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The precautionary principle: torn between biodiversity, environment-related food safety and the WTO

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Abstract: At the WTO, the precautionary principle/approach is considered as a protectionary mechanism, i.e. and alleged justification for potentially WTO-illegal trade restrictions. This article presents a survey of some pronouncements of the WTO's Dispute Settlement Body including two case studies at opposite ends of the spectrum with regard to the operationalisation of the PP. The Cartagena Protocol on Biosafety has gone further than any other multilateral environmental agreement in specifying the application of precaution. It regulates the measures a member country may take in order to limit or ban the importation of living modified organisms such as seeds or GM commodities. On the other hand there is the Codex Alimentarius that is the WTO's reference point for food safety. Although it has discussed precautionary measures extensively, consensus looks unlikely here in the near future. We shall limit our discussion of the Codex to environment-related food safety, specifically GM food.

Keywords: biosafety; Cartagena protocol; Codex Alimentarius; food safety; GMOs; precaution; risk; SPS agreement; TBT agreement; WTO.

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1 Introduction

This paper represents an overview of the role and recognition of the precautionary principle at the World Trade Organization (WTO), especially concerning environmental protection and public health. The application of precautionary measures that an importing country may use as an instrument of its trade policy will be examined. Precautionary principles may be introduced in some cases in order to ban or limit the access of goods that raise environmental or public health concerns. As such, precautionary principles represent a hotly debated and contested issue in the trade policy literature.

Two multilateral frameworks are located at opposite ends of the spectrum with regard to the operationalisation of the precautionary principle. At one end of the spectrum, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, often called the Biosafety Protocol (BP), which is administered by the UN Environment Programme, has gone further than any other multilateral environmental agreement in integrating precaution in some of its operational articles (Gupta, 2000). These relate to the measures a member country may take in order to limit or ban the importation of a certain category of genetically modified (GM) products, namely living modified organisms such as seeds, and raw GM commodities such as potatoes or cotton. In contrast, at the other end of the spectrum, the WTO, is very reluctant to accept precautionary measures that member countries might want to take in order to prevent or limit the importation of certain goods they consider as hazardous or otherwise undesirable.

Furthermore, somewhere in the middle of this spectrum (arguably closer to the WTO's position) we have the Codex Alimentarius, a joint FAO/WHO international food standard which has achieved tremendous importance through its specification as the reference point for food safety and fair trade practices at the Uruguay Round multilateral trade negotiations (Echols, 2001). The Codex regulates trade in all food and drink products, but the discussion here will be limited to the concerns of environment-related food safety, more specifically to GM products. It should be emphasised that the regulation of trade in raw genetically modified food products such as GM wheat, corn or potatoes is complicated by the fact that the task of developing and implementing import regulations in this product category is situated within the mandate of both the Biosafety Protocol and the Codex Alimentarius. Although precautionary measures have been discussed extensively, it appears unlikely that the Codex will reach a consensus on the operationalisation of the precautionary principle in the near future. Its approach to risk management remains ‘highly contentious’, and the negotiators have, for the time being, decided to elaborate regulations only where they have an adequate level of trust in the scientific knowledge regarding food safety:

“When there is evidence that a risk to human health exists but scientific data are insufficient or incomplete, the Commission should not proceed to elaborate a standard but should consider elaborating a related text, such as a code of practice, provided that such a text would be supported by the available scientific evidence.”

(Report of the Evaluation of the Codex Alimentarius, 2002.)

How does the international community deal with this divide that sets UN sister organisations so far apart concerning precautionary policies? It is noteworthy that this divide is made more serious by the observation that the precautionary principle can truly be considered as representing one of the most important driving forces in the development of global environmental standards (Boisson de Chazournes and Mbengue,
The roots of this division will be examined in both a legal and an institutional analysis, as will the implications and ramifications of this division, especially concerning some of the key WTO agreements. The timing of this stock-taking is particularly pertinent because the competing approaches are increasingly in conflict due to the implementation of the Protocol and related negotiations. In addition to the Biosafety Protocol coming into force in September 2003, 2003 is also indisputably a year of historical importance for the Codex Alimentarius. In 2003, Codex concluded the internal discussion of its first ever comprehensive evaluation process, both internal and external, in its over 40 year long history. Additionally, the governing body of the Codex Alimentarius completed a four year long intensive negotiation process regarding the regulation of trade in GM food during the July 2003 session of the Codex Alimentarius Commission.

There exists a considerable degree of interdisciplinary ferment around issues such as scientific uncertainty, risk analysis in the domains of environmental protection and public health, biosafety, and precautionary approaches, which are often contrasted with exporting countries' rights to market access that they have acquired under the WTO agreements. This article seeks to analyse the relationship between these two sides of the trade policy spectrum.

For this purpose, we shall analyse some of the particularly pertinent reports of the WTO's Dispute Settlement Body (DSB), which consists of the dispute settlement panel (Panel) and the Appellate Body. It should be stressed here that the reports of these two ruling entities, especially of the Appellate Body when there is an appeal, are of greatest importance for arriving at an understanding of the functioning of the WTO as a multilateral trade system. This functioning is made relatively transparent by the fact that the reports of the DSB are freely accessible on the WTO's extensive website, usually a few months after a ruling. It should furthermore be pointed out that the functioning of the WTO's DSB is highly procedural and at the same time much faster and arguably more predictable than other international tribunals. Most importantly, contrary to most dispute settlement mechanisms in public international law, the DSB's authority is considered to be exclusive in its domain, because it is compulsory for WTO members, that is they do not have the liberty of choosing a different dispute settlement mechanism.

