

PRECAUTIONARY LOGIC AND A POLICY OF MODERATION

*Tobias Arnoldussen**

Abstract

The term ‘precautionary logic’ denotes a kind of argumentation that urges us to take far-reaching preventative measures. This form of argumentation appeals to a number of presuppositions about society, the environment, and human behaviour. Precautionary logic appeals to a sense of fragility of humankind and the environment, the uncertainty of scientific knowledge, the destructive tendencies of technology, the responsibility we have toward each other and towards future generations, and to the possibility of averting environmental catastrophe by adopting the wisdom of precaution as a guide. In its outlook, precautionary logic shares assumptions with early and mediaeval Christian thought. It argues for a restoration and maintenance of harmony between humankind and that which sustains it. In mediaeval times, this sustaining power was God; in secular times, it is nature itself, or the ecosystem. Adoption of this paradigm of harmony and precaution leads to a politics of moderation in which all behaviour seen as excessive, immodest, or risky should be curtailed.

* Tobias Arnoldussen is a PhD Candidate in the Sociology of Law Department at the Erasmus School of Law in Rotterdam. The author would like to thank the two referees and the editors Ellen Hey and Roel Pieterman for their valuable and helpful comments.

1 Precautionary logic and a politics of moderation

Multiple authors use the term ‘precautionary logic’ to characterise a way of thinking they see gaining ground in various domains of late modern culture. For the French thinker François Ewald, precautionary logic indicates a paradigm shift regarding the use of science in risk regulation.¹ The term is used by Ewald for a kind of reasoning that urges us to look for doubt instead of certainty. According to precautionary logic, Ewald claims, we should always consider that an unseen threat may always lie in wait. We should use science not only to learn how to master perceived threats but also to uncover those we cannot perceive. I must act ‘... as if Descartes’ malicious demon could have slipped into the folds of an apparently innocent enterprise’.² For Ewald, precautionary logic concerns a way of using scientific knowledge in order to cast doubt on its own advances and to instil a mistrusting mentality within society.

Prominent criminologist Richard Ericson considers that precautionary logic is applicable to the domain of security and crime.³ He quotes Ewald extensively but examines the importance of precautionary logic for security politics.

Both authors argue that a kind of reasoning is gaining ground that urges us to take preventative measures to avoid the potentially catastrophic consequences of technological and security risks. In the field security policy, precautionary arguments were used to justify the US-led war on terror. According to Ericson, political rhetoric was used to ‘make precautionary logic a part of everyday life’. The public was prepared for a precautionary war by then Secretary of State, Condoleezza Rice. She declared that extraordinary military mobilisation against terrorism was needed before ‘The smoking gun becomes a mushroom cloud’.⁴ A more elaborate argument in favour of the precautionary invasion in Iraq in order to prevent Saddam’s regime from keeping or acquiring weapons of mass destruction is given by Slaughter and Feinstein:

The unprecedented threat posed by terrorists and rogue states armed with weapons of mass destruction cannot be handled by an outdated and poorly enforced nonproliferation regime. The international community has a duty to prevent security

¹ F. Ewald, ‘The return of Descartes’s Malicious Demon: An Outline of a Philosophy of Precaution’ in T. Baker and J. Simon (eds.) *Embracing Risk, the Changing Culture of Insurance and responsibility* (Chicago: The University of Chicago Press 2002) at 273.

² *Id.*, at 286.

³ R.V. Ericson, *Crime in an Insecure World* (Cambridge: Polity Press 2007) at 21.

⁴ *Id.*, at 38.

disasters as well as humanitarian ones – even at the price of violating sovereignty.⁵

In the domain of environmental risk regulation, precautionary logic may be even more firmly entrenched than in security policy. In this domain it has been legally sanctioned by the precautionary principle. This principle holds that when there is a threat of serious and irreversible damage, lack of full scientific evidence may not be used as a reason not to take preventative measures. This principle has gained a key status in environmental law and is listed in the EC Treaty, among others. According to some scholars, the principle has the status of customary international environmental law.⁶ Concrete examples of precautionary reasoning in the domain of environmental and public safety can be found in recent policy documents as well as in the literature. For example, the Dutch Scientific council for Government Policy wrote in a recent report on physical security that they consider the precautionary principle implies that ‘the vulnerability of people, society, and the natural environment demands a proactive engagement with insecurity’.⁷

In the literature regarding technological risk, a new way of dealing with these risks is sometimes advocated in strong terms. Paul van Loon writes:

If we are to avoid a full-blown and catastrophic apocalypse, we have to engage with technology differently. Faith in reason is not a good starting point, reason in faith might be.⁸

A similar albeit less extreme point was made by Poul Harremoës in his report *Late lessons from early warnings*. This report was written as a defence for a precautionary approach by listing a number of scientific ‘advances’ that turned out to be harmful to the environment or to public health. He writes:

Knowing enough and acting wisely enough, across the full range of environmental and related health issues seems daunting. The interconnections between issues, the pace of technological change, our limited understanding and the ‘time to harm and then to heal’ of the ecological and biological systems that can be perturbed over decades by our

⁵ L. Feinsein and A.M. Slaughter, ‘A duty to prevent’ (2004) 83 *Foreign affairs*, summary available at <<http://www.foreignaffairs.org/20040101faessay83113/lee-feinsein-anne-marie-slaughter/a-duty-to-prevent.html>> (accessed 2 February 2009).

⁶ A. Trouwborst, *Precautionary rights and Duties of States* (Utrecht: Brill Academic Publishers, Incorporated 2006) at 12.

⁷ WRR, *Onzekere Veiligheid, verantwoordelijkheden rond fysieke veiligheid* (Amsterdam: Amsterdam University Press 2008) at 18. The import of this statement will be analysed on page 263 below.

⁸ J. van Loon, *Risk and Technological Culture: Towards a Sociology of Virulence* (London, New York: Routledge 2002) at 205.

technologies together present an unforgiving context.⁹

The examples above are all instances of precautionary arguments. They defend taking far-reaching preventative measures in order to curb an environmental or security threat of which we know little, but of which the consequences are portrayed as grave, often apocalyptic in scope. As will be elaborated further here, the curbing of these threats is often seen as demanding from us a thorough revision of our existing political, scientific, and institutional arrangements. Our current understanding is seen as too limited and often even portrayed as an accomplice to environmental degradation.

Inspired by Ewald's suggestion that these kinds of precautionary arguments indicate a paradigm shift in our dealing with risk, I wish to conduct a conceptual investigation into the notion of precautionary logic. By examining this notion, I aim to excavate assumptions that are implied in this kind of reasoning with regard to humans, their life-world, and the value of human knowledge. I will first review what the term 'precautionary logic' means. In what way can we speak of a 'logic' underlying the notion of precaution? I will then review a number of characteristic arguments put forth by advocates of precaution. These arguments are analysed to show what implicit and explicit presuppositions about ourselves and about nature lie at their base. In the final paragraphs of this article, I will conclude that precautionary logic as a paradigm of thought shares motives with an earlier religious paradigm. The paradigm of precaution uses language closely linked to the themes of apocalypse and salvation found in early millenarian Christianity.

