Book Review

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The Application of the Precautionary Principle in Practice: Comparative Dimensions,
by Joakim Zander.
Cambridge: Cambridge University Press, 2010,
408 pp., £60.00, Hardcover.

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A vast body of scholarly articles and books has been devoted to the precautionary principle, making it one of the most studied principles of our time. This wealth of attention can be explained by the fact that the question of how to manage man-made risks remains an extremely divisive issue for contemporary societies and the precautionary principle is the only principle idiosyncratic to the field of risk law. The book by Zander contributes to this scholarship by presenting a rich comparative legal analysis that gives a clear illustration of how the principle is applied at the international and European level as well as the national level, where the Swedish, UK, and US legal frameworks are discussed. The central parts of the book (chapter 3 to 7) are devoted to these comparisons. For this comparison, Zander chooses two case studies: pesticide regulation and the regulation of base stations. The most interesting finding is that, in spite of how the principle is endorsed by the system (strong or weak form), its application is far from coherent. For instance, in Sweden, where a rather strong version of the principle has been adopted by an Environmental Code of general applicability, the stringency and modalities of application of the principle vary depending on the sector in which the principle is applied. In practice, the regulation of base stations in Sweden is less precautionary than the regulation of pesticides. For those disenchanted with law and policy, the result is rather unsurprising given the presence of mobile phone producer Ericsson in Sweden; yet, for believers in the rule of law the result is disturbing.

Drawing on some of the problematic dimensions of the practical implementation of the principle and on a brief theoretical analysis presented in the second chapter, the book dispenses also some policy recommendations on how to rethink the principle.

Zander is at his best when he describes and compares different legal frameworks dealing with the precautionary principle, however, his theoretical analysis and normative conclusions add little to the existing literature and are rather unconvincing. Oversimplifying somewhat, one could distinguish two camps in the precautionary principle "battlefield": on the one hand, the advocates of the principle and, on the other, the critics that argue for rejecting or better "reforming" the principle by embedding it in the cost-benefit analysis framework. The book by Zander is clearly siding with the latter. In the last section, "Which Way Forward", Zander concludes that, "[e]ven though the US system of risk regulation is far from perfect, it offers a more rational alternative to the lack of a system currently in place in the EU and some of its Member States. By subjecting the issuing of precautionary measures to strict and *objective* Regulatory Impact Assessment, a balancing of the pros and cons of regulation can be carried out, and more effective and efficient risk-reducing choices can be made" (emphasis added). The US Regulatory Impact Assessment referred to by Zander is a procedure greatly relying on the use of cost-benefit analysis. It is therefore unfortunate that the theoretical analysis at the basis of this normative conclusion is not much more than a cursory review of the existing literature on cost-benefit analysis (section 2.3.2).

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There are several problems with embedding the precautionary principle in the cost-benefit analysis paradigm, raised by many scholars and not seriously addressed by Zander. First and foremost, the results generated by cost-benefit analysis are sensitive to the methods used and assumptions made. Thus, if the analyst chooses one parameter instead of another, we easily get a different result. To see this point consider a regulation whose $1billion cost is incurred today but its $5 billion benefit will become manifest in 30 years. With a discount rate of 7 %, the regulation will not pass a cost-benefit test; in fact the net benefit is negative (-$343 million). With a discount rate of 3 %, however, the regulation will pass a cost-benefit test resulting in $1.06 billion benefit.[1] Scholars and practitioners are still divided on what the appropriate discount rate is and on whether for environmental regulation with benefits occurring in a relatively distant future it is meaningful to discount at all. The discount rate is only one of the many methodological choices on which scholars and practitioners are divided. Others include fundamental issues such as the methods to calculate the value of statistical lives[2] and the choice of using "willingness to pay" or "willing to accept" measures.[3]

If cost-benefit analysis is already problematic for the above reasons, it is evident that in cases of scientific uncertainty, when the precautionary principle should be applied, cost-benefit analysis becomes extremely arbitrary. In spite of the many methods developed to address uncertainty, such as the Delphi method, sensitivity analysis, Monte Carlo analysis, and, more generally, Bayesian updating, reaching an uncontested number remains a rather elusive exercise. As put by O'Connor et al. "... in practice the employment of the Bayesian approach amounts to adoption of an 'empty box'. Depending on the subjective probabilities and states of the world incorporated into the calculations, the procedure may serve to legitimate decisions that are substantially arbitrary."[4]

To be fair to the author, Zander acknowledges some of the criticisms to cost-benefit analysis and argues that this technique should not dictate the final decision but rather be used as a tool to put the benefits and the costs of a proposed regulation "on screen", so as to empower the decision-maker "to make an informed choice on regulation". Following these lines, he further argues that "[t]he transparency offered by a careful cost-benefit analysis can also be successfully used as a tool to explain different regulatory options in a very tangible way to citizens" (p. 24). It is doubtful, however, whether such a complex and highly technical device is to be understood by the average citizens, and will thus indeed promote transparency. Citizens are likely to be confronted only with the final numbers, not with the assumptions and methods used to reach these figures. The final numbers become rhetorical devices to criticize regulatory choices that do not pass the cost-benefit test. Who would subscribe to a regulatory policy where 90 % of the costs are incurred to eliminate the last 10 % of the risks? Or where for one regulation a life is valued US $ 0.1 million and for another US $ 100.000 millions? These numbers are definitely tangible but arguably not transparent. As brilliantly illustrated by Lisa Heinzerling in her "Regulatory Costs of Mythic Proportions" the assumptions made to calculate these costs are hidden and difficult to grasp even for well-educated scholars, let alone for the average citizen.[5] The number-crunching underpinning the practice of cost-benefit analysis, rather than enhancing transparency, may thus obscure issues and be used to exclude the public from the debate. In fact, the cost-benefit paradigm is often seen as an eminently technocratic one and it is juxtaposed to the precautionary culture that rather rests on the values of a deliberative democracy.[6]

1 The example is taken from the US Environmental Protection Agency, *Guidelines for Preparing Economic Analyses*, September 2000, at p. 36.

