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QUESTIONS OF HUMAN ENHANCEMENT

Enhancement in Sport, and Enhancement outside Sport

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Abstract

Sport is one of the first areas in which enhancement has become commonplace. It is also one of the first areas in which the use of enhancement technologies has been heavily regulated. Some have thus seen sport as a testing ground for arguments about whether to permit enhancement. However, I argue that there are fairness-based objections to enhancement in sport that do not apply as strongly in some other areas of human activity. Thus, I claim that there will often be a stronger case for permitting enhancement outside of sport than for permitting enhancement in sport. I end by considering some methodological implications of this conclusion.

KEYWORDS: enhancement, doping, sport, sports medicine, fairness

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This article advances a simple thesis: that the case for permitting enhancement *outside* of sport is often stronger than the case for permitting enhancement in sport. Enhancement in sport and enhancement outside of sport are often discussed in parallel (President's Council, 2003; Sandel, 2007), and almost all of those who are opposed to (in favour of) enhancement in one arena are also opposed to (in favour of) it in the other. Moreover, it has been suggested that the debate about enhancement in sport might have important implications for the ethics of enhancement in general.[1] I will argue that, though there are no doubt certain parallels between sport and other areas of human activity, there are also some important differences, and these differences must be taken into account in the ethical debate on enhancement.

Before proceeding to the argument, however, I should make some clarifications. First, some terminology. I will use 'sport' to refer only to competitive sports. I do not mean to include activities such as fishing, mountaineering, or jogging, insofar as they are non-competitive. And I will understand 'enhancement' as the use of biomedical technology to achieve goals other than the treatment or prevention of disease. Existing examples of enhancement might thus include cosmetic surgery, the use of methylphenidate (Ritalin) as an aid to study in normal individuals, recreational drug use, and, of course, doping in sport. Among the most frequently discussed potential future enhancements are alertness enhancement (especially using the drug modafinil), enhancement of executive or global cognitive functioning, and normal-life-span enhancement.

Second, I will limit my discussion to the question whether to *permit* enhancement, either within or outside of sport. There are various other interesting ethical questions that can be raised about enhancement. Should individuals engage in enhancement, given that it is, or is not, permitted? Should scientists attempt to develop enhancement technologies? And should policymakers and science funders try to promote research on enhancement? I will address these questions only where they directly bear on the question whether to permit enhancement.

Third and last, I will be concerned only to explore the *relative strength* of the arguments for permitting enhancement in sport, and for permitting it outside of sport. Thus, my argument will not have direct normative implications: I will not attempt to draw any conclusions on whether the arguments for permitting enhancement in either domain are decisive. Nevertheless, I hope that my comparative project is a worthwhile one, since it has potential methodological implications. For example, if the case for permitting enhancement were equally strong inside and outside of sport, then one could argue for (or against) permitting

[1] See, for example, President's Council (2003) at pp. 106-107.

enhancement in one area by showing that it should (or should not) be permitted in the other. On the other hand, if, as I shall argue, the case for permitting enhancement is stronger outside of sport than within it, then showing that enhancement should be permitted outside of sport will not establish that it should be permitted within sport. Nor will showing that enhancement should be *prohibited* in sport be sufficient to show that it should be prohibited outside sport.

SPORTS DOPING AS A TEST CASE

Ethical debate about enhancement has been prominent in the bioethics literature in recent years. Proponents of enhancement note that our lives would plausibly go better if we were more intelligent, longer-lived and physically stronger, and they deny that there is any good objection to using biomedical technologies to achieve these goals (Bostrom and Roache, 2007; Savulescu, 2007a). But opponents respond by claiming that enhancement expresses an objectionable desire for mastery,[2] involves problematic means,[3] or has bad effects (either for the enhanced individuals, or the societies in which they live).[4]

