Precaution in international law: reflection on its composite nature

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Recent decisions rendered by international courts and tribunals have prompted new interest in the legal profile of the precautionary principle. Among these decisions is the order on provisional measures rendered by the International Tribunal for the Law of the Sea in the MOX Plant case and in particular the Separate Opinion of Judge Tom Mensah. It thus appears interesting to shed light on some of the legal contours of this principle. Its complex and composite nature still raises difficulties. Even if there are terminological variations – references are made to the notion of a norm, rule, approach, standard, principle and even philosophy – precaution has become a principle endowed with a certain legal quality. An essential question is that of its relationship to the international legal order and its constitutive norms.

Though it has found an initial anchor in international environmental law, the precautionary principle has started to permeate other fields of international law. The analysis of the place of the precautionary principle in the international legal order reveals that it is resistant to any premature attempts at rationalisation or definitive characterisation. The principle simultaneously shows a trend for legalisation through different instruments, favouring the determination of certain criteria (I), a multifaceted nature (II), an integrative nature (III) and it triggers new reflections on the notion of “social contract” (IV).

I. The Legalisation of Precaution

Precaution in substance invokes a number of criteria, which justify *ratione materiae* its application in given situations. These criteria endow it with a particular structure, an original basis compared to other principles or approaches of international law and, more especially, in international environmental law.

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One can identify four fundamental criteria. Bringing them together compels precaution *prima facie*. Attempts to fit them in a hierarchy show that three of these (risk, damage and scientific uncertainty) justify the application of precaution *a priori*, whereas the last criterion (capacities) intervenes *a posteriori* to objectively determine its applicability, permitting the passage from “application” to “applicability”, from “desirability” to “feasibility”. Indeed, the act of defining the criteria to which precaution refers clears the way for the difficult objectivation, and hence materialisation, of the aforementioned criteria.

1. The “Risk” Criterion

This is the fundamental nature of precaution. Precaution’s *raison d’être* originates in law’s aspiration to assess and manage risk in our societies. Risk is a more or less conceivable and contingent danger which can cause damage. It is therefore arbitrary in its essence. Volatility is its nature; its occurrence can be unforeseen, even unexpected. As long as there is any trace of doubt as to the occurrence of an event, there is risk. In an attempt to legally and precisely qualify the risks targeted by precaution, it is useful to recall the typology of risks compiled by Nicholas de Sadeleer, who was inspired by lessons drawn from German thought. According to him, there are three main categories of risks:

(a) “unacceptable” or “definite” risks, those for which the causal link between the event and the damage is scientifically proven, even if doubt remains as to the time it will take for damage to occur. These risks should be eliminated by the principle of prevention;

(b) “residual” risks, which human activity normally implies, and which must be tolerated (e.g., the risk implicit in driving a car or taking a plane). These risks do not need to be taken into account in the decision-making process. In order to avoid situations that would be absurd for human activity, residual risks, meaning “hypothetical risks resting on purely speculative considerations without any scientific foundation”, would have to be excluded from the precautionary principle’s range of application; and

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(c) “uncertain” risks, whose existence has not been established by science but which are not unthinkable. These must be handled by the precautionary principle.

The legal terminology used in international instruments to evoke the idea of risk varies according to the instrument examined. In some instruments, references are made to “threat”. Sometimes reference is simply made to the idea of “potential” nuisance or danger.

The main difficulty with the risk criterion lies in its evolution. In other words, the matter of evaluating risk arises, including quantifying the probability of occurrence of risk, but also its qualification. International law does not provide any clear answers here, but international practice provides for indications of what is, in objective terms, the evaluation of risk.  

2. The “Damage” Criterion

Once the decision-maker has an idea of the likelihood of occurrence of the suspected risk, he will naturally reflect on the possibilities of shielding himself from it. Must this risk be reduced or even eliminated, no matter what the importance or severity of damage it could provoke? Or, on the contrary, is intervention required only if what is at stake is worth the effort? His attitude is obviously subject to variations according to the probability of occurrence and especially to the importance of damage.

