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Mediatized Engagements with Technologies: "Reviewing" the Video Assistant Referee at the 2018 World Cup

Carlos d'Andréa[1] and Markus Stauff[2]

Abstract

This article presents the implementation of the Video Assistant Referee (VAR) as an example of the increasingly layered mediatization of sports. We argue that, while integrated into the established broadcasting protocols, VAR becomes an object of explicit reflection and popular debate—and increasingly so, when football and its TV coverage are discussed on "technologies of engagement" like Twitter. Combining the concept of mediatization with insights from Science and Technology Studies, this article discusses how and why sports systematically contribute to what we call "mediatized engagements with technologies." The combination of football's "media manifold" comprising epistemic technologies, television, and social media with its knowledgeable and emotionally invested audience inevitably limits the "black-boxing" of a refereeing technology. Our case study analyses how fans, journalists, and others evaluate VAR in action on Twitter during the men's 2018 FIFA World Cup. Based on a multilingual dataset, we show, among other examples, how the media event displays the technology as a historical innovation and analyze why even the allegedly "clear and obvious" cases of its application create controversies. In conclusion, the article discusses how the layered mediatization of sports, its partisanship, and ambivalent relationship with technologies stimulate engagement far beyond the fair refereeing issue.

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While the men's FIFA World Cup 2018 (WC2018) was still proceeding, British online music magazine New Musical Express published a listicle presenting the "best bits from the 2018 World Cup that do not have much to do with footy" (Connick, 2018). Next to clips of funny behavior of players or fans, it also included the Video Assistant Referee (VAR), which was used for the first time on a global scale during the tournament in Russia. The short entry highlighted the emotionally charged debates around the new technology and illustrated it with an embedded video-tweet in which a player of the Moroccan team addresses a TV camera calling VAR "bullshit" while imitating the official VAR hand gesture (drawing a rectangle—the outline of a screen—into the air).

Magazines fabricating "best of"-lists that embed social media footage are pretty common for all kinds of content by now. But this case— a music magazine embedding a tweet that includes a viral video of a player complaining about football's implementation of a new technology in front of a global TV audience—underlines how sports' characteristic interplay of different media transforms a quite specific technological device (the VAR) into an item of popular culture and of public engagement.

With the WC2018, the visuals of the VAR in action (the monitors, the hand gestures, the Video Operation Room, etc.) became a staple of global reporting on the event. Especially on Twitter and other social media, where the voices of journalists, organizing bodies, and the fragmented global audience combine, the set-up and use of VAR are turned into objects of both funny, memetic activities and intense controversies about the technology's influence on the outcome of each match and on football more generally.

The refereeing technology thus underlines sports' role as a forerunner and key example for the wider processes of mediatization (Frandsen, 2020). Its impact on the experience of the game (by players, organizations, fans) results from its embedding in a "media manifold" (Frandsen, 2016, 6; Hepp, 2020, 13)—most conspicuously, from its entanglement with television and social media.

So far, such mediatization of sports is mostly discussed with respect to organizational, economic, and representational changes. Additionally, though, and this is the main contribution we aim to make in this study, VAR exemplifies how the layered mediatization of football makes new technologies into an issue of explicit reflection and popular debate. Combining the concept of mediatization with Science and Technology Studies' (STS) insights into technologies' "interpretative flexibility" (Pinch & Bijker, 1989), this article highlights sports' contribution to what we suggest to call "mediatized engagements with technologies": In sports, technological systems (such as VAR) are implemented in already highly mediated practices—including a knowledgeable and emotionally invested audience. The TV live-images of VAR's application in controversial

moments of a match incentivize a diversity of actors to not only understand the technology but to actively scrutinize, evaluate, contest, and thus engage with it. The establishment of social media and their close entanglement with sports live events not only make such public engagement with technology visible (and accessible for analysis); additionally, they act as "technologies of engagement" (Marres, 2012) that intensify and shape the controversies through their own modes of mediatization.

Our main question thus is: Why and how does the layered mediatization of sports (media as topic and as environment of debates) contribute to the popular awareness and critical reflection of the implementation of new technologies? Focusing on the example of the VAR during the WC2018, we mostly discuss two aspects of this question, one more conceptual and one more empirical: (1) What are systematic characteristics of (mediatized) sports that instigate and perpetuate controversies around the new technology? (2) What types of (and reasons for) engagement with the new technology are prevalent in the layered mediatization that characterizes Twitter debates during global live TV-events?

The first three sections of the paper discuss sports' contribution to a "mediatized engagement with technology" from a theoretical and historical perspective. First, we build on mediatization research to show how sports' entanglement of different media makes the operational and epistemic use of a new technology visible to a broad audience. The refereeing technology is thus implemented as an additional, highly visible layer of mediatization. In a second step, we use STS concepts such as "interpretative flexibility" to underline that sports' controversies should be taken seriously as a contribution to the public engagement with technology. The conceptual part concludes with a historical outline that shows how sports' ambivalent relationship with technology and its partisanship continuously question the organizational scripting of technologies like the VAR and keeps debating what was supposed to be "clear and obvious."