These motives are most tellingly displayed by Al Gore in his Address to the Climate Conference in Bali in 2007. In this speech, Gore rhetorically offers us two alternatives: one is to live in a world beset by floods and droughts, while the other is to be among the chosen few who have managed to inspire humankind to see itself as a 'single global civilisation'. Gore presents two scenarios. In the first, we are confronted by our offspring who accuse us of having looked the other way and ignored the droughts and floods caused by global warming. With the necessary pathos, a picture is painted of crops drying up, ice caps melting, and deserts growing. In the second, our offspring look up to us admiringly because we have managed to organise ourselves and to fight hand-in-hand for a common cause. He does not hesitate to imply that this is a role to be played by only a chosen few who will influence the destiny of us all:

I want you to tell them that you saw it as a privilege to be alive at a moment when a relatively small group of people could control the destiny of all generations to come.¹⁰

⁹ P. Harremoës and others, *Late Lessons from Early Warnings: the Precautionary Principle 1896- 2000* (Copenhagen: EEA 2001) at 4.

¹⁰ <<http://www.irregulartimes.com/gorebalispeech.html>> (accessed 1 December 2008).

I consider this existential choice Gore presents us to be the most emblematic articulation of the ecological and precautionary worldview. This view envisions humankind as doomed to self-destruction unless it finds a new way to live in harmony with nature and with each other. The Christian ‘covenant with God’ has been replaced with a covenant with nature. To reach a harmonious relationship with nature, humans need to live moderate lives and also to moderate the ecosystems they are a part of, using the wisdom of precaution. To conclude, I will indicate how the advance of precautionary logic in various domains might influence policies relating to the environment, to safety, and to lifestyle choices. The religious elements in precautionary logic will lead to a policy in which there will be a stronger role for moralism and modesty. I refer to this kind of politics as a politics of moderation.

2 Precautionary logic as an economy of truth

This issue of *Erasmus Law Review* is devoted to precautionary logic. This implies that there must be at least a common understanding of what precautionary logic means. It is, however, not immediately obvious in what sense the term ‘logic’ is being used here. The same question may arise in regard to the logic of capitalism or ecological logic, for instance.¹¹ In what sense do we use ‘logic’ in these terms?

When logic is mentioned, it is usually in the context of formal logic, which concerns the principles of valid inference.¹² In other words, logic is about the form of arguments and not about their content. This brings us no further with regard to the question of what makes precautionary logic a type of logic. Precautionary logic certainly is not about the form of arguments, but about the content.

In antiquity and in the Middle Ages, next to formal logic another branch of logic was widely studied. It was called material logic or major logic. The French philosopher Jacques Maritain gave the following definition:

Major logic (or material logic) studies the material conditions of the science, and analyzes or resolves reasoning into the principles on which they depend for their material or in other words their content; it shows to which conditions the materials of the reasoning should respond such that it has a conclusion certain at every point, not

¹¹ The term ‘ecological logic’ was coined by Anna Bramwell when discussing the work of a number of vanguard ecologists. A. Bramwell, *The Fading of the Greens: the Decline of Environmental Politics in the West* (New Haven, London: Yale University Press 1994). The logic of capitalism is also a phrase routinely used: for instance, in the title of the book *The Nature and Logic of Capitalism* by Robert L. Heilbroner (London, New York: Norton 1986).

¹² W. Kneale and M. Kneale, *The Development of Logic* (Oxford: Clarendon press 1984) at 1.

only from form, but also from the material - that is, a certain and true conclusion.¹³

This does point us in the right direction. Precautionary logic is a logic in this material sense. It is a set of principles that lead to arguments accepted as valid in the domains in which precautionary logic has established itself.

Nevertheless, though precautionary logic is a logic in a material sense because it deals with content, there are also differences. In antiquity and in the Middle Ages, the luminaries studying material logic tried to incorporate principles that were universally valid. Material logic tried to provide true premises that would be valid for all time and could hence serve as a base for reasoning. Today, philosophy has largely given up on this enterprise. Especially in the social sciences it is now commonly held that even principles we consider true are restricted to a certain time place and are tied to the institutions and practices of society. To take these cultural horizons of even our most cherished concepts into consideration, Foucault coined the term 'economy of truth'.

The political economy of truth determines what kind of discourses are considered true, what the mechanisms and sanctions are to distinguish true from false, the techniques for acquiring truth and the status of those who are empowered to say what is true.¹⁴

In Foucauldian terms, precautionary logic is part of an economy of truth. It is the part that determines which discourses are considered true within a certain domain.¹⁵ By this I mean that precautionary logic has a number of criteria or presuppositions that determine the validity and truth of an argument advanced in the domain of environmental risk regulation. In other words, statements are considered true within precautionary logic because they appeal to certain presuppositions that are implicitly considered true by proponents of precautionary thinking. I use the term 'presuppositions' in the same way the British philosopher R.G. Collingwood uses 'absolute presuppositions'. According to Collingwood, absolute presuppositions are ones in a certain domain that are considered true and not put into question: 'an absolute presupposition functions as a presupposition of all questions it is related to, but never as an answer'. Hence the idea of verifiability is not applicable here: not because we would not like to verify these presuppositions but simply because they are not put into question. They are presupposed to be true and function as such in the domain in question. They function as a set of mutually interrelating

¹³ J. Maritain, *An Introduction to Philosophy* (London: Sheed & Ward 1944).

¹⁴ L. Shiner, 'Reading Foucault: Anti-Method and the Genealogy of Power-Knowledge' (1982) 21 *History and Theory* 382, available at <www.humboldt.edu/~mc92/pdfs/gradgroup/Shiner-Reading-Foucault.pdf> (accessed 8 December 2008).

¹⁵ M. Foucault, *Power/knowledge: Selected Interviews and Other Writings, 1972 - 1977* (New York: Prentice Hall 1980) at 131.

presuppositions, underpinning certain arguments made within that domain.

The question is to what axioms and presuppositions should arguments appeal in order to be considered valid in precautionary logic. Since they are the presuppositions on which precautionary arguments are based, it must be possible to uncover them in precautionary reasoning, regardless of the specific context of the argument. According to Collingwood, a metaphysical analysis should unearth these kinds of presuppositions. I conduct here a similar analysis regarding the presuppositions made in precautionary logic.¹⁶

To that end, I will examine a number of precautionary arguments in order to question what presuppositions concerning human nature, our life-world, and our ability to make judgments about it are implicitly or explicitly stated to make those arguments convincing.

