



# Using interdisciplinary tools to improve anti-doping: Utopia or necessity?

Marjolaine Viret<sup>1</sup>

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## Abstract

This article proposes a reflection on the value of interdisciplinary approaches applied to anti-doping. It aims to show that interdisciplinary research and collaborative work is central to establishing sound anti-doping policies. After presenting some fundamentals of interdisciplinary approaches, the article analyses how these can apply to doping as a “wicked” problem, highlighting the importance of clarifying policy goals as a prerequisite for applying interdisciplinary tools. The article then focuses on some features of “interdisciplinarity” that are critical to anti-doping practice and involve creating common ground on concepts, assumptions and methodologies. Having regard to the challenges involved in integrating scientific research and evidence for policy-making purposes, transparency and procedures may equally come to play a critical part, to which interdisciplinarity can contribute. If anti-doping policies inevitably incorporate some subjectivity rooted in stakeholder values, we should strive for such subjectivity to be an “informed” one. The legal profession can have a key role in this regard. Lawyers—whether academic researcher or practitioner—must evolve into being the (co-)actors of a broader reflection on the finalities and means of anti-doping, one that will encourage the creation of truly interdisciplinary platforms and ensure that the resulting insights are appropriately transposed into regulatory terms.

**Keywords** Anti-doping · Evidence-based policy · Interdisciplinary studies · Scientific evidence · Complexity · Systems thinking

‘Would you tell me, please, which way I ought to go from here?’

‘That depends a good deal on where you want to get to,’ said the Cat.

‘I don’t much care where—’ said Alice.

‘Then it doesn’t matter which way you go,’ said the Cat.

Lewis Carroll, *Alice in Wonderland*

## 1 Introduction: venturing outside the legalistic shelter

This article was born from a question that had been nagging at its author for a while: Should we as lawyers get involved into discussions around the legitimacy of anti-doping, or should we remain confined to translating “pre-packaged”

ethical and political choices delivered to us into rules that are coherent, compatible with international and national laws, and offer some basic protection for the rights of those affected? Past research of mine was devoted to assessing how the World Anti-Doping Code (“WADA Code”) deals with scientific evidence.<sup>1</sup> It relied on a deliberate choice not to delve too far into the ideological foundations of the anti-doping system, nor indeed the very justification for fighting doping. Instead, it took the basic orientations of current anti-doping approaches as a given, testing them for their acceptability from a legal viewpoint.

Whoever has regular exchanges with anti-doping scientists is bound to develop an interest in exploring how the anti-doping system may benefit if lawyers look beyond their “legalistic” territory and engage in more fundamental debates, with other disciplines. Such exchanges highlight the value of interdisciplinary collaboration and support the conviction that anti-doping could be enhanced if researchers from different backgrounds became more familiar with each other’s concerns, theories and methods. This conviction is arguably reinforced by the contrast between the immense

✉ Marjolaine Viret  
marjolaine.viret@viretlaw.com

<sup>1</sup> Attorney-at-law, Geneva, Switzerland

<sup>1</sup> Viret (2016).

difficulties that the system faced when having to confront endemic, organised doping schemes in Russia, versus the ease with which cases were brought forward in which the athlete's ability to control intake of a prohibited substance appeared questionable.<sup>2</sup> The decision of the Court of Arbitration for Sport (“CAS”) against cross-country skier Therese Johaug crystallised the notion of “collateral” damage of the current system; in a comment to that case co-authored within the “WADC Commentary Project”, we questioned the adequacy of the severe consequences suffered by the athlete for relatively banal deeds.<sup>3</sup> Indeed, one cannot help wondering when witnessing that contrast if this is really what we were aiming for.

Lawyers are used to disposing of this type of question in a fairly comfortable way. Reasoning in terms of internal legal coherence and of compliance with some fundamental safeguards allows the legal profession to refrain from building a personal opinion on policy issues, or at least from having to express that opinion. What is relevant, legitimate or opportune is often considered a question that pertains to ethics and policy-making, rather than legal analysis. The submission behind this article is that the legal profession cannot act as a mere instrument of enforcement at the service of policy-makers. Instead, the lawyers—whether academic researcher or practitioner—must be the (co-)actors of a broader reflection on the finalities and means of anti-doping, one that will encourage the creation of truly interdisciplinary platforms and ensure that the resulting insights are appropriately transposed into regulatory terms.

The ambition of this article is to contribute some foundation for interdisciplinary approaches applied to anti-doping programmes, and to make legal audiences more familiar with these. It will aim to show that interdisciplinary research and collaborative work is central to establishing sound anti-doping regulations, though it cannot substitute for the role of policy-makers. An initial section presents some basics of interdisciplinary approaches and describes how these can apply to doping as a “wicked” problem, as well as the importance of clarifying policy goals as a prerequisite for applying interdisciplinary tools (Sect. 2). It will then focus on those features of interdisciplinary work that are of particular interest for anti-doping and involve creating common ground on concepts, assumptions and methodologies (Sect. 3). A final section centres on the idiosyncrasies of integrating scientific research and evidence for policy-making purposes (Sect. 4). This will lead into some concluding remarks on

the interdisciplinary approaches explored in this article and the role that lawyers can play in that regard (Sect. 5).

## 2 Introducing interdisciplinary approaches to anti-doping

This section presents some fundamentals of “interdisciplinarity” (Sect. 2.1) and proposes to apprehend the doping phenomenon as a “wicked” problem, for which no straightforward description nor solution exists (Sect. 2.2). These initial remarks will show the importance of thoroughly reflecting on the objectives behind the fight against doping and examine how related ambiguities affect our ability to build models that allow for effective, measurable, interventions (Sect. 2.3). Taking this step back will allow us to view practical challenges that anti-doping faces in a more grounded manner in subsequent sections.

### 2.1 Interdisciplinarity—a primer

The study of interdisciplinarity is not new, but it is only within the past decade that the notion truly seems to have penetrated mainstream discourse, with “interdisciplinary” institutes or degrees flourishing in the academic landscape. As always when a new term is trending, there is a potential for it to be used and abused as a marketing catchword, or otherwise employed in a superficial way. Interdisciplinary initiatives seem to assume at times that placing a random group from diverse horizons around a table guarantees breakthroughs in and by itself. For those genuinely interested in the approach, however, there is an expanding body of literature reflecting on the specificities and methodologies of interdisciplinary work. Leading scholars in the field thus refer to interdisciplinarity as “an emerging paradigm of knowledge formation whose spreading influence can no longer be denied, discounted or ignored”.<sup>4</sup>

The very idea of interdisciplinarity arises from the recognition that historical academic disciplines with their reductionist traditions are no longer capable of successfully advancing knowledge in many areas, unless they work hand-in-hand to combine their expertise. This holds true especially for real-world issues that do not neatly fall within the purview of one academic discipline, but need to be tackled from various angles to allow for a more comprehensive perspective, so-called complex problems (see Sect. 2.2).

A frequently cited general definition of interdisciplinarity stems from the US National Academy of Sciences<sup>5</sup>:

<sup>2</sup> See, e.g., reported cases of contaminated pharmaceutical drugs, described in Viret (2019, p. 246).

<sup>3</sup> Rigozzi et al. (2017, p. 101); further, on the notion of “doping relevance”, see Viret (2019, pp. 235–237).

<sup>4</sup> Repko and Szostak (2017), preface at XVIII.

<sup>5</sup> See, e.g., by Menken and Keestra (2016, p. 31).

Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.<sup>6</sup>

Interdisciplinarity is thus first and foremost a process, derived from the experience and observations of “interdisciplinary” practising such research.<sup>7</sup> While interdisciplinary studies have been designed primarily for collaborative research projects, many of the tools developed can be transposed to collaborations for purposes of policy-making and regulation. In such situations, the process itself may diverge from what is typically contemplated in the literature, but the caveats and tools proposed offer equal potential for improvement in the collaboration. As an illustration, healthcare policies have pioneered in the field of interdisciplinary studies, with very tangible applications for the practice.<sup>8</sup>

For problem-oriented (also referred to as “instrumentally oriented”) research,<sup>9</sup> which aims to achieve some extra-academic goal such as solving societal problems, the expression “transdisciplinary approaches” has been coined. As opposed to the more generic term “interdisciplinary”, the notion of “transdisciplinary” work incorporates the component that stakeholders within the community are invited to participate in the study, e.g. by contributing to its design or making sure the outcomes are relevant for the community. Proponents of the “collective impact” framework defend similar ideas, with a focus on community work and leadership.<sup>10</sup>

The goal of this article is not to conduct a comprehensive review of interdisciplinary research and its various forms. There are multiple views on the exact characteristics of interdisciplinarity, and it is probably more accurate to speak of “interdisciplinarity” than of a unique approach. Interdisciplinarity is “best understood not as one thing but as a variety of different ways of bridging and confronting the prevailing disciplinary approaches”.<sup>11</sup> We will also avoid delving into terminological subtleties (cross-, inter-, counter-, trans-,

pluri-disciplinarity) and the meaning assigned to them by various currents of research. Rather, the article stays pragmatic and presents a selection of tools and features of interdisciplinary approaches from which anti-doping could benefit. “Interdisciplinarity” will be used as the more generic concept, and reference will be made to “transdisciplinarity” where the emphasis is on policy-oriented work that involves practitioners and stakeholders of the community in the process (as opposed to academic experts only).<sup>12</sup>

A first feature relevant to anti-doping lies in the interconnection between interdisciplinary work and complex problems. Complexity is frequently cited as the main driver of—and justification for—interdisciplinary studies<sup>13</sup> and associated with “systems thinking”.<sup>14</sup> A system can be described as involving three characteristics: (i) a set of elements, which are (ii) coherently organised in structures that produce (iii) a characteristic set of behaviours (which can be described as the “function” or “purpose” of the system).<sup>15</sup> A feature of complex systems relevant to anti-doping is that they are “multi-faceted”—“seen from one angle, they appear different than they do from another angle, because the viewers see facets (represented as sub-systems) where different components and relationships dominate”.<sup>16</sup> Therefore, different disciplines may also have different definitions of the problem.<sup>17</sup> Another important feature is that the complex system is self-organising, which means that its overall patterns behave differently from the sum of its parts and are not fully predictable based on those parts. Insights into the problem can be offered by more than one discipline, and no discipline alone can satisfactorily resolve it. Also, the problem frequently responds to an unresolved societal issue. Some authors refer in this context to the notion of “wicked problem”, which we will see is particular suitable to describe the doping phenomenon (see Sect. 2.2).<sup>18</sup>

Second, interdisciplinary approaches distinguish themselves through their commitment to uncovering hidden assumptions in each discipline, encouraging the researchers to detach themselves from the worldviews that are intrinsic to their institutional background. The attitude of the interdisciplinarian is one of “suspended judgement”.<sup>19</sup>

<sup>6</sup> National Academy of Science—Facilitating Interdisciplinary Research, <https://www.nap.edu/catalog/11153/facilitating-interdisciplinary-research>, 2005, p. 26 (last accessed 18.02.19).

<sup>7</sup> Newell (2001, p. 14).

<sup>8</sup> Leischow et al. (2008). For an illustration with a view to designing health information systems, see also Kuziemy et al. (2009), who describe interdisciplinary team communication as crucial in healthcare settings.

<sup>9</sup> Huutoniemi et al. (2010, p. 85).

<sup>10</sup> Kania and Kramer (2011).

<sup>11</sup> Huutoniemi et al. (2010, p. 80).

<sup>12</sup> Huutoniemi et al. (2010, p. 80).

<sup>13</sup> Menken and Keebra (2016, p. 34).

<sup>14</sup> Newell (2001, p. 1). The article will not dig into the complexity theories described by the author, which distinguish different forms of complexity.

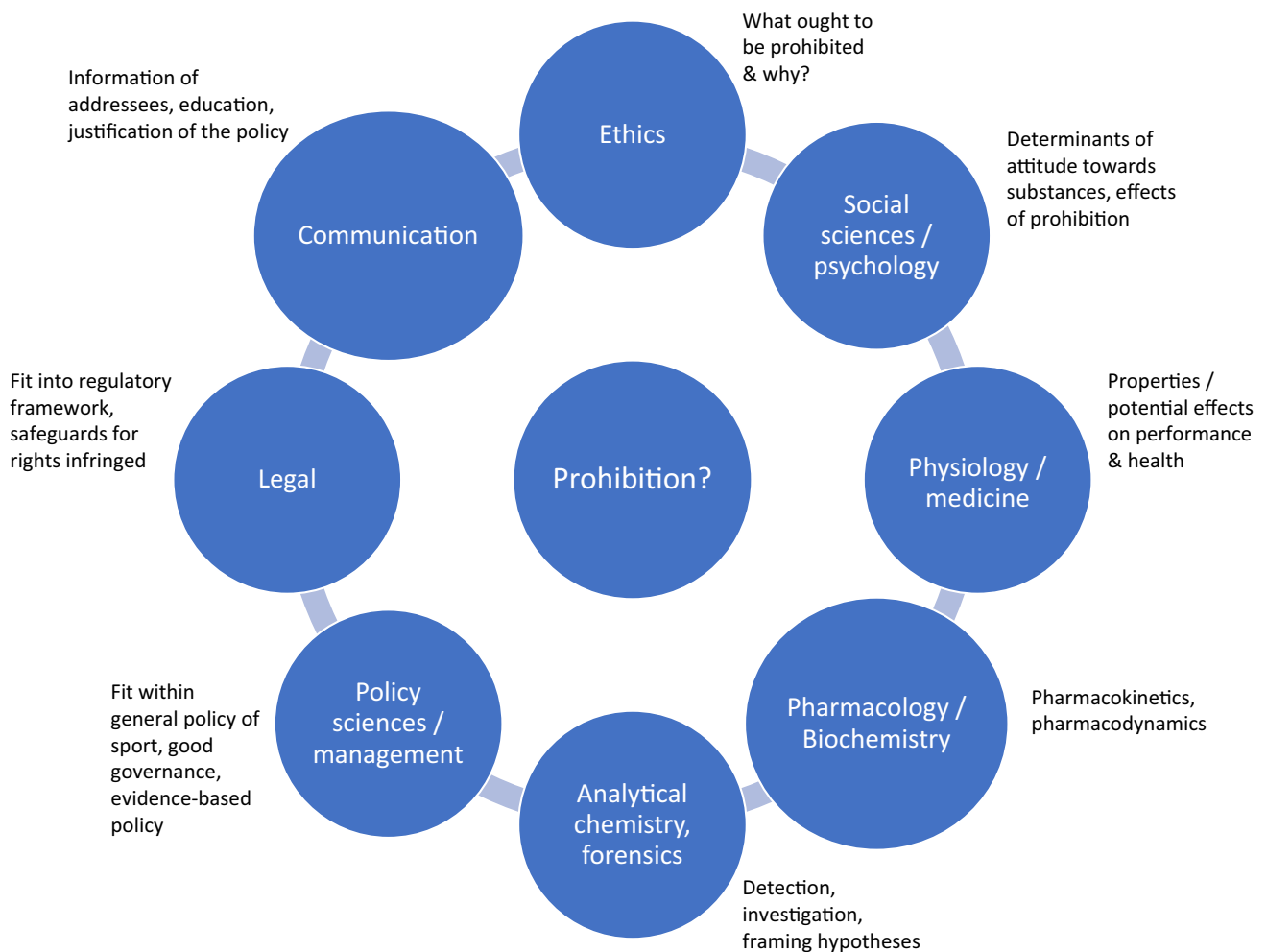
<sup>15</sup> Meadows (2008, p. 11) and definition in Appendix 1.

<sup>16</sup> *Idem*, p. 2.

<sup>17</sup> *Idem*, p. 16.

<sup>18</sup> Menken and Keebra (2016, p. 39); see also the notion of “complex adaptive system” (or “CAS” [sic!]), in Holland (2006, p. 2).

<sup>19</sup> Repko and Szostak (2017, p. 89).



**Fig. 1** Different disciplines must be involved before a substance can be added to the WADA Prohibited List, and each discipline is interested in different sub-questions with respect to that decision. If one of the disciplines is not appropriately consulted, unanticipated issues may arise. Thus, when Meldonium was placed on the 2016 Prohibited List, there was insufficient information about its excretion patterns. Meldonium turned out to have an atypical excretion pattern which made it detectable for weeks or potentially months in urine after its last intake, including potentially for athletes who had ceased using it prior to the prohibition coming into effect. This resulted in WADA having to commission further studies, adopt extraordinary communication measures and prescribe some adjustments to the standard

results management and sanctioning regime. Moreover, each disciplinary aspect may affect others. For example, a decision to prohibit a substance primarily for health reasons may, because WADA has no obligation to communicate the rationales for adding a substance to the List, create a belief among athletes that the substance may be beneficial to their performance, and actually promote abuse of the substance, thereby increasing health risk. More transparency on the methods of detection in place for the substance and their scientific validity (especially for substances that can be produced endogenously) may increase the level of trust in the system and community support, but also give cues to potential dopers for remaining undetected

Interdisciplinarity places emphasis on interactions, requiring each discipline to enter into introspection about its positions and implicit biases. The goal is to prompt the realisation that others may hold diverging but equally valid perspectives, with a view to establishing a minimum common ground or at least operating in full awareness of remaining discrepancies on concepts or methods (see Sect. 3).<sup>20</sup>

Third, a central feature of interdisciplinary approaches is “integration”. Integration is the process through which insights gained via disciplinary perspectives, within the collaborative framework agreed, are melded into a (complete or partial) synthesis to generate a more comprehensive or new understanding on a subject matter.<sup>21</sup> This goal-oriented feature of interdisciplinary work really characterises such work as a means to an end, which “integrates diverse expertise for

<sup>20</sup> Callaas and Horne (2013, p. 28) present the differences between inter- and intra-disciplinary communication.