Based on a multilingual dataset, our case study approaches Twitter as a "technology of engagement" that allows both a quantitative overview and a qualitative analysis of how the refereeing technology has been debated by fans, journalists, and others during the WC2018. Next to the lack of transparency of VAR's application, the emotional allegiance, historical comparisons, and the playful style of online communication are some of the key drivers of controversies. In the conclusions, we discuss how the layered mediatization of sports and the engagements of its partisan audience undermine any quick "closure" of technologies' "interpretive flexibility."

Layered Mediatization and Sports' Epistemic Technologies

Football referees have been using communication tools like red and yellow cards or whistles for decades; yet, the embedding of video technology into these established practices changes the experience and perception of football for players, officials, and audiences (e.g., with a focus on Rugby; see Stoney & Fletcher, 2020). This transformation continues when fans, journalists and organizations discuss the use of this new

technology on social media. Both the implementation of the VAR itself and the way it is debated on social media during a live event like WC2018 can be understood as steps in an ongoing and comprehensive process of sports' mediatization.

The concept of mediatization is pertinent here: Instead of discussing the impact of a particular media product or an individual media technology, it sensitizes to attend to the structural transformations that result from the embedding of different types of media in all social and cultural practices (Couldry, 2012, chapter 6; Livingstone, 2009; Lundby, 2014). Instead of a uniform effect of mediatization, the concept assumes that aspects of media become used, integrated into, and molded by both organizations and everyday practices that selectively adapt themselves to the (partly imagined or anticipated) "affordances" or "logics" of mass media or social media platforms (Birkner & Nölleke, 2016; Couldry, 2012; Hepp, 2020).

The mediatization perspective has been most prevalent in research on political communication and on everyday life (for a classification of different approaches, see, e.g., Hepp, 2013; Lundby, 2014). Recently sports has been discovered as a rich field for this approach, too. Frandsen (2020) convincingly argues that sports—as a quintessential "born mediatized" socio-cultural practice—allows insights for the wider social process of mediatization. From its start in the 19th century, competitive sports has become not only a topic of all major news and entertainment media (newspapers, film, radio, television, social media), but it clearly developed in close entanglement with these media (Boyle & Haynes, 2000; Werron, 2010). As a key example for the reciprocal dynamics of mediatization, sports adapts its schedules, its organization, its self-presentation to media dynamics like serialization, eventization, or personalization (e.g., Frandsen, 2020; Heinecke, 2014; Raunsbjerg, 2000) while simultaneously changing the audiences, the organization, and the technologies of media (e.g., Frandsen 2020; Johnson, 2021). While this interplay shows a lot of variety, sports' striving for global competition also creates forms and patterns of mediatization that transcend national borders (Frandsen, 2014, pp. 534f).

Our analysis of the video assistant referee in football builds on but also adds to this field of research. Often, the "media manifold" (Couldry & Hepp, 2018) that characterizes mediatization is only discussed with respect to the parallel existence of different dissemination systems (say: newspapers, television, social media) and how they impact the interrelation between athletes, sports organizations and with fans (e.g., Hutchins & Mikosza, 2010; Hutchins, 2016; Nölleke et al., 2021; Skey et al., 2018). Going beyond that, sports—and VAR especially—directs our attention towards aspects of mediatization that result from an uneasy mix between the media reporting on sports (media "out there," according to Frandsen (2016)) and the media used to organize the actual activities ("in there"). Mass media offering an audiovisual narrative of an event and social media organizing discussions about this event become entangled with "epistemic" (Scholz, 2021) or "operational" (Farocki, as cited in Hoel, 2018) media that organize basic procedures of the event (like decision-taking by referees).

A comparison with a different field might be helpful here: Analyzing scientific practices, Mike S. Schäfer (2014) distinguishes three different layers of mediatization:

Scientific practices are impacted by mass media, by internal (organizational) media of communication, and by the use of media as scientific tools. The implementation of VAR, we want to argue, complexifies this configuration by blurring the boundaries between these layers: While VAR is an epistemic instrument (similar to an electron microscope in a laboratory), it uses the images produced by the mass medium television; additionally, TV incorporates and disseminates this new mode of epistemological mediatization to a global audience that, incited by the combination of social media's affordances and sports' partisanship, comments on both the use of VAR and its depiction on TV.

VAR indeed exemplifies how the "continually differentiated media environment" (Frandsen, 2016, p. 8) changes both the organization and the experience of sports practices. In the following we will focus on a more specific aspect of mediatization that becomes evident with the implementation of VAR: Sports' layered mediatization makes this new epistemic technology—and thus the process of mediatization itself—into a topic of public debate.

Critical Engagements with Refereeing Technologies

While the wider processes of mediatization often are characterized by (or at least result in) habitualized ways of media use (Hepp, 2020, pp. 71 and 153), new media's embedding in social practices is never a given. Hepp (2016) describes how early adopters—what he calls "pioneer communities"—not only experiment with different ways of defining and using new technology, but also develop "[p]ublic conceptions of media-related transformations" (Hepp, 2016, p. 929).

