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‘Are fans in the stands an afterthought?’ Sports events, decision-aid technologies and the Television Match Official in rugby union

The intense commodification, commercialisation, mediatisation, globalisation and digitalisation of sport in the past three decades has resulted in sporting organisations and governing bodies becoming inextricably tied to the global media industry and corporate economy. A result of this mediatisation, coupled with technological advancement, has been the introduction of decision-aid technologies in sport. Existing literature on decision-aid technologies has generally focused on the technologies themselves. Here, we focus on decision-aid technology use and its impact on event experience. This paper examines fan attitudes towards the use of the Television Match Official (TMO) in rugby union in relation to the event experience. We present data from a global online questionnaire (n = 194) and 11 semi-structured interviews with fans, representatives from rugby’s governing bodies, two TMOs and a television producer. Data show an inconsistency in how TMO decisions are relayed to match crowds, which had an impact on events experience. The data also reveal how heavily reliant the TMO system is on broadcasters. Fans were generally in favour of TMO use, but they did want to be better informed when it came to TMO referrals and decisions. Indeed, fans said improvements to TMO decision delivery in stadia, specifically having audio of referee/TMO discussions/decisions relayed over the stadium PA system and/or captions providing explanations and decisions on TMO referrals, would most improve their event experience.

Keywords: Decision-aid technology, Fans, Rugby Union, Sports Events, Television Match Official

Introduction

In today’s sports industry broadcast is king (Jackson, 2013). Research by SportBusiness (2019) has found that around half of sports fans in the UK have given up going to sports events because the television experience is better. Elite sport became increasingly professionalised during the 1990s and the commodification, commercialisation, mediatisation globalisation and digitalisation of sport followed, in large part due to technology, and television most specifically (Boyle, 2013; Dashper et al., 2015; Frandsen, 2014; Lawrence & Crawford, 2019; Turner, 2007). The intensity of sport’s commodification, commercialisation, mediatisation, globalisation and digitalisation over the past three decades has resulted in sporting organisations and governing bodies becoming inextricably tied to the global media industry and corporate economy because of their heavy reliance on commercial sponsorship and the sale of broadcast rights for their survival (Frandsen, 2014; Jackson, 2013). Thus, television viewership has become the most valuable commodity in world sport (Hutchins & Rowe, 2012, 2013) and it is our contention that the fan in the stand has become an afterthought to many sporting organisations, which are reliant on sponsorship and broadcast revenues more than they are ticket sales.

A consequence of this mediatisation of sport and technological advancement has been the introduction of decision-aid technologies in sport. For years umpires/referees were at a disadvantage

to television viewers, as well as match commentators and reporters, as they did not have the benefit of slow-motion replays or audio when making their decisions. This left them open to scrutiny and ridicule (Collins & Evans, 2011; Steen, 2011). As the improvement in technology continued this scrutiny from fans and media, sports teams concerned about protecting their livelihoods, and their own sport's governing bodies greatly increased, as did the intolerance towards incorrect decisions. The governing bodies of sports, such as cricket (Decision Review System, DRS), rugby union (Television Match Official, TMO), rugby league (Video Referee), association football (Video Assistant Referee, VAR) and tennis (Hawk-Eye) were persuaded to introduce technology to assist referees and umpires' decision-making (Leveau, 2010; McLoughlin & Dawson, 2017; Steen 2011). However, while the benefit of these technologies to each sport in terms of justice over decision making (see Collins, 2010) is undeniable, little is known about their impact on the live event experience from the perspective of fans.

While there is a variety of academic literature on the commercialisation and mediatisation of sport, decision-aid technology and fan experience, there is very limited work tying those elements together. There is little research on the use of the TMO in rugby union (hereafter rugby) and even less is known about fans' attitudes towards decision-aid technology in sport. Given the continued mediatisation of sport, the likely further advancement in broadcast and decision-aid technology, and the commercial importance of fan attendance at live sport, it would be highly beneficial to academics and, in this case, sport governing bodies, to provide such insight. To that end, the aim of this paper is to critically analyse and evaluate fan attitudes towards TMO use in rugby in relation to their event experience. Our paper begins by examining the extant literature and discourses surrounding the mediatisation of sport, decision-aid technologies in sport, fan identity and fan experience. Following this we detail our methodology. Next, we critically explore our data before offering some concluding comments.

Mediatisation of sport and events

Academic research on the mediatisation of sport covers an array of subjects, including mega-events, gender, race and ethnicity, national identity, celebrity and stardom, fandom and audience experience, journalism and the digital age, and these studies can be seen across varying academic fields such as sport, events, media, journalism, communication, cultural studies and sociology (Cairns, 2015; Dashper et al., 2015; Frandsen, 2014; Hutchins & Rowe, 2012, 2013; Lawrence & Crawford, 2019; Real, 2013; Skey et al., 2018; van Driel et al., 2019; Billings & Wenner, 2017).

Sport has become a central component of popular culture and economic, political and public discourse and the institutions of media and sport have converged to form a media sports cultural complex of global proportions with television playing a central role as an 'agent of change' (Frandsen, 2014, p.525). As Wenner (1998) argues, the sport-media relationship is so important it should be termed 'mediasport' to reflect the 'cultural fusing of sport with communication' (p.xiii). Hutchins and Rowe (2012, 2013) use sports television broadcasts as an example of this fusion as they provide revenue for sporting organisations, deliver audiences for rights holders and are sources of communal pleasure for sports fans.