<sup>21</sup> Menken and Keestra (2016, p. 42).

a specific purpose”.<sup>22</sup> One of the primary purposes typically put forward (besides advancing fundamental knowledge) is solving real-world problems, i.e. “generate practical solutions which are implemented”.<sup>23</sup>

It is not universally accepted that integration is a necessary feature of interdisciplinary work, nor is there a consensus as to its exact mechanics.<sup>24</sup> It seems sensible to argue, however, that integration cannot be foregone when the ultimate goal is to establish a policy and regulatory framework. Indeed, it is not possible for separate discipline-specific solutions to coexist: one discipline may be left aside or not be adequately accounted for in the final output (policy or regulation), but once such output is finalised, there is little room for that discipline to give a practical bearing to its own, diverging, views. Instead, its scope of intervention is limited to conducting further research in hope of revealing inadequacies in the implementation of the policy and potentially turn the orientation around.

The necessity of integration in the context of policy-making is in line with the analysis of William Newell about complex systems,<sup>25</sup> whereby any new understanding produced must be one that explains the overall patterns of the system studied. To verify whether integration can be deemed “successful”, one can proceed by testing whether the resulting policy addresses the problem and makes more effective action possible. Importantly, transdisciplinary approaches allow for integrating perspectives from academic researchers, but also from other specialised (e.g. professional) bodies with expertise, as well as from those community stakeholders who are directly affected by the issues under study. This means that stakeholder values are taken into consideration and integrated with academic knowledge.<sup>26</sup> Conversely, however, integration of interests and values into the balance may mean tolerating certain “gaps” between policies and their basis in scientific evidence (see Sect. 4).

We can thus summarise what characterises a transdisciplinary problem-solving enterprise as follows<sup>27</sup>:

- Describe the “issue”/“topic” to be investigated (in particular, how it qualifies as “complex”);
- Identify disciplines that have relevant insights to contribute, in order to build an integrative framework, with appropriate questions to be investigated by each discipline, separately or jointly. In transdisciplinary settings, stakeholder experience and values are part of problem definition and -solving;
- Identify concepts, assumptions, theories and methods underpinning the different disciplines involved, either to establish common ground, to allow for “mixed methods” approaches and/or to proceed in awareness of remaining discrepancies;
- Integration: create new insights or understanding by promoting a more comprehensive view on the problem area, which could be crystallised into a model that captures that new understanding. Thus, mere juxtaposition of different views does not amount to interdisciplinary work in the meaning intended in this article.

Note that the above is generally an iterative process, involving regular back and forth between the different steps. For example, deciding that something is an issue worth tackling (we are deliberately refraining from using the term “problem” here) already involves a judgement that may be conditioned by one’s discipline of origin or one’s set of values (see Sect. 2.2). This article will not look into the actual execution of the investigations by each discipline, nor at mixed methods research models. Mixed methods allow for a pragmatic approach where researchers combine methods—including quantitative and qualitative ones—with the goal of providing the best answers to a research question.<sup>28</sup> Rather, the goal here is to try and create the prerequisites for such collaborative initiatives to be successfully deployed. These may include research *stricto sensu*, but also other projects aimed at implementing anti-doping policies on the field (e.g. designing a testing programme).

## 2.2 Doping as a “Wicked Problem”

Complexity is recognised as a driving force behind the development of interdisciplinarity. Healthcare and public health in general are areas in which transdisciplinary approaches have found recognition (see Sect. 2.1). The societal needs and challenges found in public health settings show strong parallels with those that can be found in relation to doping in sport. The idea that the doping phenomenon calls for multi-disciplinary approaches has been evoked in scholarly writings from various disciplines in recent years. These include anti-doping scientists working in analytics: “in the success

<sup>22</sup> TD-Net, Network for Transdisciplinary Research, <http://www.transdisciplinarity.ch/en/td-net/Transdisziplinarit-t/Definitionen.html> (last accessed 18.02.19).

<sup>23</sup> Idem, *ibidem* (Fig. 1).

<sup>24</sup> Newell (2001, p. 18); the US Academy of Sciences considers that research is only truly interdisciplinary when it is an ‘integration and synthesis of ideas and methods’. National Academy of Sciences—Facilitating Interdisciplinary Research, <https://www.nap.edu/catalog/11153/facilitating-interdisciplinary-research>, 2005, p. 26 (last accessed 18.02.19).

<sup>25</sup> Newell (2001, pp. 20–22).

<sup>26</sup> Menken and Kestra (2016, p. 32).

<sup>27</sup> Adapted, in particular, from: Newell (2001, p. 15); Menken and Kestra (2016, p. 52).

<sup>28</sup> Silverman (2017, pp 206–209) and glossary.



of these research projects and with efficient implementation of new techniques, international and interdisciplinary cooperation plays a major role”,<sup>29</sup> as well as legal scholars: “The regulatory challenges in the fight against doping are numerous and complex. This is partly because of the subject matter being governed, where the focus straddles the most diverse disciplines such as law, medicine, pharmacology, toxicology, social sciences and sports sciences”.<sup>30</sup>

Researchers reflecting on the effectiveness of anti-doping approaches also seem to have developed a sense for this necessity. As Olivier De Hon points out in his recent thesis: “Over time, the field of anti-doping has become a profession in itself. Effective anti-doping policies require a true multi-disciplinary effort and continuous evaluations”.<sup>31</sup> In an extensive review of social sciences research in the field of doping, Susan Backhouse highlights the need for transdisciplinary approaches as an area of future focus: “The issue of doping in sport—and of doping in wider society—cannot be solved by one discipline alone. We need a systems-based approach to prevention, drawing together researchers, practitioners and policy-makers from a range of fields including behavioural sciences, neuroscience, education and public health”.<sup>32</sup> This message was taken up by the WADA Press Release on Backhouse’s report, recognising the need for better partnerships between researchers and practitioners and “greater collaboration across disciplines”.<sup>33</sup>

Statements such as the above signal an awareness, including within the anti-doping community, that anti-doping can—and must—do better in order to inform its policies and regulations through evidence and that this needs to happen in a concerted manner. These statements, however, typically remain confined to concluding or introductory remarks, without systematic thought being spent on their implementation. There have been no thorough attempts to design a formal framework for the interdisciplinary efforts advocated. In particular, we need to explore what the proposed interdisciplinary work ought to consist of in practice and, more importantly, what is involved in achieving actual results, rather than simply creating a fancy showcase to enhance the credibility of anti-doping with the public.

Figure 1 provides illustrations of how the various components of an anti-doping policy, while a priori pertaining to distinct disciplines, are in reality inextricably entwined. The variety of disciplines involved calls for a “broad” interdisciplinary approach, encompassing conceptually diverse fields that cross the boundaries of intellectual areas (e.g. law and medicine, as opposed to medicine and human physiology which would represent a “narrow” case of interdisciplinarity).<sup>34</sup> In such situations, achieving integration is particularly challenging due to the level of epistemological heterogeneity involved. As we will see (see Sect. 3.3), each discipline (and at times researchers within a single discipline) also favours its own methods of research, which further compounds their difficulties in functioning together.

The study of complex systems offers a way forward for modelling the interactions between the different participants in anti-doping, the policy interventions into the system and their effects on behaviours. Systems thinking is frequently cited as a precious tool of inquiry in interdisciplinary settings,<sup>35</sup> whether to integrate disciplinary perspectives into a more comprehensive model or to organise the problem-solving process.<sup>36</sup> Relevant features of systems thinking include: (i) a system is composed of elements and their interconnections, which may make the behaviour of the system difficult to predict; (ii) these interconnections operate through (reinforcing or balancing) feedback loops, (iii) the effects of intervention into one element of the system may be delayed, so that it is easy to “over-intervene” if one does not take time to observe how the intervention affects the system. Systems thinking uses “mapping” of interconnections as a means to support decision-makers’ understanding of how to improve system performance.<sup>37</sup> Generally, practitioners are involved in identifying the system elements and their possible interrelations.<sup>38</sup> One critical aspect of systems mapping relates to the “feedback structure” of a system, i.e. how a change in one element of the system affects other elements, which in turn allows for developing theories about how the system operates. The model must match the real-world problem close enough that forecasts and intervention options can effectively be derived from the model. If so, the model is “validated”.<sup>39</sup> In practice, validity can often be demonstrated only by gradually generating trust among stakeholders in the ability of the model to contribute to solving the problem.

<sup>29</sup> Kuuranne (2013, p. 809).

<sup>30</sup> Haas (2017, p. 23); see also, Viret (2016, pp. 781/782).

<sup>31</sup> De Hon (2016, p. 12, pp. 20 and 35); see also Fincoeur et al. (2019, pp. 5–7).

<sup>32</sup> Susan Backhouse (2015), Social psychology of doping in sport: a mixed-studies narrative synthesis, October 2015, [https://www.wada-ama.org/sites/default/files/resources/files/literature\\_review\\_update\\_-\\_final\\_2016.pdf](https://www.wada-ama.org/sites/default/files/resources/files/literature_review_update_-_final_2016.pdf) (last accessed 18.02.19), p. 230.

<sup>33</sup> WADA Press Release of 16 December 2016, <https://www.wada-ama.org/en/media/news/2016-12/wada-publishes-anti-doping-research-project-of-current-social-science-literature> (accessed 12.10.19).

<sup>34</sup> Huutoniemi et al. (2010, p. 82).

<sup>35</sup> Mathews and Jones (2008, p. 77).

<sup>36</sup> Bergmann et al. (2012) propose system models as a tool of interdisciplinary integration for tasks involving ‘complex cause–effect structures’.

<sup>37</sup> Repko and Szostak (2017, p. 107).

<sup>38</sup> Bergmann et al. (2012, p. 102).

<sup>39</sup> Idem (2012, p. 101).

While sophisticated methods of system modelling rely on computer simulation,<sup>40</sup> the value of systems for interdisciplinary approaches is much more basic and at the same time fundamental: “structuring information and stating propositions are not about using a tool; it is rather about modelling, which is the affair of all actors”.<sup>41</sup> As highlighted previously (see Sect. 2.1), complex systems are characterised by the fact that they appear differently to an observer depending on the angle from which they are considered. The sheer process of modelling may thus uncover diverging perspectives and focuses among different disciplines. Lawyers, for example, are conditioned to view anti-doping as a system of regulations: a set of norms defining the scope of what is prohibited, a set of norms imposing sanctions if a prohibition is breached and a set of norms governing the procedures through which respect for the norms can be imposed and breaches detected. Regulatory models are relatively predictable, as the system is normative as opposed to descriptive. For example, legal rules are commonly modelled (explicitly or implicitly) as conditional propositions (if A then B), and implication trees between requirements of the rules can only take three values: yes/undecided/no.<sup>42</sup> Moreover, the value “undecided” is resolved through the legal instrument called burden of proof: if a prerequisite of a legal rule cannot be shown to have occurred or not to have occurred, the issue will be decided as a “no” against the party bearing such burden. There are thus frequently only two possible outcomes *de facto*, which leads to very determinative decisions. This type of model can be found in the WADA Code by analysing Article 2 and Article 10, in conjunction: schematically, Article 2 describes a set of behaviours that are considered “doping” (“if”), while Article 10 dictates the consequences (“then”). Article 3 in conjunction with Article 10 describes the allocation of the burden of proof with respect to the conditional proposition. For example, if a non-specified prohibited substance is present in a sample (Article 2.1), and neither party can establish the origin of the substance (undecided), Article 10.2.1 dictates that in this case the presence is deemed intentional and the period of ineligibility is 4 years.

While lawyers and policy-makers may see a set of regulation as the end product of their work, the same regulation is viewed in social sciences models only as one “environmental factor” that influences the attitudes of the social actors observed with respect to doping.<sup>43</sup> Various models in social

sciences have been proposed to explain what leads to doping, an overview of which can be found in Backhouse’s review.<sup>44</sup> One common feature of these models is that they tend to revolve around doping as a means of performance enhancement. In addition, social sciences typically study what the research subjects consider doping, rather than what is actually prohibited under applicable rules (see Sect. 3.3). Other disciplines yet propose to model the effectiveness of current approaches, but without seeking to identify the exact triggers behind an individual doping decision. Marclay and Saugy explain how “forensic intelligence can be used to develop more specific and efficient models to prevent and/or reduce doping in sport”. In particular, the highest level category of “strategic intelligence” places emphasis on understanding the doping phenomenon as a whole. It is thus “conducive to proposing long-term problem-solving policies as well as preventive and educational interventions or programmes”.<sup>45</sup>

System modelling includes an iterative element: new research—or simply a phenomenon evolving over time—may reveal that a model is flawed or insufficient to account for crucial aspects of that phenomenon. This has been the case in anti-doping, where increasing concern is voiced about the failure of a model focused on deterrence, detection and sanctions (see Sect. 4). In concluding her review, Backhouse advocates moving towards a systems-based approach to doping prevention, all the while acknowledging that significant work will be required to achieve this, especially given the “diffuse” character of doping-related research and the various theoretical approaches that have been deployed.<sup>46</sup>

One of the main challenges confronting anti-doping work is that relatively little is known in the World Anti-Doping Program about feedback loops, which would suppose measuring the impact of each anti-doping intervention. As will be detailed in connection with the study of doping prevalence (see Sect. 3.3), this starts already with describing the “problem”.<sup>47</sup> Declaring that a problem—doping—could be addressed more efficiently does not explain what the problem is, nor indeed whether there is a problem at all. In this, one can easily submit that doping qualifies as a “wicked problem”, a concept complexity is often associated with. In particular, it meets the preliminary difficulty that there is rarely a definitive description for a wicked problem: “the formulation of a wicked problem is in a fact a problem in

<sup>40</sup> *Idem* (2012, p. 104). Researchers like Werner Pitsch use computer simulations to test models seeking to assess the plausibility of theories regarding doping behaviours (see Pitsch 2019, p. 20).

<sup>41</sup> Quentin and Ribaux (2014).

<sup>42</sup> Walker (2007, pp. 6/7).

<sup>43</sup> Backhouse (2015, p. 232); see the model proposed by Kazlauskas (2014, p. 133), in which sporting bodies regulating against doping in sport is only one layer of the model.

<sup>44</sup> Backhouse (2015, pp. 191–209). The review notes that little has been done so far to test them empirically, though all arise at some level from empirically gathered data.

<sup>45</sup> Marclay and Saugy (2017, p. 131).

<sup>46</sup> Backhouse (2015, pp. 225 et seq.).

<sup>47</sup> The term “problem” is used here with caution and for the sake of the description, since it already implies a (negative) value judgement. More neutral terms would be “issue” or “topic”. See Sect. 2.1 above.

itself!”<sup>48</sup> In the context of doping, there is little consensus on what the problem is; some even question the extent to which there is a problem. Thus, some researchers in the fields of social sciences and history of sport argue that doping as a phenomenon existed long before it became characterised as a problem.<sup>49</sup> In other words, the problem of doping was borne when the behaviours targeted became perceived as morally offensive and in breach of the values of sport. The behaviours themselves did not newly emerge, though their sophistication was obviously assisted by medical and technological progress. A change of attitude towards a phenomenon, rather than changes in the phenomenon itself, would thus be at the origin of the anti-doping system as we know it today, as a result of an evolving “social norm”.<sup>50</sup>

Additionally, there is no definitive solution to a wicked problem, and solutions cannot be true nor false, just better or worse.<sup>51</sup> Each wicked problem is essentially unique and each solution is a one-shot operation, because any attempt at solving the problem modifies the circumstances and thus the problem itself.<sup>52</sup> This makes it essential to study feedback loops in anti-doping to predict and monitor how each attempt at a solution will affect doping patterns. As an illustration, since resources are limited within each anti-doping programme, investment into qualitative testing, as encouraged under the 2015 WADA Code revision with the introduction of the Technical Document for Sport Specific Analysis leads to increased costs per each sample on which special targeted analytical methods need to be ordered, therefore (all resources remaining equal) reducing for some anti-doping organisations the total number of samples that can be collected yearly.<sup>53</sup> It is thus essential that the qualitative choice (both as to the substances to test for and the athletes to select) is made diligently and proficiently, given the lower overall population coverage that may result from the change in approach. As another illustration, the introduction of the Athlete Biological Passport in cycling caused an initial strong decrease in blood doping cases.<sup>54</sup> In response, the doping patterns evolved towards smaller doses of EPO at regular intervals, minimising the fluctuations of the athlete profiles and thus making patterns of blood doping less easily

identifiable for the system. The effectiveness of the Athlete Biological Passport at detecting EPO abuse thus had a beneficial (reducing the “size effect” by deterring riders from putting their health at risk through massive EPO use)<sup>55</sup> and a perverse side effect (make EPO use more sophisticated and thus less easily detectable).<sup>56</sup> Whether the balance between the two is positive or negative supposes a judgment call that is difficult to objectivise. Some consider that the anti-doping system is making constant progress;<sup>57</sup> others argue that current remedies may be worse than the disease, claiming that today’s anti-doping policies come with non-negligible costs, in the form of undesirable side effects.<sup>58</sup>

Finally, the complexity and wickedness also stem from the fact that the doping phenomenon is global and intercultural and that it needs to be regulated in a transnational manner, in spite of differing national laws—at least that is the current political stance of the UNESCO Convention against Doping in Sport and the very foundation for the World Anti-Doping Program. Doping also overlaps with other “systems” within organised sport, in particular with sports medicine. For example, WADA limitations on tolerated use of certain substances (e.g. Beta-2 agonists for asthma and glucocorticoids) inevitably influence medical prescriptions to athletes with certain health conditions, since the level and modalities set by WADA pre-empt the physician’s judgment of what is therapeutically acceptable.<sup>59</sup> (Over-)medication of athletes at the elite and amateur level (including with non-prohibited substances) is a topic that would deserve to be treated as central to the anti-doping system, rather than at its fringes. In spite of calls among researchers and scholars for better communication between anti-doping and medicine,<sup>60</sup> there has been a historical reluctance on part of anti-doping circles to truly embrace the health dimension of anti-doping.<sup>61</sup>

System models should also be capable of reflecting the fact that anti-doping is part of broader debates about the

<sup>48</sup> Menken and Keestra (2016, p. 39).

