



The King's Student Law Review

Science and Law: An (Un)likely Kinship? How International Courts and Tribunals Solve Scientific Issues

Author: Jasmin Ziegelbecker

Source: *The King's Student Law Review*, Vol. 8, No. 1 (2017) pp. 56-67

Published by: [King's College London](#) on behalf of [The King's Student Law Review](#)

All rights reserved. No part of this publication may be reproduced, transmitted, in any form or by any means, electronic, mechanical, recording or otherwise, or stored in any retrieval system of any nature, without the prior, express written permission of the King's Student Law Review.

Within the UK, exceptions are allowed in respect of any fair dealing for the purpose of research of private study, or criticism or review, as permitted under the Copyrights, Designs and Patents Act 1988. Enquiries concerning reproducing outside these terms and in other countries should be sent to the Editor in Chief.

KSLR is an independent, not-for-profit, online academic publication managed by students of the [King's College London School of Law](#). The *Review* seeks to publish high-quality legal scholarship written by undergraduate and graduate students at King's and other leading law schools across the globe. For more information about KSLR, please contact info@kslr.org.uk



Science and law: An (Un)likely Kinship? How International Courts and Tribunals Solve Scientific Issues

Jasmin Ziegelbecker

1. Science and Law: An Introduction

*'Science too is, at best, poetry.'*¹

Putting things in context

Both the methods and results of scientific as well as legal work depend on their embeddedness in a larger social and political context² and on the institutional factors that shape professional concerns and commitment of all scholars.³ This can be seen in an abstract perspective and in respect to the direct environment of e.g. a court or a judge. Similarly, Alvarez notes that “a court exists within a broader institutional framework”, which “permits state parties to exercise their exit and voice” influencing “just how ‘proactive’ on either law-making or fact-finding a judge or arbitrator is likely to be.”⁴ This extends, amongst others, to issues of budget.⁵ Concerning “political pressures or biases”, Moncel argues that “this may lead judges to portray complicated scientific facts in a way that justifies a given result”.⁶ The difficulty especially in respect to science is that “observers often mistake political questions for straightforward scientific ones”.⁷ As will be pointed out later this has a negative effect on the transparency of the judgement.

¹ This quote is taken from Allan Janik and Stephen Toulmin, *Wittgenstein's Vienna* (Simon and Schuster Publishing, New York 1973) 129. It refers to the discussion in early 20th century Vienna, where a group of intellectuals (scientists, musicians, artists, architects, philosophers, and jurists) saw themselves as confronting common problems relating to representation and the limits of language, that derived from decline and fall of the Habsburg Empire. See also Anne Orford, ‘Scientific Reason and the Discipline of International Law’ (2014) 25 *EJIL* 369, 377ff.

² According to the constructivist theory; see also Melanie Klinkner, ‘Forensic science expertise for international criminal proceedings: an old problem, a new context and a pragmatic resolution’ (2009) 13 *IJEP* 102, 111.

³ Orford (n 1) 384.

⁴ José E Alvarez, ‘Are International Judges Afraid of Science? A Comment on Mbengue’ (2012). 34 *Loy. L.A. L. Rev.* 12, 81-98, 92.

⁵ e.g. Klinkner (n 2) 112.

⁶ Remi Moncel, ‘Dangerous Experiments: Scientific Integrity in International Environmental Adjudications after the ICJ's Decision in Whaling in the Antarctic’ (2015) 42 *Ecology L.Q.*, 306, 310 citing Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 *TEX. L. REV.* 1601, 1620–39 (2008).

⁷ Moncel (n 6) 311 citing Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 *COLUM. L. REV.* 1613, 1645–46 (1995)

