Sport technology, rules, and the internal goods of sport

Jim Parry[1,2,*], Irena Martínková[2]

[1] Department of Philosophy, University of Leeds, UK
[2] Department of Kinanthropology and Humanities, Faculty of Physical Education and Sport, Charles University, Prague, Czech Republic
* Corresponding author: s.j.parry@leeds.ac.uk

ABSTRACT

This paper explores the role of technology in sports development. Based on three examples – artificial surfaces in field hockey and football (including the Jabulani football); javelins and vault-poles; and running shoes and swimsuits – a criterion is proposed to help decide whether or not (and why) to welcome new technologies into sport. This criterion relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our identification and acknowledgement of the 'internal goods' of sport as a social practice. The idea is that the internal goods of sport (which are what we seek) are created by the constitutive rules; and so proposed new technologies, and associated rule changes, should be assessed according to their ability to promote the relevant internal goods.

KEYWORDS

sport; technology; constitutive rules; internal goods; values

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INTRODUCTION

It would be very strange if sports just stayed the same throughout history, whilst everything around it, in society and technology, were constantly evolving and developing. We do have 'traditionalists', who try to maintain their sports in an already-existing form. For example, as an extreme form of traditionalism, we might cite the continuing popularity of 'archaic' sports, such as 'Real Tennis' (Britannica, 2025) – an archaic form of tennis played in England (and in France, US and Australia), which uses

'old-fashioned' racquets, heavy balls, a slack net, and an irregular indoor court. We might think that adherents would want to 'improve' the equipment and the courts, but they do not – quite the reverse. They want to keep the game the way that it is, without the interference and intrusion of new technologies. Why would they need a 'better' ball, or a more 'rational' court? They enjoy the challenges that the old-fashioned technologies present, and they are happy to preserve their sport just as it is, and just as it has been for many centuries.

However, we also have 'modernisers', who welcome the development of new technologies as enhancements to their sports. Imagine the pole-vault without a carbon fibre pole, or field hockey without an artificial pitch surface, or high jump without a soft landing area. Well, there is no need to imagine, because we know what those sports were like only a few decades ago, and all of them have been massively transformed by new technologies, which have necessitated the development not only of new equipment but also of new techniques and tactics in the sport.

At present, modernists prevail, but questions arise regarding the ways in which sports might meaningfully be modernized. This paper examines the effects of the modernization of sport through technology, exploring how new technologies can improve (or corrupt, or damage) a particular sport. 'Technology' means: "interaction with artefacts in particular contexts of engagement" (Aunger, 2010, p. 764).

Related to this, of course, is the issue of how to amend the constitutive rules of a sport. While in sport we can talk about different kinds of technologies (e.g. Murray & Chuan, 2017), we are restricting our attention to the use of those technologies that can be used for the purpose of changing the constitutive rules of sport (which are those rules that define the sport – see later for more detail).

So, our question is not: 'Should there be technology in sport?' – because we already have it, and it is hard to see sport without it. For example, in football, the ball is a piece of technology, and so is the grass that forms the surface on which footballers play. So, we do already have technology as part of the pre-conditions of sport, and it often follows ordinary social and technological progress. The football of today is not what it was in the 19th or even in the middle of the 20th centuries, when the leather skin would soak up moisture throughout the game, until it became what we called a 'pudding'. It is quite obvious that footballers would appreciate such changes as a waterproofed outer skin for the ball, because, whilst footballers might have been able to play football with a ball *before* it became a pudding, as it got heavier, football became more difficult. The new technology made the performance of the ball more lasting and more consistent, and it enhanced the game of football. It is hard to imagine that someone would wish to return to the era of the soaking wet football.

However, new technologies are not always welcomed by sport federations. While artificial surfaces may be good for field hockey, they may be bad for football. If so, why? While better javelins were rejected, better vault-poles were welcome. Why? While improved running shoes are acceptable (even if regulated to a certain degree), improved swimsuits are not allowed. Why? Is it just a matter of personal preference, or is there more to it than that? Obviously, the answer partly lies in our wants – we have to decide what kind of sport we want (what we want sport to become) – but, since different people want different things, that cannot be the only determinant of change.