Supplementing the insights from mediatization studies with concepts from Science and Technology Studies (STS) we want to argue that sports systematically fosters "mediatized engagements with technology" that can productively expand and reframe the role of "pioneer communities." When sports audience discuss the application of a new epistemological technology (and the respective TV coverage) on social media platforms like Twitter they articulate ideas about the qualities of this technology, its appropriate use on the field, in a specific match, and its broader (detrimental or beneficial) impact on the much beloved sports.

According to STS-scholars, new technologies are developed together with a "script" (Akrich, 1992)—a set of implicit or explicit assumptions that are supposed to order its applications, functions, and effects. At the same time, different social groups or organizations see different aspects, use-cases, and potentials for a technology and thus add "interpretative flexibility" (Pinch & Bijker, 1989). The ongoing transformation of technologies is thus shaped by the (tentative) adjustments between their originally planned ("scripted") form and the actual, situated modes of use. In this process, which Akrich (1992) calls "de-scription," a technology may become successful through an (at least temporary) "closure": its technical set-up and its modes of use then become habitualized, simplified and thus "black-boxed" (Bucher, 2016; Callon, 1986). We argue here that sports'

combination of epistemic/operational and mass media prevents stabilization and heightens interpretative flexibility through ongoing controversies.

The negotiations between experts and a wider public are one of the key elements of such processes. While earlier STS research was often calling for an improvement of the public's *understanding* of science and technology (e.g., for democratic participation), more recent research approaches the public's *engagement* with technology as an unavoidable and constitutive element of all technological innovation—independent from the "correctness" of the public's ideas (Michael & Lupton, 2016; Wynne, 2002).

Remarkably, though, STS research on sports still tends to focus on the question of understanding. Harry Collins and his collaborators, who presented the most in-depth analysis of refereeing technology so far, consider it a missed opportunity for improving the "public understanding of technology" (e.g., Collins & Evans, 2008). Focusing on tennis' Hawk-Eye system, they criticize that its application is misguided by an "accuracy fetish" (Collins et al., 2016, p. 81): Instead of teaching a wider audience about the (often ambiguous) procedures of creating scientific knowledge, the set-up invisibilizes the decision-taking process and gratuitously presumes the supremacy of technology over human imperfection. This lack of understanding undermines the referee's authority and creates unnecessary controversies—and argument that is regularly repeated in research on refereeing technology (Armenteros et al., 2020; Stoney & Fletcher, 2020).

Deviating from this perspective, we suggest considering controversy neither a problem of failing protocols nor of a lack in public understanding of technology, but a productive characteristic of sports' layered mediatization. Following Sheila Jasanoff's (2003) critique of Collins' normative approach, we suggest a different perspective: (1) Sports, not least through its ambivalent attitude towards technology and its characteristic partisanship, systematically produces controversies about its mediatization, which cannot be prevented by improved technology or improved education of the audience. (2) Controversies should be analyzed as an especially rich source for analyzing critical *engagements* with technology—even if the terms of the controversy might not always satisfy the scholars' (or the designers') ideal of a public *understanding* of technology. As non-stabilized situations that produce new alliances and question the distribution of power (Venturini, 2010), controversies, understandably, are annoying for the organizing bodies of sports and threaten referee's authorities; but this should not prevent sports scholars from approaching them as moments that offer insights into the "porous boundaries between science, technology, politics, the media and the citizenry" (Pinch & Leuenberger, 2006, p. 8).

This is all the more important considering the layered mediatization of sports. Recent research has highlighted how controversies—and public engagement more generally—are shaped by sociomaterial possibilities of different media (Marres & Moates, 2015; d'Andréa, 2016). Combining the STS vocabulary with the sensitivities of mediatization can help to analyze how the sports-media entanglement not only transforms the experience of fans, but it also spawns a reflexive discussion about mediatization itself. Before we move towards a case study to discuss how the WC2018

fostered engagement with VAR, we want to conclude this conceptual part with a reflection on sports' systematic contribution to technological controversies: next to its layered mediatization, sports' partisanship and its ambivalent relationship with technologies make any "black-boxing" highly unlikely.

Sports' Technological Controversies and the Video Assistant Referee

Far beyond the case of VAR, sports enrolls fans as "pioneer communities" (Hepp, 2020, 30–39) by implementing new technologies in front of an extensive, knowledgeable, and emotionally involved audience. We have argued that its layered mediatization systematically creates public engagement with new technology. Here we want to shortly address two more basic characteristics of sports that very much contribute to and shape the dynamics of technological controversies: first, its historically ambivalent relationship with innovations and, second, the competitive character in sports and the respective partisanship of fans and media coverage.

Sports had an ambivalent relationship with technology since its emergence in the 19th century (Stauff, 2018). Above we already mentioned how this field achieved its current form in close entanglement with emergent media. Additionally, the ongoing quest for the improvement of performances created incentives for the early adoption of and experimentation with technological innovations (Hoberman, 1992; Mulvin, 2014). On the other hand, until today, its self-definition as an authentically human practice spawns ongoing suspicion against the many forms of mediatization that become a constitutive part of it and—at times—threaten to become more important than the athletes' physical and mental capabilities (Butryn, 2002; Fouché, 2017). Sports, thus, gives not only good reasons but also ample discursive resources to discuss and evaluate new technologies in action.