The terminology used to denote damage in international instruments varies. Reference can be made directly to the concept of damage. Some instruments refer to the concept of “impact”. In spite of these terminological variations, the

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5 As an example, it is interesting to point out that the WTO Appellate Body in EC—Measures Concerning Meat and Meat Products (Hormones) noted that the risk mentioned in article 5, paragraph 1, of the SPS Agreement was not only a “risk ascertainable in a science laboratory”, but also a “risk in human societies as they actually exist, in other words, the actual potential for adverse effects on human health in the real world where people live and work and die”. The Appellate Body thus affirmed that the scientific evidence which the Communities referred to did not concern the type of hormone at stake; for this reason, risk assessment was deemed insufficient. See the Report of the Appellate Body, paras 187 and 199-200, available at <www.wto.org>.

6 See Principle 15 of the Rio Declaration on environment and development: “Where there are threats of serious or irreversible damage”, available at <www.unep.org>; see also the United Nations Framework Convention on Climate Change: “Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures”, available at <www.unfccc.int>.

7 See the Convention on the Protection and Use of Transboundary Watercourses and International Lakes: “The precautionary principle, by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed”, available at <www.unece.org>.
formulation of precaution in international instruments embodies an original, if not special, concept of damage. It is usually bound to a threshold of severity, which limits the application of the precautionary principle. This threshold usually invokes concepts such as “severity” and “irreversibility”.

3. The “Scientific Uncertainty” Criterion

Whenever precaution is formulated in an international instrument, the criterion of scientific uncertainty is bound to it. The element of uncertainty is a sine qua non condition to the application and even to the legitimacy of the precautionary principle. Indeed, the precautionary principle differs from the principle of prevention precisely in its reference to the aforementioned element. The “preventive model” is forced to depend constantly on science and its expertise, the only way to allow for a certain objectivisation of the risks taken. Yet if precaution’s strength is found in its reference to scientific knowledge; this also reveals its limitations. If risk is known, preventive measures can be taken in full knowledge of the situation, exhibiting a certain effectiveness. Prevention is only possible for known phenomena. It is difficult to prevent what is unfamiliar, and even more difficult to do so with the unknown.

To denote scientific uncertainty, international instruments evoke “the absence of complete scientific certainty”, “the absence of absolute scientific certainty”, or even “uncertain, unreliable, or inadequate data” and “the lack of adequate scientific data”. However, a precautionary measure must be anchored to a minimum level of knowledge, a basis of scientific data presenting a certain consistency.

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13 See for instance the Convention for the Protection of the Marine Environment of the North-East Atlantic (op. cit.), according to which the precautionary principle should be applied when there are “reasonable grounds for concern that substances or energy introduced into the marine environment” may cause hazards.
4. The "Different Capacities" Criterion

The three above mentioned criteria would a priori justify the application of the precautionary principle. But a certain number of international instruments stipulate that measures of precaution apply a posteriori according to the capacity of the States concerned to deal with the problem. Acknowledging capacity permits one to relate the precautionary principle to a proportional approach in light of a State's economical, social and technological means. Precautionary measures do not aim to paralyse human activity. A measure of rationality and reason must guide the application of precaution. It is obvious that States at different stages of development cannot be submitted to the same requirements of the implementation of a technique. A fortiori, precautionary measures can therefore be expected to vary from one State to another.

II. A Principle with Varied Facets

It can seem surprising to question this principle's legal status when it is inscribed in a large number of international conventions and instruments. This questioning can be justified by two reasons. First of all, the principle does not always occupy the same place. At times it will figure in the preamble,14 at others in operational clauses, among general obligations or principles.15 It is rarely precisely formulated. Many of these conventions and instruments only mention it vaguely, without worrying about the details of the implications derived from it.

The analysis of the expressions that introduce the principle is particularly revealing of political compromises. The principle can be merely intended to "guide

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Parties”, and comes off as an inspirational principle. Other conventions evoke the precautionary principle in specific terms. Conventions relating to the protection of the marine environment have integrated the precautionary principle with specific formulations and plan clear mechanisms of implementation, namely that of the reversal of the burden of proof. The 2000 Cartagena Protocol on Biosafety and the 2001 Stockholm Convention on Persistent Organic Pollutants have for their part operationalised the precautionary principle.

An interesting feature to note is that the place occupied by the precautionary principle in international conventions does not prejudice its legal value. Indeed, that it is stated in the operational clauses of a convention has not necessarily made it a principle of positive law as such, although it produces legal effects. One must recall that no international court or tribunal has yet pronounced on its status.