There must be more to be said. We have to start somewhere else; and we will adopt a 'sport-respecting' stance, which seeks a deeper understanding of the sport itself, and of its 'internal goods'.

This paper proposes a criterion to help decide whether or not (and why) to welcome new technologies into sport, which relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our identification and acknowledgement of the 'internal goods' of sports as social practices. So, we suggest to begin by considering the nature of sport and its values. We need to ask 'What is sport?' and 'What is good about sport?'

Sport and its constitutive rules

As to the first question, 'What is sport?', we draw on the definition of Parry (2023, p. 53) who defines serious competitive sport as "institutionalised, rule-governed contests of human physical skill", which is a definition based on an 'exhibition analysis' (Parry, 2019). For the purpose of this paper, we draw on only one logically necessary condition from this definition: rules. There is no sport without rules, and sport philosophy traditionally distinguishes different kinds of rules, such as constitutive, regulative, eligibility and other auxiliary rules (Gleaves, 2014; Martínková & Parry, 2024). Usually, people think in terms of the regulative rules of sport, which are used by the referee to regulate the game as it proceeds, and to prescribe penalties for offences.

However, for our purposes, it is the constitutive rules of sport that are more important (see Searle, 1969, p. 34). These are the rules that make the sport what it is – that constitute the very thing that (later) we regulate. The constitutive rules call into being all that is necessary for a game to take place. They define what the sporting tasks are and how athletes/teams are compared against each other; how (not) to achieve the tasks; the number of players; prescribed or prohibited actions; permitted equipment and its characterization; the dimensions of the playing area and its defining measures, and so on. The regulative rules then regulate this activity: if players perform a prohibited action, then they will receive the referee's penalty (see e.g. Gleaves, 2014; Martínková, 2023, p. 347).

The actual rulebooks of individual sports vary, though. Sports often call their 'constitutive rules' as simply 'Rules'. Football even calls them 'Laws of the Game'. Rulebooks may contain just the playing of the game and its competition rules, or they may also contain detailed technical specifications. For example, the International Tennis Federation (ITF, 2020) defines detailed specific measures (such as, for example, the size of the court, ball and racket) as well as rules about how to play the game within its ITF Rules of Tennis. Another example is the International Hockey Federation (FIH, 2023), which differentiates between 'Playing The Game' and 'Field and Equipment Specifications' and describes them in separate sections in its 'Rules of Hockey'. The 'Playing The Game' section contains basic specifications (e.g. '1.1. The field of play is rectangular, 91.40 metres long and 55.00 metres wide' – ITF, 2023, p. 12), whilst the section on 'Field and Equipment Specifications' contains more detailed specifications (e.g. '1.3 Lines and other marks: side-lines: 91.40 metres long perimeter lines' – ITF, 2023, p. 52).

It seems reasonable to distinguish between constitutive rules that describe the sport as such from the technical rules that are more detailed specifications of the field,

the equipment, the athlete's clothing, etc. If some technical aspect of the game needs to be specified in detail, such as running shoes in track and field, it may even require its own document, such as C2.1A Athletic Shoe Regulations. World Athletics oversees so many disciplines that its rules are very long and very specifically structured – see World Athletics' (2025) *Book of Rules*.

Historically, we can trace the constitutive rules of many sports as codified in the 19th century. For example, in 1863, Association Football was 'invented' – was 'called into being' – by the setting up of rules for a new game by a group that called itself 'The Football Association'. Their football was to be played in future according to the Association rules. Prior to 1863, different kinds of 'football' were being played in different schools, and there was not yet a sport that we would recognise as modern football (National Football Museum, 2024). Incidentally, the word 'soccer' did not exist, since it was later coined as a short-hand slang word for 'Association'.