<sup>49</sup> Ohl et al. (2013, p. 3), Dimeo (2007), Kayser (2019, p. 165).

<sup>50</sup> Ohl (2019, p. 127).

<sup>51</sup> Pielke (2016, p. 36); Kazlauskas (2014), presents doping control as a wicked problem.

<sup>52</sup> In fact, one could argue that any real-world problem is a wicked problem, if one only takes a sufficiently inclusive perspective, if only because in real world resources are almost always limited and thus any “solution” in part of a system will almost inevitably negatively affect other parts.

<sup>53</sup> Rigozzi et al. (2013, paras 39–43).

<sup>54</sup> Zorzoli and Rossi (2010), Aikin and Sottas (2019).

<sup>55</sup> Aikin and Sottas (2019, p. 59); Viret (2019, p. 236).

<sup>56</sup> For another such example, see the “displacement effect” on the supply market for doping substances due to increased repression, described by Fincoeur (2019, p. 74).

<sup>57</sup> Aikin and Sottas (2019, p. 62).

<sup>58</sup> Kayser (2019, p. 167).

<sup>59</sup> WADA Prohibited List, S3 class [https://www.wada-ama.org/sites/default/files/wada\\_2019\\_english\\_prohibited\\_list.pdf](https://www.wada-ama.org/sites/default/files/wada_2019_english_prohibited_list.pdf) (last accessed 25.06.19).

<sup>60</sup> Faiss et al. (2018), in a journal targeting Swiss medical practitioners, urge anti-doping organisations to reach out to sports physicians to defend good practices to protect sport’s intrinsic values and the athlete’s health.

<sup>61</sup> See for discussion regarding reporting of pathological results—HMRC Meeting Minutes, 27–28 August 2013, p. 5, <https://www.wada-ama.org/sites/default/files/wada-hmr-committee-minutes-2013-08.pdf> (last accessed 19.02.19); see recently Henning (2019, pp. 51/52).



nature of organised sport, such as human enhancement,<sup>62</sup> or of wider societal concerns such as drug trafficking.<sup>63</sup> In fact, the Oscar Pistorius matter,<sup>64</sup> as well as recent disputes around hyperandrogenism and transgender regulations, expresses much deeper ethical issues concerning what represents “natural” and “appropriate” athleticism.<sup>65</sup> The debates have so far remained fragmented and often detached from fields of study in which this type of questioning has a long tradition. Andy Miah suggests the contribution that philosophies of technology or bioethics could bring to the debate and denounces the fact that “while there are relatively few applied ethical issues that have clear conclusions for all ethicists and philosophers, sport appears to have made its conclusions about performance enhancement without first coming to terms with the complexity of the issue”.<sup>66</sup> From an organisational perspective, Kazlauskas and Hasan have proposed a framework informed by complexity theory (“Cynefin framework”) to enhance the “workspace” in the complex context of anti-doping.<sup>67</sup> Such conceptual frameworks have so far found little resonance in day-to-day practice on the field for anti-doping organisations.

### 2.3 What’s the point anyway?

Choosing interventions (regulatory measures, education programmes, etc.) and assessing their effects within a complex system—i.e. colloquially: checking “what works and what doesn’t”—suppose some clarity on the desired outcomes.<sup>68</sup> There is widespread agreement that anti-doping could benefit from greater effectiveness, but in order to do so one needs a vision—and, ideally, a consensus—on the objectives. WADA Director General Olivier Niggli wrote about modern challenges in anti-doping: “Cheaters are becoming more sophisticated, and it is quite obvious that the anti-doping community and the Code need to adapt in order to become more effective”.<sup>69</sup> At that very high level, most would likely be inclined to agree with that statement. But, as the saying goes, the devil lies in the details.

Effectiveness refers to the capacity of a measure to achieve a desired effect.<sup>70</sup> In systems thinking, this would suppose investigating cause–effect relationships for each intervention and for its overall impact on the system (feedback loops). Without precise goal, there can be no precise measure of effectiveness. For a complete equation, one should aim for maximum “efficiency”, a ratio that minimises the efforts or resources needed to achieve the effect.<sup>71</sup> One can thus hardly overstate the importance of reflecting on the goals that anti-doping is to pursue, prior to making policy and regulatory decisions, and as a prerequisite for conducting meaningful interdisciplinary work in the field. To borrow from principles applied for the development and choice of a scientific test, such a test is often characterised through two parameters: its validity and its reliability. Validity is the ability of a test to target the outcome (value, parameter, etc.) one is looking for. Reliability is the ability of the test to reproduce results consistently (e.g. when repeating the test). To stay metaphorically within the world of sport, the image of a target in archery is often used.<sup>72</sup> Validity describes how close to the target centre an arrow (= the test) strikes, whereas reliability is how close together consecutive arrow shots come to strike. To elaborate on this image, building anti-doping policies without clarity about their ultimate purpose and objectives is akin to shooting an arrow without a pre-defined target, but in the hope that the arrow will end up striking something interesting. No matter how reliable the archers’ skills and their dedication, it is highly unlikely that a valid outcome would arise in these conditions.

Various rationales have been cited for the fight against doping, most of them relating to ideals of “purity” of a world free of doping (thus the reference to “clean sport”, see Sect. 3.1).<sup>73</sup> The World Anti-Doping Program has its roots in a certain vision of what competitive sport ought to be, but one that remains diffuse and not easily transposable into actionable goals. Under its fundamental rationales, the WADA Code provides: “anti-doping programmes seek to preserve what is intrinsically valuable about sport”, characterising this intrinsic value as ‘the spirit of sport’.<sup>74</sup> While a few of the components cited in the WADA Code to concretise the spirit of sport might qualify as evidence based (health, excellence in performance), most are either

<sup>62</sup> Kayser (2018, p. 5); Miah (2005).

<sup>63</sup> Marclay et al. (2013).

<sup>64</sup> For a discussion of the case before the Court of Arbitration for Sport, see McArdle (2008).

<sup>65</sup> Already in 2005, Miah was seeking to advance the discussion ‘by arguing that there is a need to approach anti-doping policy in a manner that recognises doping as only one section within a policy on performance enhancement’ (Miah 2005, p. 53).

<sup>66</sup> Miah (2005, p. 56).

<sup>67</sup> Kazlauskas and Hasan (2010).

<sup>68</sup> As Pitsch (2019, p. 26) highlights, ‘there is, in principle, no ‘correct’ or ‘false’ model, only appropriate models for pre-defined objectives’.

<sup>69</sup> Niggli (2017, p. 34).

<sup>70</sup> De Hon (2016, p. 37).

<sup>71</sup> However, as highlighted by De Hon (2016, p. 37), in practice the quantification of efficiency is not straightforward since the units characterising the numerator and the denominator of the ratio are seldom the same.

<sup>72</sup> See, e.g., for social sciences methods, <https://courses.lumenlearning.com/suny-hccc-research-methods/chapter/chapter-7-scale-reliability-and-validity/> (last accessed 19.02.19).

<sup>73</sup> Niggli (2017, p. 35): doping as a ‘threat to the integrity of sports’.

<sup>74</sup> See the description in the WADA Code Introduction.

themselves totally open to subjective interpretation (honesty, ethics, fair play, character and education), do not intrinsically seem irreconcilable with doping (fun and joy, teamwork, dedication and commitment, courage, community and solidarity) or rely on circular reasoning in that they presuppose the morally or legally reprehensible character of doping rather than to justify it (respect for rules and laws, respect for self and other participants). Ideology does not always easily fit in with evidence-based planning and monitoring. As De Hon notes, the cost needed to achieve effectiveness “can be expected to be maximised within a framework of rules and regulations that is predominantly guided by ideological ideas”.<sup>75</sup> Even deciding that doping is a problem area already implies taking an ideological stance. One could perceive the use of certain substances and methods in sport simply as one of the numerous tactics (training, nutrition, etc.) through which athletes seek to optimise their performances in their sport and gain an edge over their opponents, often to the detriment of their health. In fact, the mere characterisation of doping as a problem that requires solving already has an influence on athletes’ behaviours—it may deter some from resorting to drugs, just as it may push others to try them in the expectation that they will actually give them an edge.<sup>76</sup>

Within the World Anti-Doping Program, effectiveness has historically been perceived mainly in terms of compliance with the prescriptions of the WADA Code itself. Obviously, effectiveness is easier to measure if one simply take as a reference standard the regulations in place, e.g. the definition of “doping” as set forth in the WADC, as the “occurrence of one or more of the anti-doping rule violations set forth in Article 2.1 through Article 2.10 of the Code”. But this definition does not account for relevance with respect to the ultimate values that the World Anti-Doping Program seeks to defend. Effectiveness in this purely “positivist” understanding includes catching an athlete who used lip balm on the prescription of her team doctor to treat a sunburn and imposing 18-month suspension upon her (see the case of Therese Johaug cited in Introduction).

The most tangible description of the rationales pursued by the World Anti-Doping Program is set out in Article 4.3 of the WADA Code, which defines what is to be prohibited, i.e. in the criteria for including a substance or method onto the Prohibited List: potential for performance enhancement, risk for the athlete’s health and violation of the spirit of sport. Two out of these three must be fulfilled for a substance or

method to be included.<sup>77</sup> However, there is no requirement for WADA to specify which of these criteria were decisive for any particular substance or method composing the Prohibited List, nor to produce any evidence in support, which leaves very little solid ground on which to build a reflection on the current foundations for anti-doping.<sup>78</sup> This absence of a precise objective also accounts for debates around whether performance enhancement ought to be made a mandatory criterion for the prohibition. A recurring discussion with each revision of the Code is in particular whether recreational drug use should be left entirely out of the realm of anti-doping policies,<sup>79</sup> highlighting the split between those who see anti-doping primarily as a matter of levelling the playing field, versus those who view it as an issue of public health.<sup>80</sup>

Some degree of uneasiness is perceivable even among those, within WADA, who are entrusted with advising on those issues. Thomas Murray, chair of WADA Ethics Committee, stresses that “Clarity about the ethical justifications of anti-doping is essential. [...] Critics compel us to make certain that the ethical case against doping in sport is robust”.<sup>81</sup> Screening through the rationales purportedly underpinning the WADA Code, Murray admits that protecting the athlete’s health is inadequate as a moral principle to distinguish those means that should be banned from those that should be permitted. In a world in which elite sport is inevitably risky and athletes are encouraged to push their limits to attract the crowds, “little wonder that athletes smell hypocrisy when sports officials declare that they should avoid performance-enhancing drugs because they might hurt themselves”.<sup>82</sup> Murray finds little more support in the argument of level playing field: “the power of fairness as a moral foundation for anti-doping depends on having solid reasons for banning particular performance-enhancing technologies in the first place”.<sup>83</sup> Murray concludes that “for the rest of the story we have to look at meanings and values in sport”. The answer to him is the “spirit of sport”, to which he personally contributed the WADA Code’s core definition: “the pursuit of human excellence through the dedicated perfection of each person’s natural talents”.<sup>84</sup> Murray concedes

<sup>75</sup> De Hon (2016, p. 35).

<sup>76</sup> An excellent example is given in De Hon and Hartgens (2000) with respect to mind sports (reproduced in De Hon (2016, p. 110), where the experts worried that they might “create” a problem around doping where there is none by introducing regulations.

<sup>77</sup> More detailed description, see Viret (2016, pp. 445–459).

<sup>78</sup> Idem (2016, pp. 442 et seq.); Pielke and Boye (2019, p. 6).

<sup>79</sup> Young (2017, p. 20).

<sup>80</sup> McNamee (2012, p. 374). In the INHDR (2013) statement, the authors call on WADA to stop using anti-doping to ‘police personal lifestyles and social activities which are unrelated to sporting activities’ (p. 39).

<sup>81</sup> Murray (2017, p. 186).

<sup>82</sup> Idem (2017, p. 187).

<sup>83</sup> Idem (2017, p. 189).

<sup>84</sup> Idem (2017, p. 192).

that there is an “arbitrary” component in an analysis based on the spirit of sport, but adds that this does not necessarily imply a negative connotation.

In fact, what Murray highlights with respect to the argument of fairness is equally true for many concepts that support the war on doping, which are based on circular reasoning upon closer look, for example the leading idea of “protecting the clean athlete”. Technically, the only way of distinguishing a “clean” from a “dirty” athlete is by scrutinising them through the prism of the WADA Prohibited List. Thus, the argument is in reality not ethical but legal in nature. It does not explain why an athlete who has that specific substance in his or her body must not be regarded as clean (see more on the term “clean athlete”, Sect. 3.1). Petroczi et al. go even further in highlighting that the roots of anti-doping suffer from a fundamental paradox: a conflict between a goal (performance enhancement) which is permitted and in fact encouraged within competitive sport, and certain means (prohibited substances and methods) which are condemned and perceived as unethical: “This paradoxical situation creates an inherent ambiguity between the expectation for high-performing athletes and the anti-doping rules”.<sup>85</sup>

Beyond effectiveness, defining the objectives of doping policies is also a prerequisite to any meaningful assessment on whether the system produces perverse effects or whether it does indeed target relevant behaviours. Otherwise, we are left to make our own guesses as to what is relevant. For example, De Hon characterises sanctioning athletes for forgetting to update their whereabouts as: “a **clear unintentional consequence** of anti-doping regulations: sanctioning athletes not because they are cheating, but because they experience difficulties in keeping appointments” (emphasis added).<sup>86</sup> WADA, however, seems to draw no such line. WADA’s Athlete Guide to the 2015 Code, for example, tells athletes: “The Code, in its first few pages, speaks of the intrinsic value of the “spirit of sport”. That spirit is what drives forward the primary goal of any anti-doping programme: prevention, that is, to prevent the **intentional or unintentional** use of prohibited substances or methods, or the commission of **any other anti-doping rule violation**” (emphasis added).

Ironically, scarcity (or misallocation) of resources due to a lack of broader vision about the objectives of anti-doping can prevent the development of such a vision, thus reinforcing inadequacies in a vicious circle. Historically, the World Anti-Doping Program has placed considerable faith in detection through testing and anti-doping laboratories (see also Sect. 4.1 & 4.2 on the scientific optimism stance of doping

control). As a consequence of a case-by-case and justice-driven approach, anti-doping continued to lack a strategic vision to cope with the complexity of the doping phenomenon. Marclay and Saugy explain how anti-doping researchers “are bound to feed the disciplinary process of anti-doping rather than making room for thinking outside of the box”.<sup>87</sup> In other words: within the anti-doping community, we are so busy trying to produce evidence to support disciplinary proceedings against individual athletes that we are at risk of forgetting why we are doing this in the first place and whether the investments are well directed.

It cannot be the ambition of this article to resolve the ambiguity surrounding the objectives of anti-doping, nor to make a determination as to whether the current policy is fundamentally misdirected. Ultimately, we may have to accept that anti-doping cannot be justified in the abstract, but is necessarily dependent to a certain extent on a cultural context, as Murray implies when referring to the unavoidable arbitrary component in defining the spirit of sport (see above and Sect. 5).

The contribution of this article, however, is to explore how this ambiguity can be accounted for without undermining collaborative science-based undertakings from the outset. Taking an interdisciplinary perspective is essential to ensure at a minimum that research and solutions proposed actually address the same “problem” or at least achieve clarity as to what problem they are assessing (regarding the example of doping prevalence, see Sect. 3.3). Researchers seldom have the power to exert direct influence on the objectives of anti-doping, and it seems highly unlikely that proposals for a radical overhaul of the system (such as “legalisation” or “harm reduction”)<sup>88</sup> would find sufficient support in decision-making circles to be implemented in any predictable future. However, through interdisciplinary collaboration, we can avoid being misled by misconceptions about the features of the system and strive to point jointly at inconsistencies where these are uncovered, forcing policy-makers into justifying their actions. Also, since it seems unavoidable that consideration is given to stakeholders’ interests and values (see Sect. 4.3), we can seek to educate these stakeholders so that the interests they defend become more evidence and less ideology based.

<sup>85</sup> Petroczi et al. (2017, p. 161).

<sup>86</sup> De Hon (2016, p. 237).

<sup>87</sup> Marclay and Saugy (2017, p. 130). The authors also highlight the “proactive” character of forensic intelligence programs (as opposed to the “reactive” system of drug testing).

<sup>88</sup> See, e.g., Kayser and Block (2017), Kayser et al. (2007).

### 3 Removing disciplinary blinkers

“Disciplinarians”—which most of us inevitably are through our academic education background—tend to take the reference framework within which they operate for granted, so much so that they hardly register it. Practicing or researching within a discipline can thus be regarded much like interacting in one’s mother tongue, using a vocabulary, a grammar and a script that appears entirely obvious and natural. Being confronted with other languages makes us aware of the peculiarity of idioms, of the inexistence of certain terms to characterise certain concepts, or of how grammar shapes the way in which we experience the world. Entering an interdisciplinary environment resembles encounters with people from a different language and cultural background.<sup>89</sup> This section describes how discipline-specific blinkers affect anti-doping and proposes tentative solutions for lifting these blinkers. It discusses the use of terminology and concepts in anti-doping (Sect. 3.1), in acknowledging that these can represent broader worldviews of the disciplines (Sect. 3.2)<sup>90</sup> and influence their preferred methodologies (Sect. 3.3).