The protagonists in this debate often make reference to enhancement (or doping) in sport, and it is not difficult to see why. Sport is, after all, one of the first areas of human activity in which enhancement has become common practice. There is some evidence that Greek athletes were using stimulants to enhance performance as early as the third century BC (Verroken, 2005), and modern Olympians were quick to restore the practice of doping: the winner of the 1904 Olympic marathon took injections of Strychnine during the course of the race (Todd, 1987). Only a few years earlier, the first reported death due to sports doping had occurred following the 1896 Bordeaux-Paris cycle race (British Medical Association, 2002), and it would not be long until the Tour de France was hit by its first doping scandal: In 1924, the Pélissier brothers admitted using chloroform, cocaine and aspirin over the course of Le Tour (Seaton and Adam, 2003). These may have been relatively isolated incidents, but from the middle of last century, sports doping rapidly became widespread, with the focus initially on amphetamines, then on anabolic steroids, and more recently on various forms of 'blood doping' (Verroken, 2005). To give an idea of the extent of doping, a member of the 1968 United States track and field team estimated that one third of the team had used steroids at a pre-Games training camp (Todd, 1987), and by the 1988 Seoul Games, a team coach thought that 40% of the US womens track and field competitors had used steroids (Dublin, 1990).

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[2] See, for example, Sandel (2004, 2007) and President's Council (2003) at 287-290.
[3] See, for example, Kass (2003) at 20-24 and President's Council (2003) at 290-293.
[4] See, for example, Kass (2003) at 24-28, President's Council (2003) at 181-196, 205-273, 293-301, and Mehlman (2005).

Sport is also the first area in which enhancement has been heavily regulated. The International Amateur Athletics Federation banned doping in 1928, and the International Olympic Committee carried out its first compulsory doping controls in 1968 (Verroken and Mottram, 2005). Since that time the anti-doping movement has gained momentum, with increasing amounts spent on regulation, and many commentators now speaking of a 'war on doping' and a policy of 'zero tolerance' (Kayser et al., 2007). This movement may have been motivated in part by the widespread public disapproval of doping in sport, for which there is ample evidence. In 2007 alone, yellow jersey holder Michael Rasmussen, suspected of doping, was boo-ed by spectators during the Tour de France (Brown, 2007); Christine Ohuruogu's celebrations after winning gold in the 400m at the World Athletics Championships were tainted by criticism focused on her earlier ban for missing three drug tests (Turnbull, 2007; Moore, 2007); and baseballer Barry Bonds' approach to and eventual surpassing of Hank Aaron's career home run record were soured by the widespread belief that his achievements were due in part to the use of steroids (Hyde, 2007; Zinser, 2007). There has also been strong public reaction to the suggestion that anti-doping rules should be relaxed.[5]

Sport has thus served as one of the first testing grounds for enhancement technologies, for anti-enhancement regulation, and for public reaction to enhancement. It is not surprising, then, that some believe it can also be viewed as a testing ground for ethical arguments about whether to permit enhancement. Clearly, though, the debate about enhancement in sport will be relevant to the debate about enhancement outside sport only to the extent that the considerations for and against permitting enhancement are similar in both areas. I will suggest that, on at least one important dimension – that of fairness – they are not.

FAIRNESS AND SPORTS DOPING

One of the most frequently cited grounds for prohibiting doping in sport is fairness. In its least sophisticated form, the concern is simply that doping is cheating. This is obviously often true: when athletes dope, they are, in most cases, breaking the rules of their sport.[6] Moreover, cheating is surely the paradigmatic example of unfairness. The problem with cheating is that it allows the outcome of a sporting competition to be determined in part by variations in the willingness of

[5] See, for example, the online public reactions to Savulescu (2007b). Article and comments available at http://www.telegraph.co.uk/sport/main.jhtml?xml=/sport/2007/07/30/sodrug130.xml (viewed December 17, 2007).