2 The GATT 1994, the TBT Agreement, and the precautionary principle

There is obviously a potential for conflict between the right of an exporter to ship its goods and the sovereign obligation of the government of an importing country to safeguard its ecosystem and public health. The exporter's rights and the importer's obligations are qualified specifically under the WTO's General Agreement on Tariffs and Trade 1994 (GATT) by what is called the necessity test (GATT Article XX (b)). Article XX specifies exceptions to the provision of compulsory market access, while at the same time imposing severe limits on an importing country's WTO-compatible justifications for restricting or banning access to its markets. In the case of a dispute before the WTO's DSB this essentially means that the importing country must demonstrate that there are no measures available that are less trade-restrictive, that they are not discriminating against imported goods in favour of domestically produced goods or treating certain countries differently from others, and that the objectives of the trade restrictions or bans are justified because they are based on scientific procedures, reasoning and knowledge.
The precautionary principle

It has been argued in the context of the validity of precautionary measures that are involved in cases brought to the DSB (Laudon and Noiville, 1998) that we are facing, potentially at the very least, a conflict of diverging kinds of logic. This is because the fundamental concept of the precautionary principle does not seem to be compatible with the WTO’s ambitious objective of generalised trade liberalisation. The WTO’s then Director General contended in 1998 that this principle’s relationship with international trade law ought to be clarified.

“We must recognise that much more progress is needed in the WTO Committee on Trade and Environment. Its work must be revitalised if the trade and environmental agendas are to advance in a mutually supportive way... Other areas where we need to clarify the relationship between both policy objectives – trade liberalisation and environmental protection – include, among others... the so-called precautionary principle.” Speech by R. Ruggiero, ‘The Future of the World Trading System’, 15 April 1998, Washington D.C.

Be that as it may, a fundamental fact should be emphasised before discussion ensues of precaution in the context of WTO law. Within the framework of international environmental law, precautionary measures may be integrated in the agreement’s text as a right, or even an obligation, regarding actions that a sovereign government may take in the fulfilment of its environment-related objectives and stewardship (Cartagena Protocol, 2000). This directly conflicts with the position of the WTO where the same principle represents an exception, i.e. an option offered to member states not to implement certain provisions or to adjust them accordingly. The right to diverge from WTO agreements through the use of exceptions is to be resolved by the DSB as soon as a trade dispute arises between two or more member countries.

The DSB has twice had the opportunity to clarify its position on the relationship between the GATT Agreement and the precautionary principle. These two cases, examined below, are so peculiar, however, one may even say anecdotal in the first case, that the Panel as well as the Appellate Body were unable or unwilling to use them in their Reports as a useful model for the clarification of this thorny relationship.

The first of these cases involved a dispute between India and the US, where the former invoked the precautionary principle with regard to its balance of payments. India contended that quantitative import restrictions ought to be maintained out of precaution in order to prevent a destabilisation of its balance of payments (India - Quantitative Restrictions, 1999). In order to justify its claim, India claimed that the precautionary principle is integrated in GATT Article XVIII.11 through an interpretative note. It is important to note that India not only claims the right to use a precautionary measure in the usual sense of the term (i.e. a generally prudent approach), but also more explicitly and specifically in the sense of the precautionary principle as it is discussed below in the present article, namely in the context of the Appellate Body’s decision on the dispute of Hormones.

The Panel did not accept this precautionary argumentation. It only provided a technical interpretation pertaining to the GATT Agreement’s so-called Notes and Supplementary Provisions 2 in the case of the above Article that provides limited rights to developing countries to restrict imports when their balance of payment is jeopardised. The precautionary principle was rejected implicitly by the Appellate Body’s ruling that such measures are justified only in clearly defined circumstances and not when a general possibility of a deterioration of the balance of payments exists as a result of the discontinuation of these measures. The DSB added that a precautionary interpretation of the legal text could lead to an open-ended maintenance of such import restrictions.
because one might nearly always claim that there is a danger of a worsening balance of payments in the more or less distant future. The fact that the Appellate Body rejected a simple possibility leads us to conclude that it was applying a preventative, rather than a precautionary approach, since the Panel made the permission of quantitative restrictions dependent on a quasi-certitude that their elimination will necessarily lead to such balance of payment difficulties.

The Panel and the Appellate Body were again asked to rule on the application of the precautionary principle in the context of the GATT Agreement in the Asbestos dispute between the European Communities (which represent France at the WTO) and Canada (European Communities, 2000). France sought to completely ban asbestos and asbestos-related products, citing the public health concern inherent in the use of the hazardous material. Canada acknowledged that asbestos was potentially hazardous, but contended that a complete ban on asbestos was disproportionate with regard to the legitimate objective of protecting public health. Canada argued that if France's position were to be adopted, then every member could opt to completely ban natural resources that may potentially be dangerous, rather than using an approach based on a responsible risk management strategy determined by their utilisation (European Communities, 2000, para. 3.12).