Law as a science

The shifting ideals of science from old natural theology and clerical science to a modern understanding, which accordingly shaped the concerns, questions, methods, and theories of law (and legal scholars), can be traced back to 19th and 20th century, and discussion is still ongoing.⁸ So, how does law fit into this discussion? Looking at German language, one of the common terms for law, namely *Rechtswissenschaft* (literally “legal science”), the second part directly translates to the English word “science”. In the early 20s and 30s of the last century, the discussion among legal theorists seems to have led to the common opinion that indeed law is a science,⁹ a prominent voice being Hans Kelsen with his “pure theory” of law, which meant that legal science, like natural science, had to ‘formalize its subject matter’ in order to grasp it.¹⁰ Kelsen’s theory stood in context of early 20th century Vienna and was profoundly influenced by the philosophy of Mach, in particular the ideas that “science must be stripped of metaphysical or meaningless decoration and portrayed his project as a science of law”, which required the study of law to be “based upon a scientific method for acquiring knowledge and comprehension of the law”.¹¹ Also, Kelsen’s “positivist” concept was based on the idea of an independence from content, which understands legal science as capable of an objective grasp of principles in every legal system and thus comparable to the methods used by natural science.¹² Though it seems that there is now a shared commitment by legal scholars to scientific values of rationality, progress, and objectivity, those commitments are understood as requiring different forms of conduct, different means of producing knowledge and different relations to the state.¹³ This ongoing discussion may be a reason for the inconsistencies in jurisprudence.

In practice, the concept of law as a science connects to the notion of objectivity and subjectivity. This would mean that (e.g. natural) science and law are methodically built on the same pillars, which are according to Popper’s scientific theory: “all scientific assertions are subject to the probability of being discarded should they probe to be false”¹⁴. The self-perception of law also relates to another concept, namely the one of “certainty”. Scholars argue that whilst the sciences are familiar and comfortable with uncertainties and undetermined aspects of enquiries and evidence, “legal systems demonstrate discomfort with uncertainty”.¹⁵ This could be the reason why there are tensions in judgements involving scientific questions.

⁸ Orford (n 1) 369ff

⁹ eg Waldo G Morse, ‘The Law as a Science. Proceedings of the Academy of Political Science in the City of New York’ (1923), 10 *Law & Justice* 59; Orford (n 1).

¹⁰ Orford (n 1) 378f.

¹¹ Orford (n 1).

¹² Orford (n 1) 378.

¹³ Orford (n 1) 372.

¹⁴ Caroline E Foster, *Science and the Precautionary Principle in International Courts and Tribunals Expert Evidence, Burden of Proof and Finality* (Cambridge 2013) 10 citing Karl R. Popper, *The Logic of Scientific Discovery* (Harper & Row, New York 1968)

¹⁵ Klinkner (n 2) 114 citing C. Willmore, ‘Codes of Practice: Communicating between Science and Law’ in Freeman and Reece (eds), *Science in Court* (Ashgate, Aldershot 1998)

This paper argues, from the basis of this “philosophical” approach, that the nature of law as a science is not absolutely clear-cut across international courts and tribunals, which leads to inconsistencies in jurisprudence. It will address specific judgements before international courts and tribunals to show that science and law cannot be separated in order to achieve relevant judgements and will argue that the use of standards in the handling of scientific evidence, scientific experts and methods for taking scientific evidence in scientific disputes could prove to be a practical way to achieve transparency.

For the purpose of providing an overview and comparison of the practice before international courts and tribunals, this paper will build on what Foster suggest as being “a community of international courts”¹⁶, which includes courts dealing with general international law, international criminal law and international trade law and will refer to judgements and procedures before the International Court of Justice (ICJ), International Criminal Tribunal for Yugoslavia (ICTY) and the World Trade Organisation (WTO). It also includes issues of forensic science in international criminal law cases.

2. Science in international law: between two legal systems and various courts

The relationship between law and science in international law is furthermore influenced by a sociological factor. This becomes obvious when seeing the influences from the Anglo-Saxon (Common) and Civil Law system on field of international law.¹⁷ Accordingly, Orford suggests that “the American and European traditions of international law are quite distinct”, where “the American tradition” is “portrayed as flexible, informal, instrumentalist, and by inference more subjective”; the “European tradition portrayed as committed to formality, objectivity, and a studied distance from politics”.¹⁸ This seems to have an influence on how to deal with questions of science in jurisprudence as also methods of obtaining scientific evidence.¹⁹ Similarly, Sir Christopher Greenwood, judge at the ICJ, said in a lecture at the University of Geneva that there is indeed a difference in how lawyers from a civil and common law background approach facts in international courts, of course speaking especially for the ICJ.²⁰

In fact, comparison of jurisprudence by international courts and tribunals (e.g. the ICJ’s Whaling Case) seems to suggest there is a dichotomy in the judges’ view of science. ICJ judges, on the one side, hold back on speaking out about scientific facts, so that when scientific theories are refuted, their judgements do not become illegitimate.²¹ On the other hand, concerning ICTY cases judges seem to share another view. Accordingly, Klinker comes to the conclusion that “[ICTY] judges nonetheless seem to share society’s broadly based faith

¹⁶ Foster (n 14) 3 citing Brown, 258.