Who decided these rules, and why? In fact, it was a group of people from different schools, clubs and traditions, who wanted to play against each other, but could not, because their various games, though similar, had differing rules. Differing schools and clubs were able only to have 'in-house' games (between teams with such made-up and temporary names as the Ugly and the Beautiful, or the Married and Unmarried), but they wanted to play against other schools and clubs, and not just against each other. Without common rules, this would be impossible, as we have seen in attempts to play games between Rugby League and Rugby Union teams. Disputes, and even fights, typically break out, since each code is used to playing to different rules and misunderstandings occur regarding the rules and their interpretation. It is impossible to play a 'hybrid' game – unless, of course, we invented a third game, Rugby UniLeague, with a third set of rules, that both teams would observe.

So, in the case of football, representatives from various clubs and schools got together in late 1863, and devised (invented, constituted) a new game, to be called Association Football, which was to be a different game from all of their various games (Green, 1949). They decided on rules such as, for example: no handling (so those who wanted to retain use of the hands went off to form Rugby Football); and no 'hacking' – which was kicking the shins of opponents (National Football Museum, 2024). So the rules they constructed constituted a new activity, which was the beginning of what we know today as football. And, of course, there has been continuing development of the rules, to reflect the direction in which the 'gamewrights' wanted the game to develop. Some examples would be: the introduction of the 'referee'; changes in pitch markings, to delineate a 'goal area'; the gradual development of the 'penalty box'; and frequent revisions to the 'offside' rule, continuing until today.

The internal goods of sport

So, sport is made up of constitutive rules, which create the activity that athletes compete in. Now to our second question: What is the value of sport? People often think first of external goods: that through e.g. football a player might gain a scholarship, eventually earn a lot of money, or entertain a lot of people (see more on extrinsic values of sport in Martínková, 2013). However, this is only at the elite level – maybe only the top 1% of football – whilst there are many more people playing football in clubs, with not many spectators and with no-one earning any money. Whilst of course

people might have various extrinsic reasons for playing, those reasons do not explain our commitments. We might ask, why else are all these people doing it, if they are not seeking those extrinsic goods? What is attractive about sport for those who just want to play for the sake of it? And the answer of course is that they do it because they love the sport for its intrinsic goods – they love all those things that only football can offer, because of the kind of activity it is. And the same is true of all other sports – golf, floorball or skiing. It is not entertainment, or business, or income-generation – it is just doing sport for its own sake.

This is even more understandable with sports that do not generate income – indeed even require subscriptions from players – but still have practitioners and followers. Imagine rounders – which is an amateur sport played only by a few people in England. It is a 'pure' sport – people in England play rounders only for the love of it. Football could be like that – but as it happens (for various reasons) it is not – it is a popular entertainment, a business, a plaything for billionaires, etc. But even though football generates external goods in many ways, it is important to notice that these are *external* goods just because they are not internal to what football *is*. Even elite football has its internal goods, i.e. its intrinsic values, and it is these internal goods that make it popular, or a source of income-generation, or something worth owning (e.g. Hyland, 1988; Kretchmar, 1994, 2005; Martínková, 2013).

For our purposes, a very important feature of the constitutive rules is that they define 'practices' that provide the context within which can flourish the *internal* goods of the practice, which are defined as those that can be pursued only by following the rules of that practice – in this case, a sport (see MacIntyre, 1985, p. 187; Parry & Haake, 2012). These values then manifest for the athletes in the sport (Martínková, 2013).

For example, what are the internal goods of football? (Those goods that you can get only by playing football.) Goal-scoring – there is nothing like it. Controlling a high ball on your body, easing a strong opponent off the ball by using balance and leverage, hitting a long diagonal ball, playing a sweet one-two – these are goods that are all internal to the activity. (And the same will be true of any sport.) Apart from these experiential values and aiming towards excellence, there are many other values, such as interpersonal values, ranging from deep friendships among the team members to at least a basic respect for opponents (Hyland, 1988; Martínková, 2013), etc.