#### 3.1 Concepts—words matter

The terminology used to reflect on a problem is frequently discipline specific: “Every scientist is ‘socialised’ into the terminology and conceptual framework of his or her discipline”.<sup>91</sup> Technical terminology “can bewilder the uninitiated”.<sup>92</sup> In general, interdisciplinarians may face two types of situations<sup>93</sup>: (i) two disciplines use an identical term, but in a way that carries different connotations or even meanings (“same term, different concept”), or (ii) two disciplines use different terms that reflect in reality similar features and target the same concept, possibly from a different angle (“same concept, different term”).

When trying to solve a problem that supposes input from various academic disciplines, clarifying the intended meanings behind the terms used by each participant in the project is crucial. Terms which can remain relatively vague in colloquial communication must, when used as analytical tools, be defined as precisely as possible: “One frequent problem is the distance between the meaning of terms as used in scientific disciplines and those used to describe real-world problems; [...] if real-world terms that have not yet been

disambiguated are linked to different technical terms, participants in a project may end up pursuing different objectives in their sub-projects”.<sup>94</sup> Otherwise, there is a risk of producing data that cannot be compared, with results that may not be connectible. Bergmann et al. also highlight the “political function” of technical terms in that they regulate the allocation of disciplinary competences (at the risk of one discipline taking the lead if its terminology—and thus often its worldview—is declared decisive).<sup>95</sup> As a result, participants should introduce each other to the meaning of technical terms in their disciplines and then reach a workable agreement on the use of concepts within their project. At a minimum, discipline-specific interpretations must be made explicit.<sup>96</sup>

Doping regulation does not escape the need for clarity of terminology. This is true equally for terminology used in regulatory documents themselves and for the discourse surrounding their implementation, as well as related research.

The best illustration of conceptual ambiguity is the term “doping” itself. From a regulatory perspective, the term has a defined meaning in the WADA Code (Article 1), by reference to a catalogue of anti-doping rule violations; these encompass circumstances as diverse as failing to submit whereabouts or being involved with a person who was previously sanctioned for doping-related issues. Thus, one could argue that WADA “settled the debate around the definition of doping” from a legal viewpoint.<sup>97</sup> Importantly, the current regulatory definition of doping does not presuppose involvement of performance enhancement (see Sect. 2.3).<sup>98</sup> Nevertheless, many commentators and researchers in anti-doping treat doping as broadly equivalent to use of “performance-enhancing drugs” (often seen abbreviated as PEDs), though this latter term appears nowhere in the WADA Code.<sup>99</sup> Social sciences and psychology researchers in particular seem prompt to assume that the Prohibited List is essentially about performance-enhancing drugs.<sup>100</sup>

<sup>94</sup> Bergmann et al. (2012, p. 58).

<sup>95</sup> Idem (2012, p. 55).

<sup>96</sup> Idem (2012, p. 60).

<sup>97</sup> De Hon (2016, p. 40).

<sup>98</sup> McNamee (2012, p. 377), whereby the WADA Code defines doping as a heterogeneous catalogue of anti-doping rule violations, ‘contrary to everyday understanding that it is biotechnological cheating’.

<sup>99</sup> Heuberger and Cohen (2019), Sect. 4, point at ‘the general perception that substances on the Prohibited List, by definition, improve performance (to a great extent)’.

<sup>100</sup> For example, in social sciences, Petroczi et al. (2017, p. 161); Valkenburg et al. (2014) mention in Table 3 “free of doping”, then in the discussion ‘almost all athlete agreed that it is important that sports in general are free from the use of performance-enhancing drugs’ (p. 216); Boye et al. (2017, p. 351); whereby WADA ‘regulates the use of performance-enhancing substances’; Holz and Robertson (2017, p. 144), use the term ‘performance and image-enhancing drugs’.

<sup>89</sup> Menken and Keestra (2016, p. 43): ‘In interdisciplinary research, talking with someone from another discipline means you are meeting someone from another culture’.

<sup>90</sup> Eigenbrode et al. (2007, p. 57).

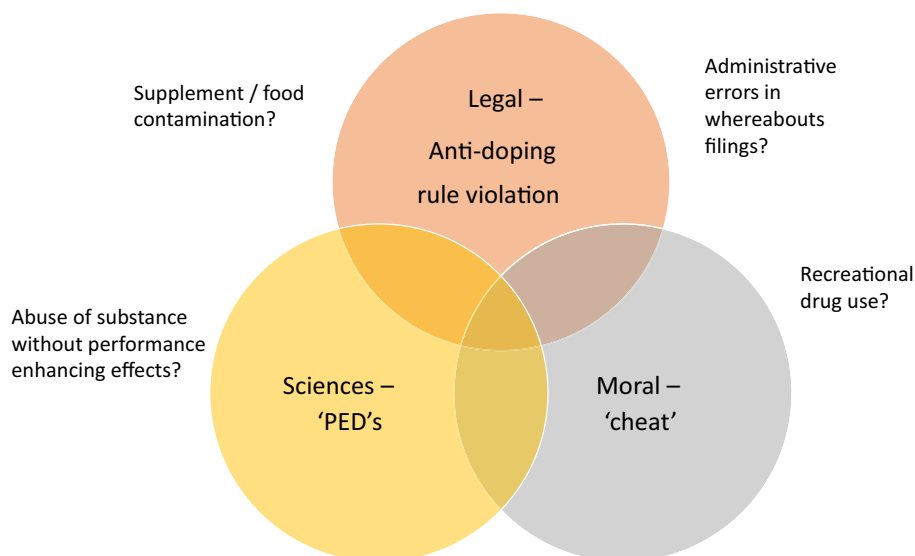
<sup>91</sup> Bergmann et al. (2012, p. 54).

<sup>92</sup> Eigenbrode et al. (2007, p. 58).

<sup>93</sup> Newell (2001, p. 19).



**Fig. 2** Definitions of “doping” vary depending on the approach adopted, and there is only limited overlap between these definitions. Various circumstances may technically qualify as “doping” from a legal viewpoint (i.e. as per the definition of Art. 1 of the WADA Code), but can hardly be characterised as performance-enhancing behaviour or morally reprehensible conduct



Most studies and models in social sciences research target intentional use of PEDs,<sup>101</sup> though the researchers’ underlying concern often relates to the athlete’s health and welfare: even athletes intentionally taking drugs are regarded as victims of a system, rather than morally deviant individuals. Ironically, whereas the WADA Code is officially concerned with the athlete’s health and does not require performance enhancement as a prerequisite for sanctioning doping, the terminology used in WADA documents and statements is much more focused on moral reproach (cheat, clean *versus* dirty, etc.; see below).

Discrepancies in the definition of doping often reflect the researcher’s views on what they assume ought to represent doping or what the individuals under study consider doping. This is not so much an issue when they are used consciously, to express divergent views, such as in the International Network for Doping Research (formerly: INHDR) call to WADA in 2013: “it is precisely the performance-enhancing nature of a substance which is the central characteristic of doping” [...] use of recreational drugs that are not performance enhancing “is not cheating and [...] does not constitute “doping” in any meaningful sense of the term”.<sup>102</sup> Discrepancies become of greater concern when these are not explicit, which may lead to research results with limited relevance for policy-making and practice (see Sect. 3.3) (Fig. 2).

Another important terminological field often used in different ways by different disciplines is the term “fault” and related expressions. From a legal viewpoint, “fault” within the WADA Code has a defined (if not entirely straightforward) meaning.<sup>103</sup> An athlete who bears no fault for an anti-doping rule violation must not receive any period of ineligibility.<sup>104</sup> The mere finding of an anti-doping rule violation based on the presence of substance in a sample does not imply any fault—and thus no moral reproach—against the athlete (this is known as “strict liability”).<sup>105</sup> Also, because of the extremely high standard of diligence that the WADA Code (and thus CAS case law) places on athletes,<sup>106</sup> a finding of fault does not necessarily imply a moral reproach. It encompasses negligence (see the tests of no (significant) fault or negligence, Appendix 1 of the WADA Code) and can involve circumstances as diverse as an athlete actually trying to achieve an edge by injecting EPO, an athlete trusting her team doctor’s assurances that a substance is safe, or an athlete smoking “weed” at a party. Social sciences may base their reasoning on a different notion of subjective accountability. Thus, Auel and Ohl “aim to show that the educational and repressive edifice of anti-doping is based

<sup>101</sup> For inadvertent doping, usually ‘knowledge/information’-based education is considered sufficient. As Backhouse (2015) highlights, p. 209: ‘existing theoretical perspectives typically focus on the use of performance enhancing substance or methods, but the WADA Code and Prohibited List also forbids the use of “recreational drugs”’.

<sup>102</sup> INHDR (2013) Statement, p. 39. One could add: not in any meaningful sense but the one that happens to be the current legal definition!.

<sup>103</sup> Appendix 1 of the WADA Code; discussion in Rigozzi et al. (2015).

<sup>104</sup> Unfortunately, even for lawyers, the notion has been obscured by mixing it with the term ‘negligence’. In civil law regimes such as Swiss law, negligence is a sub-category of fault (i.e. a fault can consist in an intention or a negligence).

<sup>105</sup> See the definition of Strict Liability in Appendix 1 of the WADA Code.

<sup>106</sup> The general definition of Fault in Appendix 1 of the WADA Code refers to ‘any breach of duty or any lack of care appropriate to a particular situation’.



on a debatable definition of doping as an individual moral fault”.<sup>107</sup> Based on their qualitative study in professional cycling, the authors critically discuss the perception of sport as a metaphor for merit and of the cheat as a deviant individual; they argue that, without disregarding the moral responsibility of the rider who uses doping, organisational factors in professional cycling “make a ‘moral’ choice extremely difficult”.<sup>108</sup> Other researchers in anti-doping science use expressions such as “establishing that an athlete is guilty of a doping offence”.<sup>109</sup> Sports lawyers would typically avoid that term in a context in disciplinary proceedings by sports governing bodies, since it is again an expression of moral reproach and evokes criminal law, which is a distinct area of regulation.

It would seem important that terms such as “fault”—which form true pillars of the World Anti-Doping Program—have a single, commonly shared, meaning within the anti-doping community. In this particular instance, this also supposes an understanding of the legal subtleties behind doping regulation. When social sciences denounce the fact that the current regulatory regime aims at presenting doping as a moral fault, the underlying assumption is often that anti-doping regulators focus too much on individual athletes, neglecting the responsibilities of their sport and entourage. Ivan Waddington states that the reason for the lack of interest in social sciences on part of anti-doping authorities is simple: “ever since anti-doping policy began to develop from the 1960s, anti-doping organisations have implicitly—and therefore uncritically—accepted as a basis for policy the individualism which is such a marked feature of modern western societies”.<sup>110</sup> While this explanation may have some merit, one of the primary reasons for which the WADA Code has historically placed emphasis on the individual athlete and his or her personal fault (rather than on organised doping in state or medical context) is much more practical: the regulatory framework had to be built on private law instruments, so that each athlete individually submits to the authority of their international federation by contractual (or similar “consensual”) means. Extending investigations to the athlete’s entourage was—and still is—often not an option for sports governing bodies; they would not even have the authority to compel the entourage to make themselves available for the forensic interviews that Waddington (rightly)

recommends.<sup>111</sup> The strong focus on individual fault thus has its origins in limitations inherent to the legal instruments available to sports governing bodies, and—at least not entirely—in an ideological stance or a refusal to acknowledge the broader dimensions of the doping phenomenon.<sup>112</sup> In this instance, merging the social sciences assessment with legal expertise might prevent misdirected criticism, which in turn would certainly enhance the receptiveness of sports governing bodies to the research outcomes.

The WADA Code rhetoric itself contributes to the confusion by relying on vague terminology and elusive concepts such as “clean sport” or the “spirit of sport” (see Sect. 2.3). We have highlighted elsewhere the risk that the “spirit of sport” criterion would serve as a fall back to avoid justifying the scope of the prohibition (i.e. the Prohibited List) through scientific evidence, which is required by the two other criteria, potential performance enhancement and health risk.<sup>113</sup> When analysing the manner in which substances are placed on the Prohibited List, ultimately the spirit of sport is the key criterion in many instances. But spirit of sport is also the only criterion that eludes the requirement of an evidence-based policy,<sup>114</sup> relying solely upon “WADA’s determination”. While the spirit of sport may be effective at selling sports caps or mugs decorated with the Olympic rings, it forms a rather shaky basis for policy decisions because no one agrees on what it means, and “evidence from the relevant doping literature indicates that universally accepted positive values attached to the spirit of sport become fragmented when applied in actual decisional situations”.<sup>115</sup> In law, undetermined general terms are commonplace. They are viewed as warranted by the general and abstract nature of legal rules, which have to be applicable to many individual situations. However, undetermined must not deteriorate into “blurry”.<sup>116</sup> General legal terms should not be used to hide

<sup>107</sup> Aubel and Ohl (2014).

<sup>108</sup> Idem. See also Ohl et al. (2013, p. 2), who explain that doping is predominantly perceived by the media, the public and WADA ‘as a moral dilemma athletes have to face’, whereas the authors focus rather on how doping appears as part of a performance culture within the sport of cycling and compliance with an unwritten social norm.

<sup>109</sup> Zorzoli et al. (2014, p. 862).

<sup>110</sup> Waddington (2019, p. 35).

<sup>111</sup> The example of the Lance Armstrong case conducted by USADA that Waddington (2019) analyses is exceptional for that reason—few other National Anti-Doping Organisations have the legal powers granted to USADA in terms of investigations against individuals. No international federation would have any such powers.

<sup>112</sup> In fact, much of the 2015 WADA Code revision was aimed at extending the reach of anti-doping organisations on the athlete’s entourage, but this extension is extremely limited whenever the entourage cannot be made subject to anti-doping rules.

<sup>113</sup> Viret (2016, pp. 451–459).

<sup>114</sup> Heuberger and Cohen (2019), Sect. 1; Dimeo and Møller (2018, p. 44).

<sup>115</sup> Petroczi et al. (2017, p. 171).

<sup>116</sup> McNamee (2012, pp 377 et seq.), analyses the two-out-of-three criteria system and refers to ‘underdetermined’ concepts, but nevertheless argues that the spirit of sport is ultimately an adequate criterion.

a lack of logic or transparency, questionable coherence or simply a lack of in-depth reflection.<sup>117</sup>

On a similar note, “cheater” or “cheat” are often used as generic terms in anti-doping discourse, almost synonymous to “doper”,<sup>118</sup> but rarely defined precisely.<sup>119</sup> A reference to “cheat” was introduced for the first time to the WADA Code in its 2015 version, in connection with the new concept of intentional doping. At the time, we raised questions within the WADC Commentary Project regarding the absence of definition of a term that does not otherwise have a legally established tradition.<sup>120</sup> Judicial panels have struggled to assign a precise or uniform role to the term, which may explain why the proposed drafts for the 2021 WADA Code plan to remove that reference.<sup>121</sup> An analysis of the concept of cheating in sports governance is proposed by Roger Pielke as “the violation of the constitutive rules of a game”, meaning those rules that define what is regarded as sport. A cheating behaviour needs to threaten “the ‘very possibility’ of sport, [...] the very legitimacy of the games that we play”.<sup>122</sup> Ask Vest Christiansen follows a similar reasoning in the comparison between doping and technical fraud (using a motor in cycling), explaining that the latter “turns cycling into a different sport”, but the author also shows how such moral distinctions are being rationalised depending on the prevailing cultural norm within the group.<sup>123</sup> The newly created International Testing Agency (ITA) uses as its mission statement “keeping sport real”,<sup>124</sup> which equally implies that doping undermines the very essence of sport (i.e. sport in which dopers are involved is no longer “real” sport). While these explanations would seem to give cheating a basis in morality, the definition here again remains circular. If cheating consists of circumventing constitutive rules to achieve one’s goal, it is still only immoral to the extent that the rules themselves are regarded as enshrining a moral prescription (versus just being the rules of a sport as we like to see them today). Similarly, what is “real” or not can only be defined by reference to the regulations that govern sport in the first place.

The moral counterpart to the cheat in the World Anti-Doping Program is the “clean” athlete, whose protection

is a cornerstone of anti-doping discourse: “the entire fight against doping is built around the idea that the clean athlete deserves to be protected so that they can perform on a level playing field free of doping [...] Clean athletes should continue to speak out and demand more action and more resources for the fight against doping”.<sup>125</sup> Athletes are thus divided into one of two categories: the clean one, who deserves protection,<sup>126</sup> and the cheat, who deserves punishment. The clean athlete is a symbolic, relatable, figure that gives everyone a good reason to rally behind the cause. But the clean athlete has no face: while the “dirty” athlete can potentially be identified through an appropriate judicial process, the clean athlete can never be individualised—he or she is everyone and nobody at the same time. From a legal viewpoint, every athlete who has not been sanctioned through a final decision for an anti-doping rule violation is a clean one. The media and the public may see it differently and label a legally clean athlete who has never been sanctioned as a cheat who has managed to game the system so far. Perhaps even more importantly, the binary divide dirty *versus* clean does not accommodate graduations, though a majority of individual cases would fall somewhere into a grey area: Is an athlete who tests positive due to contaminated supplements a “cheat” who deserves punishment or an unfortunate “clean” athlete who deserves protection?

Working on interdisciplinary problem-solving may require introducing new concepts and terms. Anti-doping is particularly rich with such terms. Some incorporate lay language that has been given a new meaning unique to the anti-doping context, such as the Athlete Biological “Passport”, to characterise longitudinal monitoring of physiological values. Others are terms with a tradition in other areas of law (e.g. strict liability, fault or negligence, direct versus indirect evidence),<sup>127</sup> but which have been imported into doping regulation and case law in a way that has often drifted away from their original legal meaning.<sup>128</sup> Others yet had to be invented specifically for anti-doping purposes. Thus, the notion of “adverse analytical finding” versus “atypical finding” is a way of putting a regulatory label on a scale of scientific confidence in the results, beyond which a laboratory is bound to report to the anti-doping organisation its results of the analysis of doping control samples in a way that will either

<sup>117</sup> Miah (2005, p. 52): while spirit of sport is mentioned as ‘an additional ethical concern, there is limited elaboration on what this means’.