The International Court of Justice has been confronted with the precautionary principle. First, in the second Nuclear Tests case, in which New Zealand affirmed that France was compelled, in applying this principle, to abstain from any underground tests until their innocuity was proven. In the Gabčíkovo-Nagymaros case, Hungary invoked the precautionary principle to justify the impossibility of respecting a treaty by which it was bound to Czechoslovakia. The Parties had agreed on the need to adopt a precautionary approach, but they disagreed on whether it was necessary to know if the conditions for the implementation of the concept were present in that specific situation. The Court evoked the appearance of new norms which must be taken into account in the field of environmental protection, without however resorting to the qualification of the precautionary principle as a legal principle. Recently in the case of the Pulp Mills on the River

16 Bamako Convention (op. cit.), art. 4: “Each Party shall strive to adopt and implement the preventive, precautionary approach”.

17 Convention for the Protection of the Marine Environment of the North-East Atlantic (op. cit.); Convention on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (op. cit.); Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (op. cit.).

18 The text of the Protocol is available at <www.biodiv.org>.

19 The text of the Convention is available at <www.pops.int>.

20 International Court of Justice, Nuclear tests case, Judgment of 20 December 1974, ICJ Reports 1974, p. 253. The Court did not examine this question. See the separate opinion of Judge Weeramantry, who stated that in that case the precautionary principle should have been applied. ICJ Reports 1995, p. 338.

21 International Court of Justice, Case concerning the Gabčíkovo-Nagymaros Project, Judgment of 25 September 1997, ICJ Reports 1997, p. 78, para. 140: “The Court is mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.”
Uruguay, the parties both agreed on its relevance to the case, but the Court did not mention it in its order on provisional measures. In the same way, the precautionary principle was invoked in the case European Communities – Measures concerning Meat and Meat Products (Hormones) at the World Trade Organization (WTO). At the time, the Appellate Body noted that the principle's status was the subject of controversy among academics and law practitioners, and felt that "whether it has been widely accepted by Members as a principle of general or customary international law appears less than clear". According to the Appellate Body, "it is unnecessary, and probably imprudent, for the Appellate Body in this appeal to take a position on this important, but abstract, question". A recent Panel Report on European Communities – Measures Affecting the Approval and Marketing of Biotech Products, restated again that the status of the precautionary principle was unclear in international law in saying that:

"the legal debate over whether the precautionary principle constitutes a recognized principle of general or customary international law is still ongoing. Notably, there has, to date, been no authoritative decision by an international court or tribunal which recognizes the precautionary principle as a principle of general or customary international law. It is correct that provisions explicitly or implicitly applying the precautionary principle have been incorporated into numerous international conventions and declarations, although, for the most part, they are environmental conventions and declarations. Also, the principle has been referred to and applied by States at the domestic level, again mostly in environmental law. On the other hand, there remain questions regarding the precise definition and content of the precautionary principle. Finally, regarding doctrine, we note that many authors have expressed the view that the precautionary principle exists as a general principle in international law. At the same time ... others have expressed scepticism and consider that the precautionary principle has not yet attained the status of a general principle in international law. Since the legal status of the precautionary principle remains unsettled, like the Appellate Body before us, we consider that prudence suggests that we not attempt to resolve this complex issue".

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25 European Communities – Measures Affecting the Approval and Marketing of Biotech Products.
The International Tribunal for the Law of the Sea has also had to consider the precautionary principle in the Southern Bluefin Tuna cases when it was asked to order provisional measures, but did not touch on the principle’s status. In the MOX Plant case the tribunal was also faced with the precautionary principle, but when asked to order provisional measures it made no mention of it.

The reluctant attitude of international judges in dealing with the precautionary principle is proof of the difficulty faced in trying to raise it in explicit terms to the rank of a principle of international customary law. However, its insertion into various domestic law instruments, its acknowledgement by the Court of Justice of the European Communities, by national tribunals, and Reports of the Panel, WT/DS291/R, WT/DS292/R and WT/DS293/R, 29 September 2006, at para. 7.88-7.89.

The Tribunal justified the adoption of provisional measures, inter alia, by the following considerations: “Considering that the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment ... Considering that, in the view of the Tribunal, the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna. Considering that there is scientific uncertainty regarding measures to be taken to conserve the stock of southern bluefin tuna and there is no agreement among the parties as to whether the conservation measures taken so far have led to improvement in the stock of southern bluefin tuna. Considering that although the Tribunal cannot conclusively assess the scientific evidence presented by the parties and to avert further deterioration of the southern bluefin tuna stock” (Southern Bluefin Tuna cases (New Zealand v. Japan; Australia v. Japan), Requests for Provisional Measures, Order of 27 August 1999, available at <www.un.org/depts/los/index.htm>. See L. Boisson de Chazournes, “Unilateralism and Environmental Protection: Issues of Perception and Reality of Issues”, EJIL (2000). Vol. 11. No. 2, pp. 315-338.