3 The precautionary economy of truth: vulnerability and uncertainty

For our analysis, it is important to examine precautionary logic in the domain in which its dominance is least contested. Since precautionary logic is most strongly established in our dealing with technological and environmental risk, it seems prudent to start our investigation of key-concepts and presuppositions of precautionary logic there. The imperative associated with the precautionary principle is a *prima facie* plausible candidate to start. The precautionary principle is the most visible political exponent of precautionary logic, because it has been taken up in international environmental law.¹⁷ Furthermore, Ewald also takes the precautionary principle as his point of departure when discussing the paradigm shift of risk regulation.¹⁸

The precautionary principle is itself not an absolute presupposition, but is a policy based on such presuppositions. The precautionary principle is the legal translation of the maxim that prevention is better than curing afterwards.¹⁹ Or, as Pieterman phrases it, the moral imperative of the precautionary culture is 'first do no harm'.²⁰

Perhaps the most well-known definition of the Precautionary Principle is found in article 15 of the Rio Declaration. It states:

¹⁶ R.G. Collingwood, *An essay concerning metaphysics- part 1* (Oxford: Clarendon Press 1940) translated as: "*Over metaphysica*" by G. Vanheeswijck (Kampen: Kok Agora 1996) at 16. Collingwood's conception of metaphysics is very different from a classical conception of the term. He considers metaphysics to be the science that reveals the absolute presuppositions buried within arguments.

¹⁷ Trouwborst, above n. 6, at 286.

¹⁸ Ewald, above n. 1, at 274.

¹⁹ R. Pieterman, *De voorzorgcultuur, streven naar veiligheid in een wereld vol risico en onzekerheid* (Den Haag: Boom Juridische Uitgevers 2008) at 15.

²⁰ *Id.*, at 64.

Where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation

(Climate Convention Rio de Janeiro 1992). The precautionary principle is a guideline for what to do in the case of uncertainty. This makes our relation to uncertainty a crucial component in the economy of truth in precautionary logic. We see a fearful position in regard to uncertainty. The underlying message of the precautionary principle is that protective measures should be taken, because we are vulnerable in the face of disaster and we have no sure way of predicting whether one will occur.

An analysis of the precautionary principle reveals two assumptions at the core of precautionary logic. Firstly, it emphasises the ease with which things can go wrong. Humankind is vulnerable because there is a great potential for catastrophe.

If one believes that catastrophic events are highly unlikely, we would not need this principle. It is because we do fear catastrophe and we believe we are vulnerable that we have such a broad public consensus to implement the precautionary principle. At least in Europe we seem to have this consensus.²¹ In the Netherlands, an influential think-tank has recently argued its strong support for this principle. The Dutch Scientific Council for Governmental Policy (WRR) pleaded in their report to embrace the precautionary principle in administrative legislation, in the Civil Code and in the Constitution. The motivation of the Council was summarised in the statement: 'The vulnerability of people, society and the natural environment demands a proactive engagement with insecurity'.²² This statement is paradigmatic for the line of argumentation employed in the report.²³ It is deemed true by proponents of precaution, but demands assent to a number of presuppositions, two of which are explicitly stated here: vulnerability and insecurity. These presuppositions are part and parcel of the truth economy of precautionary logic.

The WRR speaks about the vulnerability of people, society, and the natural environment. That vulnerability is the implied rationale for the precautionary principle. We, our institutions, and the world at large are

²¹ Internationally there is no consensus as yet on the precautionary principle. David Vogel shows that a shift has taken place from US to Europe in regard to precautionary legislation. The US tended to be more precautionary in the 1970s and 1980s, whereas from the 1990s onward the EU has been more precautionary. D. Vogel, 'The Hare and the Tortoise Revisited: The New Politics of Consumer and Environmental Regulation in Europe' (2003) 33 *British Journal of Political Science* at 557.

²² WRR, above n. 6, at 18.

²³ Both components, – intrinsic vulnerability and intrinsic uncertainty –, are for instance reiterated on page 116 in conjunction with the need to arrive at a paradigm shift considering risk policy. In the report they are mentioned numerous times.

vulnerable. This vulnerability is itself never contested, it is simply presupposed. It has to be presupposed, because if we consider ourselves, our ecosystems, and the earth on which we dwell to be robust, and correspondingly the chance of catastrophe extremely small, we would not need this principle. In pleas for precaution, our limited resources in the face of disaster are always stressed.²⁴

Arguments that we are indeed more vulnerable today in the face of technological catastrophe than we were in the face of natural dangers in the past are not given. They would also be very hard to give. How do we measure the increased risk of technological disaster versus the decreased risks of natural disaster? That no arguments are given and that questioning these presuppositions is often met with an angry response is an indication that we are dealing with absolute presuppositions.²⁵

Secondly, the analysis reveals the presumption that uncertainty is somehow on the rise. Proponents of precaution defend the idea that decisions made today are much more plagued by uncertainty than were decisions in the past. In fact, 'uncertainty' has become a buzz word in our dealing with risk. The idea is that in a globalised and highly technological world, uncertainty is evidently more present than in simple former societies. I do not find this notion self-evident, however, for two reasons. The first is that we know decisions in the past had far-reaching consequences for our current society: for instance, the decision to develop the steam engine and not take precautionary measures regarding its applications altered our culture profoundly.²⁶ The decision to develop the steam engine was at the time plagued by an equal amount of uncertainty just as the introduction of nanotechnology is today. The second reason is that even if it were granted that decisions today are taken in a more complex world, we still cannot conclude that their consequences are more uncertain and less easily predictable. The complexity of the world has increased, but so have our instruments for predicting possible consequences. Our scientific knowledge has increased dramatically. We might well argue that decisions taken in the past were plagued by much more uncertainty, since a ruler had to contend with the unpredictable will of the gods, the influence of the stars, and contradictory advice from various soothsayers. In short, the idea that the world today is more complex and that correspondingly our decisions are beset by more uncertainty than they were in the past is a presupposition. It is accepted and unquestioned. This acceptance makes precautionary arguments

²⁴ For instance in A. Arcuri, *Governing the risks of ultra hazardous activities* (Rotterdam: Erasmus University Rotterdam 2005). The same presupposition is made in ecological thinking, which is closely related to the rise of the precautionary principle; Pieterman, above n. 19, at 90.

²⁵ Collingwood, above n. 16, at 46.

²⁶ For a discussion of the way that past technological developments have changed our current society, see L. Marx, *The Machine in the Garden* (New York: Oxford University Press 2000, 2nd ed.).

plausible.