Some 'externalist' theories claim that sport does not have its own values, and only takes its values from society – see, for example, the explanation of Simon: "On this view, the values sport promotes or expresses simply mirror, reflect, or reinforce the values found in the wider society" (2000, p. 1). However, most philosophers of sport hold some kind of 'internalist' theory, which acknowledges that sport is an activity that is value laden, and exhibits and generates its own values (e.g. Fraleigh, 1986; Kretchmar, 1994, 2005; Simon, 2000; Martínková, 2013; Morgan, 2012; Skerbic, 2020). Of course, these values may then also be modified by external values that are presented by the given society.

So the role of the constitutive rules is to define and preserve the internal goods – to preserve the values that we find in playing football. So, let us say that one of the internal values of football is 'ball control' – now, the rules of football should be written in such a way as to preserve this internal good – to encourage the exercise of good ball control by providing advantages for its exercise. The rules should be framed so as to

advise players: 'if you want to win at football, improve your ball control'. So, if the present rule gives a defender too much of an advantage over a player trying to exercise control, we outlaw it. No elbowing, no barging in the back, no tripping, no hacking, no tackling from behind – all these rules are there (in part) to preserve the development of skill and control as an advantage in playing the game.

Conversely, we can think of things that we *do not* like in the game, such as negative play (e.g. taking the ball to the corner flag towards the end of the game to waste time). Why do we dislike this? Because it is not really playing the game – it is rather a case of trying *not* to play the game, to waste time, so that the team can maintain their advantage. It is a kind of 'contest avoidance'.

Another example is the abuse of the provision for substitutions. We can see the point of the substitute rule: if a player gets injured after 10 minutes, it would be a terrible disadvantage to play most of the game with 10 players through no fault. So in the 1965–1966 season the English Football League began to permit one substitute, and only as a replacement for an injured player. However, the genuineness of injuries is very difficult to monitor, and if this were the rule it is possible that injuries would be faked. So an injury substitution very quickly (within two years) became normalised as (also) a tactical substitution (for example, substituting an attacker for a defender), and coaches started to use the substitute as a 12th player at their disposal, either with or without an injury to another player.

Nowadays teams have many substitutes on the bench, with a maximum of 5 to be used on 3 occasions, and injury substitutions and tactical substitutions are commonplace. This might be a good thing, to avoid the injuries that come with too many games, and to provide exciting options for athletes late in the game. However, we also see a third kind – 'game-disruptive' substitutions – which are not for injury, nor for team-tactical or football-tactical reasons, but simply in order to waste time and break up the rhythm of the game towards the end – to prevent the opposition from having the chance to play in the last minutes. It makes football into the idea of the squad game (like American Football – 45 against 45), while coaches are able to control the game with contest-avoidance and time-wasting.

Here is an unforeseen (and undesirable?) consequence of the development of the substitute rule. We are entitled to ask – is this what we want? Or do we prefer the original idea of 'football' – that the essence of the game of football is that 11 play 11 for 90 minutes of continuous action, which enables certain internal goods of football to thrive – such as the stamina and determination required to maintain performance values (skill, concentration and effort) over a continuous period. This makes the last 10 or 15 minutes most interesting – when players have already played for 75 or 80 minutes – when we should be seeing the drama played out at its most intense and conclusive.

At just this time, the present rules permit the coach to attempt to kill the contest with game-disruptive substitutions – which seems to contradict the logic of the contest, and to prevent the expression of the internal goods of the sport. It is anti-football. If we want football to return to its 'original' idea and values, FIFA could suggest new rules for substitutions: a team may have two substitutes plus a goalkeeper, but no more; and no substitutions should be allowed in the last 10 minutes. If there is a genuine injury during this last 10 minutes, it is not too much of a disadvantage to play with only 10 (not like losing a player for 80 minutes), and it prevents the anti-football

manoeuvres of the cynical coach trying to see out time. And so, the rules of a sport can be adjusted to enable the activity to work well, to set adequate challenges, and to make the sport interesting for players and spectators.