International Tribunal for the Law of the Sea, MOX Plant case (Ireland v. United Kingdom), op. cit.

See the Decision of 5 May 1998 in the case of the export prohibition of British beef: “Where there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent. That approach is borne out by article 130r(1) of the EC Treaty according to which Community policy on the environment it to pursue the objective inter alia, of protecting human health”. See also, Case T-13/99, Pfizer Animal Health SA v. Council of the European Union, Court of First Instance, Judgment of 11 September 2002: Case T-70/99, Alpharma Inc. v. Council of the European Union, Court of First Instance, Judgment of 11 September 2002.

its reiteration in numerous international instruments tip the balance in this direction. As can be seen, the precautionary principle’s varied facets spring up. This variety is also mirrored in the obligations deriving from this principle as will be emphasised below.

In order to get a better understanding of the precautionary principle, one must note that it is part of the development of a new body of law which does not necessarily comply with the paradigm of legal positivism. It mixes “hard law” and “soft law”. Therefore it is difficult to formally and specifically determine what the precautionary principle signifies in international law when evoked in international instruments. In other words, this situation opens the debate on the normative role played by precaution in the international legal order.

Precaution is most often seen as a principle, without its meaning and the legal content of the expression “principle” being precisely determined. A principle is a juridical rule established by a text in terms sufficiently general to inspire all possible applications and that prevails over norms and standards. Even when in the form of a maxim, a principle is legally compulsory, though it may be unwritten. The expression “principle” also refers to generality, as opposed to exceptionality. Therefore, the precautionary principle is a permanent principle of

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Affecting the Approval and Marketing of Biotech Products, op. cit. para. 7.79: “the European Communities noted that the precautionary principle is one of the ‘salutary principles which govern the law of the environment’ in India and has been applied by the Indian Supreme Court”.

In this regard see the Nice European Council Resolution of 7-9 December 2000 on the precautionary principle. The Council notes that “the precautionary principle is gradually asserting itself as a principle of international law in the fields of environmental and health protection”, available at <www.consilium.eu.int/uedocs/cmsUpload/Nice%20European%20Council-Presidency%20conclusions.pdf>.

Some scholars consider the precautionary principle as a customary international law principle: J. Cameron and J. Abouchar, “The Status of the Precautionary Principle in International Law”, in D. Freestone and E. Hey (eds), The Precautionary Principle and International Law, The Hague, Kluwer Law International, 1996, pp. 29-53. Ph. Sands affirms that “there is certainly sufficient evidence of state practice to support the conclusion that the principle, as elaborated in Principle 15 of the Rio Declaration and various international conventions, has now received sufficiently broad support to allow a strong argument to be made that it reflects a principle of customary international law, and that within the context of the European Union it has now achieved customary status, without prejudice to the precise consequences of its application in any given case. Nevertheless, it must be recognised that international courts and tribunals have been reluctant to accept explicitly that the principle has a customary international law status, notwithstanding the preponderance of support in favour of that view, and diminishing opposition to it”. See Ph. Sands, Principles of International Environmental Law, 2nd edn, Cambridge, Cambridge University Press, 2003, p. 279.


Ibid. p. 653.
action. The exception would be the non-application of precaution in a decision-making process. And as for all exceptions, this non-application will be subject to strict conditions and interpretation. Since one cannot describe precaution as a rule, the legal notion of principle seems adequate. The essence of the matter is to specify the contours and implementation mechanisms of precaution while using other legal rules.

In sum, the precautionary principle is part of a new development of law. The aim is not strict international regulation, but the establishment of a process accompanied by a body of occasionally explicit, but usually implicit, rules guiding the behaviour of the various agents in the international arena. The precautionary principle does not refer uniquely to legal norms but also to technical norms, as well as economic, social, scientific, political and even cultural norms. It is in the context of this inter-normative process that precaution can be implemented effectively and efficiently, and can enjoy all necessary legitimacy. This characteristic aids in better understanding why the precautionary principle is resistant to legal systematisation. Lawyers must strive to look beyond traditional legal categories in order to admit the legal character of the precautionary principle.