¹⁷ Alvarez (n 4) 94.

¹⁸ Orford (n 1) 372.

¹⁹ See below p. 7.

²⁰ Speech by Sir Christopher Greenwood, 28 April 2016, University of Geneva.

²¹ Alvarez (n 4) 95; see also below 7f

in scientific method, rooted in the assumption that ‘following the same scientific approach, the conclusions will be the same’²².

This makes it obvious that ICJ and the ICTY have different perceptions of science, which profoundly influences their judgements: ICJ judges hold back on speaking about scientific facts (as they see scientific theories as something subjective, which can be refuted) and ICTY judges hold the assumption that scientific conclusions will generally be the same, when using the same method (objective approach).

Both of the ICJ’s and the ICTY’s procedural laws have roots in both civil and common law traditions.²³ Out of these different jurisdictions, it seems that there developed a tension inherent in international proceedings and the question if the adversarial or investigative nature would be the best option. Partly diverging opinions on procedural questions accordingly caused a number of differences in procedures.²⁴ In general, there seems to be a considerable freedom²⁵ in international law concerning procedural rules for scientific evidence and little restriction, for example in respect to admissibility.²⁶ In general, there are different views on the admissibility of evidence, depending on the legal tradition of the judge of the tribunal or court, which can be either an inquisitorial or an adversarial legal system.²⁷ It has to be noted that the ICTY ruled that the qualification of expert does not automatically mean admissibility of evidence, in that case a scientific report.²⁸

Of course, a similar issue concerning the role of science and especially scientific fact-finding can be found everywhere in international, regional and domestic jurisprudence, especially concerning health and environmental issues. A prominent example can be found in the case law of the European Court of Human Rights: In *D. v. the United Kingdom*, the decided in the case of an HIV patient, if his fatal illness constitutes “an exceptional circumstance”.²⁹ This is a legal question requiring interpretation, and at the same time involves a question of (medical) science when asking: when is that person fatally ill? What about AIDS medication that keeps that person alive for the moment, but if expulsed would die? Here it depends to a great extent on the assertion of (medical) scientific experts involved in the decision of a case to determine what state the individual is in.

²² Klinkner (n 2) 125.

²³ Klinkner (n 2) 127.

²⁴ See Klinkner (n 2) 115; see further below p. 7f.

²⁵ Foster (n 14) 3.

²⁶ Foster (n 14) 4.

²⁷ Klinkner (n 2) 115.

²⁸ Klinkner (n 2) 117 citing *Popović et al.* (Case No. IT-05–88-T) *Decision on Defence Rule 94bis Notice regarding Prosecution Expert Witness Richard Butler*, 19 September 2007, para 22

²⁹ *D v the United Kingdom* App no. 22600/93 (ECHR, 2 May 1997)

3. Scientific experts and expert evidence in international courts and tribunals: Of missed opportunities, ‘experts fantômes’ and transparency issues

The role of scientific experts and methods of obtaining scientific evidence

The role of the scientific expert differs according to a court’s procedural rules. An expert witness according to the ICTY’s Trial Chamber (in *Popovic*) is “someone who possesses the relevant specific knowledge, experience or skills to help the Trial Chamber come to a better understanding and a conclusion on a technical issue”.³⁰ Like the law in general and courts and judges in particular, experts (and what they produce) can be influenced by a number of factors, including high sums of payment³¹ and a constrained to try to conform to the socially constructed expectations of their discipline.³²

International courts and tribunals have various methods for taking expert evidence in scientific disputes, amongst others, the Court can appoint experts, scientific evidence can be submitted or experts can be appointed by the Parties (such as in the *Whaling case*). Experts can be cross-examined by the Court and/or the other Party. There are critical voices saying that cross-examination favours lawyers from a common law background³³, which in my opinion could be overcome with special training. Experts can appear before courts either as witnesses or councils. In his lecture at the University of Geneva, Judge Greenwood urges that party-appointed experts should appear as witnesses and not as councils. Sir Greenwood admits that what judges try to do when experts are appointed by the parties, is narrowing down the disagreement of experts (and expert’s reports) appointed by opposing parties and focus on where they agree.³⁴