Now, this new rule seeks to preserve what some see as the internal goods of football. But others may disagree. The point is: whatever you think is good or bad about the internal goods of the game, they have been produced by the intended or unintended consequences of the adoption of some constitutive rule.

'Gamewrights' (the people designing the rules), if they were skilled enough, could design just the sport they want, that exhibited just the internal goods that they wish for the athlete to gain from the sport. For example, if they wish for fast, open, flowing, skilful football, then they might re-think the offside rule, which most people find difficult to understand, anyway. Or, for example, they could make the offside rule apply not at the halfway line, but from the edge of the penalty area (18 yards from goal). Would that not immediately spread out play and give players more space?

To review, the logic goes like this:

- a necessary condition of sport is that it has rules,
- the most important rules are the constitutive rules,
- constitutive rules define the sport and condition its internal goods,
- and the internal goods of a sport yield a criterion for or against the introduction of new rules – and also the introduction of new technologies.

So, first we need to specify its internal goods, then identify rules or practices that detract from these internal goods, and finally suggest changes to its constitutive rules that will enhance it. Let us see this with three examples, in order to illustrate how this criterion works with respect to technology. The main question is: 'What do we want for our sport?'

- Better javelins – no, but better vault-poles – yes? Why?
- Improved running shoes – OK, but improved swimsuits – not allowed. Why?
- Artificial surfaces – good for field hockey, bad for football? If so, why?

Javelin and pole vault

Better javelins – no, but better vault-poles – yes? Why?

The rule used to be that athletes could take their own javelin to a competition. So there was a secretive competition between scientists/technologists to produce the best javelin, so that their athletes would get an advantage and have the best chance to win. But the javelins became so 'good' that the athletes were throwing them out of the arena onto the track, and even threatened the spectators' seating area (Ansari, 2022).

So fresh criteria for javelin design were needed, and fresh rules for javelin throwing. First, a decision has to be made, where the event will take place. If the event is to be inside the stadium, the javelin must be impossible to throw out of the designated area. Of course, this is an 'external' safety criterion, or value: let us stay in the arena, and hurt no-one. There were other major considerations, such as the problem of "the increasingly frequent flat landings and the resulting discussions and protests because of attempts declared valid or invalid by competition judges" (Martin, 2022). Such considerations influenced the constitutive rules, especially the javelin design criterion.

The javelin must be constructed such that its best throw does not exceed the limit of the arena, which is to say that further technological improvement is not welcome: "The objective was a javelin that would not fly as far and would land point downwards" (Lawler, 1993, p. 15). There was an issue about technique, too: "The old javelin floated. Correctly cast, the old spear gave the thrower bonus metres for free. In contrast, the new spear has to be driven. Today's successful throwers have returned to 'pure' technique and have accepted full responsibility for the throw" (Lawler, 1993, p. 16).

As well as safety, fairness was the second value behind the new provisions, influencing the event rule: athletes cannot bring their own javelin. A number of (identical) javelins were provided, and all athletes could use any one of them, but not a different one. This provided the athletes with an internal good of the sport, which is an internal good of all sports: equality of contest. In this case, we do not want to see the best javelin thrown by someone; we want to see the best javelin thrower win. So, safety and fairness are the two values behind the new rules.

One criticism of such revisionism is that it inhibits technological progress. But it need not do so. We could have a separate 'designers' competition every few years, with the 'best' javelin then adopted as the 'official' javelin for the next period. But the criteria for the 'best' javelin would be decided by the athletic community, according to how it sees the internal goods of javelin throwing, and not by technologists alone. Technologists would have to work to a 'brief', which would be written according to specifications of the constitutive rules, and of the internal goods identified.