4 The precautionary economy of truth: science and the unknown

One reason the uncertainty assumption is readily accepted by advocates of precaution is that they would not yield to the aforementioned argument that we have many more instruments now to control complexity. In fact, one of the other axioms in precautionary logic is that science cannot be trusted to supply us with adequate answers in the domain of risk. As Jane Hunt states: ‘Implicit in most interpretations of the precautionary principle is the recognition that science cannot adequately predict the potential environmental consequences of human activities’.²⁷ It remains implicit because it is presupposed that scientific answers are inadequate to provide proper management of risk. This presupposition does not seem to follow directly from the principle itself, but it is indeed implied. If it were easy to obtain scientific certainty, we could wait. It is the assumption that we cannot, at least not with regard to environmental questions, that makes the principal interesting for its proponents. In fact it is exactly for this reason that Joel Tickner and Carolyn Raffensperger embrace it. In their introduction *Protecting Public Health*, they put it as follows:

Modern day problems that cover vast expanses of time and space are difficult to assess with existing scientific tools. Accordingly, we can never know with certainty whether a particular activity will cause harm. ... With increasing knowledge about the complexities of ecosystems, the human body, and the impacts of various stressors, we have realized that we actually understand less than we thought we did about these systems.²⁸

We find this type of criticism of science all through environmental law, as Jean Marc Piret argues.²⁹

The role of science is not exclusively negative within the economy of truth of precautionary logic. It is in fact somewhat ambivalent. There is a mistrust of traditional science and what is seen as its Cartesian paradigm. It is presupposed that science cannot provide adequate answers due to the complexity of environmental questions. It is argued that we need a more holistic science. Yet even ‘traditional’ science is fine when it teaches us

²⁷ Jane Hunt, ‘The Social Construction of Precaution’ in T. O’ Riordan and J. Cameron (eds.), *Interpreting the Precautionary Principle* (London: Earthscan 1994) at 117.

²⁸ J. Raffensperger and C. Tickner, ‘To foresee and to forestall’ in J. Raffensperger and C. Tickner (eds.), *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Washington D.C.: Island Press 1999) at 1.

²⁹ J.V.A.G. Piret, ‘Filosofische beschouwingen bij de grondslagen van het milieurecht’ (1995) 21 *Recht en Kritiek* 335.

precaution. Raffensperger and Tickner denounce risk assessment as such, since it is tied in with the presuppositions of traditional science, but state:

Risk assessment can play a role in implementing the precautionary principle. Instead of using risk assessment to establish 'safe' levels of exposure, levels that are fundamentally unknowable, it can be used to better understand the hazards of an activity and to compare options for prevention.³⁰

The same has been signalled by François Ewald. He contends that in precautionary logic, science is urged to continuously question the many proofs that everyday life should not be the subject of permanent anxiety. 'In effect', he concludes, 'science interests us less by producing new knowledge than for introducing new doubts'.³¹ The same shift in the use of science has been emphasised by Frank Furedi in his article *Precautionary Culture and the Rise of Possibilistic Risk Assessment* for this issue of *Erasmus Law Review*. According to Furedi, environmentalist thinkers have been at the forefront of a movement to discredit probabilistic thinking about risk and to urge for possibilistic thinking, which invites speculation about all things that can possibly go wrong.³²

In practical public health and environmental politics, this trend that Ewald signals is already visible: for instance, in the valuation of air-pollution by particles. It is feared that tiny particles are a substantial cause of illness and even mortality. This category of pollutants is called particulate matter (PM) and is defined as every tiny particle or droplet that has a diameter of less than 10 micrometres. However, it is still unclear what chemical composition a particle must have in order to be dangerous. The trend is to fear that the smaller a particle is, the more dangerous it becomes. Since the 10-micrometre particle appears not to be very dangerous, the 2.5-microgram particle must be the dangerous one. However, our measurement systems are becoming increasingly sensitive and we may now identify particles with a diameter of 1 micrometre and even of 0.1 micrometre. The smaller the particle becomes, the more difficult it is to measure, but the more fear and suspicion it instils. Voices are raised currently that tell us to fear in particular the 1 and 0.1 PM.³³

³⁰ J. Raffensperger and C. Tickner, *The Precautionary Principle in Action: A Handbook*, written for the Science and Environmental Health Network (1999) at 15, available at <www.biotech-info.net/handbook.pdf> (accessed 12 December 2008).

³¹ Ewald, above n. 1, at 289.

³² F. Furedi, 'Precautionary Culture and the Rise of Possibilistic Risk Assessment' (2009) This issue of *Erasmus Law Review* at 197.

³³ For an illustration, see the paper of A. Schmidt-Ott, *Measurable Quantities in Ambient Particle Characterisation and Future Needs Beyond PM10 and PM2.5*, presented at Dustconf 2007, available at <[http://www.dustconf.com/INDEX700.HTM?cms\[categoryID\]=67&cms\[cm230\]\[contentID\]=73#s10](http://www.dustconf.com/INDEX700.HTM?cms[categoryID]=67&cms[cm230][contentID]=73#s10)> (accessed 15 November 2008).

Upon questioning this assumption, I was told that at a given moment the particle would be so utterly small that it would simply pass through all our cellular tissue without having any effect. I concluded that in that case the particle is reduced to nothing. It seems precaution stops when we are dealing with nothing, but even that is not quite true.

In view of precaution, we cannot stop at the immeasurable. A relatively new characteristic of precautionary logic is the consideration of ‘unknown unknowns’. This gained a kind of notoriety when it was introduced to justify another instance of precautionary politics: namely, the pre-emptive strike doctrine of then US President George W. Bush. The then US Defense Secretary Donald Rumsfeld used it to denote that risks abound about which we are not even aware. In fact, the introduction of the concept won Rumsfeld a prize for most nonsensical comment.³⁴ It is true that the concept of unknown unknowns is self-contradictory. It is a Catch-22-like concept, because we cannot know whether they are there, in what number, their relevance, or the extent to which they are indeed risky. In fact we cannot know anything about their existence and yet they are conceptualized. This is self-contradictory, because it is a concept conceptualising something that resists conceptualisation. There might be infinite unknown unknowns or none at all; they might be helpful or harmful unknown unknowns. It is of no consequence, because we cannot know either way. The comment might have won a prize and been ridiculed, but it has been picked up in ‘precaution speak’.³⁵

5 The precautionary economy of truth, time, space, responsibility, and wisdom

Precautionary logic has a chronological dimension, as risks are potentialities that might become actual. Costs are actual and are felt now. Precaution argues for sacrificing benefits now in order not to be harmed in the future, and the relation with the future is one of anxiety. Because precaution is often concerned

³⁴ <<http://news.bbc.co.uk/2/hi/americas/3254852.stm>> (accessed 14 November 2008). In effect, as Jaap Hanekamp shows in his article in this issue of *Erasmus Law Review*, Rumsfeld was not the first to coin the concept. It had been introduced by the American cold war analyst and nuclear strategist Herman Kahn. The concept of unknown unknowns has a history in Cold War nuclear strategy. Its cropping up now in ecological discourse presents an interesting case of discourse migration.