Not surprisingly, such controversies are also provoked by the increasing use of media technologies to make performances more transparent for referees and audiences. In principle this happens from the beginning of sports: Lines, goal nets, or finish line photography can all be considered "decision aids" (Collins & Evans, 2011) that enhance visibility to support the referee's decision: foul or no foul; ball in or out; etc. In some cases (like the horizontal bar in high jumping), technology actually acts as "decision maker" (Collins & Evans, 2011) thus partly taking over the referees' tasks.

Offering a great example for layered mediatization, more advanced refereeing technologies have been introduced in reaction to growing discontent that resulted from the visibility of misjudgments on TV. This medium's slow-motion replays offer the live audience augmented visibility, thus threatening the "epistemological privilege" of the human referee on the field (Collins et al., 2016, p. 11). At times, football's organizational bodies actually complained about (and sometimes tried to prevent) slow-motion replays on television (Eisenberg, 2005, p. 594) or at least banned them from the in-stadium screens.

Here too, the concerns partly result from football's claim on "purity" and "authenticity," that might motivate "defensive strategies" (Nölleke et al., 2021) towards

particular forms of mediatization. For decades the occasional calls for refereeing technologies in football got refused because of their alleged threat to the human qualities of the game. In 2002, for example, FIFA and its then boss Joseph Blatter argued that technological support would "destroy an essential element of our game – the emotion. If our game becomes scientific then nobody will have any discussion any longer" ("Blatter rules out technology", 2002). However, with each new blatantly visible (and highly consequential) misjudgment, the calls for a "technological fix" (Rosner, 2004) became louder: Motivated by refereeing mistakes during the 2010 edition (Bandini, 2010), the Goal-Line Technology was implemented for the men's World Cup 2014 (Winand & Fergusson, 2016). In March 2018, after earlier tests in some national leagues and smaller international tournaments (FIFA, 2017; Medeiros, 2018), the FIFA Council approved the Video Assistant Referee for its most traditional tournament. Different from the Goal-Line Technology, VAR is a "decision aid" that actually multiplies and displays the role of humans and their relation with technologies.

From an STS-perspective, the implementation of VAR during the World Cup 2018 could be considered an effort to fix previous problems that resulted from additional layers of mediatization by introducing a new layer with a well-defined script (Akrich, 1992). The International Football Association Board (IFAB) protocols define the set-up of monitors, assign roles, procedures, and manners of using VAR: Additional assistant referees monitor all situations in a Video Operation Room (VOR) (this process is called "silent checks"); in case they identify what the rule-book describes as a "clear and obvious" error (IFAB, 2017), they advise the on-field referee to scrutinize the video footage on the newly installed pitch-side monitor (an "on-field review").

Following the "mininum interference, maximum benefit" philosophy (IFAB The International Football Association Board, 2017), the "clear and obvious" criterion is considered a threshold to reduce the technology's interference with in the flow of the match and to ensure the authority of the human referee. Yet, even if football's ambivalence towards technology could be overcome, the competitive and partisan character of sports undermines the rationality of a technological script and injects "interpretative flexibility" into allegedly "clear and obvious" situations.

From the start, VAR was not only aiming at developing a technically reliable system; additionally, its procedures of creating evidence were carefully entangled with the TV coverage of football to address and convince the wider audience. Conceding that VAR's integrity would be "*undermined if the broadcaster could show footage not available to the VAR*/referee which contradicts the VAR/referee decision," the IFAB handbook explicitly prescribes that "any review *uses the same footage as that which may be seen on television*. (IFAB, 2017, p. 12; emphasis in original.)

This alignment of refereeing with the audience's mediatized perspective was supposed "to solve the controversy" (Benítez, 2020)—and yet it only created new ones, as many observers remarked either regretful or mischievously (e.g., Alvarez 2018). Instead of thinking of these new controversies as a glitch that can and needs to be overcome, we consider them as systemic features of image-based truth-finding more generally. Visual evidence is always dependent on prior knowledge and interpretation

(e.g., of rules) (Dijck, 2005), trained observation (Daston, 2008), and—of special importance in our case—the comparison of many images. This meticulous process becomes only more fragile when partisan audiences, journalists, and an expanded team of officials have access to and can manipulate an increasing amount of images.

Building on that, we are not interested in how to avoid controversy (or how to improve the application of VAR) but in analyzing how the actual existing controversies offer an insightful example of a mediatized engagement with technology.

Case Study: Engaging with Video Assistant Referee on Twitter during WC2018

Twitter's impact on the transformation of sports (e.g., Highfield, 2013; Wenner, 2014) and, more specifically, on football communication (Billings et al., 2015; Bruns et al., 2014; Vimieiro, 2017) are well-established research fields. The scholarly interest in social media controversies (e.g., Burgess et al., 2016; Marres & Moats, 2015), however, has so far only inspired studies on political controversies during sports mega events (e.g., d'Andréa, 2016; Lünich et al., 2019; Meier et al., 2019). The little research on technological controversies so far is based on interviews with fans to understand their general attitude towards refereeing technologies (Stoney & Fletcher, 2020).