This kind of javelin competition would have two separate (and separately judged) competitions, one for designers and a subsequent one for athletes. Compare this with Formula 1 car racing, which also has two separate competitions, one for the drivers and one for the manufacturers, but they are simultaneous and simultaneously judged. There is one race, and one set of rankings. Here, since car design differences are permitted, within specified limits, it becomes difficult to tell who is the better driver, or which is the better car. Presumably, this is why it is necessary to have two separate competitions. Alternative formats such as 'Formula Ford' racing give 'the same' car to each driver, which makes it easier to determine who is the best driver.

In contrast to javelin, pole vault does not want to go back to bamboo or metal poles, because carbon fibre poles enable greater skills, a more gymnastic and spectacular event, and the achievement of greater heights: "The increase in the world record height achieved in pole vaulting can be related to the improved ability of the athletes, in terms of their fitness and technique, and to the change in materials used to construct the pole" (Davis & Kukureka, 2012). The sky is the limit.

Running and swimming

Improved running shoes – OK, but improved swimsuits – not allowed. Why?

Whilst pole vault is for innovation and wants carbon fibre poles, swimming does not want flippers even though they make swimmers go faster, which would make for exciting races and world records. Swimming does not want the mono-fin, either, which is even faster – but why not? Maybe the answer here is that it does not even count as 'swimming' (it changes what swimming *is*). To make this entirely clear, the constitutive rules should specify just what does (and does not) constitute 'swimming'. If flippers and fins were outlawed as not really 'swimming', it would still be open to

others to create another sport, just as the hands-using football players created rugby. As a matter of fact, this sport is called 'finswimming', and if we wanted to we could propose new disciplines, such as e.g. monofin butterfly, as an enrichment of its contemporary four disciplines of finswimming on the surface (mono or bi-fins), apnea and immersion.

Similarly, until race walking was invented, there was no need to define 'walking'. But if we want a sport of race walking, its constitutive rules must say what 'walking' is, otherwise there is no event of 'walking' recognizable from 'running'. The same kind of point applies to the case of Oscar Pistorius: should he be allowed to compete with 'blades'? In the Paralympics, the rules clearly state what kind of disability and what kind of blades are acceptable, which gives the rationale for his inclusion. But whether he should be allowed to compete in the Olympics is a different matter, because what Pistorius does is not 'running', but rather 'blading' (see Edwards, 2008, p. 120), which is a different ability test. This is why empirical arguments about relative advantage are irrelevant (Ibid., p. 123).

This also explains why new technology such as 'spikes', or other kinds of running shoe, are acceptable, whereas blades, wheels and wings would be unacceptable. Spiked shoes enhance 'running' – but bladers and wheelers face a different kind of test in a different kind of event. The introduction of the Vaporfly running shoe challenged this analysis, however, since this shoe was certainly an enhancement. World Athletics had a problem to solve: why, and on what grounds, should the Vaporfly be accepted, or banned? Is it an acceptable enhancement of running (as were spikes), or are the soles of these shoes to be seen as analogous to springs, since they give a 4% 'return' in energy, and should they also be banned? (See Roe, 2019). World Athletics has now issued specific rules on athletic shoes. Rule 1.2 specifies the leading rationales in this matter.

> Without prejudice to the specific limitations and requirements of these Regulations, these Regulations seek to balance the following principles:
> 1.2.1 fairness within the sport of Athletics;
> 1.2.2 measures that support health & safety (including injury prevention) of Athletes upon whom high levels of physical and mental demands are placed;
> 1.2.3 performances (including records) in Athletics are achieved through the primacy of human endeavour over technology in Athletic Shoes and advances in the same (e.g. to allow for meaningful competition); and
> 1.2.4 acknowledging that Athletes wish to compete in 'high quality', 'innovative' and 'leading' Athletic Shoes. (World Athletics, 2021, p. 4)