[6] I say "in most cases" because I understand doping to be a synonym for 'the non-therapeutic, non-preventative use of biomedical technologies in sport'. On this broad definition, doping might include, for example, the use of creatinine, a legal dietary supplement that might be thought of as a biomedical technology.

competitors to abide by the rules of the sport. Those willing to flout the rules are more likely to succeed than those unwilling to do so. But willingness to flout the rules does not seem like the sort of consideration that should determine the outcome of a sporting contest – it seems to be an *irrelevant* factor. And, on one view, being determined by irrelevant factors is precisely what makes an outcome unfair.[7]

But the objection that doping is cheating is no objection to the suggestion that doping should be legalized, for we could prevent doping from being cheating simply by permitting it (Schneider and Butcher, 2000; Savulescu et al., 2004; Foddy and Savulescu, 2007; Nature Editors, 2007). If doping were legal, then the outcomes of sporting competitions would no longer be influenced by the willingness of competitors to flout the anti-doping rules: there would be no such rules.

Of course, there is another way of dealing with the problem of cheating. One could simply try to enforce the anti-doping rules more effectively. This is the response favoured by most sporting officials and members of the public. Unfortunately, though, many anti-doping rules are quite simply unenforceable (Kayser et al., 2005; Savulescu and Foddy, 2008). Athletes may use recently developed drugs not known to regulators, take masking agents to normalize their test results, or use substances (such as EPO or their own previously-removed blood) that occur naturally in the body. Moreover, it is likely that in the not too distant future genetic technology will open up a new range of undetectable doping practices. Athletes may, for example, be able to inject DNA designed to up-regulate muscle formation directly into their muscles, thus avoiding abnormal blood or urine test results (Foddy and Savulescu, 2007). It therefore seems highly unlikely that regulators could ever stamp out doping entirely. Cheating will persist, and outcomes will continue to be unfair. On the other hand, removing the anti-doping rules would completely remove the problem of cheating. On this basis, it could be argued that, though considerations of fairness militate against doping under the current rules, they also militate in favour of changing the rules to allow doping – at least, those forms of doping that cannot be effectively regulated (Kayser et al., 2007; Savulescu, 2007).

It should be noted, however, that cheating is not the only possible cause of unfairness in the outcomes of sports competitions. On the understanding of unfairness adopted above, the outcomes of a sporting competition will be unfair whenever they are determined by irrelevant considerations. And willingness to flout the rules is surely not the only such consideration in sport. True, by

[7] The view is closely related to what is sometimes called the Aristotelian principle of fairness: that two cases should be treated alike unless there is a morally relevant difference between them. Loland (2001) develops this conception of fairness within the context of sport. See especially pp. 41-92.

legalizing doping we would negate one irrelevant consideration – willingness to flout the rules – but the outcomes of sporting competitions will still be determined in part by *willingness to dope*, and this may also be an irrelevant factor. To settle the question whether doping would be unfair even if legal, we need to come to some view about what should and what should not determine the results of sports competitions.

At this point, it might be argued that any attempt to justify anti-doping regulation by reference to fairness is bound to fail, since sport is in any case irretrievably unfair. Norman Fost, Julian Savulescu and others have defended this pessimistic line by noting that, since those with certain arbitrary genetic traits will always have advantages over those who lack them, the playing field will never be level (Fost, 1986; Savulescu et al., 2004; Kayser et al., 2005; Mehlman et al., 2005). But, at least on the understanding of fairness introduced above, it is an open question whether it is unfair for genetic traits to influence sporting outcomes. Whether it is unfair will depend on whether genes should influence sporting outcomes. It may be true that in some areas of human activity – the criminal justice system, for example – we think that genetics should not determine outcomes. But we cannot simply assume that the same goes for sport. Once again, what seems to be called for is some account of what should and should not determine sporting outcomes.

WHAT SHOULD DETERMINE OUTCOMES IN SPORT?