<sup>118</sup> Niggli (2017, p. 34), who also refers to the “bad guys”.

<sup>119</sup> Pielke (2016, p. 58).

<sup>120</sup> Rigozzi et al. (2013, para 110).

<sup>121</sup> Status 3rd draft (July 2019), <https://www.wada-ama.org/en/media/news/2019-07/wada-publishes-latest-draft-versions-of-the-2021-code-and-international-standards> (last accessed 19.07.19).

<sup>122</sup> Pielke (2016, p. 59).

<sup>123</sup> Christiansen (2019, p. 108).

<sup>124</sup> <https://ita.sport/> (last accessed 19.02.19).

<sup>125</sup> Niggli (2017, p. 35), who adds that the athlete should be the ones with the most influence on the evolution of anti-doping, but ‘- the clean athletes, of course’.

<sup>126</sup> Kinahan et al. (2017, p. 53) refer to: ‘the determination of stakeholders to protect clean athletes with an effective prohibited list’.

<sup>127</sup> For a detailed analysis on the “myth” of direct versus indirect evidence, see Viret (2016, pp. 694/695); specifically the distinction between adverse analytical findings and Athlete Biological Passport findings, Viret (2019, pp. 239–241).

<sup>128</sup> On the concept of “strict liability”, see Viret (2016, pp. 503–505).

trigger the opening of disciplinary proceedings or prompt further investigation (see, e.g. in Article 7 of the WADA Code). Running a terminology specific to an interdisciplinary field of activity is a way of ensuring equal access to the issue under study for all relevant disciplines and avoids claiming a monopoly over its interpretation.<sup>129</sup> It can also, however, lead to misunderstandings if the term becomes commonplace without having received a clear definition in its new context. This is particularly the case when referring to “false positives” and contamination in the context of doping. Technically, false positive refers to the analytical properties of a test, i.e. the ability of the technology to discriminate between samples that contain a prohibited substance versus those that do not.<sup>130</sup> However, the term false positive is also at times used to refer to situations in which the athlete actually had a prohibited substance entering his or her body, but which the user of the term considers should entail no sanctions, for example because the athlete was only negligent.<sup>131</sup> This leads to parallel usages of the term false positive with very different implications, which can be dangerous if communicated to the media or the public without qualification. For example, from a regulatory viewpoint, a case of a contaminated nutritional supplement ingested by an athlete is not a false positive. Instead, it represents a perfectly valid anti-doping rule violation under Article 2.1 WADA Code (for which some sanction adjustments are provided for in Article 10). Characterising such a situation in a news report as a false positive may convey the idea that the laboratory analysis was flawed or that its detection methods are unreliable, whereas in reality the term only expresses the author’s opinion about whether the behaviour sanctioned is truly relevant to the fight against doping.<sup>132</sup>

The examples above are hopefully central enough to the fight against doping to show the importance of establishing common ground about terminology used and achieving clarity about the meaning of a term newly coined or used in a sense specific to doping. We are not merely playing with words here: clarity about terminology conditions whether researchers from various disciplines (not to mention policy-makers and judicial panels) can actually meaningfully exchange views or whether they are talking past each other. As Pielke insists: “we are free to shape sports rules however, we’d like, but to reach agreement on satisfactory rules, we

need a language suitable to the task”.<sup>133</sup> Litigation attorneys are trained to use only one meaning per term and one term per meaning in a legal submission, a working rule that is of equal value in interdisciplinary approaches. Even without removing entirely language discrepancies among disciplines, language should be sufficiently disambiguated so that participants can create compatible research designs, compare their findings and communicate efficiently with each other. Where a term has a defined meaning in the current World Anti-Doping Program, it should be understood that it is used in that sense, unless its user specifies otherwise. This is not to say that the current regulatory definition is somehow intrinsically superior to other possible definitions or that it should not be questioned, but merely that it is appropriate to start from the currently decisive meaning if one wants to analyse the anti-doping system in way that will generate interest on part the policy-makers and other stakeholders.

### 3.2 What can we know and how?

Each discipline is characterised by certain “assumptions” about the nature of reality and knowledge (epistemological assumptions: “what can we know”, and methodological assumption: “how do we know”),<sup>134</sup> which have generally proved to do well within their particular perspective on the system. Discrepancies here “reflect scientific, cultural norms that have developed around the practices that generate reliable knowledge in specific fields of inquiry”.<sup>135</sup> Also, the place that is assigned to subjectivity and values, and to the societal context, may vary significantly among disciplines, ranging from close to nil, to forming the central focus of their work.

Here again, interdisciplinary approaches can provide added value: “since assumptions tend to be invisible when everyone shares them, the most effective way to probe the assumptions of one disciplines is to scrutinise it through another discipline”.<sup>136</sup> An interesting aspect of this probe, for a lawyer, is what different disciplines recognise as “evidence” *lato sensu*, which can be described as the accepted methods “for acquiring and validating information”.<sup>137</sup> Law provides for very definitive means of discovering “reality” and, once established, cast it in stone through the judicial ruling and its *res iudicata* effect. These views are not necessarily shared by other disciplines operating and reflecting on anti-doping, which can lead to situations in which parallel

<sup>129</sup> Bergmann et al. (2012, p. 66).

<sup>130</sup> Viret (2016, pp. 706–714).

<sup>131</sup> Pluim (2013) analysing the decisions rendered by the ITF over the period 2003–2007: number of ‘false-positive doping cases steadily increasing’.

<sup>132</sup> See, e.g., for food contamination by Clenbuterol <http://www.stuff.co.nz/sport/4578193/Bad-food-can-harm-innocent-athletes> (last accessed 21.02.19).

<sup>133</sup> Pielke (2016, p. 57).

<sup>134</sup> Menken and Kestra (2016), p. 74.

<sup>135</sup> Eigenbrode et al. (2007, p. 57).

<sup>136</sup> Newell (2001, p. 19).

<sup>137</sup> Eigenbrode et al. (2007, p. 57).

worlds seem to coexist without really engaging with each other.

An illustration can be found in the whereabouts system, that component of the World Anti-Doping Program whereby a selected pool of elite national or international athletes has to provide continuously updated information about their whereabouts, including a daily 1-hour time slot during which they undertake to remain at a predetermined location. The European Court of Human Rights (“ECtHR”) has recently issued a ruling declaring the WADA whereabouts system proportionate and therefore not in breach of athlete privacy.<sup>138</sup> One could think that a ruling from an internationally recognised human rights court—which can hardly be suspected of lacking independence from the sports movement—would somehow alleviate concerns regarding the intrusiveness of the system. Since the decision became final in April 2018, those judicial proceedings have given us a definitive “answer” from a legal perspective (though on a personal level a lawyer may still agree or disagree with the court’s reasoning). Social sciences research, by contrast, operates through asking athletes and other participants about their personal experience and perception of the system, a very different reference standard, into which the researchers’ own perspective may also flow to a certain extent.<sup>139</sup> Thus, Scharf et al. submitted a study paper after the ECtHR ruling and acknowledged its findings, but their opinion seemed entirely unaffected: “despite this ruling we uphold our argument and criticism of ADAMS as a system jeopardising privacy and creating surveillance spillover effects on non-participants, i.e. into the social environment of the athletes”.<sup>140</sup> In their paper based on athlete surveys, athletes showing little interest in the system is interpreted as an expression of “fatalism” and of seeing ADAMS “as an unavoidable nuisance”.<sup>141</sup> Declared lack of knowledge about the manner in which the data are treated in ADAMS is again construed as a sign of power asymmetry,<sup>142</sup> instead of being just attributed to athletes’ genuine lack of interest. In sum, legal and social sciences disciplines hold very different views about how to define “reality” when it comes to the acceptability of the whereabouts system, and they reach these different views through studying different perspectives on the system.

<sup>138</sup> Judgment ECtHR, *National Federation of Sportspersons’ Associations and Unions (FNASS) and Others v. France*, nos. 48151/11 and 77769/13, 18.1.2018.

<sup>139</sup> Valkenburg et al. (2014), Scharf et al. (2018); Dimeo and Møller (2018, p. 62) (‘tramples all over societal ideas of privacy and dignity’); Kayser et al. (2007, p. 22).

<sup>140</sup> Scharf et al. (2018), Sect. 2.1.

<sup>141</sup> Idem, Sects. 4.2/4.3.

<sup>142</sup> Idem, Sect. 5: ‘Power asymmetries and forced compliance with the system may also lead to a less critical engagement with it’.

Casting an interdisciplinary eye on the above allows us to see that these two worldviews need not remain contradictory, provided they are each applied within the realm of what they can legitimately tell us: if the whereabouts system is to be assessed for its enforceability on athletes, then it makes sense to consider the legal ruling as the more relevant reality. Within the balance of interest required under the European Convention on Human Rights, the subjective perceptions of the individuals affected by a restriction are only one component in the balance. If, however, the goal is to measure the effects of whereabouts on the perceived legitimacy of anti-doping programmes by those athletes, then gathering their direct reactions is the more appropriate way of gaining access to that aspect of reality. Assembled, the two can provide precious insights on the legitimacy of the system. For example, though a system validated by the ECtHR can be presumed to afford athletes an acceptable level of fairness, diverging perceptions on part of (some) athletes should be taken seriously but might be better addressed through athlete education on the features of the system and the rationales behind it, and any alterations to the system made with a view to making the system more easily graspable to them.

Another example pertains to what “establishing” means and how one establishes facts. Again, from a legal perspective, the determination is relatively clear-cut (which does not mean that it is easy to reach): fact is what was found as such by a judicial body of competent jurisdiction, in a decision that has become final and enforceable. Only these facts make up the “legal truth”, what was not retained in the decision is not part of reality. By contrast, social sciences literature tends to refer to elements external to the judicial proceedings. For example, the matter involving Norwegian race walker Erik Tysse was decided in a final manner before CAS.<sup>143</sup> Since then, however, there has been an exchange of papers and opinion pieces through scientific journals in which scientists produced scientific evidence from the case and questioned the validity of the interpretation of Tysse’s values by the anti-doping laboratory in charge of the analysis.<sup>144</sup> Both accusations and replies to these accusations have been published or reported, leaving it to each expert or commentator to decide which side is right. Nevertheless, these and a few other cases are now regularly used as indications that anti-doping laboratories are getting away with fraud or blatant incompetence. The judicial truth may seem somewhat artificial, but it has the advantage of being clear-cut. The drawback in relying on non-judicial sources is that the credibility of the sources can never be validated,

<sup>143</sup> CAS 2011/A/2353, *Tysse v. Norwegian Athletics Federation & IAAF*, Award of 29 August 2011.

<sup>144</sup> See the account by Dimeo and Møller (2018, pp. 110/111); Boye et al. (2017).



nor indeed is there a supreme authority that could carry out such validation.

Here again, a more comprehensive view on the issue can be achieved by distinguishing the purposes for which either approach is suitable. Questioning facts that have been established in a final legal ruling through other sources of information is generally a delicate enterprise, since there is no way to provide for a fair adversarial process.<sup>145</sup> Those accused of having benefited from the allegedly flawed ruling have no way of countering allegations that were not presented in court or were deemed unreliable by the court, other than by entering into social media debates that will never be settled. Presenting accounts from these sources as equivalent to those established in a judicial ruling inevitably influences the way the ruling—and thus reality—is perceived, by implying that the ruling was affected by a flaw.<sup>146</sup> For this, the instrument of revision is at the disposal of the parties themselves, who may come back to the court with new facts or facts that they could not previously have knowledge of, to ask for the ruling to be overturned.<sup>147</sup> Reopening judicial cases outside court proceedings may result in “alternative” versions of reality that complicate the assessment of anti-doping policies. By contrast, if the purpose is to show how public debate may linger even after a doping dispute has been adjudicated in a final manner, for example in order to assess how these controversies affect the credibility of anti-doping programmes, then this type of approach would seem perfectly appropriate.<sup>148</sup>

The above examples show the importance of being aware of different, coexisting, worldviews, if we want to create fruitful collaborative conditions to improve policy-making in anti-doping, to prevent inexplicit misunderstandings

<sup>145</sup> It is submitted that criticising evidence with respect to a specific case adjudicated in court is somewhat different from questioning scientific evidence behind policies in general, if only because the first type of information is typically confidential and privy to the parties, whereas the second type ought to be published through peer-reviewed research [see for an example of the second type, Pielke et al. (2019)].

<sup>146</sup> For example, Dimeo and Møller (2018, pp. 110), who present Tysse as an athlete ‘whose career and reputation have been ruined by what might be laboratory mistakes’, while acknowledging that he ‘unsuccessfully appealed to CAS’.

<sup>147</sup> An example of successful revision request before CAS in favour of the athletes (CAS 2008/A/1557, *FIGC, Mannini, Possanzini & CONI v. WADA*, Award of 27 July 2009); an unsuccessful attempt by Claudia Pechstein before the Swiss Federal Tribunal (SFT, 4A\_144/2010, decision of 28 September 2010).

<sup>148</sup> An illustration of such an approach is given by Plassard and Schoch (2019), p. 194, who show how each media outlet sought to construct credibility for its ‘experts’ with respect to evaluation of Chris Froome’s cycling performance. Unlike in court proceedings, there is no supreme arbitrator to put an end to the debate, but the analysis itself demonstrates the construction of alternative ‘realities’ in the interest of each media, allowing the media to have an actual influence on the cycling ecology.

“concerning what is deemed a valuable question, what are valid data, what kind of result (publication, intervention, technology) should emerge”.<sup>149</sup> Where lawyers have a clear advantage over other disciplines is in the option available in law to create concepts that are assigned a unique legal definition, to the exclusion of any other, and to “freeze” reality in time through judicial decision-making. The drawback is that this puts law at risk of losing touch with the underlying real-world complexity. Other disciplines, however, are also at risk of falling prey to their own preconceptions if they are not careful in their approach to research. Thus, there are multiple theories in social sciences regarding the phenomenon of doping (e.g. theories that refer to athletes’ individual decisions for or against doping or at a broader societal level or seek to model the determinants that drive those decisions). As Pitsch and Emrich point out, however, it is essential to empirically measure or at least estimate true doping behaviours to inform those theories: “only social scientific empirical work can protect us from the temptation to develop theories that explain phenomena that do not exist at all”.<sup>150</sup> One might add that interdisciplinary approaches are a potent tool to harmonise that empirical work in a way that will prevent any discipline from shielding itself from complexity through its own paradigms (see next section with respect to the study of doping prevalence).

### 3.3 Methodologies and their hidden assumptions

Discipline-specific training “instils specific research approaches and techniques that constrain questions, frame observations and determine methods of interpretation and standards for validation”,<sup>151</sup> with distinctive ways of perceiving and investigating the world. Methods are entwined with a discipline’s perception of valid evidence, since the type of evidence recognised conditions the methods for gathering such evidence.<sup>152</sup> Thus, some fields may accommodate quantitative (e.g. statistical analysis) as well as qualitative (e.g. textual or narrative analyses) approaches. These approaches coexist in particular in social sciences, including with respect to the doping phenomenon. Finally, participants may differ on the “type and amount of evidence they require for knowledge”.<sup>153</sup> Anti-doping is a particularly idiosyncratic field, since much of the data gathered through traditional hard sciences (analytical chemistry, etc.) are indirectly governed by the need to produce evidence which

<sup>149</sup> Menken and Kestra (2016), p. 43.

<sup>150</sup> Pitsch and Emrich (2011, p. 575); further on problems with theory developments in the doping field, see Pitsch (2019, p. 18).

<sup>151</sup> Eigenbrode et al. (2007, p. 58).

<sup>152</sup> Idem (2007, p. 57).

<sup>153</sup> Idem (2007, p. 59).



would survive scrutiny in disciplinary proceedings against an athlete (see Sect. 2.3 above).

Some methods which are seen as legitimate within one discipline may appear shocking to others. For example, Dimeo and Møller characterise anonymizing doping control samples as “dehumanising”.<sup>154</sup> From a legal perspective, anonymizing (actually: “coding”)<sup>155</sup> a sample before sending it to the laboratory for analysis is a manner of guaranteeing an athlete’s rights to privacy and confidentiality, and refraining from doing so would not be in line with best practices. From the perspective of analytical science, the goal is precisely to remove biases that may arise from the analyst being aware of the identity of the sample donor.<sup>156</sup> The social sciences researchers, by contrast, describe the mechanism as “depersonalising” the analysis, so that the analysts “do not have to feel personal responsibility or empathy because they are dealing with a sample, not with a person on with whom they might come to empathise”. Participants in doping control thus become “dehumanised by the system” in the name of science and fairness.<sup>157</sup> An analytical scientist, by contrast, would probably argue that the goal when seeking to identify a substance in a sample is precisely to aim for as little empathy as possible, for the benefit of accuracy and precision. Here, the differences in perception of appropriate methods and their implications are profound.