However, in that case, why not accept the 'go-faster' swimsuits, such as the LZR suit, which propelled inferior swimmers to world records, before it was banned? The answer would seem to be in the name of one such suit: the Hydrofoil. A hydrofoil boat is a boat with extra technology to give the boat 'lift' out of the water so as to reduce drag and to make the boat go faster. The LZR-type swimsuit uses new materials that trap air inside the costume (which can take 40 minutes to put on), so as to perform the same functions. Swimmers report that they feel as if they are 'gliding'. We can now see that

it might easily be thought that 'gliding technology' changes the event into something that might be thought to be not 'swimming' at all; but rather 'hydrofoiling'. The overall justification of the ban by FINA captured it as follows: "FINA wishes to recall that the main and core principle is that swimming is a sport essentially based on the physical performance of the athlete" (Inside the Games, 2009). Presently, World Aquatics (2025, pp. 18ff.) has rules on swimwear and offers a list of approved swimsuits on their webpages (https://approved.swimwear.fina.org/).

One internal value of all sports here is equality of challenge – all competitors must face the same challenge, or else the basis for competition is undermined. Another value is equality of access – do all competitors have access to the latest technology? If not, then privileged countries, clubs, or athletes may win thanks to their privileged access, and not because of their athletic ability.

Artificial surfaces for field games

Artificial surfaces – good for hockey, bad for football? If so, why?

The short answer is that a completely flat and predictable surface is a great asset to a small-ball-and-stick game like field hockey, and it allows the optimal exercise of the internal goods of the sport, such as small ball control, fine stick work, accurate passing, etc. (We can compare this to a small puck on slick ice; or to the air-ball in floorball.) Grass is an inferior surface for field hockey because it is less predictable, more easily damaged, and more subject to the vagaries of weather conditions. Football, however, as a large-ball game, does not require such a fine-grained surface, and in fact requires something like grass in order for the ball to bounce satisfactorily (i.e. not too much and too high), for the ball to take spin and swerve, and for it to 'sit up' a little for a strike. Of course, it may be true that, in the future, there will be technological developments that mimic the virtues of grass, and have none of its disadvantages – but, for now, attempts to replace grass with artificial surfaces have been resisted. And the reason is because those pitches have been unable to allow for the exercise of the internal goods of football.

But let us go back to the idea of the 'pudding' football. The present-day ball is nothing like that, and presents the player with optimal, predictable and consistent properties. But consider what happened in 2010, when sport technologists from the University of Loughborough were asked to design a new FIFA ball for the 2010 World Cup. Some players said that they produced a ball that curved and bent unpredictably in flight, presenting unreasonable challenges for the goalkeeper, and giving the striker too much of an advantage (but see a defence of the Jabulani ball in Ghosh, 2010). It is fair enough if the goalkeeper is beaten by speed, placement, disguise, etc. A deflection is tough luck. It is fair enough if a keeper is defeated by a strong and skilful striker – but to be defeated by an unpredictable wobbly ball negates all the fun, fairness, skill and challenge. It makes goal-keeping more difficult, but for a non-footballing reason, failing to encourage the internal goods of the game. If the allegations about the poor performance of the Jabulani ball are true, then it is technology wrongly applied.

CONCLUSION

The argumentation in this paper tried to show that it is within our power to define the kind of sport that we want by adjusting the constitutive rules. Further, we think that it is our responsibility to seek to identify the internal goods that we think make our sport challenging, exciting and worthwhile; and to seek rule changes to promote those internal goods. Technology is a part of the picture: we cannot do without it, but we should use the power of the constitutive rules, and our understanding of the internal goods of our sports, to control it. Technology should serve sport, not dominate it.

This paper proposes a criterion to help decide whether or not (and why) to welcome new technologies into sport, which relies firstly on an analysis of the role of the rule in sport; secondly on the identification and understanding of the constitutive rules of sport; and thirdly on our acknowledgement of the 'internal goods' of sport as a social practice, and also of the individual sport. The idea is that the internal goods of sport (which are what we all seek) are created by the constitutive rules; and so proposed new technologies, and associated rule changes, should be assessed according to their ability to promote the relevant internal goods. The test for the acceptability of a proposed technological innovation is: will it enhance or detract from the internal goods of my sport?

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