Canada thus contended, based on an explicit risk management policy, that it was possible to continue to produce, sell and use asbestos. Canada did not reject the possibility of using precaution in the WTO framework but contended that this principle did not justify the import ban pronounced by the French government (European Communities, 2000, para. 3.312). As far as the precautionary principle invoked by France is concerned, neither the Panel nor the Appellate Body have taken a position. Nevertheless, this dispute merits scrutiny in the examination of the DSB's view of the precautionary principle since the rulings do shed some light on the DSB's way of thinking about scientific uncertainty in trade disputes. Indeed, the DSB seems implicitly to provide some space for the precautionary principle by declaring that the acquisition of scientific certainty on all aspects of an issue is not required to justify the exceptions set forth in Article XX of the GATT Agreement (European Communities, 2000, para. 8.221). These exceptions provide WTO members with the right to impose import restrictions or bans under specific conditions, in particular the protection of human, animal or plant life and health, and the conservation of exhaustible natural resources.

In any case, the key issues involved in disputes centring on precautionary concerns are different from those that have been at the core of most WTO disputes, namely a violation of one or more of the fundamental principles of the GATT Agreement that relate to non-discrimination. The principles of non-discrimination consist of the obligation for WTO member countries to treat imports the same way as equivalent nationally produced goods (the National Treatment principle articulated in Article III), and secondly, the obligation of treating equivalent products offered by different exporting countries the same way (Article I on General Most-Favoured-Nation Treatment). While the WTO Agreements use the term 'like' products, there is in fact considerable debate on the exact meaning of this term. Disputes over precaution or scientific uncertainty, however, tend to make national borders less important because the same measures are also usually applied on nationally produced goods. Borders are a key issue, nevertheless, with regard to the determination of the sovereign powers that a state has the right to exercise as a WTO member, for instance with regard to the addition of hormones to beef, the importation of GM food, or national legislation concerning GM seeds.
Let us now examine two more specific WTO agreements that are of particular pertinence here, the Agreement on Technical Barriers to Trade (TBT) and the Agreement on the Application of Sanitary Measures (SPS). The analysis of precautionary measures in the context of the TBT Agreement is somewhat delicate because this Agreement has so far been the basis of only one ruling (EC – Sardines), even though in the EC – Asbestos case, Canada considered that the European Commission’s ban on the complete life cycles of asbestos products violated the TBT Agreement. The DSB ruling was, however, based essentially on the GATT Agreement.

Therefore, although the EC based its argument for the asbestos ban on the precautionary principle, the ruling failed to shed light on the WTO’s conception of the role of precaution with respect to the TBT. The Panel ruled that only some portion of the French asbestos ban falls within the scope of the TBT Agreement, namely the provisions on exceptions. Canada, however, had not relied on these provisions in advancing its claim (European Communities, 2000, para. 8.172). The Appellate Body overruled the Panel on this specific point, considering that the TBT Agreement is applicable to this case, but its analysis nevertheless avoided addressing the thorny implications of the precautionary principle and its province in WTO law (European Communities, 2001). This ruling makes sense in this context since the French asbestos ban was not based on scientific uncertainty, but rather on the scientifically undisputed knowledge of the harmful nature of asbestos fibers. Hence, the Appellate Body based its ruling on strictly economic grounds: it put the burden of proof on Canada to show that consumers are willing to pay the same price for chrysotile asbestos products as for alternative products (based on PCG fibres):

“The Appellate Body did not find that the products under consideration were not ‘like’; it simply found that Canada had not satisfied its burden of proving that those products were like products under GATT Article III.4.” (Musselli and Zarrilli, 2002: 381)

The Asbestos case is therefore related to public health controversies, but not to the precautionary principle. Scientific certainty and confidence in scientific evidence relate to the principle of prevention, not to precaution. Preventive measures are well recognised in WTO law, and can be invoked by a Party to justify an import ban on products whose hazardous or dangerous nature is established, as long as the other WTO provisions such as the above-mentioned principles of non-discrimination are fulfilled.

3 The SPS Agreement and the precautionary principle

As far as the SPS Agreement is concerned, WTO case law presently contains four significant disputes. These four cases illustrate well the diversity of stakes and measures that are covered under the SPS Agreement. These stakes are public health in the first instance (EC – Hormones) and environmental concerns in the three others, namely the health of wild animals (Australia – Salmons), and plant protection in both the third case (Japan – Agricultural Varietals) and also in the most recent case (Japan – Apples).

The first case relates to a conflict that began in the late 1980s between Europe and the USA regarding the safety of beef treated with hormones. The dispute began prior to the creation of the WTO, and clearly influenced the Uruguay negotiations on sanitary and phytosanitary measures. At that time the US government advocated the establishment of a technical committee to evaluate the scientific justification of banning the use of beef
hormones (Dick, 1989). Under the GATT Agreement in effect at the time, the European Commission had the right to veto the establishment of such a committee. The EC did veto the creation of the committee. This experience contributed substantially to the consensus for negotiating the SPS Agreement. The two economic superpowers have been drawn into a commercial and scientific clash over beef hormones ever since (Biln, 1999).