On one view, sometimes described as the 'Athenian' ideal, the outcomes of sports competitions should be determined solely by natural ability. Indeed, one could argue that we value sport in part because it serves as a test of natural ability. But if this view is correct, then all sports competitions are grossly unfair, for there is no sport in which natural ability is the only determinant of success. Most obviously, success in all sports is determined by effort (both in training, and during competition) as well as natural ability (Fost, 1986). Moreover, there has been no serious attempt to mitigate the effects of effort on outcomes in sport. In fact, those who succeed through making particularly great efforts are normally subject to special praise. This suggests that we do not really value sport as a test of natural ability – at least, not as a test of natural ability alone.

An alternative view is that the outcomes of sporting competitions should be determined solely by effort. But again, this view seems at odds with our actual beliefs and practices. In most sports, no serious attempts have been made to mitigate the obvious effects of natural ability on outcomes, and those who succeed in large measure as a result of their extraordinary natural abilities are, again, normally the subjects of praise, not disapproval.

Much more plausible than either of the views mentioned above is a view which combines the two, holding that the outcomes of sport should be determined by natural ability *and* effort; we value sport because it serves as a test of these two characteristics (Todd, 1987).

One might, again, note that if this view is correct, then virtually all sport competitions are unfair, since outcomes are typically determined in part by factors such as quality of coaching and equipment, access to training facilities and, more generally, the wealth and technological development of the society in which an athlete lives (Fost, 1986; Savulescu et al., 2004; Équilibre, 2007; Kayser et al., 2007). Even in the least technology-friendly sports, such as running and swimming, some relatively high-tech equipment, training schedules, and nutritional supplements are permitted, and access to these technologies may thus affect outcomes. However, there is some evidence that we regard the influence of technology and other external-to-the-athlete factors as a concession to expedience (or, in some cases, athlete safety), not as an expression of what we think sports should test, or of what we value about sport. For example, officials do often attempt to mitigate the effect of external factors on sporting outcomes. An obvious example of such mitigation comes from Olympic yachting, where the design of boats is (in many classes) strictly regulated to ensure that those with access to superior yacht-building technology have little advantage over others. Further evidence can be found in our own attitudes to sportspeople who do rely on such factors, and who succeed as a result: those who achieve great success in sport largely as a result of external technological or financial advantages are often not praised and admired in the same way as those who succeed through natural ability and effort. It appears, then, that we sometimes do regard such external factors as inappropriate determinants of sporting outcomes, even if we are prepared to accept that some influence of technology must be tolerated.

Of course, the fact that people sometimes regard external factors as inappropriate determinants of sporting outcomes does not show that they ought to regard them as such. Some have argued that seeking to improve performance using technology should be regarded as part of what sport is about – part of the spirit of sport. Julian Savulescu and Bennett Foddy (2004) write:

> We can choose what kind of competitor to be, not just through training, but through biological manipulation – that is, by taking drugs. Far from being against the spirit of sport, biological manipulation embodies the human spirit – the capacity to change ourselves on the basis of reason and judgment. When we exercise our reason, we do what only humans have the ability to do.[8]

If the claim here is simply that there is nothing wrong with sports which embrace a role for technology, then it is difficult to disagree with. There are, of course,

[8] See also Savulescu et al. (2004).

already many sports where technology is perhaps the major determinant of outcomes. Consider, for example, Formula One racing. This sport is arguably intended more as a test for technology than as a test of the efforts and natural abilities of competitors.[9]

On the other hand, if the claim is meant to be that *all* sports *ought* to embrace a role for technology, then it is less plausible. Why should we not have some sports that test mainly effort and natural ability, and others that test technology? Arguably, part of what we appreciate about the diversity of sport is that different sports test different things. It is true that technology *need* not be regarded as an inappropriate determinant of sporting outcomes. But nor need it be regarded as an appropriate determinant. We can choose, on a sport-by-sport basis, whether and to what extent we want sporting outcomes to be influenced by technology.