³⁵ N. de Sadeleer, ‘The Precautionary Principle in European Community Health and Environmental Law, Sword or Shield for the Nordic countries’ in N. de Sadeleer, *Implementing the Precautionary Principle: Approaches from the Nordic Countries, the EU and USA* (London: Earthscan 2007) at 25. De Sadeleer remarks that: ‘At least experts should point out the unknown unknowns’. Pointing out unknown unknowns, however, is a *contradictio in terminis*. We can never point out something about which we do not know that we do not know it.

with catastrophic damage that may potentially realise itself, it invites us to consider worst-case scenarios and to take into account even the smallest of risks.³⁶ This extension into the future is in principle limitless, and has been made clear in the climate change debate. The EU considers that the scope of its policy must be one hundred years. It is also clear in Veerman's analysis of the need for a new and very costly Delta plan for raising the Dutch dikes.³⁷ Worst-case scenarios are stacked together to argue for building precautionary dikes aimed at preventing a flood that might occur hundreds of years from now. I call this the '2 to 12 argument'. Precaution extends its scope well into the future, but the future is always considered one heartbeat away from being now. It is always '2 to 12' and so measures need to be taken now; they can never wait.

The farther that precaution is extended in time, the bigger the margin of uncertainty. Since precaution is applicable in instances of scientific uncertainty, these tendencies reinforce each other. Here the notion of uncertainty and the precautionary call for regulation of future events calls for precautionary politics on many terrains. This makes people, institutions, and policy-makers far more responsible. Not only are we responsible for our own well-being, which as we have seen is fragile enough, we are also made accountable for the well-being of future generations because of precaution's chronological dimension. In combination with the imperative to take into account worst-case scenarios and even unknown unknowns, we are faced with a daunting task. Ewald envisions that we should 'out of precaution, imagine the worst possible, the consequence that an infinitely deceptive malicious demon could have slipped in the folds of an apparently innocent enterprise'.³⁸

Since risks do not stop at the border, our responsibility to be cautious has also expanded in space. Ulrich Beck's 'Risk Society' has become a 'World Risk Society'. Globalisation and temporalisation have caused the scope of our actions to be wider and deeper, and coupled with that our responsibilities as well. The following is summarised nicely in K. Whitesides' notion of precaution. In his book *Precautionary Politics*, Whiteside writes:

Precautionary politics means that we must take responsibility for maintaining the robustness of the intricately interconnected ecological systems that sustain life on this planet – even when we are far from understanding all the conditions that make them thrive. Never before has so much wisdom been required of humanity's slowly advancing capacity for political association.³⁹

We are responsible even if we do not know. We must maintain the balance of

³⁶ Pieterman, above n. 19, at 4.

³⁷ J.K. Vrijling, 'Het Deltaplan 2008 kritisch geanalyseerd, een toekomstadvies of een donderpreek?' (2008) 5 *Spil* 15.

³⁸ Ewald, above n. 1, at 268.

³⁹ K. Whiteside, *Precautionary Politics Principle and Practice in Confronting Environmental Risk* (Cambridge Massachusetts: MIT Press 2006) at 154.

intricately woven systems against large odds. Wisdom is needed from us, whereas it is implied that this wisdom is something different from scientific knowledge.⁴⁰ What strikes me here especially is the juxtaposition of the ‘intricately interconnected ecological systems’ and ‘humanity’s slowly advancing capacity for political association’. While nature is portrayed as in itself an intricate and interconnected whole, humankind on the contrary is cumbersome and slow and we can only hope it will find wisdom.

This appeal to the wisdom of foresight that extends well into the future is a characteristic presupposition of precautionary logic. It is simply assumed we are able to do this in a meaningful way. This is questionable.⁴¹ We do not know whether our technological advances will hurt or help future generations. Yet in precautionary logic it is assumed that we somehow can know and that we can judge beforehand what risks are likely and which should be avoided. We will never know by using conventional science, but we can by using wisdom.⁴² Typically, risks that have to do with modern technology should be avoided, and that takes us to the following point: the bleak view of humankind and its endeavours.

6 The precautionary economy of truth, humans versus nature, humans versus humans

The examples given in the last paragraphs indicate yet another reason that we are responsible. It is because the dangers we are facing and the uncertainties we are subjected to are considered to be of our own making. Our institutional arrangements have led us to the risk society, in which we have polluted air and water and are agents of war and terrorism. Arguments for precaution are never arguments to intervene with nature, because of the horrible things nature is prone to do. Precautionary arguments are arguments to intervene in cultural arrangements. No one raises a precautionary alarm at the thought of creating a large natural reserve in the Dutch Oostvaarders Plassen, even though letting nature take its course may cause drastic changes to the environment. For the threat, it does not matter whether it is man-made, but for precautionary

⁴⁰ At a conference on 13May 2009 – ‘De Grenzen van de Risicobenadering, hoe nu verder?’ – Professor Herman Cousy, Director of the Centre for Risk and Insurance Studies in Leuven, referred to the ‘paradigm of precaution’ as ‘nova prudentia.’

⁴¹ For an epistemological critique of the precautionary principle as a guide to decision-making, see W. J. McKinney and H. Hammer Hill, ‘Of sustainability and precaution: the logical, epistemological, and moral problems of the precautionary principle and their implications for sustainable development’ (2000) 5 *Ethics and the Environment* 77.

⁴² Wisdom is treated as a kind of knowledge that has the potency to transcend the bounds of science. Raffensperger and Tickner use the phrase ‘observation and good sense’ in a similar vein. On the use of both terms, see Pieterman, above n. 19, at 25.

argumentation it seems to be important. Whether global warming is man-made has no impact on its reality, yet it is emphasised time and again that it should be considered man-made. In the air-pollution debate centred on particulate matter, people point to the risk of man-made particles, taking for granted that natural particles will cause no harm.⁴³

Humankind is seen as a polluting, destructive force, while nature is considered far less dangerous.⁴⁴ Precautionary logic has a dualistic conception of humankind and nature: they are viewed as distinct entities. Arie Trouwborst's definition of the precautionary principle highlights this dualism. He states that the core of the principle is 'in dubio pro natura'.⁴⁵ It implies that our actions can be contra or pro nature, but are never themselves natural.

In the philosophies of thinkers such as Hobbes and Locke, a 'state of nature' still had an ominous ring to it. Nowadays nature is seen as benevolent, but things having to do with culture, or worse, 'technological culture', are received with anxiety. In Hobbes, the state of nature is the condition before the onset of law and the state. For ecologists, the state of nature is the state before the onset of technology. In Hobbes, the exploits of humans could lead them out of the state of nature and into a 'commonwealth'. For the ecologist, the onset of technology has corrupted nature, perhaps irreversibly. The term taken from Whiteside's work referred to above shows the same presupposed opposition between nature working like clockwork and humankind being cumbersome and brutish. The tendency to see humankind as inherently good, but the embrace of technology having led to a certain fall from grace, is current among many strands of ecogism, as Bramwell shows. In a thought-provoking study, Keith Thomas shows us how the advances of the industrial revolution triggered a kind of longing for the old pastoral 'natural' state.⁴⁶ Before the industrial revolution, nature had no such pristine place in the public imagination. Nowadays though we are forced to live with a sense of guilt about having destroyed what once was. It seems that the farther we are removed from a state of nature, the more it is forgotten that living in such a state was 'solitary, nasty, brutish and short'.