The procedural rules on expert witnesses respectively evidence are substantially sparse for ad hoc tribunals (ICTY, ICTR).³⁵ During cross-examination at the ICTY, concerns about independence and objectivity should be addressed, but affiliation with a party does not itself constitute grounds for disqualification.³⁶ In cross-examination, the opposing party might aim to discredit the expert as a reliable source of knowledge. A cross-examiner could challenge the expert’s scientific method or techniques or seek to undermine the expert’s particular findings and conclusions.³⁷

When referring to ICTY procedures, Klinkner notes the following perception: Indeed, forensic scientists are routinely employed by the Office of the Prosecutor, expectation is for ‘any

³⁰ Klinkner (n 2) 116 citing *Popovic (ICTY case)*.

³¹ Guillaume Gros, ‘The ICJ’s Handling of Science in the Whaling in the Antarctic Case: A Whale of a Case?’ (2015) 6 JIDS 578, 587.

³² Klinkner (n 2) 112.

³³ Gros (n 31) 587, citing Martin Hunter ‘Expert Conferencing and New Methods’ presentation at 18th ICCA Congress (Montreal 2006) 5

³⁴ Speech by Sir Christopher Greenwood, 28. April 2016, University of Geneva.

³⁵ Avi Singh, ‘Expert Evidence’, in Karim A. A Khan and others (eds), *Principles of Evidence in International Criminal Justice* (Oxford 2010), 602

³⁶ Klinkner (n 2) 116.

³⁷ Klinkner (n 2), 122.

professional, qualified person in the scientific field to be independent even though employed by the prosecution’, and that professional qualifications would speak for an expert’s good faith.³⁸ Is that a naïve approach? In the case of forensic scientists at ICTY it may be a case of “denial” in absence of *normative standards*, where the legal system has to implicitly rely on an ethos of scientific professionalism (“*professional standards*”) which transcends national and cultural boundaries and binds each forensic practitioner to high standards of competence and integrity in the service of justice.³⁹ Issues may arise especially in extent to the limited binding force of codes of practice.⁴⁰

General procedural rules in the Rome Statute (ICC Statute) impose some requirements on the manner in which evidence should be collected and reflect, according to Singh, the strong civil law influence on the ICC.⁴¹ The ICC’s embrace of deference to administrative reasonableness and chamber driven process is an obvious reaction, states Singh, to the contentions regarding appointment of party driven expert witnesses at the *ad-hoc* tribunals.⁴² Art 56 of the ICC Statute exemplifies the investigative role of the chamber and allows the ICC to appoint an expert to assist⁴³ and is, according to Alamuddin, a central provision.⁴⁴ The ICC pre-trial and Trial Chambers are highly involved in choosing and instructing the expert witnesses, while the choice is limited by ICC Regulations, which requires that the expert is chosen from a list maintained by the registry, but parties can in principle appoint their own experts (from the registry’s list).⁴⁵

“Experts fantômes” and other Pulp Mills insights

The *Pulp Mills Case* involved central questions relating to science, when the Court had to assess obligations regarding contribution to the optimum and rational utilization of the river, the co-ordination measures to avoid changes in the ecological balance, the prevention of pollution and preservation of the aquatic environment.⁴⁶ In its decision, the Court criticises the fact that expert witnesses were presented by the Parties as counsels and not as expert witnesses. It goes on to state that “it is the responsibility of the Court, after having given careful consideration to all the evidence placed before it by the Parties, to determine which facts must be considered relevant, to assess their probative value, and to draw conclusions from them as appropriate”.⁴⁷ In this context the Court does not explain though, on which basis it will assess and draw conclusions in regard to the submissions presented before it, exercising judicial caution. The Court seemingly did not want to disclose its reasoning and assessment methods concerning the scientific evidence before it, so as not to commit itself to

³⁸ Klinkner (n 2) 116.

³⁹ Klinkner (n 2) 123.