There are many other examples of diverging methodologies in anti-doping research, but this article will focus on one aspect central to current debates about the legitimacy of the World Anti-Doping Program: the study of doping prevalence. Prevalence data is widely considered essential for developing theories about the phenomenon of doping, as well as for establishing and evaluating anti-doping programmes.<sup>158</sup> WADA declared prevalence assessment as one of its priorities for 2017 and beyond.<sup>159</sup> Pitsch and Emrich published in 2011 an overview of different ways of studying prevalence, along with a description of sources of “biased estimations” intrinsic to each.<sup>160</sup> The two major categories

are methods that rely on analysis of biological materials (doping control or samples collected specifically for that purpose) on the one hand<sup>161</sup> and questionnaires applied to participants on the other hand.<sup>162</sup> The key challenge here is that studies based on analytical means do not search for the same “doping” as questionnaire-based research does. Analysis of doping control samples is very capable of reliably detecting the presence or use of substances or methods as per the Prohibited List, but it tells nothing or very little per se about the causes behind that presence (e.g. intention of the athlete to dope or contamination). Questionnaire-based methods—leaving aside the challenges inherent in studying deviant behaviours—<sup>163</sup> may reflect athletes’ belief about whether they doped or not, thus give us indication about their intentions, but cannot confirm whether the resulting behaviour was actually prohibited under the rules. As research has highlighted,<sup>164</sup> the degree of knowledge about the Prohibited List is typically relatively low among athletes and other participants.<sup>165</sup> This may result in either overestimation (e.g. an athlete who believes that using caffeine supplements is banned), or underestimation (e.g. many athletes do not think of substances consumed recreationally as doping) as compared to an analysis that would detect what is actually (i.e. legally) prohibited.<sup>166</sup> As a result, different methodologies may—under the same heading of “doping prevalence”—be studying de facto two very different sets of situations,<sup>167</sup> with only limited overlap for comparing the resulting data.

In addition, the design of the research question for questionnaires is key in understanding the exact bearing of the study for anti-doping policies, as the question may influence participants or even support them in erroneous assumptions.

<sup>154</sup> Dimeo and Møller (2018, p. 128).

<sup>155</sup> When transferred to the laboratory samples undergo ‘coding’, also called ‘pseudo-anonymising’, not anonymising *stricto sensu*, since it must remain possible to re-establish the link between the sample and the athlete for results management.

<sup>156</sup> As a matter of fact, once a B sample confirmation is requested, the identity of the athlete becomes typically known to the laboratory, since the athlete (or a representative) has the right to be present during the confirmation analysis.

<sup>157</sup> Dimeo and Møller (2018).

<sup>158</sup> Pitsch and Emrich (2011, p. 559).

<sup>159</sup> Progress of the anti-doping system in light of the Russian Doping crisis: [https://www.wada-ama.org/sites/default/files/20180920\\_progress\\_of\\_anti-doping\\_system\\_exco.pdf](https://www.wada-ama.org/sites/default/files/20180920_progress_of_anti-doping_system_exco.pdf) (last accessed 10.02.19).

<sup>160</sup> See also De Hon et al. (2015).

<sup>161</sup> Sottas et al. (2011), for hematological markers.

<sup>162</sup> De Hon (2016, p. 309).

<sup>163</sup> See e.g. Pitsch and Emrich (2011, p. 564).

<sup>164</sup> Pitsch and Emrich (2011) identify for example for interview or questionnaire studies the limited knowledge of the interviewees about the status of substances as “prohibited” or “not prohibited” as problematic; see also Lentillon-Kaestner and Ohl (2010).

<sup>165</sup> The claim by Ulrich et al. (2018) that errors among elite athletes about whether they used a prohibited substance or method would be rare appears rather optimistic: ‘such errors would seem rare among world class athletes, who are typically well educated regarding doping rules, and thus unlikely to misinterpret a question explicitly asking about having “knowingly violated anti-doping regulations”’.

<sup>166</sup> These variations were also highlighted in the report from the WADA Working Group on doping prevalence of August 2018 to the HMRC, whereby: ‘when the definition of doping was left to the athletes, the variability further increased’; ‘There was also confusion on the substances that were prohibited’. Minutes of the WADA HMRC Meeting, 28–29 August 2018, [https://www.wada-ama.org/sites/default/files/resources/files/hmr\\_committee\\_meeting\\_minutes\\_28082018.pdf](https://www.wada-ama.org/sites/default/files/resources/files/hmr_committee_meeting_minutes_28082018.pdf) (last accessed 10.02.19).

<sup>167</sup> As correctly highlighted by Henning (2019, p. 47).

For example, one research question used is cited as “Have you ever used illicit drug or methods in order to enhance your sporting performance?”<sup>168</sup> To a legal eye, this question suffers from several ambiguities: first, the term “illicit” from a legal viewpoint refers typically to a drug that is prohibited under national laws and the use of which represents a criminal offence (e.g. cocaine). The term is not in use in the WADA Code context. One can thus only wonder whether this term was adequately understood by survey participants as meaning substances prohibited under the WADA Prohibited List (which we assume is what the researchers intended to study).<sup>169</sup> Second, and more importantly, doping within the meaning of the WADA Code does not presuppose intent to enhance sporting performances, nor does it presuppose that such effect occurred. By including an element of purpose into the definition, the questionnaires thus exclude an entire set of circumstances which would be reported as doping if detected in doping control samples but might not be considered performance enhancing by the participants.

Prevalence studies are essential in various respects, including estimating the prior probability of use of a particular substance within an athlete sub-population,<sup>170</sup> smart allocation of resources or measuring the effectiveness of a testing programme. To these aims, interdisciplinary approaches can contribute a great deal, for example by applying “mixed method approaches” (or “methodological pluralism”; see Sect. 2.1).<sup>171</sup> However, these approaches are only feasible if research initiatives are coordinated in such way that the results obtained are comparable. The generic reference to “doping prevalence” obscures the fact that different disciplines who *prima facie* pursue a similar research question are in reality looking for an entirely different answer.<sup>172</sup> This is especially dangerous if the discrepancy is not recognised—for example, there are recurring claims in the media that anti-doping programmes are ineffective because data from anti-doping analytics do not match reported prevalence assessed through questionnaires.<sup>173</sup> Backhouse rightly questions the “diverse ways of measuring knowledge” and argues

for the need for future research to consider “what is knowledge”.<sup>174</sup> The WADA Working Group on Doping Prevalence appears to be working on issues of compatibility, but the latest report was that for the time being no meta-analysis would be possible due to the diversity of the populations and that improvement in the quality of the data available is necessary.<sup>175</sup>

As mentioned before, social sciences research frequently focuses on PEDs, making “inadvertent” doping an under-researched field of study. Cases of “wronged” athletes are always sure to attract considerable attention and sympathy, but as shocking as they may be, we need to know how occasional or representative these cases are. Here again, we cannot depart from an evidence-based perspective to rely on anecdotes. The problem with inadvertent doping is that it is even less straightforward to study than its intentional counterpart: analytical methods will detect the result of inadvertent doping (perhaps with greater frequency than intentional one, since the inadvertent athlete will not seek to cover up his or her behaviour), but will struggle to distinguish it from intentional doping. Questionnaire-based research would need to come up with novel, indirect, approaches, since by definition an inadvertent doper will be unable to report truthfully about his or her conduct. This phenomenon could then be studied through a third type of method more familiar to lawyers, i.e. the systematic analysis of disciplinary decisions. However, this type of method would need to be carefully designed and applied to produce meaningful results. For example, studies that only look at the operative part and the resulting sanction length cannot distinguish between cases in which mitigation failed on the facts (i.e. it proved impossible to establish what happened), versus those in which the legal appreciation of the panel was decisive (what happened did or did not justify a reduction in the sanction). Also, this method could only inform us about the cases of inadvertent doping that have been detected through testing, so that the validity of the method depends itself on the effectiveness of doping control.

Working on compatible approaches to doping prevalence could have the positive side effect of encouraging discussions around the ultimate objectives of the World Anti-Doping Program (see Sect. 2.3). Prevalence is a prerequisite for measuring the effectiveness of a programme,<sup>176</sup> and such effectiveness can only be measured with respect to what the programme aims to achieve. Thus, if doping is defined as any type of anti-doping rule violation (as per the current

<sup>168</sup> For example, in Pitsch and Emrich (2011, p. 567).

<sup>169</sup> An Australian study, in fact, distinguished in its survey testing for ‘illicit drugs’ versus PEDs, which showed that elite athletes have different attitudes towards the two (Dunn et al. (2010)).

<sup>170</sup> Prior probability here is used to mean the probability prior to consideration of any evidence specific to an individual or specific doping case.

<sup>171</sup> Menken and Kestra (2016), p. 91.

<sup>172</sup> De Hon et al. (2015) already advocated for the use of harmonised definitions of terminology used in prevalence studies, including for the terms ‘doping’ or ‘elite’.

<sup>173</sup> See e.g. <https://www.theguardian.com/sport/2017/aug/29/sport-doping-study-revealing-wider-usage-published-after-scandalous-delay> (last accessed 08.02.2019).

<sup>174</sup> Backhouse (2015, p. 33).

<sup>175</sup> Minutes of the WADA HMRC Meeting, 28–29 August 2018, [https://www.wada-ama.org/sites/default/files/resources/files/hmr\\_committee\\_meeting\\_minutes\\_28082018.pdf](https://www.wada-ama.org/sites/default/files/resources/files/hmr_committee_meeting_minutes_28082018.pdf) (last accessed 10.02.19).

<sup>176</sup> For a similar critique, see Pielke and Boye (2019, pp 4/5).

Article 1 WADA Code), even an anti-doping programme that catches almost exclusively athletes who consumed contaminated supplements or recreational drugs over the weekend is perfectly effective. By contrast, if doping is to deter from to the use of the infamous PEDs, administered with a view to gaining an unfair advantage over competitors, the same programme becomes utterly ineffective. We can thus only urge the community of anti-doping researchers to work on truly collaborative projects, involving sitting together to design research questions that can then be translated into each discipline's methods and in a way that outcomes can be integrated to advance knowledge on various types of prevalence.

## 4 Science and policy—mind the gap

While this article is devoted primarily to the tools of interdisciplinary approaches, it seemed unimaginable not to replace these into the broader context of policy-making. This final section will look at the idiosyncrasies of “integration” of scientific evidence for the sake of policies (Sect. 4.1), analyse how policy-making differs from a mere implementing act of scientific research findings (Sect. 4.2) and highlight the role of procedures to compensate for that difference (Sect. 4.3).

### 4.1 Integration for policy purposes

As described in the overview of the interdisciplinary process (see Sect. 2.1), integration consists in constructing a novel, more comprehensive, understanding of the real-world problem under scrutiny. We also saw that, in the context of complex systems, determining “what works and what doesn't” for policy purposes requires the ability to build models and test interventions to validate these against the effects they actually produce on the system (see Sect. 2.2). Within anti-doping, a preliminary step is to clarify what we mean by “what works”. There are two possible levels of assessment, which are not always clearly distinguished in writings on the subject. We can study whether the WADA Code rules are effectively implemented (what we could call “operational” effectiveness), or we can investigate what those rules should be aimed at achieving in the first place and whether the entire design of the system is truly apt at achieving these objectives (“strategic” effectiveness).

Integration of knowledge for purposes of improving detection and enforcement of the system currently in place (operational effectiveness) has shown progress in recent years, in spite of a widespread belief that doping control still relies almost exclusively on the isolated and random collection of doping control samples. This is evidenced by the investment of WADA in investigation and intelligence

proficiency tools, both in materials for anti-doping organisations to implement, and in its own staffing.<sup>177</sup> Such progress has been encouraged by growing awareness that basing disciplinary decisions on the sole reporting of an adverse analytical finding proves illusory in practice. As Marclay et al. explain, judges and lawyers typically end up requesting from the analytical experts “a personal opinion on the significance of the AAF”, which may put experts into a questionable position of becoming an advocate for either party. The authors suggest that “considering the seriousness of the legal outcome, an important step towards a more comprehensive evaluation of cases brought to court could be initiated by collating products of intelligence that originate from boarder sources of information”.<sup>178</sup>

Producing intelligence is, in and by itself, an integrative process, in that it involves collecting and analysing data from various sources in a way that allows for producing new insights. By seeking to combine analytical with non-analytical data,<sup>179</sup> a forensic approach almost automatically mandates the collaboration of various expertise backgrounds, therefore favouring a more nuanced vision of situations. “Forensic intelligence might bring a broader logical dimension to the interpretation of data on doping activities for a more future-oriented and comprehensive approach instead of the traditional case-based and reactive process”.<sup>180</sup> In addition, approaches derived from forensics already represent in and by themselves a translational transplant, in that they suppose “transposing the concept of forensic intelligence”, traditionally rooted rather in criminal law, to anti-doping.<sup>181</sup>

Know-how from forensic approaches also brings to anti-doping a formalised process of framing hypotheses and inferences structures that are then tested with each new piece of evidence, to confirm the “predicted truth value of

<sup>177</sup> WADA Guidelines on Information Gathering and Intelligence Sharing, v. 1.0, <https://www.wada-ama.org/en/resources/world-anti-doping-program/guidelines-information-gathering-and-intelligence-sharing> (last accessed 22.02.19); see also the hiring of new director of intelligence and investigations Günter Younger, WADA Press Release 16 June 2016, <https://www.wada-ama.org/en/media/news/2016-06/wada-appoints-gunter-younger-as-new-director-of-intelligence-and-investigations> (last accessed 22.02.19).

<sup>178</sup> Marclay et al. (2013, p. 135).

<sup>179</sup> Holz and Robertson (2017, p. 149).

<sup>180</sup> Marclay et al. (2013, p. 133): ‘anti-doping might significantly benefit from a more extensive gathering of knowledge’. Idem, denouncing a “tunnel” vision in which ‘situations that are often perceived as a discussion on the abilities of the scientist rather than the value of the results themselves and an erroneous and partial use of the analytical results’ (p. 135).

<sup>181</sup> Marclay and Saugy (2017), p. 129); idem, p. 133: “forensic intelligence can be transposed into anti-doping intelligence by relying on a similar methodology and shifting the paradigm to the problem of doping in sport”.

hypothesised links”.<sup>182</sup> Integration favours methods that have the potential to accommodate quantitative and qualitative data alike. Though typically perceived within anti-doping as tied to the Athlete Biological Passport and as instruments that belong exclusively into the realm of the scientific experts, Bayesian networks are the interdisciplinary tool par excellence. They offer an organised framework for integrating findings gained from various disciplines—qualitative or quantitative. In their essence, they are an elaborate form of formalised logic, authorising input from multiple sources of information. Scholars in interdisciplinary studies have identified Bayesian probability networks as tools through which “imprecise estimates made by experts can be incorporated in a modelling system and then processed further with corresponding uncertainty”.<sup>183</sup> In anti-doping, the potential of this tool was identified by the designers of the Athlete Biological Passport,<sup>184</sup> in whose eyes the proposed Bayesian approach was both an interdisciplinary enterprise and a tool for informed decision-making.<sup>185</sup> Its proponents conceded at the time that the “framework may appear complex at first sight”, but stressed that by making factors otherwise hidden explicit, doping control would gain in “clarity and fairness”.<sup>186</sup> The prerequisite, however, is that stakeholders develop a basic understanding of probabilistic thinking and skills in the drawing of inferences. Probabilistic thinking in reality already underlies policy and judicial decision-making, but in a way that is typically not brought to the awareness of the lawyers. So far, Bayesian models are only truly institutionalised within the Athlete Biological Passport, as part of the expert review when assessing values flagged as abnormal.<sup>187</sup> Even in this context, however, passport experts have deplored the fact that expert panels are unable to make full use of these tools, since they are chosen for their qualifications as clinicians, without the expertise to appropriately apply forensic standards.<sup>188</sup>

Progress is less visible where “strategic” effectiveness is concerned. As described before (see Sect. 2.3), the entire “war on drug use in sport” is based on a—frequently non-explicit—moral vision of what sport represents and what it means to practice sport. The WADA athlete education tools

include an entire module designed to convince athletes that doping is “immoral” (see Sect. 4.2). This vision is also palpable in the language used by officials in the anti-doping movement, with a rhetoric oscillating between military operations and crusade (“countries have joined this battle”<sup>189</sup>; “the time is ripe for anti-doping advocates to advance the cause”).<sup>190</sup> However, if one tries to reason beyond a certain gut feeling that there is something inherently wrong about doping, it proves much less straightforward to come up with a reasoned justification for doping regulation and current anti-doping strategies. The reality is that, beyond general political statements, anti-doping stakeholders lack a tangible common agenda, a shared vision of their goals and ambitions for anti-doping. As explained before (Sect. 2.3), they even lack a uniform understanding of what the problem consists of. Developing a common agenda, however, is the first step in starting out on any collaborative, transdisciplinary, journey.<sup>191</sup> Without it, we are bound to remain stuck with some vague *clichés* and intuitions that offer little ground for designing appropriate interdisciplinary questions.

It is tempting to turn to scientific research to help us escape this dead-end and claim that the system would automatically make perfect sense—and become fair—if only anti-doping were more evidence based. However, we may need to accept that science—even in its interdisciplinary version—has its limits when it comes to doing transdisciplinary work for policy purposes, as we shall see in the next section.

## 4.2 Acknowledging the “Policy” in evidence-based policy-making

The interplay of science with public policies has been extensively studied, for example in public health, with a variety of models to reflect this interplay.<sup>192</sup> Historically, advocates of evidence-based policy-making would present shortcomings in the interplay as a mere problem of “knowledge translation” or of “politics”—i.e. scientific evidence either does not make its way to the decision-makers, or is improperly put aside for ideological reasons. Others, however, point out that the essence of policy-making involves weighing the current state of scientific research against societal values.<sup>193</sup> This makes collaboration among disciplines for policy purposes qualitatively distinct from mere interdisciplinary research, therefore the more specific term of transdisciplinary work (see Sect. 2.1). Also, an incompressible “gap”

<sup>182</sup> Marclay and Saugy (2017, p. 133).

<sup>183</sup> Bergmann et al. (2012, p. 93).

<sup>184</sup> Kuuraanne et al. (2014, p. 2); Sottas et al. (2008).

<sup>185</sup> Sottas et al. (2008, p. 194). Idem, ibidem: ‘From the perspective of Bayesian decision theory, we propose a model that directly estimates the probability of occurrence of a test result as a function of the information available to the decision maker’.