The responsibility that precautionary logic places upon us to curb risk

⁴³ This is evident from the regulation that, for instance, Sahara sand or sea salt is deductable from the total quantity of particles in the air. Of course it is possible that these particles do no harm, and that man-made particles do, but no one has ever raised the question.

⁴⁴ Here we find the parallel between precautionary thinking and ecological thinking. Pieterman, above n. 10, at 90; A. Bramwell, *Ecology in the 20th Century* (New Haven: Yale University Press 1994). Belief in the benevolence of nature is also noted by Cass Sunstein, *Risk and Reason* (Cambridge: Cambridge University Press 2002) at 36.

⁴⁵ Trouwborst, above n. 6, at 29.

⁴⁶ K. Thomas, *Man and the Natural World: Changing Attitudes in England 1500 - 1800* (Harmondsworth: Penguin 1983).

does not extend solely to the environmental domain. We also become responsible for keeping each other and our society safe. The formulation of the Dutch Scientific Council once more comes to mind. A proactive engagement with security is needed. Paul Frissen noted that this made us all responsible for our environment as well as for state security.⁴⁷ As the WRR formulates it:

... That society takes on the obligation to take insecurity seriously and that she creates the conditions under which multiple actors – politics and science - the administration as well as private parties – will be enabled to meet this obligation.

In this domain too we see the reversal of Hobbesian reasoning. Hobbes' solution was to place security squarely in the hands of the state, in order to escape from a state of nature. Here the opposite is being argued: civilians, corporations, and private parties should all be made responsible for security. At this juncture, the call is made to change present institutional arrangements. Here we leave precautionary logic and enter into precautionary politics.

7 Precautionary logic and the truth economy of the Enlightenment

Before venturing into politics, it would be constructive to review this outline of precautionary logic. I think the core has been mapped out. Precautionary arguments are considered true when they rest on the following basic assumptions: firstly, humankind and its environment are vulnerable. This is a given. Almost all precautionary arguments will display this presumption of vulnerability; secondly we are facing a world of intrinsic uncertainty. Science is unable to help us cope with the risks and does not make the weighing of risk possible. Science and technology are part of the problem and not part of its solution, unless they transform themselves, as Raffensperger and Tickner argue and Ewald signals; thirdly, human action is viewed with suspicion, since humans have a tendency to disrupt nature. Humankind and nature are viewed as distinct entities; fourthly, since humankind is destructive as well as fragile, we must take responsibility for each other and control disruptive people as well as disruptive things. A fifth characteristic of precautionary arguments is the implication that even though our current use of science and technology may well lead to disasters, we may avert them when we realise the necessity for wisdom. There is a way out, but it entails a significant alteration of our habits and our frame of mind. This new wisdom is the wisdom of precaution.

To counter the threats we have ourselves created, we should resort to the wisdom of foresight. We are responsible for future generations and for the well-being of the planet and its ecosystems. We have the capability to transform our short-sighted self-interest into a long term holistic vision by

⁴⁷ P. Frissen, 'Ik ben een burger niet een staatsdienaar' *NRC* (6 October 2008).

means of precaution. A new attitude of precaution and awareness of risk is seen as the light at the end of the tunnel.

Do these presuppositions really present a new way of thinking about ourselves, and if so do they have any practical political consequences? The first part of the question should be answered with yes and no. It does mark a break from the older enlightenment values embraced in industrial society, but it is not an economy of truth that is unprecedented in the history of thought.

The axioms of precautionary logic differ significantly from enlightenment values. A comparison of the axioms in both has already been undertaken by Roel Pieterman in his book on precautionary culture, and a part of it is covered in an article by Roel Pieterman and Tobias Arnoldussen.⁴⁸ The differences between precautionary logic and the economy of truth of the enlightenment concern primarily four different but interdependent notions: the view of the autonomous human subject changed; the view of the possibility of knowledge changed; the view of our world as a robust entity changed; and the ideas concerning moral and technological progress changed.

The Enlightenment faith in human progress has become a story of human degradation: instead of progress there is decline. Human history is portrayed as a process in which we increased insecurity and risk. Despite the fact that we live longer and lead healthier lives now than at any point in history, it is stated that risk, uncertainty, and insecurity have increased to unprecedented levels. The rationale behind it is that man-made catastrophes have become possible, and they have gradually become a focal point of our anxiety. Therefore, the idea of the human agent as a force of moral progress has been discarded. Furthermore, the autonomous subject of the enlightenment has been replaced by a fragile subject caught in the trappings of ecosystems. In fact, the whole idea of the autonomous human subject has lost its prominent place in thought. Precautionary logic takes a standpoint 'sub specie aeternitate', an absolute standpoint. The autonomous subject living in the here and now does not take the centre stage anymore, but the well-being of future generations does. Their well-being is bound up with that of of earth's ecosystems, from biodiversity to climate.

The narrative of progress is turned on its head. Even though humankind is bound to nature, it is also essentially alienated from it. Instead of being an agent of moral progress, humankind has strayed and this has brought it to the edge of a chasm into which it may fall sooner rather than later. Because of their short-sighted and destructive tendencies, humans should be watched by other humans and kept under surveillance. Autonomy is replaced by an emphasis on learning to be cautious. The Enlightenment faith in science has been replaced by a 'crisis of the sciences'. The earth is no longer seen as a

⁴⁸ R. Pieterman, above n. 19, and R. Pieterman and T. Arnoldussen, 'Het voorzorgbeginsel over ideologie en onzekerheid' (2008) 3 *Rechtstheorie en Rechtsfilosofie* 230.

potential to be domesticated and put to good use, but as a fragile balance that might easily shift the wrong way. The consequences of such a shift may well be disastrous for humanity.

Acceptance of this inversion of all values leads to a different worldview and with it to different tactics to combat uncertainty. Authors such as Ulrich Beck point out that this change does not mean a fundamental departure from modernity but a radicalisation of its tendencies. The faith in reason that constitutes the ideal of the Enlightenment also means that everything, including its own concepts, will be criticised by reason. This is a plausible explanation for the turning away from values that the Enlightenment represented.

The critical role that reason is supposed to play in the Enlightenment leads to a questioning of its own assumptions. Reason is granted the power of being the sole tribunal of knowledge and critique, and that trust in reason leads to its mistrust because criticism necessarily implies self-criticism. Indeed, we seem to have reached that reflective stage of self-criticism. Reason is granted absolute power of critique and the trust in its powers leads to despair.

The same conversion into its opposite we find in the conception of vulnerability. At first glance it is surprising that vulnerability becomes axiomatic in a time when we have achieved so much technological mastery of the earth. At the same time, this mastery teaches us that what we took to be an indomitable force is not: it can yield. Therefore the security that this mastery is supposed to give us leads to the insecurity of finitude. Our environment can be destroyed. We have such power. This breeds a sense of uprootedness and fearful responsibility and leads to calls for restoration of a harmony that was supposedly there in our past. The idealisation of science as a means to protect us from nature has given way to an idealisation of nature as it was before the onset of technology.