⁴⁰ Klinkner (n 2), 124.

⁴¹ Singh (n 35) 605f.

⁴² Singh (n 35) 609.

⁴³ Singh (n 35) 605.

⁴⁴ Amal Alamuddin, ‘Collection of Evidence’ in Karim A. A Khan and others (ed), *Principles of Evidence in International Criminal Justice* (Oxford 2010), 236ff.

⁴⁵ Singh (n 35) 607f.

⁴⁶ *Case concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)*, Judgment on the merits, ICGJ 425 (ICJ 2010), 20 April 2010

⁴⁷ *Case concerning Pulp Mills on the River Uruguay* (n 46) para 168.

a specific way of handling this kind of scientific evidence just yet. This judicial behaviour can be seen in line with the sociological factor that judges before international courts see what they produce as something that echoes for centuries, as argued below⁴⁸ and admitted by the Judge Greenwood.⁴⁹ Also, the Court mainly sees itself as an adjudicator for conflicts may have played a part (political factor), not seeing the importance to disclose how it came to its conclusions to provide transparency.

Subsequently, the Court seemed to have decided the *Pulp Mills Case* without external advice on scientific facts submitted to it, but in fact – as brought up by Dissenting Judges Al-Khasawneh and Simma – relied on “experts fantômes”, so internally appointed experts of which it did not disclose the identity. This was criticised by Dissenting Judges Al-Khasawneh and Simma as a practice that is “not sufficient”.⁵⁰ Similarly, Judge Greenwood emphasises that when dealing with experts appointed by the Court, transparency is central: parties should know what is happening concerning the choice of the person itself as well as the type of expertise. As seen in the *Pulp Mills* judgement, not adequately taking science in account in the decision making process, can become a “trap” and “weaken the perceived authority” of a judicial body, instead of working as a “legitimizing factor”.⁵¹

The Whaling case and a “missed opportunity”

In the *Case concerning Whaling in the Antarctic* before the ICJ, the Court was faced with a central question: What is “scientific research”? Australia argued that Japan masks activities which were in fact not “science” by declaring them to be and funnily enough that meant that in theory a scientific expert would be defining the term ‘scientific research’, which adds another level of thought to the relationship of law and science. The role of scientific experts and evidence in international courts and tribunals such as the ICJ⁵² and the ICTY⁵³ is a very complex one, as legal scholars admit and, as discussed above, many questions arise in the context of the relationship between science and law.

When judging the *Whaling Case*, the Court explicitly states that it is not “called upon to resolve matters of scientific or whaling policy.”⁵⁴ In doing so, the Court exercises judicial caution, while in the same time implicitly saying something by hesitating to decide on this question. The reasoning the Court gives for its approach is that “is aware that members of the international community hold divergent views about the appropriate policy towards whales

⁴⁸ See page 10f, see also Alvarez (n 4) 95.

⁴⁹ Speech by Sir Christopher Greenwood, 28. April 2016, University of Geneva.

⁵⁰ *Case concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)*, Judgement of 20 April 2010, Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, para 14.

⁵¹ Francesca Romanin Jacur, ‘Remarks on the Role of Ex Curia Scientific Experts in International Environmental Disputes’, in Nerina Boschiera and others, *International Courts and the Development of International Law: Essays in Honour of Tullio Treves* (Springer, New York 2013) 444 citing Joost Pauwelyn, ‘Expert advice in WTO dispute settlement’ in G. A. Bermann. & PC. Mavriodis (eds.), *Trade and Human Health and Safety*, 2006.

⁵² Makane Moïse Mbengue, ‘Scientific Fact-finding by International Courts and Tribunals’ (2012) 3 JIDS 509, 576.

⁵³ Klinkner (n 2) 126.