Our case study approaches Twitter as a "technology of engagement" (Marres, 2012) that allows for analyzing how fans, organizations, journalists and others engage with the use of VAR "in action" and how the different layers of mediatization—such as TV images of the VAR being discussed on Twitter—contribute to such engagement. During the WC2018, we created a large-scale dataset using DMI-TCAT (Borra & Rieder, 2014), an open-source software that allows for a "real-time" collection of tweets based on keywords or expressions. Aiming at a multilingual dataset (including Portuguese, Spanish, English, and French) we collected tweets that include the term "VAR" in co-occurrence with "mundial" OR "copa" OR "cup" OR "coupe." Being interested in the first impressions of VAR, the analysis focuses on the first 6 days of the tournament. In total, 55.549 tweets were collected between the opening match on 14 June (Thursday) and 19 June (Tuesday), a period in which all 32 national teams played their first match.

In a first analytical effort, the distribution of the collected tweets over time were visualized in an hour-by-hour bar graph. In Figure 1, each color represents a day. When compared to the schedule of the tournament and journalistic accounts of the matches, the data visualization confirms the premise that decisive and/or controversial VAR-related moments of the live event create more engagement on Twitter and thus peaks in the graph.

To combine the quantitative overview with a more qualitative analysis of the types and terms of engagement, we used the data metrics provided by DMI-TCAT to identify the most retweeted tweets for the peak moments ("identical tweet

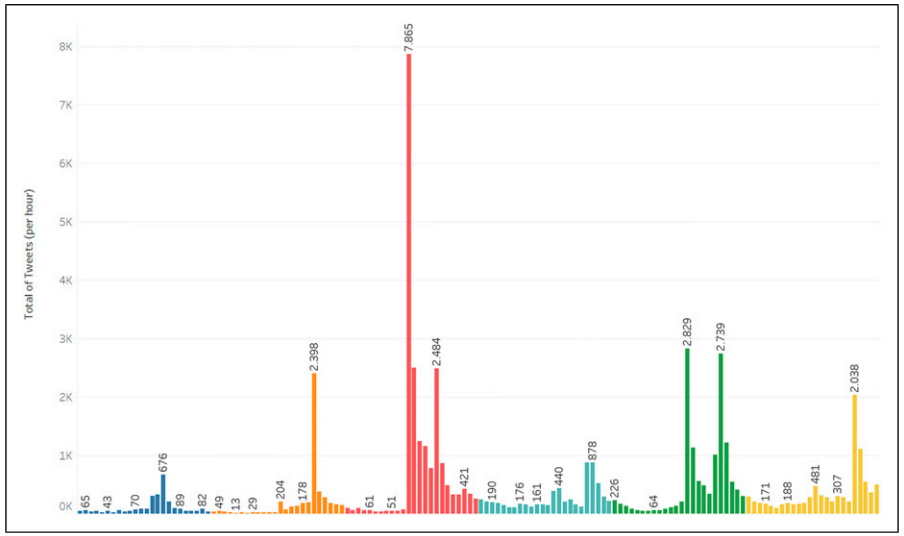

Figure 1. Number of tweets per hour from 14–19 June 2018.

Table 1. Matches Mentioned in the Analysis.

Bars color	Day	Matches Analyzed	Twitter Peak (In an Hour Period)
Orange	15 June	Portugal x Spain	2398
Red	16 June	France x Australia	7665
Green	18 June	Tunisia x England	2739

frequency") and the most popular tweets with embedded media ("media frequency"). Exporting this data to Google Sheets with thumbnails of the embedded media allowed for a more panoramic analysis of the VAR-related visuals shared on Twitter. Building on this initial exploration and the quantitative insights we focused on three matches (Table 1) to perform a close reading of selected tweets; in this process, we identified a number of key issues that illustrate how different moments of VAR-use in the tournament triggered a multiplicity of mediatized engagements with this new technology.

Making (and Reimagining) History

Representing the highest peak in the 6-day period, the 7865 tweets collected between 11 a.m. and 12 p.m. (UTC+2 DST) on June 16 were posted during the second half of the match France x Australia, when the referee paused the match to review a situation on the monitor and gave a penalty to the French team. This on-field

review made the use of VAR "clear and obvious" to a worldwide audience. In line with the broader tendency of sports to constantly produce "historic events," this moment was immediately marked as historically significant, not least by sports journalists on Twitter and in mainstream media.

"And history was made when a penalty was awarded" (D. Johnson, 2018) and "Griezmann makes history" ("World Cup", 2018) were expressions used by ESPN and BBC, respectively. A one million followers profile (Squawka Football, 2018) quickly stated that the first goal scored after an "intervention of VAR" was a fact that should be memorized by everyone. Written in Spanish by a journalist with three million followers, the most popular tweet about this match in our dataset highlighted the increasing mediatization: "first match in the World Cup history in which the VAR and the Goal Line Technology was used" (MisterChip, 2018; as in all following non-English tweets: our translation).