Suppose, then, that having reflected on whether technology should be allowed to determine outcomes in sport, we have decided that, for some sports, it should not play any greater role than is necessary. One can see the outlines of a fairness-based argument for the prohibition of doping in these sports. If doping were permitted, athletes would presumably dope to a greater degree, on average, than they do at present. Thus, *absolute* sporting outcomes (time taken, distance jumped, targets hit *et cetera*) would, to a greater degree than currently, be attributable to technological influence. Moreover, since different competitors would no doubt have different access to doping technology, *relative* outcomes (placings, rankings) would also be determined to a significant extent by technology. This would be a particular problem if doping technologies were expensive.

However, it remains an open question whether a strict anti-doping policy – such as that currently in place in most sports – would fare any better than a permissive one. Strict regulation of doping probably does reduce the effect of technology on *absolute* outcomes. But it is not clear that effects on absolute outcomes raise any fairness related issues. The introduction of running shoes and graphite tennis racquets arguably affected absolute outcomes in athletics and tennis, but since it did obviously affect relative outcomes, we do not regard it as raising questions of fairness. What seems important, from the point of view of fairness, is the extent to which technology affects *relative* outcomes. And here, it is not clear that a strong anti-doping policy would do any better than a permissive policy: since drug tests will always be imperfect, those with the best doping technology may be able to evade anti-doping regulation whereas those with

[9] Of course, there is a difficulty here about who we deem to be the competitors in Formula One racing. Are the mechanics and car designers themselves competitors? But even if we include all members of the support and design team as competitors, it remains the case that outcomes in Formula One depend largely on access to technology that originates outside the team.

inferior technology may be caught (Kayser et al., 2007; Savulescu and Foddy, 2008). Thus, differences in access to technology can also have a very marked effect on outcomes under a strict anti-doping regime.

The advocate of anti-doping regulation may, however, make one further manoeuvre. She may point out that, as well as caring about relative sporting outcomes *within* individual competitions, we also care about relative outcomes across competitions occurring at different places and, crucially, different times. We like to be able to compare the performance of Tyson Gay with that of Jesse Owens, or the performance of Barry Bonds with that of Babe Ruth. Thus, if we are to take seriously the view that sporting outcomes ought not to be determined by external factors, we should try to equalise these external factors not merely within individual competitions, but also across competitions occurring in different places and times. And since past sportspeople did not have access to doping technologies, some might feel that modern day competitors should also be deprived these technologies.

I doubt that many people assign over-riding importance to ensuring fairness of outcomes across time. For example, few people object to the technological improvements that have been made to running shoes, racing bicycles or skis over the last century, even though these make comparison across time difficult. When considering whether to allow some new technology into a sport, we are prepared to sacrifice some inter-temporal fairness in order to reap other benefits.

However, it remains true that there is a cost, in terms of inter-temporal fairness, to adopting these technologies. And there would be a similar cost to permitting doping: past competitors in most sports did not have access to enhancement technologies, so there is at least some fairness-based reason to deprive current athletes of those technologies. Moreover, as we have seen, there is also the possibility – though this is partly an empirical question – that permitting doping might increase unfairness *within* competitions due to differing access to doping technology. We may conclude, then, that the prospect of a permissive approach to sports doping does raise some fairness-based concerns, though it is far from clear that those concerns count decisively against such a policy.

WHAT SHOULD DETERMINE OUTCOMES OUTSIDE SPORT?

Are similar fairness-based concerns raised by the suggestion that we should permit enhancement outside of sport? Plausibly, the answer to this question will depend on what kind of non-sporting activity we consider. I wish to focus here on two realms of human activity: the arts (by which I mean to include literature, music, and the visual arts), and the economy. These two areas have been chosen to bring out two different ways in which non-sporting activities may differ from sport.