⁵⁴ *Whaling in the Antarctic, Australia and New Zealand (intervening) v Japan*, Judgment, ICJ GL No 148, ICGJ 471 (ICJ 2014) 31st March 2014

and whaling”, but “it is not for the Court to settle these differences.” Instead, the Court argues that it has only to determine if the permits granted by Japan fall within the scope of the ICRW (the Whaling Convention)⁵⁵. While it is true, that technically the legal question at hand is the one the Court states, it is immanently impossible for it to decide on this issue without implicitly taking a stance. Through this behaviour the Court actively promotes the idea and attitude in the judicial system (“judicial activism”) that science and law should be separated. The Court’s practice in the *Whaling Case* led to criticism by many legal scholars, stating that the Court “missed the opportunity” to provide guidance on this issue of law and science, which would have led to further the rule of law.⁵⁶ Also its methodology was criticised: Instead of relying on evidence submitted by the parties, a frequent tenor among critics was that the Court could have made use of its opportunities under Art 50 of the Statute and 67 of the Rules of the Court to appoint own experts in order find answers the questions accordingly.⁵⁷ Sir Judge Greenwood basically defends the Courts’ making-use of burden of proof and standard of proof as not being an evasive tactic but as a ‘perfectly good reason’ to decide on the basis of the evidence submitted by the parties out of efficiency thoughts.⁵⁸

The (im)possible separation of law and science?

In fact, Mbengue argues that the Court avoided factual scientific questions and answered legal ones instead.⁵⁹ This has a number of consequences, such as argued by Gros, who says that judges are depriving themselves of liberty that they would have if they actually involved scientists in the process of their decision-making.⁶⁰ Also the question stands if the Court could and should have furthered the rule of law by ruling explicitly on the term “scientific research” or if that would have led to law-making beyond interpretation.

Alvarez argues that the virtue of avoiding direct confrontation with a scientific question shows that they do not want their judgement to be illegitimate when the scientific theory proves to be overturned.⁶¹ Similarly, Judge Greenwood said that facts and especially working them out in a court case can be ‘tricky’, because if you get it wrong, this ‘echoes for centuries in international law’.⁶² As discussed before in this paper, this seems to reflect the self-perception of (judges of) international courts and tribunals, such as the ICJ, that sees their rulings not as ‘science’ (and therefore something produced to advance the rule of law, until it is overturned), but instead as a “universal truth”.

Now, one could argue that questions of law should be decided by adjudicators and questions of fact should be answered by experts. Unfortunately, the reality is not that clear-cut: In the *Pulp Mills Case* for example, determining the necessity of environmental measures could

⁵⁵ *Whaling in the Antarctic* (n 54) para 69

⁵⁶ See e.g. Gros (n 31), Brendan Gogarty and Peter Lawrence, ‘The ICJ Whaling Case: science, transparency and the rule of law’ (2015) 23 *JLIS* 2014.

⁵⁷ See e.g. Gros (n 31) 589; Jacur (n 51) 445

⁵⁸ Speech by Sir Christopher Greenwood, 28. April 2016, University of Geneva.

⁵⁹ Mbengue (n 52) 571.

⁶⁰ Gros (n 31) 590.

⁶¹ Alvarez (n 4) 95.

⁶² Speech by Sir Christopher Greenwood, 28. April 2016, University of Geneva.

have involved judgement combining a close appreciation of the science with legal principles at issue. Accordingly Judges Al-Khasawneh and Simma argue in their Dissenting Opinion to the Judgement: “The conclusions of scientific experts might be indispensable in distilling the essence of what legal concepts such as ‘significance’ of damage, ‘sufficiency’, ‘reasonable threshold’ or ‘necessity’ come to mean in a given case.”⁶³ Instead, the Court found that scientific evidence was insufficient to establish a case, seemingly deliberately not deciding on this mixed question of law and fact⁶⁴, referring to what it calls “the well-established principle of *onus probandi incumbit actori*”⁶⁵ (which means “it is the duty of the party which asserts certain facts to establish the existence of such facts”). Nonetheless, the vast majority of international courts and tribunals’ constitutive instruments or procedural rules do not contain any provision on the burden of proof.⁶⁶