Football marks the novelty of a new technology in front of a global audience. At the same time, it offers incentives and criteria to evaluate its transformational impact: Addressing one of the most voiced concerns, a sports journalist at ESPN Brazil praised the operational efficiency: "The most important: a fast decision with

Figure 2. A typical tweet commenting on the new procedures of refereeing.

collaboration of the VAR team. Historical moment in this World Cup" (Bertozzi L, 2018). An Argentinian journalist working for ESPN in Spain focused more playfully on the performance of authority: He posted an image of the VOR in action and wrote in Spanish that seeing the "VAR referees" working "fully uniformed" indoors was the "funniest thing in the world" (Agulla A, 2018; see Figure 2).

This might be considered a banal example of the partly playful, partly mischievous modes of online conversation. We suggest, however, to take it as yet another indication for sports' heightened sensitivity to new technologies. By underlining VAR as a historic novelty, football's global audience becomes a "pioneer community." Due to sports' layered mediatization and the efforts to level epistemic hierarchies, the new technology becomes hypervisible on TV. Consequently, social media discuss its impact on sports and on its media coverage mixing sober operational concerns with esthetic critique and parodistic takes.

Such reflection on the VAR gets amplified through football's collective memory: In many tweets, the use of VAR was linked to canonical and highly emotional controversial moments from the past. GoonerGordo (2018), for example, posted a reminder of the disallowed goal of the English team during the 2010 World Cup that was one of the trigger moments for the implementation of the Goal-Line Technology.

Other tweets appropriated the vernacular visual culture of the web to recall previous controversial VAR-moments from other competitions. de Branco E. L (2018), a humorous profile focused on Hispanic football, posted a photomontage showing River Plate's player Enzo Perez in a yellow jersey similar to the one used by the Australian National team. In capital letters (and with a misspelling), the post claims "THEY INVENTED THE VAR TO THORW US FROM THE CUP!!!" (Figure 3).

The photomontage is based on a screenshot from an Argentinean Superliga Championship-match between River Plate and Boca Juniors, in November 2017, when Enzo Perez shouted that VAR had been created to eliminate his team from "the Cup." The image of his emotional outburst (which was actually directed at VAR-use in a Copa Libertadores-match) became immediately memetic among Argentinian supporters. Its "remix" for the first appearance of VAR during the WC2018 shows, on the one hand, how in sports a new technology gets easily suspected of being intentionally "invented" (or "scripted" as we would say) to discriminate against one team or nation. On the other hand, and again resulting from its layered mediatization, sports' publics do not only discuss the technology but also observe (and make fun of) the way people react to the technology in the face of TV cameras.

During France x Australia, the first conspicuous use of VAR in front of a global audience transformed Twitter into a forum to discuss the historical significance of a new step in the ongoing mediatization of football. The topics are mostly aligned with what is discussed in legacy media in similar terms. The possibility to compare VAR's application with a near endless set of similar situations in earlier games heightened the

Figure 3. A tweet complaining about the intentionally biased "invention" of video assistant referee.

"interpretative flexibility" (Pinch & Bijker, 1989) that was additionally increased by social media's playful visual culture.

Online, the "historical first" of the technology got more attention than the actual decision resulting from its use, which was mostly considered comprehensible. Nevertheless, former England international Jermaine Jenas criticized the VAR-use on BBC: "That is one that should not even be sent for a review. The referee made his decision by not giving the penalty. It was *not a clear and obvious* [emphasis added] mistake." Football coach Phil Neville wittily made the debate itself a reason to not use VAR in this case: "It has to be *clear and obvious* [emphasis added]. We have three different opinions in the studio so it's not clear" ("World Cup", 2018). Such controversies around the actual use of VAR and the evidence it produces will be discussed in the remainder of this paper.

The Interpretative Flexibility of "Clear and Obvious"

Already one day before France x Australia, the 3-3 draw between Portugal and Spain saw the first official use of VAR in the WC2018. In line with our earlier analysis, the

British newspaper *Independent* celebrated: "Diego Costa goal makes history with first VAR decision at a World Cup" (Austin, 2018). In contrast to the France x Australia-match, however, this earlier use of VAR did not result in an on-field review, but was limited to an inconspicuous "confirmation of the correctness of a decision" (IFAB, 2017) by the VOR.

TV coverage only briefly showed the referee with his hand next to his earpiece asking the players to wait for VOR's confirmation that the Spanish striker did not

Figure 4. "A question, friends: Is this the World Cup they said there is #VAR?!"

commit a foul before scoring the goal. This "silent check" procedure does not seem to have been taken up by TV commentators (FIFATV, 2020) and congruously not by Twitter users either. As shown in Figure 1, this "real"' first use of VAR in a World Cup (highest orange peak) triggered only one-third of the tweets than the following day's "on-field review" (red peak).