Consider first the arts. Like sport, art is one area in which enhancement technologies are already in use. For example, some musicians use beta-blockers to calm their nerves before performances (Tindall, 2004). Moreover, it seems likely that, as in sport, such technologies may give those who use them a better chance at producing better 'artistic outcomes'. It would not be surprising if musicians who dampened their pre-performance nerves with beta-blockers gave better performances, on average, than those who did not. Indeed, there is some evidence that this is the case (Brantigan et al., 1982). But would the suggestion that musical performance enhancers should be permitted be susceptible to the same fairness-based objections as are advanced against allowing drugs in sport?

The first thing to note here is that the circumstances in which we value art as a test of the artist's abilities are rather limited. We can imagine a guitar enthusiast who appreciates the music of Jimi Hendrix largely for what it shows about his guitar-playing ability.[10] And there are special circumstances – for example, auditions and artistic competitions – in which art clearly does function as a test. But much of the time, many of us value the arts primarily for the outcomes they produce – the beauty of a painting, the quality of a piece of music, the poignancy of a drama or the humour of a comedy – as well as the meanings they express. And though, in such cases, we may still care about what abilities the artist drew on in producing the artwork – say, because this is relevant to interpreting the art's meaning – it does not follow that we are valuing art because of what it reveals about these abilities: we need not be regarding art as a test. On the other hand, it seems plausible that when we value competitive sports, we almost always do so in part because of their testing function: their aesthetic appeal or meaning is at most a secondary consideration.

This difference between sport and the arts is of crucial importance in evaluating the possible unfairness of enhancement. The fairness-based objection to enhancement in sport relied on the view that use of enhancement technology is an irrelevant determinant of sporting outcomes. But the analogous objection fails to get a strong grip on enhancement in the arts for the simple reason that we are generally quite reluctant to write-off any determinant of artistic achievement as irrelevant. And this may be because, not valuing art primarily as a test, we have less need to worry about the possible interference from irrelevant determinants in that domain.

Consider now another realm of human activity: the economy. As with sport and the arts, enhancement promises to play an important role in determining the outcomes of economic activity. For example, future people may be able to cognitively enhance themselves in ways that will increase their economic productivity, and thus their wealth and income. Imagine an investment banker

[10] An anonymous reviewer for *Studies in Ethics, Law and Technology* suggested this example to me.

with enhanced numerical skills, a social worker with enhanced empathetic abilities, or a physically enhanced builder.

Again, we can ask: would there be any fairness-based objection to allowing economic outcomes (for example, income and wealth) to be determined in part by the use of enhancement technology? And again, we might begin by noting that – like art, and unlike sport – the economy is not normally regarded as a test of individual abilities. We value the economy for the benefits it brings us, not for what economic outcomes tell us about the characteristics of individual economic agents. We might thus expect that, as with art, we will be largely indifferent to whether technology determines economic outcomes, being instead primarily concerned with what those outcomes are.

In fact, however, this is not quite the case. Many people have strong views about what individual characteristics should determine a person's income or wealth. Presumably this is because economic outcomes are so important in determining a person's quality (and quantity) of life, and perhaps also because they are open to social manipulation in a way that sporting and artistic achievements are not. One's contribution to society or the market value of one's work are two prominent candidates as suitable determinants of economic outcomes. One's need, effort, desert, merit, choices or sacrifices are others. Note, moreover, that many of these views would rule out any role for enhancement technology in determining economic outcomes. If my income should be determined by my effort, for example, then it should not be determined by my use of productivity-increasing enhancement technologies, since these are unrelated to my effort. In this respect, then, the economy appears to be more like sport than it is like art; we do care about what affects outcomes, and in particular, we may regard the use of enhancement technology as an irrelevant determinant of outcomes.

There remain, however, some important differences between sporting and economic activity. Firstly, insofar as we are concerned about what determines economic outcomes, these concerns relate only to the distribution of income and wealth *across contemporaries.* Many people now enjoy economic advantages that far exceed those enjoyed by our eighteenth century predecessors. But no one would object to this discrepancy on the grounds, say, that we are no more needy or deserving than them. Technological improvements have enabled us to reap greater economic benefits, and we do not think that there is anything importantly unfair about this.