<sup>186</sup> Idem, p. 206.

<sup>187</sup> WADA ABP Operating Guidelines, v.6.1 <https://www.wada-ama.org/en/resources/athlete-biological-passport/athlete-biological-passport-abp-operating-guidelines> (last accessed 19.02.19).

<sup>188</sup> Schumacher and d’Onofrio (2012, p. 979).

<sup>189</sup> Schamasch and Rabin (2012, p. 1698).

<sup>190</sup> Niggli (2017, p. 35).

<sup>191</sup> Kania and Kramer (2011, p. 39).

<sup>192</sup> Morgan-Trimmer (2014); Parkhurst (2017).

<sup>193</sup> Parkhurst (2017), Hawkins and Parkhurst (2015), Jasanoff (1995, p. 11), Jasanoff (2011, p. 307).



is bound to remain between the results of transdisciplinary work and the final policy decision; the responsibility of the decision-maker, and in fact the core justification for having a decision-maker at all, lies in filling that gap. Discussing scientific integrity behind anti-doping regulations, Pielke and Boye warn against thinking that science can provide all the answers.<sup>194</sup> Ward et al. have proposed a model showing how the abilities of sport scientists—especially their grounding in “scientific thinking and statistics”—could be exploited to support decision-making in professional sports organisations, but point at two types of pitfalls: “failures of ignorance”, which arise from current limitations in scientific knowledge and “failures of ineptitude”, where knowledge exists but is failed to be applied correctly in practice.<sup>195</sup>

Little in-depth work has been devoted to knowledge translation and its limitations within the World Anti-Doping Program.<sup>196</sup> Traditional doping control has widely built on the type of scientific optimism cited in the previous section, relying on the faith that “good” would prevail over “evil” if only analytical anti-doping science could progress more rapidly than its “doping science” counterpart.<sup>197</sup> One could say that the World Anti-Doping Program is technology-friendly (i.e. when it comes to developing novel detection methods),<sup>198</sup> but tends towards being science indifferent, if not science-averse when it comes to integrating new knowledge that warrants radical changes to current policies. Social sciences researchers, for example, regularly deplore the lack of practical repercussions that their research seems to have on anti-doping policies. Obviously, part of the issue could be solved through better transdisciplinary collaboration and the tools described in Sect. 3, to make the research of those social scientists more relevant for practical implementation (e.g. when it comes to defining what they study as “doping” behaviours). Still, it is also true that evidence-based approaches are a challenge on the ability of policy-makers to act on what that evidence tells them.<sup>199</sup> Evidence-based policy supposes a commitment to show an interest in science

and further presupposes the commitment to dealing with “uncomfortable knowledge” that science may deliver.<sup>200</sup>

In other instances, science may not deliver at all. Without diminishing the value of a greater commitment to evidence-based policy, we need to acknowledge that even the most cutting-edge, interdisciplinary, research will only take us so far in our quest for objectively supported solutions. Most importantly, scientific research and analysis can only provide data to inform policy decisions. Interdisciplinary work may be able to provide more comprehensive, integrated and practice-oriented data, but it cannot make decisions on behalf of policy-makers, who have to consider a number of other criteria, such as cost effectiveness, legal admissibility or social acceptance within the community. Part of the policy component in a field of limited resources is also deciding what ought to be prioritised<sup>201</sup> and how to communicate these priorities to the addressees of the policy.

In this respect, it is worth mentioning the concept of “value-based education” that stands behind WADA’s education tools. Educating about values comes with the inherent contradiction of claiming a basis in science (e.g. behavioural psychology for the effects that the education programmes are designed to have on their addressees) and inevitably subjective argumentation (i.e. because rationally justifying values is a mostly unachievable goal). WADA’s ethical module “ethical reasons for avoiding doping” within the ALPHA programme illustrates these challenges well. The education tool places heavy reliance on achieving compliance with rules by generating the desired moral attitude.<sup>202</sup> The programme thus has athletes prove that doping is immoral.<sup>203</sup> This is done through a logic challenge, through which athletes are led (through compulsory combinations, only one combination is considered the “right” answer at any time) to reason as follows: (i) doping gives you a competitive edge, incentivising others to do the same to get that same edge; (ii) since doping is detrimental to health, you are harming competitors by incentivising them to dope if you dope; and (iii) doing harm to others is immoral, which makes doping immoral.<sup>204</sup> This logic challenge shows the difficulty in spreading values rationally, especially in a top-down fashion

<sup>194</sup> Pielke and Boye (2019, see eg p. 3).

<sup>195</sup> Ward et al. (2019).

<sup>196</sup> See, recently, Pielke and Boye (2019); Kazlauskas (2007), for her thesis research, conducted a survey on anti-doping laboratory directors to contrast their perception of their work, the manner in which they maintain their competences, and external perceptions on their work, but the principal data collection from 2002 to 2004 pre-dates the implementation of the WADA Code.

<sup>197</sup> Ohl (2019, p. 130).

<sup>198</sup> On the manner in which the regulatory framework has been designed by WADA to encourage anti-doping laboratories to continuously compete for more sensitive, better detection capabilities, see Viret (2016, pp 343–349).

<sup>199</sup> De Hon (2016, p. 410): ‘obviously, anti-doping stakeholders will need to accept their vulnerability when such studies are being performed, as they may or may not support current policies’.

<sup>200</sup> Pielke (2016, p. 202).

<sup>201</sup> Idem (2016, p. 212).

<sup>202</sup> Petroczi et al. (2017) analyse this value-based education approach and its application to the doping phenomenon, as it ‘promotes moral reasoning and changes attitudes by providing positive solutions to stay clean’.

<sup>203</sup> Anyone can access the training by opening an account. Note that doing so requires an agreement that data may be made available to anti-doping organisations.

<sup>204</sup> Dimeo and Møller (2018) describe earlier WADA conceived education materials as ‘propaganda’ aimed at scaring athletes away from doping.



and especially if they build on prerequisites that suppose a basis in evidence. As per the WADA Code itself, substances and methods do not necessarily need to be performance enhancing to be prohibited, nor do they necessarily need to represent a risk for the athlete's health (see Sect. 2.3). Some may be only one or the other; some may not have been categorically proven to be either. At best, the immoral character of doping as defined in ALPHA would thus only cover part of the behaviours actually defined as doping under the WADA Code. The other question, obviously, from an evidence-based policy standpoint, is why we need to persuade athletes that doping is immoral in the first place. There are multiple legal prohibitions in national laws that do not claim to enshrine a moral prescription and which individuals are nevertheless required to follow.

Even advances driven by scientists and new technologies are not “neutral” in the way they shape the orientations of policy decisions.<sup>205</sup> Thus, anti-doping scientists have long been looking into new tools to reinforce the instruments at the disposal of anti-doping organisations, with a view to strengthening the efficiency of detection.<sup>206</sup> In this context, the approach based on profiling has shown benefits within the Athlete Biological Passport and its underlying Bayesian framework. We have stressed the potential of this framework for interdisciplinary integration (see Sect. 4.1). New research is targeted at exploring how monitoring of performance data could add to the existing arsenal, in combination with conventional testing and the Athlete Biological Passport.<sup>207</sup>

Detecting doping based on performance profiling is riddled with technical challenges, such as identifying the relevant data to collect, or ensuring reliability of the measurements.<sup>208</sup> It will also require careful legal consideration to weigh in athlete privacy, given the sensitive character that some of the data may have (giving indications on the athlete's state of health). At a more fundamental level, however, use of performance data is rooted in an assumption typically mentioned *en passant* in studies in the field: “Since performance improvement is the primary goal of doping, it

is expected that doping will affect competition results”.<sup>209</sup> This assumption again highlights the importance of making research goals explicit, including the concept of “doping” (see Sect. 3.1). Performance profiling seems aimed in the eyes of its proponents at one particular type of doping, i.e. intentional doping. To be more precise, performance profiling is capable of identifying conduct that has the effect of increasing performances in a measurable way<sup>210</sup> and this whether the underlying conduct was intentional or not within the meaning of the WADA Code (i.e. whether the athlete intended to cheat). It will not assist in identifying intentional doping schemes which are ineffective, i.e. which do not actually lead to performance enhancement.

Performance profiling thus addresses a very specific subset of circumstances currently prohibited under the WADA Code. This may be unproblematic if we determine that addressing this fraction is worth the investment of resources it represents, and proportionate to the encroachment upon athlete rights. It is important, however, that all stakeholders are aware of what “doping” means when used in the context of performance monitoring. There is an interesting feedback loop here in that the development of a detection technology influences the strategic orientation of anti-doping programmes. Since that strategy is a matter for policy-makers to set, it is important, then, that the implications are made clear to them; otherwise, policies would become *de facto* directed by the designers of the new technology. Equally, policy-makers should bear in mind that other aspects of anti-doping (e.g. inadvertent doping through contaminated supplements that can put the athlete's health at risk) ought to receive more attention through complementary tools (e.g. education programmes).

Scientific research is thus not necessarily value neutral. In the case of performance monitoring, it does in fact even carry potential for creating new value conflicts: performance is at the core of competitive sport, and achieving superior performance gains is the aim of just about any training programme and any athletic pursuit. The fact that performance

<sup>205</sup> Parkhurst (2017, p. 55 et seq.) talks about “issue biases”, which arise from the fact that the selection of scientific evidence can have an impact on which issues are tackled by policy-makers and obscure the political nature of these decisions, e.g. because certain types of evidence are more easily obtained through scientific research than others.

<sup>206</sup> “Efficient use of testing resources” (Iljukov et al. 2018, p. 1); Iljukov et al. 2018, p. 4)—“Optimally targeted anti-doping tests are crucial for the success and the cost-efficiency ratio of any anti-doping program”.

<sup>207</sup> Montagna and Hopker (2018) on applying Bayesian approaches to performance data; for an initial proposal, see already Schumacher and Pottgiesser (2009).

<sup>208</sup> Faiss and Saugy (2019, p. 155).

<sup>209</sup> Iljukov and Schumacher (2017, p. 1). See also: “As the aim of any doping regime is to improve sporting performance” (Hopker et al. 2018, p. 1). “Considering that the main goal of doping is to improve athlete's performance, it seems reasonable to systematically monitor athletes' competition results for identification of possible irregularities” (Iljukov et al. 2018, p. 4) “[...] it seems reasonable to assume that the most direct goal of doping is to improve race results”. (Menaspa and Abbiss 2017, p. 3) admit that cycling is an extremely complex sport and the effects of enhancing an athlete's physiology on “overall race performance has not been well investigated”. And indeed, some studies seem to show that on a population basis, peak performances increase when a new, effective, doping agent becomes available to athletes. This has been verified for anabolic steroids and EPO (Iljukov and Schumacher 2017, p. 2).

<sup>210</sup> See the graphical representation of the model proposed by Faiss and Saugy (2019, p. 157).

profiling makes athletes suspicious based on the very feature they are encouraged to strive for is a paradox that we cannot easily dismiss. Even the scientists working on these profiling tools warn about their ethical implications: “improvement in athletic performance per se is not an indication of any wrongdoing and must be interpreted with caution”.<sup>211</sup> Performance monitoring thus reinforces the fundamental conflict raised by Petroczi et al. between the expectations on athletes to enhance their performance, and the restrictions on the means for doing so (see Sect. 2.3).<sup>212</sup>

These reflections at the policy level have their counterpart in legal adjudication: there is a demarcation between what the scientific experts can report based on a piece of evidence submitted to them, and the determination of the hearing panel on the outcome of the case. Like policy-makers, judicial panels are called to make decisions under conditions of uncertainty,<sup>213</sup> within time constraints that may not allow for gathering additional evidence, especially in sport competitions where time is often of essence.<sup>214</sup> As already mentioned in connection with perceptions on reality and knowledge (see Sect. 3), one methodology central to legal fact-finding is the mechanisms of burden and standard of proof. Previous work highlighted the challenges of legal decision-making under conditions of “scientific uncertainty” and the role of the burden of proof in this regard.<sup>215</sup> While scientific researchers are comfortable operating with probabilities as a measure for knowledge, the judiciary fact-finding methods do not accommodate such probabilities, at least not in their end product.

In the World Anti-Doping Program, this difficulty is typically removed from the scope of review of disciplinary panels because WADA sets regulatory technical level considered binding. For example, for anti-doping laboratories, a decision limit (e.g. the one in connection with exogenous human growth hormone, “hGH”)<sup>216</sup> reflects a certain probability that an athlete was doping. Decision limits are themselves expressed within a certain confidence interval.<sup>217</sup> In legal terms, the same decision limit decides peremptorily—at

least under the current regulatory framework—whether the athlete must be found to have committed an anti-doping rule violation or not. The disciplinary panel cannot (at least not officially) set a 3-year sanction rather than 4 years because they were only satisfied with a 95% confidence that the athlete used hGH. Panels have some latitude in their legal appreciation of the sanction that the athlete deserves based on established facts, but fact-finding itself tolerates no graduations: something must be found to either have occurred or not. This “yes-or-no feature” is reinforced by the WADA Technical Documents directly dictating a legal consequence to the panel (i.e. a sample value above the decision limit is to be declared an anti-doping rule violation for presence of exogenous hGH, regardless of whether the panel was satisfied, on the facts, that the athlete used hGH).

Scientific research can assist in clarifying which values correspond to which degree of probability in the hypothesis of a doping versus a non-doping athlete, but setting the degree of probability that is considered acceptable for a decision limit or threshold is a policy choice, or, where no level is set, depends on the legal appreciation of the judicial panel.<sup>218</sup> This policy choice reflects a balance of interests, drawing the line between the potential number of doped athletes escaping a sanction we want to tolerate, versus the number of “innocent” athletes being convicted we are willing to accept.<sup>219</sup> These crucial choices behind doping regulation are inevitable, but they are somewhat obscured by the fact that these figures are typically enshrined in WADA Technical Documents, which creates the impression of a purely technical demarcation line. In reality, no amount of scientific research can relieve policy-makers from the responsibility of drawing that line and of endorsing its consequences. For the athlete, whether the case falls on one side of the line or the other may decide on the end of a career or the fate of an Olympic medal.

Finally, science and policy-making operate within different timescales. Even where future research might contribute meaningful answers, it may not always prove practical to wait for scientists to refine and replicate their findings before making policy choices. This dilemma is central to the discussions around the composition of the WADA Prohibited List. There are regularly studies arguing some (or most!) of the substances and methods on the Prohibited List are not supported by proper scientific evidence when it comes to their performance-enhancing properties.<sup>220</sup> Leaving aside

<sup>211</sup> Iljukov and Schumacher (2017, p. 2). One can legitimately question whether it would be ‘fair and ethical to use these data to “raise questions”’ (Menaspa and Abbiss 2017, p. 2).

<sup>212</sup> Petroczi et al. (2017, p. 160).

<sup>213</sup> Jasanoff (2011, p. 311), Pielke and Boye (2019, p. 3), characterise scientific evidence as a ‘means of dealing with inevitable uncertainties’.

<sup>214</sup> With respect to the CAS decision in the *Dutee Chand v. IAAF* matter, see Viret and Wisnosky (2016b, pp. 247/248).

<sup>215</sup> Viret (2016, pp. 174–176).

<sup>216</sup> In Viret and Wisnosky (2016a, pp. 56–59), we extensively discuss the status of the “decision limit” for hGH in comparison to threshold substances.

<sup>217</sup> Saugy et al. (2016, pp. 24/25).

<sup>218</sup> *Idem* (2016, pp. 23/24).

<sup>219</sup> Sottas et al. (2008, pp. 207/208). As per Sottas et al. (2008) forensic standards can help us converting evidentiary value into a likelihood of doping, but “an open question remains in determining which level of probability of doping is required”.

<sup>220</sup> See, recently, Heuberger and Cohen (2019).

the issue that the WADA Code does not necessarily require a substance or method to be performance enhancing (see Sect. 2.3), these studies inform policy-makers but do not relieve them from their responsibilities to make decisions in a context of uncertainty. De Hon makes the point that “it is simply not possible to wait for definitive proof on all characteristics of substances or methods before they should be banned or not. It is unavoidable that policy-related decisions will have to be built on a certain degree of expert advice as a supplement to existing scientific literature”.<sup>221</sup> As Pielke puts it in a somewhat provocative way, the question is really whether a substance should be considered guilty until innocent, or the reverse.<sup>222</sup> The gold standard of the clinical study involving administration of substances to athletes against a control group, on the model of drug trials, may be hard to pass through the scrutiny of ethic committees,<sup>223</sup> but this does not mean that we must surrender the assessment entirely to the discretion of WADA. In certain situations, it may be advisable to adopt the attitude of “suspended judgment” that interdisciplinary approaches invite, though this may be difficult in a field of high public exposure that puts pressure on policy-makers to respond with immediate action to each new finding. The WADA Monitoring Program illustrates this attitude of suspended judgment. Research may in fact contribute to the prevention of doping behaviours, namely if athletes can be informed on the basis of research clearly showing that a substance has no performance-enhancing effect.<sup>224</sup> Instead, hastily prohibiting a substance and publishing an explanatory notice stating that the substance is being abused by athletes with the intention of enhancing their performance, as happened with Meldonium,<sup>225</sup> will inevitably create the impression in athletes that they can expect a real benefit. Publicising the prohibition of a substance may thus push athletes who may never have considered the substance to consume it, thus endangering their

health.<sup>226</sup> Since research seems to show that health risk does not act as an effective deterrent factor at least in elite athletes,<sup>227</sup> policy-makers may need to more carefully consider the consequences of declaring a prohibition. This brings us to the role of transparency and procedures in policy-making.