To illustrate, such is the influence of media organisations, Olympic events are staged at a time to suit the American television networks and the Olympic opening and closing ceremonies have included special effects only television viewers can see (Boyle, 2013; Cairns, 2015). Sporting fixtures that were

traditionally played on a Saturday afternoon are now played on a day and at a time that suits broadcasters (Frandsen, 2014), while demand for an exciting product has resulted in sports, such as rugby league, changing their rules in an effort to speed up play and cricket creating new, ever-shorter forms of the game (Malcolm & Fletcher, 2017). Such developments have led Billings and Wenner (2017, p.13) to argue that,

the communication powers of both sport and media is particularly applicable to the study of sporting [events] where the political and economic stakes are higher and where the powers to influence are heightened.

Within much of the literature on the mediatisation of sport there exists a belief that the media wield 'unquestioned and undifferentiated power' (Frandsen, 2014, p.526). But Frandsen (2014) also argues that the media-sport relationship is a symbiotic one. She advocates that the relation is not just a matter of sport adjusting to the needs of the media, rather than sport 'is a communicative form with distinct cultural and social meanings and powerful inherent logics that need to be reflected in an analysis of mediatization as well' (p.525). Indeed, we must not forget that the media provide sports coverage which both educates and initiates its audiences in the 'virtues and technicalities of sports' (p.531) and thus, serve to provide sports with 'institutional recognition' (Birrell, 1981, cited in Frandsen, 2014, p.532). Indeed, while sport provides experiences that are entertaining, and which people are willing to pay money for, increasingly, these experiences are accessed via media forms, including television and digital media, as opposed to live in the stadia. For these reasons, Frandsen (2014, p.525) refers to the sport-television relationship as *an example sine qua non*, and an example *par excellence* of mediatisation. Indeed, as we will demonstrate in this paper, television has both direct and indirect influence on the event experience: direct in the way game images are made available in stadia, and indirectly, through the way in-stadia experiences are inevitably compared to those viewing the match on television.

While the media-sport relationship may well be symbiotic, what is increasingly evident is just how side-lined those attending sporting events have become. The commodification and commercialisation of sport means that revenue generated from sponsorship and broadcast rights far outstrips that generated from ticket sales. The primary spectators therefore, are not those in the stands, but those at home in front of their screens (Cairns, 2015). Consequently, they get an enhanced 'best seat' experience with a wider choice of viewing angles, commentary, statistics and superimposed graphics (Sturm, 2015), as well as access to the full decision-making process when decision-aid technology is employed.

This mediatisation has even extended to the 'live' event. Cairns (2015), Turner (2015) and Siegel (2002) argue that attending sporting events has become mediatised with big screens a common feature in stadia, and corporate boxes fitted with televisions. Rather than just experience the 'live' event, spectators now get to watch replays, decision reviews, not to mention advertising on these big screens. These force the spectator to oscillate between the immediate and mediated views of the game. Fans can also listen to television/radio commentaries and audio of match officials should they choose to bring or buy the radio headsets to do so. Moreover, as they develop with greater regularity over the coming decades, 'smart' stadia, such as that used by Tottenham Hotspur Football Club in the English Premier League football, will offer unrivalled connectivity for smartphone users. The stadium has thus, 'become an extension of the living room' (Turner, 2015, p.44). Where the extant research is

lacking however, is determining to what extent spectators' 'live' experience is affected by the mediated delivery of decision review outcomes in stadia.

Decision-aid technologies and sport

Compared to the mediatisation of sport, there is a much smaller body of academic research on decision-aid technologies in sport. That which does exist has largely focused on how the technologies are used (Leveaux, 2010), the necessity or otherwise of the systems and the consequences of their (non)use (Collins, 2010; Collins and Evans, 2008, 2011; McLoughlin and Dawson, 2017; Nlandu, 2012; Ryall, 2012; Steen, 2011; Svantesson, 2014). The most well-known of these decision-aid systems are used in cricket (DRS), rugby union (TMO), rugby league (Video Referee), association football (VAR) and tennis (Hawk-Eye).

In the case of rugby's TMO, which has been in use since 2001, World Rugby protocols govern how and when the TMO is used. According to World Rugby (n.d.) it is the match organiser's responsibility whether or not to appoint a TMO. Once appointed a TMO can use technology to clarify situations relating to: 1. The grounding of the ball in in-goal; 2. Touch or touch-in-goal in the act of grounding the ball or the ball being made dead; 3. Where there is doubt as to whether a kick at goal has been successful; 4. Where match officials believe an infringement may have occurred in the playing area leading to a try or preventing a try; and 5. Foul play, including sanctions. Any of the acting match officials, including the TMO, may recommend a review by the TMO. As we go on to identify below, not all matches appoint a TMO and therefore, fan experiences of its usage inevitably differs depending on the match they are observing.

Each of these decision-aid systems were introduced in order to reduce the number of incorrect decisions made during a match. McLoughlin and Dawson (2017) provide a detailed and robust examination of DRS use in cricket, in particular, how it is employed and how players have had to learn how to use the technology to their advantage. Despite DRS leading to a reduction in incorrect decisions, critics of the technology, including those in the media, argue DRS undermines the authority of the on-field umpires (Haigh, 2017; McLoughlin & Dawson, 2017). But Steen (2011) found that DRS data from the 2011 Cricket World Cup showed right decisions were being made more often and that the umpires at the top of their game did not have their original decisions reversed when DRS was used. Research by Davis (2017) into the use of DRS in Test cricket between September 2009 and mid-March 2017 found that of the more than 2100 reviews during that period, only 26.2% resulted in the on-field decision being overturned. This suggests fears that the system would bring a surge in the frequency of dismissals have not materialised.