III. A Principle with Integrative Power

The precautionary principle has symbiotic effects. Due to its flexible structure and content, it constitutes a meeting point for certain principles and legal techniques. It is composed of a mix of obligations of means and of result, and is a basis for other principles in international law.

The precautionary principle must be analysed as a symbiosis of legal obligations of means and obligations of result. One refers to obligations of means when reference is made to a State’s capacity to take measures but also when the “cost-effect ratio” of the envisaged precautionary measures is mentioned. In this case, the means implemented in order to respect the precautionary principle will

34 Birnie and Boyle, after having stressed the uncertainties in the application of the precautionary principle (and even in its meaning), affirm that “the proposition that [the precautionary principle] is, or ... is not, customary international law is too simplistic. Use by national and international courts, by international organizations, and in treaties, shows that the precautionary principle does have a legally important core on which there is international consensus—that in performing their obligations of environmental protection and sustainable use of natural resources states cannot rely on scientific uncertainty to justify inaction when there is enough evidence to establish the possibility of a risk of serious harm, even if there is as yet no proof of harm. In this sense the precautionary principle is a principle of international law on which decision makers and courts may rely in the same way that they may be influenced by the principle of sustainable development.” P. Birnie and A. Boyle, International Law and the Environment, 2nd edn, Oxford, Oxford University Press, 2002, p. 120.
vary according to their cost and to their effectiveness in preventing environmental degradation. This understanding of the precautionary principle first appeared in the 1992 Convention on Climate Change which requires that precautionary measures “(should) be cost-effective so as to ensure global benefits at the lowest possible cost”.

Other instruments also require the need to take into account the costs of prevention in relation to their effectiveness. The obligation of means, in the sense of a simple behavioural order, is likely to make the principle more attractive to States.

As an obligation of result, the precautionary principle imposes the obligation of preventing possible negative effects on the environment. In extreme circumstances, the principle can lead to the establishment of a preventive prohibition of certain activities and the suggested activity would be thus forbidden until its innocuity is proven. It is in this context that certain conventions provide for the reversal of the burden of proof.

In truth one needs to go beyond the dichotomy (strictly, and classically, speaking) between obligations of means and obligations of result. The precautionary principle, due to the complexity of objectivising the criteria necessary for its implementation, rather calls upon "obligations of intermediary means" and "obligations of intermediary result". This is to say that regardless of the type of obligation prevailing according to the dictates of a conventional disposition, there will always be a minimum dose of the other obligation to take into account. Therefore, though precaution in one instrument may refer essentially to an obligation of means, a minimal result is nevertheless to be expected of the application of precaution. Conversely, an obligation of result will necessarily be subject to conditions, i.e. the means to which the State wishing to apply precautionary measures has access.

One may also say that the precautionary principle induces a new category of obligations, named "necessary obligations". International agents are compelled to act in conformity with precaution as it becomes a sine qua non condition for human survival. Necessity becomes a potential source of the legal legitimisa-

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35 Article 3, para. 3 (op. cit.).
36 See the 1994 Oslo Protocol (op. cit.): "precautionary measures ... should be cost-effective" (para. 4 of the preamble). See also article 4, para. 3a), of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, as amended in 1995 (op. cit.).
38 In the same way Judge Weeramantry in his separate opinion in the Gabčíkovo-Nagymaros case, without mentioning any necessary obligation, stressed the necessity of taking into account erga omnes obligations in international judicial proceedings. The precautionary principle would belong to this category of obligations. As Judge Weeramantry said: "We have entered an era of international law in which international law subserves not only the
tion of precaution at the international level. It finds support in the emergence of a new global ethic, i.e. the preservation of humanity and the environment.\textsuperscript{39} Ethics becomes an essential source of law and legal obligation. Precaution would consist of an “obligation of legal ethics”.\textsuperscript{40} To recall the conceptualisation used by the French Constitutional Court (Conseil Constitutionnel), the precautionary principle could be described as a “principe particulièrement nécessaire à notre temps”.\textsuperscript{41} Due to its power of integration, the precautionary principle succeeds in reconciling ethics and law.