8 Precautionary logic and religion

Have the axioms of the enlightenment indeed been turned into their opposite? When we compare the economy of truth that precautionary logic offers, we see similarities to an economy of truth that was firmly entrenched in the Middle Ages, in the philosophy of the church fathers, and in Christianity. This was indeed the economy of truth that Enlightenment originally set out to criticise.

Whereas Enlightenment promised us a continuous era of progress, precautionary logic warns us that it is '2 to 12'. Since fragility is central to the self-understanding advanced by precautionary logic, every risk of disaster should be excluded. This is not possible, however. Therefore fragility combined with the other key notions of fundamental insecurity and mistrust of science results in an unsolvable anxiety. The set of presuppositions of precautionary logic fuels the idea that we are living in an end-time. We do not

live in a dawn of reason but in the end-time of technology. The 'carpe diem' of the Renaissance and the Enlightenment has been replaced by a new 'memento mori'. In his book *Black Mass*, John Gray describes a variety of political systems that ruled in the 20th and early 21st century as 'apocalyptic'.⁴⁹ Without glossing over important differences, this can be said to hold true for precautionary logic as well. Precautionary logic has an apocalyptic character. As we have seen, it obsesses about irreversible imbalances and human uncertainty in the face of catastrophe. The difference is that the apocalypse is not God's doing, but that of humans. It is a secularised apocalyptic and eschatological logic in which the destroyer God and the saviour God have been replaced by nature as both destroyer and nurturer.

Precautionary logic favours apocalyptic thinking, but it is also eschatological. Eschatology is the doctrine of salvation and this too is prominent in precautionary logic. We can be redeemed and we might be spared the catastrophe, but it does entail conversion. This conversion is constituted by embracing the demanded proactive engagement with insecurity. Even the language adopted is one of a call that needs to be answered, as in 'the obligation to take insecurity seriously', or 'never before has so much wisdom been required of humanity....'. The same religious imagery is invoked by the disasters lying in wait when we do not heed the call. We need to contend with rising water levels, a new deluge; depletion of the ozone layer means we will be burned by the sun; not being as cautious as necessary towards our fellow humans will result in war or terror. As mentioned in the introduction, one of the icons of precautionary thinking, Al Gore, uses the language of catastrophe and salvation in his Bali speech.

They'll look back, and either they will ask "What were you thinking? Didn't you hear the IPCC four times unanimously warning the world to act? Didn't you see the glaciers melting? Didn't you see the North Polar ice cap disappearing? Didn't you see the deserts growing, and the droughts deepening, and the crops drying up? Didn't you see the sea level rising? Didn't you see the floods? Didn't you pay attention to what was going on? Didn't you care? What were you thinking?"

Or they will ask a second question, one that I'd much prefer them to ask. I want them to look back on this time, and ask: 'How did you find the moral courage to successfully address a crisis that so many said was impossible to address? How were you able to start the process that unleashed the moral imagination of humankind to see ourselves as a single, global civilization?' And when they ask that question, I want you to tell them that you saw it as a privilege to be alive at a moment when a relatively small group of people could control the destiny of all generations to come.⁵⁰

⁴⁹ J. Gray, *Black Mass: Apocalyptic Religion and the Death of Utopia* (London: Allen Lane 2008).

⁵⁰ <<http://www.irregulartimes.com/gorebalispeech.html>> (accessed 1 December 2008)

The point of this speech is to offer an existential choice between a world beset by plagues of biblical proportions or graced with a hard-won salvation that will create a harmonious world in which we manage to balance risks using precaution and to restore the harmony of the earth's ecosystems. This harmony is most of all a vision for the future, and is one between humans and nature, but especially between humans and their offspring. The choice is one of discord between us and future generations, or of harmony. The kingdom of harmony that should be realised by us will be a kingdom come for future generations. It is the 'moral imagination of humankind to see ourselves as a single, global civilisation'. The biblical imagery is taken further by presenting the people fighting to address climate change as a small band of chosen ones. The destiny of the world lies in their hands. The 'conversion' to realise the change in the behaviour of humankind is not an easy one. It entails transforming our beliefs, our scientific methods, and our modes of production and consumption.⁵¹ It cannot be otherwise. We all carry the burden of the fall from grace, presented in precautionary logic as our wasteful and short-sighted, profit-minded human temperament.

In mediaeval philosophy, humankind is tainted with original sin. The expulsion from the Garden of Eden happened when humans ate from the forbidden fruit of knowledge. The same ambiguous stance towards knowledge is found in precautionary logic as it is in religious doctrine: human knowledge is not to be trusted, but it may be ultimately beneficial when we utilise it for the love of God or nature respectively.⁵²

The relationship between humankind and nature has parallels with the relationship St. Augustine envisions between God and humans. In the same way that St. Augustine views God, nature is seen as a powerful but ultimately benevolent force. It is we humans who, due to a corrupted will that causes disruptions in our relationship with nature, will cause ultimate harm. The following paragraphs from a book on Augustinian political theory summarise the views of the bishop of Hippo, but could easily be found in the pleas of a proponent of precaution.

Like all other created beings, man is good, but not incorruptibly, absolutely, or necessarily good. He is mutable and changeable, but as long as he acknowledges his dependence upon and his inferiority to God, his Creator and obeys his commands, he will be good and happy. Moreover man has been given the gift of free will, which no other earthly creature possesses, he can if he wishes to do so act in a manner contrary to

⁵¹ Communication from the Commission, *A sustainable Europe for a better world: a European Union strategy for sustainable development*, COM 2001 264 final, available at <http://ec.europa.eu/sustainable/sds2001/index_en.html> (accessed 8 December 2008).

⁵² G. Wieland, 'Happiness, the perfection of man' in N. Kretzmann, and others (eds.), *The Cambridge History of Late Medieval Philosophy* (Cambridge: Cambridge University Press 1982) at 676.

Gods command. He can choose to obey or disobey. If he disobeys he turns away from the source of his being, his life will be warped and stunted, the farther he removes himself from God, the more wretched, miserable and imperfect he will become.⁵³

From Carson to Gore, we see the same relationship between humans and their Creator as is envisioned here. The hallmark of precautionary logic is the belief that the more technological culture advances and the more humankind removes itself from nature, the more ‘wretched and miserable’ humankind and the environment will become. However, precautionary thinking is thoroughly secularised. The Creator does not live on another plane of existence. The dichotomy between creator and created is the same however. Here, nature is seen as the creator and humans and what is man-made are seen as having been created. Therefore it is less perfect, flawed, and dangerous. Nevertheless, if humankind uses its free will for the benefit of working with nature and not against it, a happy life may ensue.

Augustine sees life as fraught with danger and hardships and inherently flawed because of original sin. However, faith may be an indication that one belongs to the chosen ones on which God has bestowed grace. The same role that faith plays for Augustine, wisdom plays for the precautionary.