Transparency

A central issue is the fact that how the Court deals with science at the moment is lacking transparency. In the aforementioned *Whaling case*, for example, the Court is dealing with the term ‘scientific research’, which is central to define if Japan has violated its obligation under the International Convention for the Regulation of Whaling. The Court hesitated to explicitly define this term and instead comes up with a definition of the phrase ‘for the purposes of’ (scientific research). This behaviour can be called judicial hesitation. By hesitating, the Court implicitly takes a stance on how international courts should deal with issues relating to science, namely that questions of law and science should be decided separately. This is an artificially created separation. Mbengue criticises that the Court implicitly ascertained a meaning to the term ‘scientific research’ by defining the phrase ‘for the purpose of scientific research’.⁶⁷ It is true that this approach makes it impossible comprehend the Court’s reasoning. Similarly, in the *Pulp Mills case* the use of “experts fantômes” by the Court made it difficult to comprehend how it came to its conclusion.⁶⁸ It would have been imperative for the Court “for this reason, in a case concerning complex scientific evidence and where, even in the submissions of the Parties, a high degree of scientific uncertainty subsists, that an expert consultation, in full public view and with the participation of the Parties, would take place”.⁶⁹ This, first of all, makes it difficult to apply this judgement as a “precedent” (of course, *stare decisis* formally does not apply in international law, but case law still has a great extent of authority) and on a second note, the Court does not provide transparency for its actions and decisions and therefore risks that states lose their trust and accordingly withdraw their consent to the facultative jurisdiction of the Court.

⁶³ *Case concerning Pulp Mills on the River Uruguay*, Joint Dissenting Opinion (n 50) para 17.

⁶⁴ *Case concerning Pulp Mills on the River Uruguay* (n 46); see also Foster (n 14) 138ff.

⁶⁵ *Case concerning Pulp Mills on the River Uruguay* (n 46) para 162

⁶⁶ Aristidis Tsatsos, ‘Burden of Proof in Investment Treaty Arbitration: Shifting?’ (2009) HFR, 91, 92f

⁶⁷ Mbengue (n 52) 573.

⁶⁸ *Case concerning Pulp Mills on the River Uruguay*, Dissenting Opinion (n 50) para 14

⁶⁹ *Case concerning Pulp Mills on the River Uruguay* (n 46) para 17.

4. Of recent developments and WTO's expert committees as a potential inspiration

Recent developments: Costa Rica and Nicaragua Case

In the recent case of Costa Rica and Nicaragua, who disputed over a border and a road, the Court frequently referred back to its *Pulp Mills Judgement*⁷⁰ and took into account the submission of experts appointed by the respective parties of the dispute (Costa Rica and Nicaragua). Presented with the question whether “significant [transboundary] harm” in itself was caused by the road-derived sediment, which is a mixed question of law and fact, the Court after having established earlier that “the road is contributing at most 2 per cent of the river’s total load [of sediments]”, concludes that “significant harm cannot be inferred therefrom, particularly taking into account the high natural variability in the river’s sediment loads”⁷¹, basing its conclusion on the submissions of the party (“Costa Rica’s calculations based on the figures provided by Nicaragua’s experts and uncontested by the latter”⁷²). When presented with a more complex scientific question, namely whether the sediment contributed by the road, caused any other significant harm to the river’s morphology, to navigation and to Nicaragua’s dredging programme, it dismissed the claim, stating there was not (enough) evidence submitted by the Parties, again not making use of its possibility under Art 50 of the Statute and 67 of the Rules of the Court to appoint its own experts.⁷³ In doing so, it acted on basis of what the Court called “the well-established principle of *onus probandi incumbit actori*” in the *Pulp Mills Case*⁷⁴, without expressively referring to the principle in its decision.

It has to be noted that the Court did not once refer to the *Whaling Case*, instead completely ignored the judgement. This judicial indecision leads to further inconsistencies in the system concerning the relationship between science and law before the International Court of Justice.

WTO's approach to standardization: an inspiration?

One of the factors influencing a court’s decision is the extent of clarity the state of law provides. Especially in issues relating science in international law, the Court has a broad range of options for his decision, based on the uncertainty of the governing rules. As early as 1996 Brower saw that there was a need for greater procedural clarity in international law (especially for international environmental law).⁷⁵ Since then international law sees the development of growing procedural obligations⁷⁶. Moncel sees this as a positive development, saying that “where procedural rules are vague and scientific facts complex, judges may use their discretion to make law, rather than just interpret the law.” But is that vagueness of

⁷⁰ *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)* and *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, (Judgements) [2015] ICJ Rep 70/4, 16 December 2015, paras 104, 118, 157, 161, 176, 226.