McLoughlin and Dawson (2017), Collins (2010) and Collins and Evans (2008, 2011) also explore the controversy surrounding Hawk-Eye's ball-tracking in cricket, which critics argue is not 100% accurate due to its virtual estimation of the ball's trajectory. Collins (2010) and Collins and Evans (2008, 2011) however, assert that cricket at least allows for a zone of uncertainty which acknowledges Hawk-Eye's limitations and favours the on-field umpire's original decision (known as 'umpire's call') which is important for the credibility of the umpire and the sport. In contrast, they identify how in tennis the potential for uncertainty is not recognised, which creates a false transparency as the event crowd and

television viewers believe what they are seeing in the graphic of the disputed line call is absolute fact and not an estimation of the ball's position.

Inevitably, the introduction of technologies aimed at 'helping' the officials, has led to further questions about the officials themselves. Collins (2010) explores the notions of ontological authority (the on-field official's decisions define what happens), epistemological privilege (the on-field official has the superior view, specialist skills and is in the best place to make the decision) and presumptive justice (justice is being done because no-one is better placed or more capable than the on-field official). He argues that technology undermined presumptive justice and epistemological privilege as the on-field official was denied access to television replays everyone else could see, but that decision-aid technologies have now given the on-field official at least epistemological parity with TV viewers and crowds with access to replays at grounds, while it is transparent justice (justice which is seen to be done), rather than presumptive justice, which is now largely being delivered. Although, as Collins (2010) also notes, there are occasions when transparent injustice is evident when replays highlight an incorrect decision by the official and yet, that decision stands.

Within these discussions and debates, consideration of rugby's TMO is conspicuously limited. The works of Cairns (2015), Collins (2010) and Ryall (2012) provide a brief description of how rugby's TMO gives advice to the on-field referee to assist with the decision-making on scoring and foul play. Leveaux (2010) provides a more in-depth look at the TMO system in his study on the use of technologies in referee decision-making. He concludes technologies should only be used as an aid in referees' decision-making, that referees should not become dependent on the technology, and must remain the final arbitrator. Dawson et al's (2019) paper is something of an anomaly as its primary focus is the role of the TMO. Their case study looked at whether the use of the TMO in the European Rugby Cup and European Rugby Champions Cup over 15 seasons from 2000/01 to 2015/16 had any impact on home advantage. They argue that the TMO is in effect a monitoring device for the on-field referee as the TMO is remote from the effects of the crowd which can influence referee decisions. They found that the use of the TMO had increased the number of yellow cards awarded to away teams, increasing home bias, which suggested that prior to the introduction of the TMO referees may have consciously or unconsciously been seeking to avoid contributing to home advantage.

As with research on decision-aid technologies in other sports, the perspective of the fans does not feature. Even media articles on the TMO have largely reflected the opinions of players, referees, sports writers, and governing bodies. Academic studies of fan attitudes towards decision-aid technologies are thus, a rarity. Winand and Fergusson's (2018) paper on football supporters' attitudes to Goal Line Technology (GLT) is arguably the most applicable for our purposes. They found that although a majority of supporters favoured the use of GLT there were levels of dissatisfaction with it when it affected the atmosphere in the stadium, resulting from contentious decisions. Football has traditionally not shown replays on big screens in stadia because of fears of sparking crowd unrest (Hamilton, 2019) but with the issues experienced at the 2019 Women's Football World Cup with VAR, calls for those in the stadium to see at least a definitive image or clip of the incident being reviewed are growing (Hamilton, 2019).

Fans and fan experiences at sports events

Sports fandom has been the subject of much research and debate across several disciplines including social psychology, leisure, sport management, events, tourism and marketing. Areas within sports fandom that have received the most attention include fan identity (Crawford, 2004; Funk & James, 2001; Giulianotti, 2002; Hunt et al., 1999; Tapp & Clowes, 2002; Wann & Branscombe, 1993), fan motivations (Funk et al., 2009; Reimers et al., 2018; Wann, 1995), fan satisfaction (Clemes et al., 2011) and fan experience (Bouchet et al., 2011; Cairns, 2015; Funk, 2017; Horbel et al., 2016; Lee et al., 2012; Turner, 2015; Willem et al., 2019).

The level of connectedness or attachment to a team/sport/athlete has been used to categorise fans into typologies (Hunt et al., 1999; Funk & James, 2001; Giulianotti, 2002; Tapp & Clowes, 2002; Bouchet et al., 2011). It is not our intention to debate the usefulness of these typologies. Indeed, such critiques exist elsewhere (see Crawford, 2004). For our purposes though, and given its application to other similar studies (namely Winand and Fergusson, 2018), we are particularly interested in Wann and Branscombe's Sport Spectator Identification Scale (SSIS), which classifies fans as either 'lowly', 'moderately' or 'highly' identified spectators. In their study those who were highly identified were more involved and invested in the team, believed the team's success was down to internal (players, tactics etc) not external factors (referee decisions) and had more favourable expectations regarding the future success of the team. They also suggest that those who identified highly with the team would be the most knowledgeable. With our study in mind therefore, it is posited that those who are highly identified rugby fans may perceive the TMO to impinge on their enjoyment of the game and their event experience because their greater understanding of the game's rules and idiosyncrasies means they may not always need to see replays to understand referee decisions.

