers.

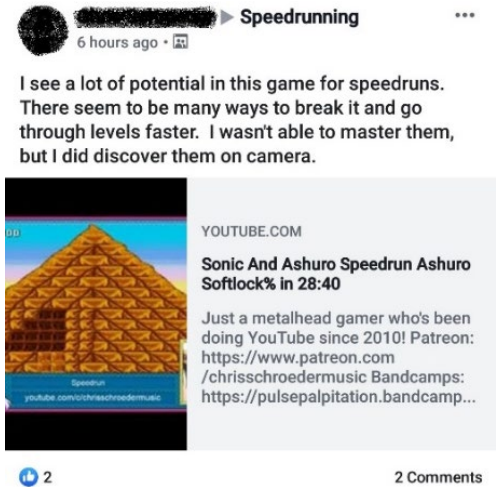
DATA TABLE

Knowledge-Practices	Drone Racing Illustrative Data	Game-Breaking Illustrative Data
Continuously striving towards a future aspiration	- “you can almost always improve, I guess that’s also what is very exciting.” (Interview, Informant 12, 1:01:50) - “You will never be done with improving the drone. It’s always about improving the drone a little bit every day.” (Ethnographic Interview, Informant 10, 01.03.2018)	- “I like to continue striving towards that theoretical perfect time, even though it’s not going to happen, but that you feel motivated because I know I can always continue working towards it. I’m only going to get closer to it over time.” (Interview, Informant 2, 1:10:15) - “I enjoy seeing like, how far you can exploit a game. Yeah, seeing like, what the absolute limit for a game speed run is.” (Interview, Informant 1, 12:20)
Theory crafting / Hypothesizing	- “In his design process, Informant 10 optimizes the drone as much as possible by the aid of digital simulations and hopes that they are as close to the reality as possible and then constructs the drone and flies it outside.” (Fieldnotes, 07.04.2018) 	- “Theory crafting is where you’re coming up with possible ideas for shortcuts or glitches.” (Interview, Informant 2, 31:42) - “I usually have a theory that could work and then I just try it out using different methods [...] then you first look at ‘okay is it theoretically feasible?’ you look at ‘okay what do I have available at that time?’ and then of course you analyze what you can do with your available tools.” (Interview, Informant 7, 21:33) - “we said ‘okay, theoretically this can happen’. So I ended up being the person executing their idea.” (Interview, Informant 2, 29:23)
Accumulating Knowledge	- “of course, there’s always the ones who are a bit further than the others so that’s there’s different levels of experience and then you often go to the one with more experience of course if you have a problem you want to solve” (Interview, Informant 14, 40:58) - “these hobby message boards are really useful as well you can also just google stuff or find <i>YouTube</i> videos about [...] DIY drones” (Interview, Informant 8, 09:10)	“I’ve been doing this every day actually; I go on <i>YouTube</i> and type in <i>spider reignited trilogy</i> [name of the game] glitch and I select for the last 24 hours every single video and watch them,” (Interview, Informant 3, 40:25)

Sharing Knowledge	- “Helping others is part of the culture within drone communities” (Ethnographic interview, Informant 10, 07.04.2018) - “A lot of the things we share in the local community is also just the ideas and the new things like [...] finding a new way of doing something” (Interview, Informant 12, 47:11) - “I guess [...] we're kind of, eh among the pros in the [...] very narrow areas and that's basically where we than think ‘ok I can actually post something here’ because we can actually help people.” (Interview, Informant 14, 32:42)	“If I find something, I'll upload it within the next 10 to 15 minutes.” (Interview, Informant 5, 16:34)
Experimenting / Testing	- “you have to go outside and then you find out ‘oh it doesn't work’ I go in again I find out ‘oh it's because I haven't soldered this’ or whatever and then you go out again it's a lot of going back and forth within experimenting.” (Interview, Informant 16, 73:38) - “mostly testing in the hobby is pretty primitive so mostly [...] you replace the component on your copter and fly and then see I it gets better or worse.” (Interview, Informant 14, 09:40) - “He [Informant 11] stated that crashes are an important part of each experiment.” (Fieldnotes, 07.04.2018)	“Basically all the programming behind the game is like the rules of the game, but you don't really [...] see that. So all you have is the result [...] if you press A Mario jumps, you see that. So by inferring, like by experimenting within the game, you find out about the rules of the game, and you sort of figure out how it works.” (Interview, Informant 3, 39:16) “After mapping the wall collisions, I was like: ‘Oh, so if I did this right, then this corner should have this open openness with the collision. So Mario should be able to go closer than normal.’ So then I believe in the game I went at that point, I found out that yes, that was true.” (Interview, Informant 2, 1:00:10)”
Analyzing Data	- Digital data can be gathered by a processor in the flight controller and extracted and analyzed by using an open-source software called <i>Betaflight</i>. Among others, this software provides information about the speed and acceleration of the drone, motor temperature, and the voltage consumption	For the analysis, frame-specific data regarding the position in space, the memory cache, Mario's speed per frame, and much more information is displayed.