A variety of the European Commission’s legal instruments were attacked at the DSB by the USA as well as by Canada including several EC Directives that ban the importation as well as the sale from domestic sources of beef and beef products that have been treated with certain hormones. The EC advanced two types of scientific arguments in support of the ban. As far as public health is concerned, the Europeans feared that an increase in cancer cases and other potential health problems such as hormonal disturbances, especially during puberty, would result from ingesting hormone-laced beef. Secondly, the EC and its public were concerned with the treatment of cattle, and risks related to their wastes (including an increased use of antibiotics associated with non-therapeutic hormone treatment) in freshwater systems. Despite the fact that the Hormones ruling is actually rather evasive with regard to a clarification of the precautionary principle’s implications, it is the single ruling that has prompted the DSB to elaborate the most significant ruling thus far on the subject. This is so largely due to the fact that all other rulings are even less useful in providing guidance. The significance of this ruling is underscored by the fact that the Appellate Body considered certain aspects of the relationship between this principle and the SPS Agreement to be ‘important’ (EC Measures, 1998).

The Panel and the Appellate Body agreed that the precautionary principle could be used in the interpretation of Articles 5.1 and 5.2 of the SPS Agreement, but only if it had the status of a customary law, which both bodies concluded it did not. However, they added, even if the principle attained this status, it is still mediated by the provisions of these two Articles (EC Measures, 1997). The Panel stressed that the EC had intentionally chosen not to base its arguments on the principle. The reason for that strategic decision was very simple: the EC did not want to accept the interim nature of the SPS Agreement’s precautionary provision that is subject to the obligation to constantly review and re-justify the ban in the light of new scientific findings that might develop. Furthermore, as Article 5.7 specifies, this has to be done ‘within a reasonable period of time’. Instead, it decided to institute a permanent ban on beef hormones. The three most pertinent paragraphs of the SPS Agreement’s Article 5 are cited here for easy reference:

Article 5
Assessment of Risk and Determination of the Appropriate Level of Sanitary or Phytosanitary Protection

1 Members shall ensure that their sanitary or phytosanitary measures are based on an assessment, as appropriate to the circumstances, of the risks to human, animal or plant life or health, taking into account risk assessment techniques developed by the relevant international organisations.

2 In the assessment of risks, Members shall take into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions; and quarantine or other treatment.
In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organisations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.\(^3\)

In view of the complex and multiple implications that are triggered by SPS Article 5.7 we shall focus upon it, especially in the context of the fourth SPS case Japan – Apples, in which the Panel set forth\(^4\) a particularly interesting though partial analysis of 5.7. For the analytical purposes of the present study it is of interest to cite the Panel’s textual explanation of the conditions that are mandatory in order for the WTO to accept precautionary measures on a temporary basis. The Panel’s explanation represents essentially an editorial redrafting of the Article which does in fact make it easier to understand. In view of the twisted and contorted language of countless passages in the WTO’s legal text one would hope that future Panels continue this very useful exercise! The Panel’s version of the paragraph clearly demonstrates just how constrained the application of this principle is in the trade regime:

We recall that the Appellate Body in Japan – Agricultural Products II noted that Article 5.7 sets out four requirements that have to be met in order for a measure to be justified as a provisional measure. These requirements, cumulative in nature, are the following:

- The measure is imposed in respect of a situation where ‘relevant scientific evidence is insufficient’.
- The measure is adopted on the basis of ‘available pertinent information’.
  Pursuant to the second sentence of Article 5.7, such a provisional measure may not be maintained unless the Member that adopted the measure:
  - seek[s] to obtain the additional information necessary for a more objective assessment of risk
  - ‘review[s] the . . . measure accordingly within a reasonable period of time.’

The Appellate Body added that ‘whenever one of these four requirements is not met, the measure at issue is inconsistent with Article 5.7.’\(^5\)

4 The Hormones case: some advances on the road to recognition of the precautionary principle?

In spite of the ambiguity surrounding the precautionary principle in general, and in WTO law in particular, it should be emphasised that the Appellate Body did make in this ruling at least three historically important statements which, taken together, provide the precautionary principle with a substantially enhanced status. It is not exaggerated to state, in view of the intense debate in several academic disciplines on the status of the precautionary principle, that the 1998 Hormones Appellate Body Report represents a milestone in the direction of a more general recognition of precautionary approaches in a body of law which so far has been particularly recalcitrant in this regard, namely WTO law.
Firstly, the Appellate Body explicitly recognised that the precautionary principle is incorporated in the SPS Agreement: 'the precautionary principle indeed finds reflection in Article 5.7 of the SPS Agreement.' However, we can clearly see a certain embarrassment in the body's refusal to explain what the precautionary principle really means in the application WTO provisions. This statement evinces the limits as to how far the DSB will go at this point in time, while the DSB indicates that the precautionary principle has a 'specific meaning' it failed to outline the contours of the principle. We may assume that the notion of specificity as it is used here refers to the above-mentioned transitory nature of precaution as it is expressed in Article 5.7.

Secondly, the SPS Agreement's heavy emphasis on scientific evidence and risk assessment procedures traditionally relies on quantitative results. The Appellate Body has recognised, however, that in some circumstances qualitative, rather than quantitative methods must be accepted: 'we must note that imposition of such a quantitative requirement finds no basis in the SPS Agreement.'