### 4.3 Transparency—a procedural counterpart for science base?

We have seen that science and research often provide no direct answers for policy-makers, who also have to take into account stakeholder values and other interests within the community concerned. Accordingly, the manner in which evidence base and those interests are integrated is of paramount importance for the coherence and fairness of the outcomes. Even though interdisciplinary work can assist in rationalising the process, and making sure that all relevant factors are considered, there will always be some “subjective human judgement” involved in decision-making.<sup>228</sup> As per the reasoning of Murray previously cited (see Sect. 2.3), we may just have to accept that the justification for anti-doping policies will ultimately lie in values, and we may also have to accept that these values are continuously renegotiated and are called to evolve along with cultural and societal norms.

The notion of a “fair” or “sound” anti-doping policies then becomes tied to the commitment of the system to (i) having in place the structures and procedures (including what we could call the “scientific advisory system”)<sup>229</sup>—for taking into account all relevant factors in the negotiations, and (ii) guaranteeing accountability,<sup>230</sup> which includes transparency in such way that the rationales underlying policy choices can be reconstructed by those affected. Access to any scientific evidence flowing into the decision-making process is a prerequisite for debating and challenging the resulting choices. This also correlates with society moving away from considering expertise as a panacea, in such way that “technocratic” input is now required to be balanced out

<sup>221</sup> De Hon (2016, p. 312).

<sup>222</sup> Pielke (2016, p. 149); see also Murray (2017, p. 188): if health were the sole criterion, ‘we would also face difficult judgments about the standard of proof needed’. In reality, the current regulatory solution even does away with this question altogether, since WADA has freed itself from having to consider it, by providing in the WADA Code that an athlete cannot challenge in disciplinary proceedings the basis for inclusion of a substance or method onto the Prohibited List (Art. 4.3.3). Declaring a legal ‘immunity’ on the Prohibited List makes reliance on the inclusion criteria set out by the WADA Code itself in the same provision (two of which require a basis in scientific evidence of some sort, see Article 4.3 and Sect. 2.3 above), illusory.

<sup>223</sup> Kinahan et al. (2017, p. 42): ‘experiments to prove performance enhancement may be difficult to perform in humans’; Heuberger and Cohen (2019), in particular Sect. 2.

<sup>224</sup> Heuberger and Cohen (2019), Sect. 4.

<sup>225</sup> WADA Explanatory Notice 2016 Prohibited List <https://www.wada-ama.org/sites/default/files/resources/files/wada-2016-prohibited-list-summary-of-modifications-en.pdf> (last accessed 21.02.19).

<sup>226</sup> Henning (2019, p. 52).

<sup>227</sup> Backhouse (2015, p. 135).

<sup>228</sup> Pielke (2016, p. 59).

<sup>229</sup> Parkhurst (2017) uses the expression ‘evidence advisory system’; see also Hawkins and Parkhurst (2015).

<sup>230</sup> Accountability is a key feature of traditional ‘good governance’ principles; see specifically with respect to WADA, Ordway and Nehme (2016, p. 220). For other proposals to reform governance of the anti-doping system and specifically WADA, see, for example, Chapelet and Van Luijk (2018); Duval (2016) Tackling Doping Seriously—Reforming the World Anti-Doping System after the Russian Scandal; ASSER Policy Brief No. 2016-02, last revised 18 November 2018, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2836388](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2836388) (last accessed 27.06.19).

by a “participative” process with appropriate representation of stakeholders.<sup>231</sup>

In preparatory work for legislation, feedback is often obtained through a consultation process, which can be open for anyone or limited to relevant stakeholders. The WADA incorporates two forms of consultation in its role as a policy-maker and regulator: the first is a “public” consultation process on proposed regulatory document revisions; the second consists in the recommendations of WADA’s advisory Committees and Expert Groups. A public consultation process is typically only launched for revisions of the WADA Code itself, or, during those revision periods, for the International Standards. By contrast, the annual Prohibited List revision proposals are never communicated to the public, but only shared with anti-doping organisations. In all cases, the WADA Executive Committee or Foundation Board has the sole decision-making power to adopt the new regulation.<sup>232</sup> While the mere existence of a consultation process is something that WADA should be commended on, important steps could be taken to enhance to transparency of the process and their benefit for stakeholder support. There is typically little feedback as to why a change is made or rejected, what its intent was, nor is there any assurance that amendments will not be added after the consultation.<sup>233</sup> This is true for the WADA Code itself, which in the 2015 review received several last minute modifications (e.g. for the regime on recreational drugs), after the consultation process was closed and after it was accepted by acclamations by the stakeholders who had had no opportunity to review these changes.<sup>234</sup>

As implied in the idea of “legitimation by participation”,<sup>235</sup> the process should not be a self-justifying exercise, but needs to be rooted in a certain quality of the participants. Appeals to increased representativeness in the anti-doping system are often tied specifically to athlete participation,<sup>236</sup> with suggestions that athletes should be included into

deliberations and policy decisions.<sup>237</sup> While these suggestions are intuitively persuasive on an abstract level, the manner in which they are concretised requires thorough assessment, to avoid situations where representativeness might act simply as an alibi tool for anti-doping authorities to restore their image. Discussions around these issues would first need to acknowledge the fact that the anti-doping system, like organised sport in general, is no democracy, and, at this point at least, simply does not have what it takes to function like one.<sup>238</sup> Athlete representation is not something that can be improvised if institutional and cultural ground is lacking. Brendan Schwab, of the World Players Association, discusses the rise of professional athlete associations, including outside the traditional “union” framework of US professional leagues, but also highlights that sports governing bodies in the Olympic Movement, including WADA, may treat with circumspection any form of representation which, unlike traditional athletes’ commissions, is not set up by and under the terms of the sports governing body.<sup>239</sup> Schwab also describes how “global sport” has designed itself with its autonomy as a priority concern, with the protection of athlete rights being subservient to that priority. Like the IOC Athlete Commission, the WADA Athlete Committee ensures that “the representation of athletes is regulated and controlled by” sports governing bodies.<sup>240</sup> The WADA Athlete Committee terms of reference incorporate the “official” language, whereby its role is to “serve as the voice of clean athletes, encouraging integrity and fairness for sport and athletes”.<sup>241</sup> There is something vaguely unsettling about hearing the athletes’ voice, as if somehow they had only one. Athletes are not a homogenous group, there is no such thing as the “standard” athlete; their views on the goals behind anti-doping and the best way to deal with doping are potentially as diverse as those within the anti-doping community itself. As desirable as it may be to obtain athlete support, athletes and their presumed positions should not be misused as a way of validating policy measures, unless we

<sup>231</sup> Maasen and Weingart (2005, p. 2): ‘a shift is seen to be taking place from a legitimation through knowledge to a legitimation through participation’; Nowotny (2003), frames this evolution as a creation of ‘socially robust knowledge’.

<sup>232</sup> See WADA website: ‘Where there is no consensus, WADA’s Executive Committee, acting as the steering body for the Team, decides which diverging stakeholder views should be incorporated within the successive drafts’. (WADA website); <https://www.wada-ama.org/en/what-we-do/the-code/2021-code-review> (last accessed 19.02.19).

<sup>233</sup> Kinahan et al. (2017, p. 40): ‘modifications introduced after the consultation period with the stakeholders are avoided as much as possible, to preserve the spirit of the consultation process’.

<sup>234</sup> Rigozzi et al. (2014, para. 3): ‘the departure from the proclaimed revision process is certainly not ideal in terms of good governance’.

<sup>235</sup> Maasen and Weingart (2005, p. 2).

<sup>236</sup> Ordway and Nehme (2016, p. 228) also mention the positive impact of gender diversity on integrity outcomes in governance.

<sup>237</sup> Pielke (2016) argues for a legitimization of doping regulation through athlete involvement, imagining a system in which athletes would vote on the composition of the Prohibited List (p. 149).

<sup>238</sup> Chappelet (2017, pp 3 and 9) argue that there is consensus that sports governance should combine elements of corporate governance (like the business world) with elements of democratic governance (like the public sector), but that international treaties would be necessary to oversee this new form of governance.

<sup>239</sup> Schwab (2017, p. 48 et seq.).

<sup>240</sup> Schwab (2018, p. 191). In this contribution, the author describes various forms of “athlete activism” and how these influence the failure of global sport to embed human rights into their governance models.

<sup>241</sup> WADA Athlete Committee Terms of Reference <https://www.wada-ama.org/en/resources/athlete-committee-terms-of-reference> (last accessed 20.02.19).



have a thorough process in place to determine what these positions are, and the tools to allow them to form these positions in an informed manner.<sup>242</sup>

Finally, consideration of societal values and interests cannot simply be equalled with (assumed) popularity of a measure. Accepting that there is a value-based component in policy-making does not justify any and all policy measures guided by a desire to please stakeholders in the face of contrary evidence. In fact, an effective measure may not always be the most glamorous to present. Aikin and Sottas show how an important component that the World Anti-Doping Program targets is the “effect size”, meaning that doping behaviours are pushed through the detection system into a realm where they could have, at most, limited effect on performances, thus also contributing to ensuring athletes can compete on a level playing field.<sup>243</sup> These types of effects, however, are much more subtle than what can be demonstrated through plain and simple prevalence percentages, and may thus go unnoticed, since they are much more difficult to convey to the media and the general public. Instead, it is the role of the policy-maker to be able to take a step back and balance out these societal values with the available evidence. Within anti-doping, it may be a commendable goal to increase trust of the athletes in the system, but athletes are not necessarily placed in a position to recommend smart policy choices, nor to grasp their full implications. Thus, Richard Young commented with respect to the introduction of harsher sanctions during the 2015 WADA Code revision: “the athletes realised their wish of a 4-year ban for intentional cheaters”.<sup>244</sup> Raising the standard sanction from 2 to 4 years may be a strong political signal, but the more relevant question is whether it can lead to any meaningful reduction in doping behaviours and whether it could come at the cost of “collateral damage”. First, studies in behavioural sciences tend to question the efficacy of detection-deterrence approaches where the risk of being caught is perceived as low, so that simply raising sanctions might add little in terms of deterrence.<sup>245</sup> Second, legal analysis tells us that, through the play of the legal presumptions, in reality the new WADA Code imposes a 4-year ban for “intentional cheaters”,<sup>246</sup> but also for athletes who are unlucky enough to test positive

for a non-specified substance but cannot identify its origin (e.g. because it came from a source of contamination beyond their control). It is not clear whether “the athletes” would still favour 4- year sanctions if they received the elements necessary to make an informed recommendation.

To conclude this section, it is submitted that giving due regard to transparency and procedural safeguards does not authorise policy-makers to disregard scientific evidence. Values and interests should only come into play for those aspects on which scientific research is genuinely unfit for providing advice. For example, science may be incapable of telling us directly what is to be considered as admissible or not for sport to remain “real sport”, but once anti-doping organisations have defined the contours of what is admissible and established their criteria for prohibiting doping, they must be held accountable to these criteria.<sup>247</sup> Similarly, if scientific research shows a measure has no effect on the behaviours it is aimed at, these measures ought to be abandoned, as opposed to be continued for the sake of reassuring stakeholders and the public that “something” is being done.

In sum, creating genuine accountability would suppose at a minimum that both input channels for anti-doping policy—scientific evidence, as well as stakeholder contributions—are well publicised and thus accessible for public debate, but also for further research and reflection. General issues of good governance, though beyond the scope of this article, thus inevitably overlap with an assessment of the anti-doping system’s capacity to undertake effective interdisciplinary work. This is true for the composition of WADA’s Committees and Expert Groups that advise on technical issues behind anti-doping policies, but also for more general representation matters. From the perspective of transdisciplinarity, gathering input from athletes is not (only) a question of democratic participation, but a prerequisite for constructing a valid framework of collaborative research work. Thus, legitimation through expertise and legitimation through participation are not opposites, but joint actors in the creation of evidence-informed policy.

## 5 Conclusion

This article does not claim to provide definitive answers to the many issues it raises. It will hopefully encourage debate and contribute some stepping stones towards an integrated approach to anti-doping, based on coordinated input from all disciplines involved in doping-related research, as well as practitioners and stakeholders within the anti-doping community. On the alternative laid out in the title between

<sup>242</sup> Initiatives such as the Global Athlete HQ may ultimately lead to a genuine worldwide athlete representation, but it is still unclear how their legitimacy will be grounded <https://www.insidethegames.biz/articles/1075480/former-wada-deputy-director-general-and-olympic-champion-to-lead-new-international-athlete-organisation> (last accessed 13.02.19).

<sup>243</sup> Aikin and Sottas (2019).

<sup>244</sup> Young (2017, p. 18).

<sup>245</sup> Backhouse (2015, pp. 136/219/224).

<sup>246</sup> “Intentional cheater” is a pleonasm under the system of the WADA Code (see Article 10.2.3).

<sup>247</sup> Pielke and Boye (2019, p. 14) recommend that WADA should ‘make clear the evidentiary criteria or listing a substance or method’.

“utopia and necessity”, it should be clear by now towards which limb of the alternative this author leans. Some would probably argue that the tools and ideas proposed are too complex to be implemented in practice. In reply, one could submit that doping in sport happens to be a complex issue to tackle and that the worst way of dealing with complexity is to disregard it.<sup>248</sup>

Committing to an interdisciplinary approach requires a mixture of rigour, critical thinking (including self-reflection) and some common sense. Above all, it appeals to the open-mindedness of those who set out on the journey. It can be as plain as to immerse oneself into writings of other disciplines, and to engage with those, even if it is to meet them with circumspection. The instruments of interdisciplinarity do not amount to some magic formula, but the principles they embody need to be taken seriously if we want to make real progress:

- There is need to work towards a clearer vision of the objectives of the fight against doping and its underlying rationales. We may need to tolerate an inevitable cultural—even “arbitrary”—component within these rationales. As discussed, scientists cannot substitute themselves for policy-makers and their responsibilities. Still, no coordinated efforts will be possible unless and until such overarching common agenda is established. These objectives will provide us with a benchmark against which the effectiveness of the policies can be measured. At the very least, prior to setting out on a collaborative project, participants should clarify among themselves what they are striving for and how this relates to current policies;
- The different disciplines that seek to contribute to the evidence base behind anti-doping policies need to coordinate their tools of analysis. This requires disambiguating key concepts, uncovering hidden assumptions and biases intrinsic to each discipline and wherever possible striving from the start for methodologies that will produce compatible results. The initial design of the projects should incorporate the need for findings to be effectively integrated. Integration is a critical element of any collaborative work that is to deploy effects on policies; merely juxtaposing insights gained by various disciplines will typically not be sufficient.
- Transdisciplinary approaches allow for combining the quest for evidence-based policy with involvement of stakeholders. By their very design, they encourage participation of the community affected. This, however, presupposes that appropriate institutional and procedural

structures be in place to secure the representativeness of that involvement and a commitment to apply them in practice. Future work will deepen the analysis of these structures. Transdisciplinarity can thus act as a common denominator between scientific integrity and good governance.

Initiatives that gather participants from various backgrounds around doping in sport into multi-disciplinary events certainly represent a step into the right direction,<sup>249</sup> but they are unlikely to bring about real paradigm shifts unless they truly force the disciplines to engage with each other to produce common work. We need to come up with methods for designing umbrella research questions that each discipline will have something to contribute to, and will also be of value to policy-makers and judicial bodies. In some instances, this may be as straightforward as to agree from the outset on a common conceptual ground with a shared terminology. In others, much more work may be required to ensure that the data generated can be integrated into a single set of evidence. This does not mean that we are asked to eliminate all discrepancies: diversity enriches the debate, and may highlight focus on different aspects within a complex system. By contrast, ambiguity is detrimental where it tends to cover up inconsistencies in the system.

More than anything, we should be humble about what we know, or rather, what we believe we know. Doping in sport, like competitive sport itself, is a subject that often triggers strong emotional reactions. Without diminishing the role of transparency and representativeness, it is important not to confuse pragmatic policy-making and demagoguery. We would be delusional to think that we can eradicate subjectivity from policy-making in anti-doping. What we can strive for, however, is an “informed subjectivity”, i.e. a system in which whenever policy-makers or judicial panels depart from evidence-based solutions, or decide to move forward without awaiting such evidence base, they do so in full consciousness and having made explicit the values that prompt them to do so. This would seem a realistic minimal standard to which to hold the anti-doping system accountable.

So what can lawyers’ contribution be in that respect? Some may object that law is not a science and operates on a different dimension than “real” researchers in anti-doping on, say, the physiology of performance enhancement or the social determinants of drug use in sport. This may be true insofar as legal analysis is not aimed at generating new knowledge on “reality”, but at putting a regulatory framework on such reality, or enforcing such framework. Nevertheless, a purely normative perception of the legal profession would neglect the fact that the regulatory framework cannot

<sup>248</sup> Backhouse (2015, p 227): ‘The problem of doping will never be resolved by sitting in a 45-minute anti-doping education session’.

<sup>249</sup> See, notably, Fincoeur et al. (2019, pp. 5–7).

be detached from the reality it intends to regulate; in fact, it directly influences reality: social sciences see regulation as one determinant of doping behaviours (see Sect. 2.2). Moreover, lawyers' ability to use concepts in a systematic way and apply structured and precise logical reasoning can be an asset within the conceptual and modelling skills that the interdisciplinary approaches require. The essence of a lawyer's work is to live in an environment where different viewpoints coexist and need to be reconciled (either through negotiation or through adjudication). Finally, lawyers are indispensable within the final process of integration, as a support for policy-makers and regulatory drafting, as well as for enforcing the regulations. It would thus seem natural that they participate early on in the process, especially since new evidence findings are never delivered into an empty space but need to be fitted within an existing legal environment. Lawyers can no longer confine themselves to enforcing doping regulations or, at most, verifying the compatibility with higher legal standards. We have to accept responsibility that goes beyond being the "guardians of the law", and stand up for a certain level of evidence behind the regulations we are asked to draft, implement or enforce.

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