In their study of Scottish football supporters' perceptions of GLT, Winand and Fergusson (2018) found that there was no difference in supporters' satisfaction towards GLT between low, moderate and highly identified supporters. However, lowly identified supporters, who are typically less emotionally attached to their team, were more in favour of GLT viewing in the stadium and of future decision-aid technology in football compared to moderate and/or highly identified supporters who are typically more focused on the game and its results. The authors suggest this is because lowly identified supporters may find referees errors more enjoyable as they are less invested in the game and are more interested in being entertained than by the game per se. Winand and Fergusson (2018) also highlight the relationship between event atmosphere and event experience. The atmosphere in sports stadiums is one of the most important reasons why people attend events. In rugby's case, the performance of the officials includes the use of the TMO. It can therefore be posited that TMO use is likely to have an effect on the atmosphere within the stadium, thus helping to shape the event experience.

Methods

In order to satisfy the needs of this research, we felt it was important to engage with fans of rugby, those in positions of power and ultimately responsible for shaping rugby policy, those with direct experience of operationalising TMO use, and those with a responsibility for producing rugby broadcasts. To that end, we produced an online questionnaire aimed at rugby fans globally, and we

also undertook semi-structured interviews with governing body representatives from most of the major competitions around the world, TMOs and a television producer from a broadcaster's rugby union unit.

As the research period (May-September, 2019) fell during rugby's off-season in the northern hemisphere, but during the season in the southern hemisphere, a global approach was taken in order to have the best opportunity of gaining a good sample size from the online questionnaire and to reach the major rugby playing nations (New Zealand, Australia, South Africa, France, Italy, Argentina, UK, Ireland). This approach also ensured that the way TMO decisions are delivered in stadia and how that affects fan experiences could be explored in different contexts.

Purposive sampling, in this case snowball sampling, was used for the online questionnaire. The targeting of one demographic (rugby fans) meant it was not possible to extrapolate the data to identify general patterns of behaviour or opinion (Bryman, 2016). However, it was a viable approach as attendance at rugby matches and knowledge about the use of the TMO was required to participate. The questionnaire was created using Google Forms. The link to the questionnaire was initially emailed or sent via messaging systems to rugby fans known to the authors and was also posted on social media, including Facebook and Twitter. Participants were asked to complete the survey and share the link via their own personal contacts or via their social media pages. The questionnaire was open for two weeks. During this period, 194 people completed the questionnaire. Initial analysis of respondents identified that 152 (78.4%) were male, 38 (19.6%) were female and 4 preferred not to say; 49 (25.2%) were under the age of 30, 96 (49.5%) were between the ages of 31 and 50, and 49 (25.3%) were 51 or over. The majority of respondents (160, 82.5%) were from the UK and Ireland and this dominance was reflected in the matches attended with 129 (66.5%) attending European matches, 73 (37.6%) attending English Premiership matches and 78 (40.2%) attending Pro14 matches, with 25 (13%) going to Super Rugby matches which are played in the southern hemisphere. International Test matches (138, 71.5%) were the most attended. Almost a quarter of fans (24.7%) attend every home match of their favourite team, while 76 fans (nearly 40%) also attend one or two away games a season. More than three-quarters of fans (77.8%) watch rugby on television every week.

As the literature review revealed how highly a fan identified with a team could impact on their knowledge of a particular team or sport (Wann & Branscombe, 1993), and their attitudes towards decision-aid technologies (Winand & Fergusson, 2018), a section of the questionnaire, which was adapted from Wann and Branscombe's (1993) SSIS, asked respondents to provide their level of agreement on seven items ranging from 'strongly disagree' to 'strongly agree'. This process allowed us to establish participants' level of fan identification. The seven items included, 'I am very interested in what others think about my rugby team' and 'When someone criticises my rugby team it feels like an insult'. The average of each respondent's score was calculated to place them into one of Wann and Branscombe's conceptualisation of lowly (a score below three), moderately (a score between three and five) and highly (a score above five) identified fans. The majority of fans (158, 81.4%) identified as moderately, 26 (13.4%) were lowly and 10 (5.2%) were highly identified fans.

In addition to these, questions about TMO use in general, such as 'Are you in favour of TMO use in rugby?' and 'Do you trust referees to make the correct decision using the TMO?', which required yes or no answers, and a further two open-ended questions asking respondents to detail what they felt were the most beneficial and frustrating aspects of the TMO, were included to gain fans' holistic views

towards TMO use. Finally, a section relating to TMO use and the in-stadium experience asked respondents about the use of audio and images in the stadium during TMO referrals and whether they believed changes to how TMO decisions were relayed would improve their events. At the end of the questionnaire respondents were asked if they would be willing to take part in follow-up semi-structured interviews. Four respondents agreed and were later interviewed.