While this could be understood as a "black-boxed" use of VAR, the situation actually destabilized the script: Most online engagements were motivated by anger and frustration about the apparent "non-use" of the much announced technology. A journalist from "Mundo Esportivo" stated, in Spanish: *"*Was not this the World Cup of VAR? First moment that it could be used on and does not appear" (Polo E, 2018). FoxDeportes (2018) asked a similar question and combined it with the famous meme of actor John Travolta looking around in confusion (Figure 4).

This misunderstanding partly resulted from VAR's script that did not give TV access to the ongoing processes in the VOR (the "silent checks"), nor to the communication between VOR and the referee ("checks"). Regardless of such a misunderstanding, though, the example shows how football's emotional allegiances heighten the sensitivity for a necessarily selective use of technology.

A tweet in Spanish by HoyEnDeportes (2018) says: "The VAR does not affect Madrid's players even in the World Cup." Typical for sports, the tweet insinuates preferential treatment for players like Diego Costa (Atletico de Madrid) or Sergio Ramos (Real Madrid). Also in Spanish, Noelia (2018) connected this situation again with River Plate's elimination, claiming that VAR was only applied "to eliminate River from the cup" and was "was never used again."

A similar but even more heated online-debate occurred during the England x Tunisia-match on June 18, when "three major incidents" (D. Johnson, 2018) were not revised on-field. The VOR's understanding that both occurrences were not clear enough to interrupt the match were emphatically criticized. A former English star player and analyst at BBC's Match of the Day tweeted: "*Wtf is the #VAR doing?! That's twice @HKane has been wrestled to the floor!*😡" (Shearer A, 2018). In another tweet, Thomas J (2018) posted a Gif showing actual wrestlers throwing an opponent out of the ring to stress the glaring character of the violation (Figure 5).

Here, too, partisanship might explain part of the commotion, but the debate actually tackles one of VAR's basic rules, namely to restrict reviews to "clear and obvious" cases. As discussed before, though, "clear and obvious"—even in scientific contexts—is not a given but the result of structured practices. When different people in different situations (e.g., the VOR officials, former players, fans) evaluate a situation based on a plurality of images from different angles, what even counts as "clear and obvious" becomes controversial. From this perspective, the partisanship of fans is not an emotionally tinted deviation from an "objective" observation but rather an additional motivation to mobilize more (rhetorical, visual, narrative) "allies" to determine if something is "clear and obvious." As we have seen, fans and professional commentators can easily invoke endless

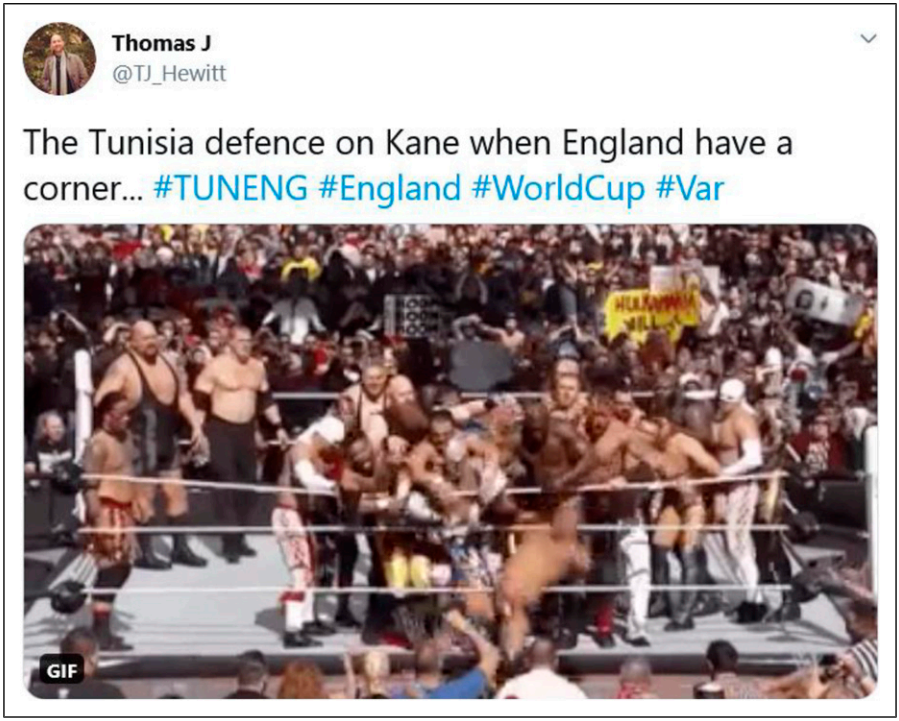

Figure 5. Use of a wrestling-gif to underline how "clear and obvious" a violation was.

comparable situations to highlight inconsistent use and interpretation of the mediated images and thus to question the scripted distribution of authority.

Like in many other occasions, the engagement with VAR during the England x Tunisia match additionally suggested a connection between the refereeing technology and off-field political issues. According to a profile offering "free horse racing tips," Russian president Putin was *"the man behind the #VAR"* in this game (My Racing Tips @myracingtips, 2018; Figure 6). The tweet uses the tone of online conspiracy-discourse in a playful manner and seems to refer to the tense diplomatic crisis between Russia and England since Sergei Skripal—a former Russian military spy—and his daughter had been poisoned in England. The British government accused Russia of attempted murder and expelled Russian diplomats three months before WC2018's kick-off.