Thirdly, the same scientific approach tends to be rooted in the majority opinion or judgement of scientists in a given discipline or speciality. A more prudent or precautionary outlook, however, will also take into consideration minority views of scientists who might in some cases conflict with the majority view. In Hormones, the Appellate Body provides for the possibility that a member country can take into consideration the arguments of a scientific minority in the evaluation of a risk:

"The risk assessment could set out both the prevailing view representing the 'mainstream' of scientific opinion, as well as the opinions of scientists taking a divergent view. Article 5.1 does not require that the risk assessment must necessarily embody only the view of a majority of the relevant scientific community. In some cases, the very existence of divergent views presented by qualified scientists who have investigated the particular issue at hand may indicate a state of scientific uncertainty." 9

In spite of this apparently broad support for precaution in the SPS Agreement, the Appellate Body ruled that the EC's ban of beef hormones did not conform to the provisions of the Agreement. Should we conclude that the DSB will rule in favour of what is often called 'sound science' whenever it is faced with a specific decision regardless of these three points? There may be some support for this conclusion in the Body's rather murky and inconclusive discussion of four terms with a similar meaning: probability, potential, possibility and potentiality:

"What needs to be pointed out at this stage is that the Panel's use of 'probability' as an alternative term for 'potential' creates a significant concern. The ordinary meaning of 'potential' relates to 'possibility' and is different from the ordinary meaning of 'probability'. 'Probability' implies a higher degree or a threshold of potentiality or possibility. It thus appears that here the Panel introduces a quantitative dimension to the notion of risk." 10

If the Appellate Body's not entirely convincing philosophising is to be interpreted to mean that the possibility of an event cannot be taken into consideration, only its probability, then we would be entrenched squarely in the domain of traditional preventive measures based on an adequate understanding of the risks and uncertainties involved. In that case, we would have to conclude that efforts to give an importing country the possibility of justifying precautionary measures in certain cases of scientific uncertainty would have suffered a setback.
In spite of the DSB's recognition of the validity of the precautionary principle at the level of conceptual generalities, it has declared that the EC’s ban on beef hormones was illegal under the WTO. This judgement is seen by many observers as a potential harbinger for future trade disputes over genetically modified food products with far higher economic and political stakes and sensitivities on both sides of the Atlantic. Multilateral trade politics and policies have changed considerably since January 1998. In view of the numerous other post-Seattle and post-Cancun problems facing the WTO, one may fear that these additional (self-made) pressures related to scientific uncertainty may put further strains on the organisation. In today’s political climate there are strong signals that they could in fact reinforce threats to multilateralism through a reinforcement of latent inclinations toward the conclusion of bilateral and regional agreements (Gordon, 2003).

To conclude our discussion of the Hormones case, we also need to take into consideration the general conclusions that the EC has drawn from this case: whatever provisions Article 5.7 (or any WTO legal texts for that matter) may provide about the precautionary principle, there is no reason to assume that these pronouncements must necessarily impede further developments regarding the status, the meaning and the pertinence of the precautionary principle.

5 Precaution versus prevention

The second WTO dispute over sanitary measures relates to an Australian regulation banning the importation of certain salmon species that had not undergone a specific treatment to prevent certain diseases. Canada contested these measures in early 1997. Contrary to the European strategy in the Hormones case, the Australians had not invoked the precautionary principle to justify their measure. The Appellate Body’s report is nevertheless interesting in our context for different reasons.

Referring to the Hormones case, the Appellate Body concluded that in a scientific risk assessment the risks must be verifiable, stating that theoretical uncertainty is not included in the kinds of risks that need to be assessed under SPS Article 5.1. It consequently considered that the risk assessment presented by Australia was not in conformity with the SPS provisions. This conclusion regarding the flaws in Australia’s risk assessment had major consequences in this particular dispute. The Appellate Body considered that the incompatibility with Article 5.1 represented a red flag that suggesting a hidden trade restriction.

This means that like the Hormones case, the sanitary measure had been declared as incompatible with WTO law primarily due to the absence of an objective risk assessment. Furthermore, the Appellate Body criticised Australia for incoherence in its sanitary policy: the government applied these SPS measures to salmon but not to goldfish in spite of the fact that their situation is identical. However, SPS Article 5.5 contains the following provision:

"...each Member shall avoid arbitrary or unjustifiable distinctions in the levels it considers to be appropriate in different situations, if such distinctions result in discrimination or a disguised restriction on international trade." 

This may be quite obvious in the context of the global trade agreement, however, the Appellate Body went a step further in this 1998 ruling and declared that an SPS measure cannot have the objective of avoiding the occurrence of a possible risk but only of a
probable one.\textsuperscript{14} As discussed above, the strict distinction that is made here implicitly between precaution and prevention has arguably been softened somewhat in the \textit{Hormones} case, but it has by no means been put to rest.

This brings us to the question: what really is the dividing line between precaution and prevention? This seemingly simple question has implicitly or explicitly preoccupied the authors of countless articles and books on the precautionary principle. The internationally respected expert on environmental risk analysis, Professor Nicolas de Sadeleer, points out that instead of assuming a clear dividing line we need to be examining those two concepts as two ends of a spectrum:

"The distinction between the preventive principle and the precautionary principle rests on a difference of degree in the understanding of risk. Prevention is based on certainties: it rests on cumulative experience concerning the degree of risk posed by an activity (Russian roulette, for example, involves a predictable one-in-six chance of death). Therefore, prevention presupposes science, technical control, and the notion of an objective assessment of risks in order to reduce the probability of their occurrence. Preventive measures are thus intended to avert risks for which the cause-and-effect relationship is already known. ( . . . )

Precaution, in contrast, comes into play when the probability of a suspected risk cannot be irrefutably demonstrated. The distinction between the two principles is thus the degree of uncertainty surrounding the probability of risk. The lower the margin of uncertainty, the greater the justification for intervention as a means of prevention, rather than in the name of precaution. By contrast, precaution is used when scientific research has not yet reached a stage that allows the veil of uncertainty to be lifted."\textsuperscript{12} (de Sadeleer, 2002)