In addition to fan perspectives we wanted to explore how decision-aid technologies are currently used from the perspective of rugby officials and producers. Thus, semi-structured interviews were conducted with two TMOs, a television producer and representatives from the governing bodies of Sanzaar, Premiership Rugby, European Professional Club Rugby (EPCR) and Pro14 Rugby¹. These interviews were used to provide context to underpin analysis of the questionnaire data and to see whether there were any similarities and/or differences in TMO application between competitions and countries. This allowed a more complete picture to emerge and a greater understanding to develop around the extent the delivery of TMO decisions affects event experience. Author A, a former rugby journalist, used her contacts within the rugby industry to arrange the interviews with the governing body representatives and television producer, while interestingly, the TMOs reached out to us after seeing the questionnaire online. Interviews were conducted over the phone and took between 20-50 minutes to complete. They were recorded, transcribed and subjected to thematic analysis to identify key themes across respondents (Bryman, 2016).

Findings

Analysis of the 194 questionnaire responses and 11 interviews revealed three broad topics: 1) fan identity and understanding of rugby; 2) demand for audio; and 3) use of images. These themes provide the framework for our analysis.

Fan identity and understanding of rugby

As we mentioned earlier, an adapted version of Wann and Branscombe's (1993) SSIS, which used a seven-point Likert scale, was used to determine the level of fan identification. The average of each respondent's score was calculated to determine their grouping according to their commitment to their team. There were 26 (13.4%) lowly identified fans, 158 (81.4%) moderately identified fans and 10 (5.2%) highly identified fans. Because of the complex nature of rugby and its laws and the subjectivity around some of the decision-making, it was posited that: 1) the more highly identified fans were, the greater their understanding of rugby's rules would be; and 2) different levels of knowledge would have an impact on event experience. The perception that those with a less nuanced understanding of rugby needed more guidance when the TMO was called into use was borne out in comments by fans and some of the governing body representatives. Fans for example, spoke about how understanding the game could impact the fan experience:

It is different experiences based on your level of understanding of it [rugby]. Hearing [decisions] and seeing [decisions] helps those people who are not as clued up. (Fan 6)

If you understand the game you know what they are looking at from the TV pictures [on the big screen]. Maybe it's less accessible for new fans. (Fan 146)

In line with structural and technological developments aimed at making other sports more accessible (Malcolm & Fletcher, 2017; Sturm, 2015), the idea of accessibility and indeed, making rugby *more* accessible to fans, particularly those new to the game, was of particular interest to governing body representatives:

[Some fans] do need the game explained a bit better. The dilemma is always... you want to do it well without alienating the core fans. But I think everyone accepts that they would like the game to be explained better. (Premiership Rugby representative).

"I think there's actually an educational role to play where you can make rugby more accessible to a greater amount of people and therefore, put fewer people off when they first experience it... Having that educational angle, without patronising the people in the stadium who do know the rules and laws of the game inside out, [and] do know what the Television Match Official has done that for, is something to improve. (EPCR representative)

At the core of all these responses was a perception that fans want to be informed about what decisions are being made and why. Indeed, analysis of the fan questionnaire revealed that the vast majority of respondents want to be better informed about the referee/TMO decisions made during a match than they are currently². Just over three-quarters of fans felt if changes were made to the way TMO decisions were delivered to the crowd it would improve their event experience. In particular, having audio of the referee/TMO decision-making processes and/or rulings, or explanation of rulings on the big screen were the key changes that fans wanted (discussed below).

The testimonies above allude to a view that the level of 'education' needed declines as fans become more identified with and knowledgeable of the sport. However, on the whole, our data do not support this as only 61% of lowly identified fans felt changes to the way TMO decisions are communicated with the crowd would improve their match experience compared to almost 80% of moderately identified fans and 90% of highly identified fans. Moreover, just under a quarter of respondents (44 fans) felt no improvements were needed to the way TMO decisions are currently delivered in stadia. Of these, 34 were moderately identified fans and 10 were lowly identified fans. This supports similar findings by Winand and Fergusson (2018) who suggest supporters have different expectations from a sport event according to their level of fan identification. However, in contrast to Winand and Fergusson's findings, where lowly identified supporters were less opposed to GLT viewing in the stadium and the introduction of technology in football, just under a third of our lowly identified fans were against introducing more technology (e.g., audio, big screen captions) into rugby, while all the highly identified fans wanted to be better informed, and wanted improvements to the way TMO decisions are delivered in stadia. This difference could be attributed to an existing culture in rugby for having screens in stadia, which is not currently the case in football, and thus, rugby fans are more used to being shown footage or images of TMO decisions. Moreover, as television broadcasts of rugby matches already carry audio of the match officials, which is not the case in football, this may also have an influence on rugby fans' demands for an improved in-stadia experience, particularly as almost 77% of fans in this study watched rugby on television on a weekly basis.

Participants were also asked about their views on how and when a TMO is called into use. Interviews with the governing body representatives, TMOs and television producer indicated that this was standardised across all competitions. However, they also revealed there was less consistency in other aspects of TMO use³ and especially how those TMO decisions were relayed to the crowd. For example,

while all Premiership, Pro14, European Champions Cup, Super Rugby and international Test matches had TMOs at every game, the EPCR representative explained that for the European Challenge Cup, only matches being televised live had a TMO. The Sanzaar representative explained the role of the TMO:

The main reason we use replays and Television Match Officials is to get the major seven-point [try] decisions right and to protect player welfare when it comes to serious foul play... It's not about getting every decision right, that would just turn the whole thing into a farce, and I think everybody understands that.