	 - “Informant 10 summarized this crash with the sentence: 'There is no bad data.’” (Fieldnotes, 07.04.2018)	 - “A community really makes it easier to collect things and crack theory accordingly because there might be one person who is strong in one element e.g. in doing the tricks [...], others can craft theory so well that it makes sense to try these tricks” (Interview, Informant 7, 27:19) - “<i>Mario Kart Wii</i> is a good example, because I'm not the only person working on that game. We have a specific server on <i>Discord</i> where it's a bunch of different people collaborating. [...] it's a team effort to try to push the game to its limits.” (Interview, Informant 2, 11:28) - “you’ll hear people are playing to improve the time for the community” (Abney317 in: Snyder (2017)) - “I would [...] like to thank [name of the game-breaker] for his continued work in glitch-hunting this game, [name of the game-breaker] for his work in reverse-engineering a sizeable skip in the middle of the Prologue and [name of the game-breaker] and [name of the game-breaker] for their work in RNG manipulation and reverse-engineering certain battle mechanics.” (<i>YouTube-video</i>³ uploaded by Informant 2, 00:50)
Investigating collectively	- “Building a drone is not a one-man project, it really isn't. It's collective.” (Ethnographic Interview, Informant 10, 01.03.2018) - “All the different backgrounds from the individual members are really important to build the ‘perfect drone’. Some have very advanced knowledge in electronics, some in software design and others, like Informant 11, have a really good feeling for the drone so they can help to calibrate it in the end.” (Ethnographic Interview, Informant 10, 01.03.2018) - “Building a drone demands so much knowledge in so many fields, no one could ever do that without help.” (Ethnographic Interview, Informant 13, 07.04.2018)	

³ Due to anonymization we do not link to the video.

Advancing the state of knowledge	- “It is this evolvement of the drone what the hobby is actually about. Most people from outside only see the races on the racetrack, but the real race takes place in developing the drone.” (Ethnographic Interview, Informant 10, 05.05.2018) - “Informant 11 proudly stated that he and Informant 10 are doing things that are not ‘out there right now’.” (Fieldnotes, 01.03.2018)	- “after mapping the wall collisions, I was like: ‘Oh, so if I did this right, then this corner should have this [...] openness with the collision.’ So then [...] I went at that point, I found out that ‘yes, that was true’. So like experimentally, verifying what you find, in theory, is exactly like the same satisfaction that scientists get when they're like: ‘all right, if I apply these formulas correctly, there should be a black hole there.’ And then they find it. It's like, amazing. [...] You learn about the rules, you apply them, you make a model, you test it experimentally and if it works exactly that that's like the perfect feeling.” (Interview, Informant 1, 1:00:10) - “Games are systems, and sometimes the creators of those systems do not envision all it is possible within the system, we find ways to do things that no one knows they are possible.” <i>Narcissa Wright</i> in Wagner (2019)
Identifying weak-points	“Since the drone is already that much developed there are no major things where he can save weight anymore. That is why informant 11 claims that he has to ‘go on the hunt for grams.” (Fieldnotes, 05.05.2018)	

HONOR CODE STATEMENT

Hereby, we affirm that that the presenting authors are not listed as presenters in more than two sessions in total, and that the submission has not been submitted to multiple tracks, has not been previously presented at ACR, and has not been published or accepted for publication in any journal (including online publications and full-paper publications in conference proceedings).

DATA COLLECTION INFORMATION

The first author conducted the entire data collection himself from fall 2017 until March 2020. Data were discussed and analyzed by all authors using the first author's field notes, photographs, video, artifacts, screen captures, and text files. The final ethnography was jointly authored.

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