Not all such online commentary questions the "authority" or "neutrality" of the technology, though. Some imaginations about possible uses outside of sports rather present VAR as a much longed-for authoritative truth-machine when claiming that it could overcome corruption, convict unfaithful partners, or even "put an end to the mafia" (Noelia, 2018). By making connections within and beyond the field of sports,

Figure 6. A playful association between technology and politics.

such mediatized engagement with VAR guarantees ongoing "interpretative flexibility": Its principle capability to produce authoritative and legitimate decisions might be conceded, but the institutions, procedures, and interpretations to actually achieve that remain contested.

Discussion and Conclusion

This article used the implementation of the VAR during the mens' 2018 FIFA World Cup as an example to suggest that sports is a so far neglected field for analyzing the public engagement with technology. The increasingly layered mediatization of sports—for example, social media users comment on TV images of officials who employ video monitors to check decisions—spawns reflexive discussions: When commenting on sports, fans, journalists, officials, athletes, and other actors will inevitably also discuss how media impact it; and they will do this in a highly mediated environment, for example, tweeting while watching television. Taking these two dimensions into account—media as topic and as environment of the debates—we more specifically proposed to analyze sports as rich field for "mediatized engagements with technology."

While one might argue that hyperbole, emotions, and partisanship, which are so characteristic for sports, very much hamper any reasonable engagement with technology, we here claimed the opposite. Not only sports' historical ambivalence towards technology but also the long-term allegiance and emotional investment of its audiences provoke an ongoing and resourceful engagement with technology. Building on research within Science and Technology Studies, we suggested that, regardless of "correct understanding," all forms of controversy play a role in the negotiation of a technology's legitimacy. The combination of sports' layered mediatization and its invested, partisan audiences prevent smooth black-boxing of epistemic technologies.

To articulate this conceptual discussion with more empirical insights on the reasons for and types of engagement, we analyzed the mediatized engagements with the newly introduced Video Assistant Referee system (VAR) online. Our case study takes Twitter as a social media platform with which a diversity of actors can intensively make public, in "real time," their perceptions on how VAR was used and/or made part of the "media manifold" during the first days of the WC2018. This "decision aid" system is an especially interesting case for our topic: Carefully scripted to restore the authority of the referee, it adds additional operational/epistemic layers to TV broadcasting. For decades accustomed with the "epistemological privilege" ensured specially by TV replays, fans and journalists now are confronted with a complex system of "silent checks" in the VOR and with "on-field reviews," which give them insights into the image-based truth-finding process.

The intense use, by partisan actors, of "technologies of engagement" such as Twitter transforms VAR into an object of popular debate. Not only football organizations and referees, but also fans and journalists thus become part of the "pioneer communities" that evaluate and shape VAR's insertion into sports' media manifold. Our analysis showed how online communication on sports marks a technology's historical novelty, not least by playful comments on the visuals it adds to the familiar TV coverage. The comparison with similar situations from the past, an established practice in football culture, heightens the attention for the technology's impact and offers incentives to critically comment on its use (or non-use).

Analyzing the controversies that resulted from some (non-)use of VAR during WC2018 we could confirm that they cannot solely be attributed to a lack of transparency or an inchoate understanding of the technology. Even the restriction of the technology to "clear and obvious" situations was not able to stabilize its perception. To the contrary, the partisanship of sports and its abundance of comparable situations enlarge the "interpretative flexibility" of VAR-related situations and thus of the technology and its application. The presence of former players, coaches, and referees on TV and on Twitter additionally destabilizes the distinction between experts and lay people. While the engagement is often driven by the desire of "fair" refereeing, it cannot be reduced to that. In our perspective, typical elements of social media's communicative styles—memes, speculation, conspiracy theories—should also be considered contributions to the social negotiation of a technology's potentials and downsides. To misappropriate the headline that opened this article, these are

all "bits that have *very much* to do with footy"—especially during a global media event such as FIFA World Cup.

Focusing our analysis on tweets from just a few days during WC2018, we cannot claim to offer a conclusive analysis of how VAR is discussed by a global audience. While using a multilingual data collection we intentionally did not look into national or cultural differences. We cannot say if and how the majority of football fans, especially those who are not on Twitter, engage with the impact of mediatization on the game. Future research hopefully will take up some of these questions and will also study how the ongoing "updates" of refereeing technologies—including the incorporation of image processing based on Artificial Intelligence—changes the way different actors engage with the new technological solutions and promises.

We hope that our discussion here offers some conceptual and empirical input for such research by arguing that the increasingly layered mediatization of sports spawns reflexive engagements with the process of mediatization. Football especially develops in close entanglement with media technologies and often helps to promote them, but is also creates conditions to postpone any premature closure of the "interpretative flexibility" of a technology such as VAR because its highly invested audiences scrutinize, evaluate, contest (and thus "de-script") how it is used and made visible.

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