Clearly, whether or not a TMO is in use during a match will impact the overall viewing experience of the fans. Overall, fans in this study were in favour of TMO use (93.8%) with no significant difference existing across fan groups. The key benefits of having the TMO were getting more decisions correct, identifying foul play, confirming tries and, overall, making the game fairer. The following excerpts were indicative of fan responses:

The TMO can be used to ensure that the key decisions are correct. Also, with more emphasis on the safety of players at the breakdown, the TMO can be crucial to identify foul play. (Fan 145)

I look back at old matches and think "how many of those decisions must have been incorrect?" Results are much fairer with TMO. (Fan 68)

However, while acknowledging the benefits of the TMO, almost 60% of all fans were also frustrated when it is called into use. It should be emphasised here that while match officials can call upon the TMO at any time, and on as many occasions as they wish, World Rugby (n.d., no page) spell out in its laws that 'the referee should not be subservient to the system' and that he is 'the decision-maker and must remain in charge of the game'. Issues that were raised most consistently included the number of times referees turned to the TMO, thus negatively impacting the flow of the game, the time it takes to reach a decision, the inconsistency of its use, and going back too many phases in play to check things. Several fans voiced their frustrations with TMO (over)-use:

We've seen some games in the last season that the ref clearly started doubting himself and called on the TMO five, six, seven times. Where they are supposed to be there for the exceptional, the serious incidents, they just started questioning absolutely everything. (Fan 29)

Others were keen to emphasise that the on-field referee should have ultimate responsibility; that is, the ontological authority referred to by Collins (2010):

Refs not taking enough responsibility to make decisions when they are in the best position to make a decision. Decisions taking too long with repeated viewings. (Fan 115)

It was interesting that while we may have anticipated that highly identified fans, with greater understanding and knowledge of rugby, would feel more frustrated when the TMO was used than those who are moderately or lowly identified, this does not appear to be the case in our data. Although all 10 highly identified fans were frustrated with TMO use, so were 16 (62%) lowly identified fans and just over half (87 fans) of moderately identified. This suggests that emotional attachment, level of knowledge and focus on results, which are lower in lowly identified fans, and increase as fans begin

to identify with their team more (Crawford, 2004; Funk & James, 2001; Van Leeuwen et al., 2002), play less of a role than anticipated in how fans form a view of TMO.

Demand for audio

Fans in this study believed having audio of the referee and TMO broadcast over stadia PA systems would keep them better informed and improve their event experience. While they were united in wanting audio over the PA system, some felt the whole discussion between the referee and TMO should be relayed in the same way as it is on the television broadcast and at international cricket matches:

When you can't hear the conversation it's hard to understand why the decision is taking so long. So, it would be useful to have some sort of explanation. (Fan 31)

Once again, we see here the importance to fans of being informed. Related to these responses, a good proportion of participants felt that making Fan Radios⁴ available across all competitions would also be an improvement, although there was a strong view that these should be free:

I use [Fan] Radio at international games, but not Pro14/[European] Challenge Cup games. If they had it available at those games too, it would improve my experience. (Fan 28)

[Fan] Radio should be provided free via an app instead of having to purchase a device to ensure everyone in the crowd has access to the same information. (Fan 150)

Contrary to the desire of fans and indeed, supporting the 'need' for Fan Radios, interviews with the governing body representatives revealed that across their competitions, no audio of TMO/referee conversations or decisions were currently broadcast over stadium PA systems. Both the TMOs and television producer said they would have no issue if such a measure was introduced, but representatives from Premiership Rugby and EPCR cited issues with audio quality and the cost of getting stadia up to standard as barriers to this. Nevertheless, they did recognise that fans in the stands want to be better informed and so the Fan Radio was considered an appropriate compromise:

One of the reasons that we brought [Fan Radios] in is because there was a feeling that the fan on TV was getting a better experience than the fan at the stadium because they were getting informed. We wanted to plug that gap really and say if you're coming to the ground and you're paying for your ticket you should have as great an experience as we can give you... Because the reality is that every year the broadcasters get better at what they do. (Premiership Rugby representative)

The tensions and ambivalences surrounding the commercial imperatives of providing exhilarating event experiences for both live attendees and television viewers (Axford & Huggins, 2010; Frandsen, 2014) is captured very nicely by the Premiership Rugby representative. In the case of rugby, and in the absence of in-stadia audio, currently, it is not a requirement for individual clubs to provide provision for Fan Radios. It is worth stating that a trial did take place in Australia in August 2019 at two Test matches where TMO/referee discussions and decisions were relayed over the stadium PA, while, according to the television producer, one rugby governing body in the UK is also in discussions about whether or not to introduce it. According to the Sanzaar representative, providing audio over the PA system is widely considered an opportunity for enticing in new spectators:

Australia have wanted to do those sorts of things, probably more than most countries, because rugby is not anywhere near the primary sport in that country. So, they need to find ways to energise, entertain, connect to people.

The comments from the governing body representatives and television producer highlight inconsistencies in approach and attitude towards fan experiences in stadia. Around a third of fans (62 respondents) chose to buy Fan Radios. Of those, only 15% of lowly identified fans chose to use them, while 34% of moderately identified fans and 40% of highly identified fans chose to. This difference could be because fans who are less attached to a team do not want to pay extra for audio (Premiership Rugby, n.d; Sports Ears, n.d), while those who are more committed are willing to pay for the benefit of an improved and more informed experience (Crawford, 2004). Indeed, 82% of fans who bought Fan Radios said having audio enhanced their enjoyment, 81% said it helped their understanding, 47% said it added to the excitement, and 68% said it had a positive effect on their event experience. Typical comments from fans included this, from Fan 111:

I enjoy hearing the referee talk with the players and other officials. I often share what is being said with fans around me, especially if those fans don't know all the intricacies of rugby's laws.