2 R.L. Revesz, "Environmental Regulation, Cost-Benefit Analysis and the Discounting of Human Lives", 99 *Columbia Law Review* (1999), p. 941.

3 Economists have long assumed that the two measures were almost identical. A growing body of research, however, has shown that willingness to accept measures are larger than willingness to pay measures. For a review of these studies, see J.K. Horowitz and K.E. McConnel, "A Review of the WTP/WTA Studies", 42 *Journal of Environmental Economics and Management* (2002), p. 426.

4 M. O'Connor *et. al.*,"Emergent Complexity and Procedural Rationality: Post-Normal Science for Sustainability," in Robert Costanza, Olman Segura and Juan Martinez-Alier (eds), *Getting Down to Earth: Practical Applications of Ecological Economics* (Washington, DC: Island Press 1996), at pp. 233–34.

5 L. Heinzerling, "Regulatory Costs of Mythic Proportions", 107 *Yale Law Journal* (1998).

6 For an example of these juxtaposition, see E. Fisher and R. Harding, "The Precautionary Principle and Administrative Constitutionalism: The Development of Frameworks for Applying the Precautionary Principle", in E. Fisher, J. Jones and R. von Schomberg (eds), *Implementing the Precautionary Principle: Perspective and Prospects* (Cheltenham, Edward Elgar 2006); A. Klinke and O. Renn, "A New Approach to Risk Evaluation and Management: Risk-Based, Precaution-Based, and Discourse-Based Strategies", 22 *Risk Analysis* (2002), p. 1071. For a recent book on this issue see D.A. Kysar, *Regulating from Nowhere: Environmental Law and the Search for Objectivity* (Yale University Press, 2010).

The position of Zander on this issue is a little ambiguous. On the one hand, he acknowledges that the differences in risk perception between experts and lay people are not to be ascribed to irrationalities only: "unlike experts, [lay people] place great significance on qualitative aspects of risks, such as dread, ... and catastrophic potential" (p. 13). This idea, amply researched by cognitive psychologists, coupled with a growing body of literature showing how culture influences the perception of risks, has led scholars to elaborate the concept of "rival rationality". On the other hand, when reaching normative conclusions, Zander seems to downplay the rival rationality paradigm, and implicitly assumes that the public is irrational and in need of guidance by an insulated group of experts: "When rationally comparing costs and benefits with each other, cognitive errors and biases may be corrected. In this way it is hoped that emotional interpretation will not find his way into a formalized weighing of the facts" (p. 24).[7] This vision, which has been amply articulated by Cass Sunstein in his "Laws of Fears"[8], has been criticized as fundamentally antidemocratic by Dan Khan, Paul Slovic and others: "the idea that expert cost-benefit analysis respects citizens' 'values' but not their 'blunders' is ... misleading. When experts regulators reject as irrational public assessments of the risks associated with putatively dangerous activities ... they are in fact overriding public *values*. For just as citizens' perceptions of the benefits of those activities express their world views, so do their perceptions of the risks they pose"[9] (emphasis in original).

Finally, the argument has been made that cost-benefit has an anti-regulatory bias[10] and that it could be used to block the adoption of necessary environmental regulation. For instance, in a well-known work which studied the practice of cost-benefit analysis retrospectively, it has been shown that, if cost-benefit analysis would have been systematically used in the seventies in the US it would have led to not adopting some very successful regulatory measures such as the decision to remove lead from gasoline in the 1970s or the regulation of workplace exposure to vinyl chloride in 1974.[11] Today it is uncontroversial that these rules have yielded substantial benefits; however, at the time when the regulations were proposed, given the uncertainty of the risk associated with these substances, a cost-benefit analysis would have most likely flunk the regulation. Given its strong normative conclusion favoring the use of cost-benefit analysis, it is disappointing that Zander does not even attempt to counter these arguments.

Zander's book is an important contribution to understand how the precautionary principle is applied in practice. It contains a wealth of examples from which lawyers can learn a great deal. It is unfortunate that next to his excellent comparative analysis, Zander's strong normative message is largely unsupported by theory or empirical studies.

7 Later in the book, Zander seems not to see this tension. On p. 229, when discussing the UK experience, he contends that "public opinion is taken into account in a sophisticated manner through the use of WTP, WTA and QUALYs." It is doubtful that this is the case. If it is true that these techniques build on the behavior of individuals in the market, they are most often used to construct the value of goods that are not traded in the market. They rely on a set of assumptions made by economists and subject of controversy.

8 C.R. Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (Cambridge, UK: Cambridge University Press 2005).

9 D.M. Kahan *et. al.*, "Fear of Democracy: A Cultural Evaluation of Sunstein on Risk", 119 *Harvard Law Review* (2006), p. 1071.

10 See for instance, D.M. Driesen, "Is Cost-Benefit Analysis Neutral?", 77 *University of Colorado Law Review* (2006), p. 335.

11 F. Ackerman, L. Heinzerling and R. Massey, "Applying Cost-Benefit to Past Decisions: Was Ever Environmental Protection Ever a Good Idea?", 57 *Administrative Law Review* (2005), p. 155.