The third SPS dispute that was brought to the Appellate Body concerned the 1999 Japanese ban on the importation of various agricultural products (Varietals) from the USA. In this case, neither the Reports of the Panel nor of the Appellate Body provide much new insight or information. The reports are essentially limited to a confirmation of those underlying perspectives that guided the previous two cases. Japan argued that SPS Article 2.2 should be interpreted in the light of the precautionary principle but the Appellate Body applied the same reasoning as in \textit{Hormones} in this regard.\textsuperscript{15}

Thus the Appellate Body had again shunned the debate on the fundamental issues underlying precautionary measures in light of potential risk and scientific uncertainty. We may hypothesise that the fundamental reason for the DSB's unwillingness to spell out more clearly what it considered to be a sovereign government's trade-related rights and obligations in the fulfilment of its duties with regard to the protection of the environment and of public health is very simple: the nature of scientific uncertainty is such that dealing with it is necessarily unpredictable in many instances. Such unpredictability, however, might seriously undermine the claim of predictability upon which the WTO has premised much of its credibility and legitimacy. One should think, therefore, that there are indeed ways and means for the WTO to support its assertion of global democratic legitimacy through a more differentiated and comprehensive treatment of these issues in its jurisprudence.

The DSB's interpretation of SPS Article 5.7 in the \textit{Varietals} case undoubtedly takes the WTO some further distance from a precautionary approach. In spite of the fact that WTO law recognises, as discussed above, the precautionary nature of this Article within certain limits, the Appellate Body \textit{de facto} further narrowed these limits. It did so by expressing concern that an interpretation that is relatively broad and flexible regarding an
importing country’s obligation to not maintain SPS measures without scientific proof would deprive the Article of its meaning.\textsuperscript{16}

6 Scientific uncertainty vs. insufficient science: the Japan – Apples case

Let us conclude our review of the SPS-based case law with a look at the most recent dispute, Japan – Apples, which was concluded in November 2003.\textsuperscript{17} Japan’s appeal focused on the first requirement of Article 5.7.\textsuperscript{18} Japan contended that the assessment as to whether relevant scientific evidence is insufficient should not be restricted to evidence ‘in general’ on the phytosanitary question at issue, but should also cover a ‘particular situation’ in relation to a ‘particular measure’ or a ‘particular risk’. In other words, the phrase ‘[w]here relevant scientific evidence is insufficient’, in Article 5.7, ‘should be interpreted to relate to a particular situation in respect of a particular measure to which Article 2.2 applies (or a particular risk), but not to a particular subject matter in general, which Article 2.2 does not address.’\textsuperscript{19}

For the Appellate Body, Japan’s reliance on the opposition between evidence ‘in general’ and evidence relating to specific aspects of a particular subject matter was misplaced. The first requirement of Article 5.7 is that there must be insufficient scientific evidence. When a panel reviews a measure claimed by a WTO Member to be provisional, that panel must assess whether ‘relevant scientific evidence is insufficient’. This evaluation must be carried out, not in the abstract, but in the light of a particular inquiry. The notions of ‘relevance’ and ‘insufficiency’ in the introductory phrase of Article 5.7 imply a relationship between the scientific evidence and something else. Furthermore, the second sentence of Article 5.7 refers to a ‘more objective assessment of risks’. The ruling of the Appellate Body is relevant in this context:

“These contextual elements militate in favour of a link or relationship between the first requirement under Article 5.7 and the obligation to perform a risk assessment under Article 5.1: ‘relevant scientific evidence’ will be ‘insufficient’ within the meaning of Article 5.7 if the body of available scientific evidence does not allow, in quantitative or qualitative terms, the performance of an adequate assessment of risks as required under Article 5.1 and as defined in Annex A to the SPS Agreement. Thus, the question is not whether there is sufficient evidence of a general nature or whether there is sufficient evidence related to a specific aspect of a phytosanitary problem, or a specific risk. The question is whether the relevant evidence, be it ‘general’ or ‘specific’, in the Panel’s parlance, is sufficient to permit the evaluation of the likelihood of entry, establishment or spread of, in this case, fire blight in Japan.”\textsuperscript{20}

The Panel suggested that the body of available scientific evidence permitted, in quantitative and qualitative terms, the performance of an assessment of risks, as required under Article 5.1 and as defined in Annex A to the SPS Agreement, with respect to the risk of transmission of fire blight through apples exported from the USA to Japan. In particular, the body of available scientific evidence would allow ‘[t]he evaluation of the likelihood of entry, establishment or spread’\textsuperscript{21} of fire blight in Japan through apples exported from the USA. Accordingly, in the light of the findings made by the Panel, the Appellate Body concluded that, with respect to the risk of transmission of fire blight through apples exported from the USA to Japan, the ‘relevant scientific evidence’ is not ‘insufficient’ within the meaning of Article 5.7.
Japan's argumentation on 'scientific uncertainty' represents another important aspect of the case. Japan challenged the Panel's statement that Article 5.7 is intended to address only situations where little or no reliable evidence was available on the subject matter at issue, because this does not provide for situations of 'unresolved uncertainty'. Japan attempted to establish a distinction between 'new uncertainty' and 'unresolved uncertainty', arguing that both fall within Article 5.7. New uncertainty arises when a new risk is identified. Unresolved uncertainty is uncertainty which scientific knowledge has not been able to resolve, despite accumulated scientific evidence. According to Japan, the risk of transmission of fire blight through apple fruit relates essentially to a situation of 'unresolved uncertainty'. Thus, Japan maintained that, despite considerable scientific evidence regarding fire blight, there is still uncertainty about certain aspects of fire blight's transmission. Japan contended that the reasoning of the Panel is tantamount to restricting the applicability of Article 5.7 to situations of 'new uncertainty' and to excluding situations of 'unresolved uncertainty', and that, by doing so, the Panel erred in law. The Appellate Body rejected Japan's argument with an interesting dictum:

"The application of Article 5.7 is triggered not by the existence of scientific uncertainty, but rather by the insufficiency of scientific evidence. The text of Article 5.7 is clear: it refers to 'cases where relevant scientific evidence is insufficient', not to 'scientific uncertainty'. The two concepts are not interchangeable. Therefore, we are unable to endorse Japan's approach of interpreting Article 5.7 through the prism of 'scientific uncertainty'."  

This paragraph needs to be viewed within the wider context of the discussion on precaution and prevention. If this pronouncement is to serve as a precedent then we can expect two consequences. Firstly, we need to revert to de Sadeleer's perspective of a continuum between precaution and prevention as discussed above, which is based on the criterion of the difference of degree in the understanding of risk. The ruling's insistence on scientific evidence tends to inherently shift the analysis of a science-based trade barrier away from a precautionary and toward a preventive reasoning because the demonstration of scientific uncertainty is not considered as adequate, the respondent country must justify its trade measure through detailed cause and effect relations. In order to achieve WTO compatibility with its trade measures, therefore, the respondent needs to enter into a framework of interpretation which automatically puts it at a disadvantage since the factual underpinning necessary for the adoption of preventive measures may simply not be available at a certain point in time. This obligation exists in spite of the fact that the legal requirements and the mode of argumentation forced upon the respondent make it appear that the dispute takes place in a context of prevention.

Secondly, we need to keep in mind, without expanding our discussion into the issue of the burden of proof, that the Dispute Settlement Understanding has left the determination of this burden to the dispute settlement bodies and has thus imbued them a very large degree of discretion. The respondent country's task of establishing a justification for exceptions to the trade discipline is made more difficult by the obligation of demonstrating not only that there is a lack of scientific understanding or knowledge, including uncertainty about the risk incurred, but also the more difficult challenge of pinpointing specifically where there is insufficient scientific evidence. The documentation of such detailed gaps in the scientific knowledge may simply not be available at a certain point in time in the scientific research process.
The precautionary principle

The risks associated with genetically modified food represent a much-discussed example of what may be called an analytical black hole between scientific uncertainty and insufficient scientific evidence. This predicament refers particularly to rapid advances in the understanding of the relationship between genes and proteins. Proteins turn out to be much more complex than prevalent scientific opinion has assumed until recently (Anderson, 2002). These scientific advances may well put into question important elements of the scientific foundation for risk assessment. Likewise, the scientific community is at the very beginning of the learning curve in its understanding of the risks associated with nanotechnologies. It is, therefore, exceedingly difficult, if not impossible, to pinpoint insufficiencies in relevant scientific evidence. In cases where scientific knowledge is in the process of advancing very rapidly and where, at the same time, little is known about the specificity of the risk that needs to be assessed, the demonstration of significant uncertainty within a clear scientific demarcation would arguably be a more appropriate requirement. Unfortunately, the SPS Agreement treats all scientific risks the same, it lacks provisions for distinguishing between mature technologies and sciences on the one hand, and on the other hand, those which develop particularly quickly and unpredictably.

To make matters more difficult, the WTO's Appellate Body is not allowed to reconsider scientific aspects of evidence and expertise or to take into consideration newly published research. The Appellate Body is strictly limited to consideration of the legal aspects of a dispute only. 'An appeal shall be limited to issues of law covered in the panel report and legal interpretations developed by the panel.' This static view of the traditional process of scientific research may indeed be appropriate in most cases. However, in today's world of potentially rapid and unexpected scientific advances and breakthroughs, as well as potentially quickly emerging threats and dangers, such a stance based on slow moving research activities has become inadequate and possibly dangerous with regard to appropriate risk management policies and procedures.

The Panel's statement in Japan - Apples that Article 5.7 is intended to address 'situations where little, or no, reliable evidence was available on the subject matter at issue', refers to the availability of reliable evidence. According to the Appellate Body, the Panel's interpretation cannot be read as excluding those cases where the available evidence is more than minimal in quantity, but has not led to reliable or conclusive results. Indeed, the Panel explicitly recognised that such cases fall within the scope of Article 5.7 when it observed that under its approach Article 5.7 would be applicable to a situation where extensive scientific research has been conducted on a particular issue without yielding reliable evidence.