As much as having the audio was thought to benefit the event experience, its absence was similarly viewed negatively. For example, according to Fan 97:

I really don't like not having that connection. When you go to the Pro14 games [which don't have Fan Radio] you feel like you're missing out on something that you'd actually maybe get better on the TV if you're watching it at home.

While having audio via Fan Radio was viewed largely as a positive experience, some fans suggested having them had created a two-tier fan experience whereby some fans had them, while others, for a variety of reasons, including the cost or indeed, not wanting them, did not. For example, it was highlighted how fans with the headsets would be informed of the TMO decision (via the commentary) before the on-field referee had signalled it, thus informing the rest of the crowd. These fans spoke about the peculiar atmosphere in stadiums as a result of this:

You could hear a kind of ripple going round the stadium when some people realised the guy was about to be sent-off and the rest of the fans sort of cottoned on to it afterwards. It was quite weird to hear that some people knew before other people what was going to happen. (Fan 97)

So [the referee] was chatting with players a good 22 metres from the try-line and the TMO said "[Ref] I've got a decision, you may award the try" and I just leapt up and went "Yeah!". Of course, the fans around me were going "Why are you cheering?" "Oh, he's got an earpiece in, they've won it". So, I found out before [the referee] blew his whistle [to award the try]. That was an extraordinary experience. (Fan 25)

Interestingly, while the main function of Fan Radios is to help immerse fans in the event experience, a few fans felt they had become less engaged with the 'live' experience because of their use:

Quite often instead of watching what's happening on the pitch I'll sort of put my hand to my ear and listen intently to the radio and not even look at what's going on because you're going off into this world of audio rather than the visual thing that's happening on the pitch. (Fan 97)

Taken together, these testimonies suggest that the introduction of Fan Radios has led to the increasing mediatisation of the 'live' rugby event. This mediatisation has both benefits and pitfalls with the suggestion that some fans can become less engaged as 'live' spectators in these hybridised, mediatised experiences (Siegel, 2002).

Use of images

First and foremost, sport spectatorship is a visual experience and sport lends itself well to this given that it is basically the performance of bodily actions. Indeed, as Frandsen (2014, p.535) points out, 'Though sports events can be multi-sensory, the visual signs *representing* moving bodies are the dominant elements of the sports experience'. She goes on to say that television's use of both pictures and sound provides a medium with unique ability to convey the sport experience. Having and using big screens in rugby stadia is commonplace, and the minimum requirement for Premiership, Pro14, Super Rugby, European matches and Test matches is for stadia to have at least one screen that is visible to as many people as possible. According to the governing body representatives, TMOs and television producer, during TMO referrals the images shown on these big screens are of the incident/score being looked at. However, while just over 85% (165 respondents) of fans agreed this was the case, a few said they were shown advertising or a caption stating a TMO review was going on, and one said they occasionally got a blank screen instead. Fans frequently referred to the quality of event production, and thus, the role of television broadcasters. Of particular interest was the different availability and application of the TMO across competitions. European Challenge Cup matches do not have a TMO unless matches are televised, so on-field referees did not have the option of checking tries or reviewing foul play incidents during non-televised matches. The number of cameras in use for TMO decisions also varied depending on whether a match was being televised live or not (e.g., being recorded to show at other times), or how high-profile it was. Regardless of where matches are taking place host broadcasters provide the footage and camera angles used by the TMO. They have a screen that shows the main broadcast feed, another screen of that main feed on a seven second delay, then another screen split into four that shows various other camera angles which can be rewound and replayed while the match continues. It is the host broadcaster's main television feed that provides the images displayed on the stadia screens during the game and for any TMO referral. Thus, according to this television producer:

What the viewer sees at home is exactly the same as what you'll see on the stadium big screen.

Getting these images on the big screen during the referral process was described as a collaboration between the TMO, television director and television production replay team:

What we're all trying to do at that particular moment in time is get the footage that shows the referee what he needs to make the decision so he can get on with it. I kind of explain my role as less of a referee, but more of a referee-TV director. My job is to make sure the right footage is on the screen for him to make the decision. (TMO 1)

Though we do not have space to expand on this further here, it was interesting how this TMO described himself; i.e., 'less of a referee' and more of a 'referee-TV director'. This description, though clearly lacking some nuance is an excellent example of the collaboration between media/television and sport and thus, mediatisation process, whereby 'former boundaries between the sports event,

the mediated representation of this event and third-party commercial interests have been blurred (Frandsen, 2014, p.527). Notwithstanding an overall appreciation for encouraging the on-field referee to 'get on with it' some fans had a perception that broadcasters try to influence the use of the TMO through selective and repeated use of replays:

It seems from a fans' perspective that it depends on the broadcaster as to what the TMO sees. Home teams seem to get the better camera angles etc. (Fan 7)

Similar concerns were shared by TMO 1, who referred to the potential power of television directors to influence availability of certain images:

If you've got a director who particularly wants to look at anything against a player [of one team] more than he might do the other side, I can't really control that. And that then could influence, *it doesn't*, but it could influence the crowd, which then influences the referee because he's got stuff on the screen and what you're seeing on the screen, you can't sometimes ignore it.