Secondly, and relatedly, though we are concerned about what determines the distribution of income and wealth across contemporaries, that concern is normally thought to be subject to an important constraint: if some change in the economic ground rules will result in one person being made absolutely better off, economically, without anyone else being made absolutely worse-off (either

economically or in any other way), there can be no objection to that change.[11] Thus, though we may think that economic benefits ought, in general, to be distributed according to desert, there can be no objection to a non-deserving person obtaining a higher income – say, through cognitive enhancement – if this has no absolute negative effect on anyone else. Thus, issues of fairness arise in the economy only in those cases where one person's having greater income or wealth causes another person to be absolutely worse off. In competitive sport, however, we may care if one person benefits from some irrelevant advantage even where this has not absolute effect on others. The change will still affect relative outcomes, and will thus still interfere with the sport's testing function.

There are, then, two respects in which enhancement in economic activity is less susceptible to fairness-based objections than enhancement in sport. First, enhancement in the economy does not raise issues of fairness between present and past people. And second, since not all cases of enhancement in the economy will make others worse off, not all will raise issues of fairness even between contemporaries.

IMPLICATIONS

We have seen that one of the most prominent objections to permitting enhancement in sport – that it would lead to unfair outcomes – does not apply, or does not apply with equal force, in two non-sporting areas: the arts, and the economy. The feature of sport which gives rise to this conclusion is that it may, at least in some cases, plausibly be regarded as a test of certain human abilities (such as effort and natural ability). To a large extent we may value sports like athletics and swimming for what they tell us about those abilities. No similar claim seems as plausible regarding the arts or the economy. We arguably value those areas of human activity more for their outcomes than for what they reveal about their participants. Other things being equal, then, there will be a stronger case for permitting enhancement in these areas than in some sports.

Other things might, of course, not be equal. There may be reasons for permitting enhancement in sport that are peculiar to sport, or reasons against permitting enhancement outside sport that do not apply to sport. But I am not aware of any good argument for the existence of such reasons. As I noted at the outset, it is commonly assumed that enhancement in sport raises by and large the same ethical issues as enhancement outside of sport. Thus, having seen that there is one dimension – that of fairness – on which enhancement outside of sport seems less problematic than enhancement inside it, we may tentatively conclude

[11] Arguably, our acceptance of this constraint explains why we find it unconcerning that we are better off, in various ways, than our predecessors: our being better off does not in any way harm them.

that, *all things considered*, there are stronger reasons to permit enhancement in the arts and the economy than in certain sports.

Whether the same conclusion holds for other non-sporting areas of human activity is an interesting question, but not one that I can pursue here. However, my feeling is that sport is relatively unusual in being valued largely for its function as a test, with most areas being more outcome-focussed, like the arts or the economy. Clearly, there are some exceptions to this generalisation. Academic examinations and job interviews are intended as tests. For the most part, however, the generalisation seems to hold.

My argument does not yield any immediate conclusions about whether we should permit enhancement either inside or outside of sport. But it does have methodological implications for how to reason about these matters. Specifically, if one can establish that enhancement ought to be banned outside of sport, then one will have established at least a *prima facie* case for banning enhancement in sport, where a permissive policy would raise additional issues of fairness. But demonstrating that enhancement ought to be banned in sport may lend no support to the view that it ought also to be banned outside of sport, since the case against enhancement in sport may be based on fairness-related issues that are peculiar to sport. On the other hand, arguing for a permissive approach to enhancement in sport may be a persuasive strategy for defending a similar approach to enhancement outside of sport, where fewer issues of fairness arise. But defending a permissive policy on enhancement outside of sport may lend no support to a permissive policy on sports doping.

Of course, none of this shows that others have been wrong to draw an analogy between the ethics of enhancement in sport and the ethics of enhancement outside sport. Clearly, there are parallels. I have simply tried to provide one reason for exercising caution in drawing them.

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