This analysis has sought to demonstrate that none of the WTO disputes based on the SPS Agreement had addressed the implicit or explicit merits of precautionary reasoning. Should we conclude that the WTO is rejecting the precautionary approach? The answer to this question needs to be carefully contextualised. The interpretation of the DSB, especially the Appellate Body, seems to apply a rather flexible interpretation of the scientific method that underpins the SPS Agreement as a whole. In spite of the fact that in all four pertinent cases the SPS measures were judged to be WTO-incompatible, it is clear that these rulings were not based on a rejection of the precautionary principle as such, but rather on the conclusion that the justification of these trade restrictions did not demonstrate that they were based on the required scientific risk assessment procedures. Christine Noiville's interpretation of the first three decisions is that they have been decided on the basis of formalities rather than on fundamental issues (Noiville, 2000). In all four cases one may indeed observe that the importing countries were not very
forthcoming with regard to their scientific evidence. It should be noted that this can be seen as an approach that is in conflict with the precautionary principle because even though the latter is not yet defined in a generally accepted form, it is widely acknowledged that a 'best possible' research effort is required as an integral part of its implementation.

7 Concluding remarks

In its decisions, the DSB seems to be aware of the fact that scientific knowledge is subject to all kinds of qualifications; this sensitivity contrasts with the more positivist view of science that is expressed through the SPS Agreement. Thus the Appellate Body acknowledges that scientific research is often unable to provide scientific certainty. We may thus conclude from the DSB's interpretations that the sense of SPS Articles 2.2, 3.3 and 5.7 has significantly evolved. These articles insist that trade restrictions need to be justified through the establishment of scientific evidence that demonstrates their necessity. The DSB, however, takes a less rigorous position by postulating a less demanding principle that it calls 'a rational relationship' between the trade measure and the risk assessment.

To summarise this discussion on the precautionary principle's status within the WTO, we can conclude that the DSB does provide a certain flexibility and openness in order to take into consideration the complexities of scientific uncertainty and related precautionary measures. At the same time, the DSB's flexibility is clearly quite narrow, it does not accept the notion that trade restrictions could be justified by the precautionary principle per se. Rather, it has held that a proper risk evaluation must take into consideration the probability of the occurrence of a disease, of its propagation, and of the biological and economic consequences it may cause, and it must also assess the impact of the protective measures that the importing country decides to implement.

Last but not least, we also need to look briefly at another important element of the precautionary principle: public participation. The question of the SPS's inability to deal with wider societal and not necessarily science-based trade conflicts is left for another discussion. Nevertheless, recognising the importance of this issue, Professor Thomas Cottier who has extensive experience as a Swiss negotiator at the WTO, has published widely on the WTO, and has served as a WTO Panel member, stated (Cottier, 2001):

“A proper methodology referring to the social sciences should be developed in the context of risk management. In particular, this includes inquiries into the social and political acceptance of existing risk. Standards of review should be framed accordingly, and examination of scientific evidence and social and political criteria should be undertaken in consecutive steps.”

The WTO's most contentious ruling in terms of the political and societal antagonism it has created, at least in Europe, is arguably the ruling in the *Hormones* case. At the time of this writing, the WTO is embroiled in another dispute between Europe and the US that is also staked on issues like scientific uncertainty, food safety, as well as more diffuse issues such as cultural traditions and preferences. There are parallels between the two cases, as well as at least two important differences. Firstly, the economic and environmental ramifications are far larger with respect to the food safety disputes than the *Hormones* case. Secondly, the WTO is presently in a weakened position both
politically and institutionally compared to its position in January 1998 at the time of the *Hormones* ruling. This is the result of three events that are outside the scope of discussion here, namely the 1998 Ministerial Conference in Geneva, which sparked extensive riots in the city, as well as the 1999 and 2003 Ministerials in Seattle and Cancun which ended in a breakdown of the negotiations that were caused to a large extent by the emerging political empowerment of developing countries whose views on many trade policies differ considerably from the industrialised world.

Furthermore, the USA, especially the present Administration, is chary to engage in multilateral negotiations in general, and in the case of trade, for emphasising bilateral and regional agreements. This undoubtedly represents a much worse alternative in terms of efforts of reconciling trade policy with global environmental protection and public health. None of the points raised here bode well for the WTO, the institution is presently caught between different and in some instances opposite currents. The ongoing and upcoming rulings on disputes that are surrounded by scientific uncertainty represent one of its biggest challenges and have the potential to further aggravate political and economic tensions between countries and regions.

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Notes

1 http://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm#disputes, or http://docsonline.wto.org/gen_search.asp?searchmode=simple

2 These constitute an integral part of the GATT Agreement.

3 http://www.wto.org/english/docs_e/legal_e/legal_e.htm#sanitary


5 Ibid., para. 8.213.


7 Ibid., para. 120.

8 Ibid., para. 186.

9 Ibid., para. 194.

10 Ibid., para. 184.


12 Ibid., para. 166.

13 Ibid., para. 146.

14 Ibid., para. 123.


16 Ibid., para. 80.


18 The measure is imposed ‘In cases where relevant scientific evidence is insufficient . . .’
The precautionary principle

19 Ibid., para. 31.
20 Ibid., para. 179.
21 Annex A to the SPS Agreement, para. 4.
22 Report *op. cit.*, para. 184.
23 Ibid.
25 WTO Dispute Settlement Understanding, para. 17.6.
26 Report *op. cit.*, para. 173.
27 Report *op. cit.*, para. 185.
28 See hormones, para. 193. See also Japan—Varietals, para. 79: ‘In our opinion, there is a ‘scientific justification’ for an SPS measure, within the meaning of Article 3.3, if there is a rational relationship between the SPS measure at issue and the available scientific information.’
29 Australia—Salmons, *op. cit.*, para. 123.