Irrespective of the criticism, the general consensus was that getting to see the images of the score/incident during a TMO referral had a positive impact on the event experience, in that it not only kept them better informed of the match, but reassured them that their experience was in no way inferior to that experienced by those watching on the television (Skey et al., 2018).

Discussion

There is an existing literature on the commercialisation and mediatisation of sport, decision-aid technology(ies), and fan experience. However, there is limited academic work tying mediatisation, decision-aid technology(ies) and fan experiences together. This paper helps to address this knowledge gap by examining the use of the TMO in rugby and its impact on the event experience. Rugby, like most other sports, has become highly mediatised. The overriding principle behind this mediatisation is the technological framing of how consumers engage both with cultural forms and each other, by promoting the value of 'speed, immediacy, interactivity, and bespoke consumption as cultural aesthetics' (Axford & Huggins, 2010, pp.1328-29). While the TMO has been in use in rugby for almost two decades, the desire to remain at the cutting edge of technological advancement has not abated. The drive to use technology to improve officiating in sport comes from the governing bodies and the broadcasters. The governing bodies want their match officials to get decisions correct as often as possible, while the technology allows broadcasters to provide information and entertainment ('infotainment') which helps generate subscriptions (Frandsen, 2014).

Fans in this study had strong feelings about the use of the TMO, how it affected their match experience and what improvements they would like to see in the future. There is clear evidence this group of fans want to be better informed during the TMO decision-making process and are largely in favour of TMO use. But there is also some frustration over when and how often it is used. Regardless of their level of fandom, our respondents believed changes to in-stadia TMO decision delivery would improve their event experience. In particular, respondents, across all levels of fandom, would like audio of the TMO/referee discussion and/or decision to be relayed over stadia PA systems during the TMO referral process. Currently the only way fans can access that audio, which has always been part of the television broadcast, is via Fan Radio. Those who used Fan Radios largely said they improved their

match-day experience. It could be surmised therefore, that this desire for audio in the stadium is a reflection of how the fans' experience of watching rugby on television appears to have conditioned them to wanting a more mediated experience at the 'live' event (Billings & Wenner, 2017). However, crucially, as Frandsen (2014) has advocated, this is also a strong example of how sports fans and consumers are keen to take advantage of the interrelational nature of mediatisation by gaining some sense of control over the type, extent and impact of these processes on their viewing experiences.

There was also a feeling that there needs to be consistency in the use of the TMO. The situation in the European Challenge Cup, where having a TMO is dependent on a match being broadcast live on television for example, harms the integrity of the competition. It goes against the notion of fairness and justice that all those in sport champion (Collins, 2010; Long et al., 2017; Malcolm & Fletcher, 2017; Ryall, 2012; Svantesson, 2014). It is another example of the inconsistency in event experience fans are subjected to and the impact mediatisation has had on the 'live' event experience (Cairns, 2015; Frandsen, 2014; Siegel, 2002; Turner, 2015). This impact is equally evident in the TMO's total reliance on images/camera angles supplied by the broadcaster and the use of a television feed to provide the images shown on stadia big screens.

Conclusion

Although the study revealed the major part technology plays in rugby and the match-day experience, it was clear fans believed the on-field referee should remain the final arbitrator and that (s)he should use technology only as an aid in the decision-making process. This was in line with Collins' (2010) supposition that decision-aid technologies allow transparent justice to be delivered by on-field referees which those involved in sport want to see. This extract from one of the TMOs perhaps best summarises the challenge facing rugby in this mediated age:

Rugby needs to decide what it wants. Does it want accurate decision-making all the time or does it want a free-flowing, pacey game. We can't have both. There is no way of getting every decision accurate by using the technology that's there... and having a quick game.

That after almost 20 years of TMO use, rugby is still trying to work out how best to use the technology, get correct decisions and preserve its status as a fast, flowing contact sport, would indicate the debate about decision-aid technologies is far from over. Moreover, given the largely maligned introduction and early experiences of VAR in elite football, this debate is something most, if not all, sports can expect to have as technological advancement and thirst for more mediated event experiences continue.

Notes

¹ Sanzaar oversee the southern hemisphere Super Rugby and Rugby Championship competitions; Premiership Rugby manage the England domestic club league; EPCR manage the European Champions Cup and the European Challenge Cup; Pro14 Rugby manage the club competition involving teams from Scotland, South Africa, Italy, Wales and Ireland.

² In competitions in the study no audio of the referee/TMO is played over stadia PA systems. Fan Radios can be bought at international Test matches, Premiership matches (UK fans), some European

matches (UK, Ireland), some Pro14 matches (UK, Ireland) and in Super Rugby (Australia and New Zealand). In matches where the TMO is used, footage of the score/incident being ruled on is shown on the stadium's big screen. However, in the European Challenge Cup only matches that are televised live have a TMO.

³ At matches in the southern hemisphere TMOs sit in a box in the stadium with a technician. In the northern hemisphere, outside of the Rugby World Cup, TMOs sit close to the television director and television producer in the host broadcaster's Outside Broadcast truck (interviews with TMO 1 and TMO 2 and television producer).

⁴ Fan Radio is the product name for the radios which provide match official audio/ television commentary to fans in the stands in the Premiership and EPCR competitions. These radios are called Sports Ears in New Zealand and Australia. The radios are sometimes also referred to as Ref Radio. For the purpose of this paper Fan Radio will be used as the generic term for all makes of these radios.

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