This feature of the precautionary principle can also be exemplified in its intermingling with other fundamental principles. It lends these other principles strength, and calls for a redefinition of their role in the international normative system. Two of these principles enjoy a privileged relationship with the precautionary principle: “the principle of intergenerational equity”, and “the principle of public participation”. The principle of intergenerational equity is a constitutive element of the concept of sustainable development. As stated by Principle 3 of the Rio Declaration on Environment and Development, “the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations”.\textsuperscript{42} Considering the precautionary principle as a right geared towards the future permits the acknowledgment of the rights of future generations and of their interests in decision-making processes. By


\textsuperscript{40} C. Perelman, \textit{Ethique et droit}, Brussels, Ed. de l'Université de Bruxelles, 1990.


\textsuperscript{42} Rio Declaration on Environment and Development, \textit{op. cit.}
regulating uncertainty, the precautionary principle is sensitive to the future consequences of human activity on the environment, to health, and to human survival. A satisfactory implementation of the precautionary principle guarantees a fortiori the protection of the interests of future generations.

The principle of public participation also benefits from the dynamism implicit in the precautionary principle. The management of the uncertainty linked to human activity is not the public decision-makers' monopoly. The precautionary principle upsets traditional decision-making processes by requiring increased transparency. Precaution considered as the symbiosis of technical, scientific, social, economic, cultural, political and legal norms involves a plurality of agents. To do so, the implementation of the precautionary principle must give rise to an effective and efficient application of the principle of public participation. The State cannot be the only agent responsible for the evaluation of whether precaution should be applied in a particular situation. Scientific communities, the private sector, NGOs, local populations and other concerned actors must be involved in decision-making processes. In addition, access to adequate information as a corollary to public participation is a guarantee for meaningful decision-making processes.

IV. Conclusion: Understanding Precaution through its Societal Dimension

"To be or not to be": as with any new regulative legal concepts, precaution is confronted with this existential query. The precautionary principle's viability in the international legal order depends on its intrinsic and extrinsic aptitude to play its role. Intrinsically, it must play its role as an original and singular legal technique, and not be overtaken by other legal techniques. Extrinsically, the precautionary principle must be able to live up to its societal dimension. If not, it risks being stripped of all normative legitimacy.

The precautionary principle triggers new reflections on the "social contract". It proves that all attempts of social constructivism (that is, of management of society according to a final and pre-ordained plan) is destined to failure, or at least

43 In accordance to Principle 10 of the Rio Declaration on Environment and Development, "Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided" (op. cit.).
to serious questioning. Precaution brings with it a new trend: that of complexity, and therefore the questioning of all absolute assumptions which have long been the foundations of modern society. It takes place within a post-modern context, and is the bearer of several “disturbances” in the legal order.

The first is the remodeling of the interaction between law and science. The relativity of the Cartesian dogma due to the appearance of new problems and challenges for the whole of humanity leads to a new mode of handling scientific expertise by law. Indirectly, it also leads to a rebalancing of the interaction between legal politics and science. Precaution speaks of a bond profoundly upset: science would be sought for the suspicions and doubts it raises rather than for the knowledge it offers. This is not a dilution of the role of science, but a repositioning of it. Indeed, the precautionary principle creates another mode of interaction between normative processes and scientific expertise. The latter favours a new approach to law tending towards normative processes that are consolidated and renewed by the results obtained through scientific expertise on an ongoing basis. This expertise calls for a constant adaptation of decision-making processes.

The second is the remodeling of the interaction between law and economics, linked to the cost that precaution could entail for a particular society. Precautionary measures could initiate a social psychosis which would kill initiative and innovation. Societies cannot allow such vagaries. To rebalance the interaction between law and economy, the precautionary principle must be considered as a substantive element of “sustainable development”. In this perspective its objective is not to ruin economic activity but to emphasise the necessity of convening today’s requirements in terms of environmental protection. As an element of sustainable development, the precautionary principle must strive for a “durable better-being of humanity”, in all its interpretations, not just its economic interpretation.

The precautionary principle also requires one to rethink the interaction between law and effectiveness. In other words, one must redefine effective mechanisms to implement and underwrite this new body of law, whose essence is “soft”. The aim is to avoid veering into the arbitrary or excessive use of discretionary power in the application of the principle. Courts and tribunals are therefore asked to play a role in shaping the contours of the precautionary principle. There is a need to arbitrate between contradictory interests, and a third party such as a court or a tribunal, through the objectivisation of the content of the precautionary principle, can contribute to this important task.

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44 N. de Sadeleer, Environmental Principles – From Political Slogans to Legal Rules, see note 3, pp. 174 et seq.