⁷¹ *Certain Activities* (n 70) paras 194f

⁷² *Certain Activities* (n 70) para 186

⁷³ see e.g. *Certain Activities* (n 70) paras 203, 206.

⁷⁴ *Case concerning Pulp Mills on the River Uruguay* (n 46) para 162.

⁷⁵ Moncel (n 6) 305ff.

⁷⁶ Foster (n 14) 7.

procedural roles really the only “problem” and can such obligations accordingly be the solution?⁷⁷

In international trade and investment law, for disputes especially before the WTO (especially SPS Agreement) as well as before arbitration tribunals, (normative) standards can play an important role. (Normative) standards can serve as guidelines for judges instead of relying on professional ethos, as suggested above concerning ICTY procedures. The issue with standards is that they can only set a minimum level of protection and must also be updated regularly.⁷⁸ Article 2 para 2 of the SPS Agreement states three requirements for scientific evidence under the provision: (i) that measures can be applied only if necessary to protect life or health, (ii) are based on scientific principles and (iii) are not maintained without sufficient evidence, except for provisional measures (as provided for in Article 5 para 7).⁷⁹

The DSU and the SPS Agreement allows the Panels or the Appellate Body of the WTO to consult individual experts as well as establishing an expert review group in disputes involving scientific or technical issues,⁸⁰ although dispute settlement bodies of the WTO have full discretion to decide if they want to seek external information at all.⁸¹

As suggested by Viñuales, international bodies such as the World Heritage Committee could be called to intervene, for example as amici curiae or as experts.⁸² But, of course, although the regular involvement of expert committees in international trade law procedures provides for an interesting concept, it is not the ultimate solution.

Instead it is central to acknowledge the limits of science and its experts, namely that uncertainty is an intrinsic character of the discipline and that scientific experts may have their own bias. This would strengthen the need to rely on the process through which scientific advice is received and urges the respective role of adjudicators and their experts to be defined.⁸³

5. Conclusion

To conclude, besides the mentioned acknowledgement of the limits of science and its experts, it is important to remember that law and science can both not be seen outside of their context, which is social and political. One can be used for the purposes of the other. The Court, in the *Whaling Case* did not really give a definition of “scientific research” – it seems as if it was

⁷⁷ Moncel (n 6) 310.

⁷⁸ WTO EC—Measures Affecting Asbestos and Asbestos-Containing Products—Report of the Panel (18 September 2000) WT/DS135/R

⁷⁹ Agreement on Sanitary and Phytosanitary Measures (SPS Agreement, 15 April 1994)

⁸⁰ WTO Analytical Index referring to Art 11. 2 of the SPS Agreement, e.g. EC-Hormones.

⁸¹ WTO Analytical Index, para 757, referring to Article 13.2 of the DSU, eg. EC — Hormones, Argentina — Measures Affecting Imports of Footwear, Textiles, Apparel and Other Items (“Argentina — Textiles and Apparel”)

⁸² Jorge E Viñuales, *Foreign Investment and the Environment in International Law* (University Press Publishing, Cambridge 2012) 203

⁸³ Jacur (n 51) 444.

deliberately trying to separate these two disciplines to not provide grounds for further utilisation and misrepresentation.⁸⁴ But separating scientific questions from law in legal disputes involving such questions is almost impossible. Science and law are intertwined in mixed questions of law and fact, be it in the questions of the definition of the term “scientific research”⁸⁵, be it when analysing “reasonableness”⁸⁶ or deciding whether a State polluted a river⁸⁷.

As noted also by Judge Weeramantry: “International law must keep abreast of science, or will watch helplessly from the side-lines while unrestrained technology transgresses all social controls.”⁸⁸

⁸⁴ William De la Mare and others, ‘Applying scientific principles in international law on whaling’ (2014) 345 Science Issue 620, 1125, 1126.

⁸⁵ *Whaling in the Antarctic* (n 54)

⁸⁶ Foster (n 14) 6.

⁸⁷ *Case concerning Pulp Mills on the River Uruguay* (n 46)

⁸⁸ C.G. Weeramantry, ‘Achieving Sustainable Justice through International Law’ in Marie Claire Segger Cordonier and C.G. Weeramantry (ed), *Sustainable Justice. Reconciling Economic Social and Environmental Law* (Brill Publishing, Leiden 2005) 19.