Human existence in this world is characterised by fragility and fragmentation. This fragility makes balance and harmony a necessary virtue, both within mediaeval thought and within precautionary logic. This harmony though is for the human of mediaeval times only to be found in the afterlife, where the multiplicity of things is made whole.

The multiplicity and fragility of earthly things admits of no perfect condition; there is happiness only in another world, in which the multiplicity is made one and the fragility is exchanged for permanence.⁵⁴

The precautionary thinker has a similar vision of a holistic science that will restore harmony between humans and nature. Unlike the Augustinians, humans see this harmony as a possibility to be realised on this earth, and not for the here and now, but for tomorrow. The idea that this harmony lies in the future lives on in the conceptualisation of ‘future generations’ Gore envisions this utopian vision as follows:

The greatest opportunity inherent in this climate crisis is not only to quickly deploy the new technologies that will facilitate sustainable development, and create the new jobs and to lift standards of living. The greatest opportunity is that in rising to meet the climate crisis, we in our generation will find the moral authority and capacity for long term vision to get our act together in this world and to take on these other crises, not

⁵³ H.A. Deane, *The Political and Social Ideas of St. Augustine* (New York: Columbia University Press 1963) at 15.

⁵⁴ Wieland, above n. 49, at 676.

political problems, and solve them. We are one people on one planet. We have one future, one destiny. We must pursue it together, and we can.

The picture of harmony painted by Gore resembles the harmony of the afterlife. Like the 'City of God', the future will be a time in which that which is fragmented and fraught with conflict becomes whole. The disruptions with which this world struggles will be solved and we will be re-united with each other and with the planet. Gore envisions the coming of an end-time in which our destiny is fulfilled.

It is clear that the outline sketched here is not subtle enough. There are many great differences in the views of different mediaeval philosophers, especially between Thomas and Augustine. However, they have things in common as well, and they are important here. The philosophies of the Middle Ages were based on a perspective of harmony. Excess, hubris, and immodesty are from the time of Aristotle onward seen as upsetting the balance. Aristotle's philosophy, on which Thomas' thinking is based, as well as the neo-Platonic philosophies that informed St. Augustine, were philosophies of mediation and moderation. Humankind took an in-between position. He was more perfect than the rest of creation, due to his ability to reason and his desire for truth, but he was far more flawed than God. In comparison, the pretentious truths of Enlightenment are thoroughly immodest. They represent the human subject, autonomous, reasonable, calculating, as the source and measure of good and evil. Legislation was a matter of the will of the people, not the will of God. It is not a philosophy of mediation, in which the subject is the medium between God and the animals, heaven and earth. In Enlightenment philosophy, the human subject has occupied an absolute position. The liberal perspective of self-realisation, either individually or collectively, could become dominant because of this prioritisation of the subject.

Augustine would consider this view to be ultimately sinful. Indeed, for him human pride led to the fall from grace. 'By craving to be more, man becomes less; and by aspiring to be self sufficing he fell away from Him that truly suffices him'.⁵⁵

The advocates of precaution could easily agree with the church father on this score. Precautionary logic represents a break with prideful Enlightenment philosophy. No longer can we calculate risks and judge which ones to take; we must be moderate in the face of uncertainty. The punishment for immodesty in this regard is catastrophe. Therefore we refer back to a role of medium. Now it is the ecosystem that sustains us and humankind is an imperfect beneficiary, though with the redeeming quality of foresight. This is our role in precautionary logic: becoming a happy medium, shepherd of ecosystems, keeper of sustainability, and living in harmony with ourselves,

⁵⁵ De Civitate Dei XII.

other human beings, and nature.⁵⁶

In short, the reflection of Enlightenment values has created a new despair and a new uncertainty. Enlightenment values became less convincing perhaps to radical moderns, because it is clear that we do not control our own destinies. We cannot calculate the dangers by using common sense; we need experts and expert systems. We do not know our ways about in the intricate systems of capital and management that we have created by ourselves. This uncertainty has caused a reappraisal of our own role within the greater scheme of things. The autonomous subject as such does not exist. Self-reflection has led us to the conclusion that we cannot take the place of the absolute subject and that we should once again resign ourselves to the role of medium.

In order not to become resigned to powerlessness, we refer back to an older paradigm in which we were not all-powerful but could gain favour by sacrifice and modest living. This is what precaution asks from us: the sacrifice of consumption and production, a new modesty in the face of risk, and the establishment of harmony between our development and the demands of nature. The role of humankind in religious logic is similar to its role in precautionary logic. It is not after autonomy but seeks to maintain a harmonious relationship. In mediaeval times, this relationship was our covenant with God. In present times, it is that between humans and their environment.⁵⁷ We should not disrupt the harmony between humans and nature.

9 Precautionary politics and precautionary law

What would the relevance of all of this be for politics in a risk society? It is known that politics is getting to be more risk averse, at least in Europe. It is also

⁵⁶ Schwarz and Thompson define this perspective as egalitarian. One defining quality of this perspective is its millenarian cultural bias. M. Schwarz and M. Thompson, *Divided we Stand: Redefining Politics, Technology and Social Choice* (Philadelphia: University of Pennsylvania Press 1990). Bramwell considers ecologism to be Manichean because it embraces the idea of a battle between good and evil represented by nature and humankind. Whereas that might be true of the more radical wing of ecologism, it is not deep ecology for more moderate visions. The type of ecologism that seems to dominate green thought now sees harmony of humans and nature as most important. This is captured best by the notion of sustainable development. M. Jacob, 'Sustainable development and deep ecology: an analysis of competing traditions' (1994) 18 *Environmental Management* 477.

⁵⁷ Douglas and Wildavsky also signal the sectarian nature of various environmental groups. However, they do not think the perspective they hold will attract any mainstream following. I contend here that precautionary logic has the same axiomatic underpinning, though is less radical in its aims. M. Douglas and C. Wildavsky, *Risk and Culture: an Essay on the Selection of Technological and Environmental Dangers* (London: University of California Press 1982) at 124.

known that green policy initiatives increasingly gain ground and are adopted by parties all across the political spectrum. However, risk aversion and even green politics might still be considered instrumental. If precautionary logic in fact displays a quasi-religious underpinning, risk aversion will be combined with other trends. Practical politics will display the ideals of harmony and moderation that follow from precautionary logic.

Here I will sketch a preliminary outline of political developments based on the assumption that precautionary logic is indicative of a paradigm shift in favour of a secularised religious perspective of harmony between creator and created. This proposal could function as a base for further research questions. Politics following from precautionary logic will reflect the presuppositions embedded in this line of reasoning. It will take into account vulnerability, insecurity, a shift in the aim of science from disinterested knowledge to knowledge in the service of love of nature, enlarged responsibility, and fear of an end-time, but – at the same time – hope for a harmonious future.

I would like to refer to the politics associated with this set of presuppositions as a politics of moderation. I use this term in the double meaning of the word ‘moderation’.⁵⁸ Firstly, I use it in the common sense meaning linked to frugality. We have to be moderate in regard to resource and energy use, moderate in regard to our lifestyles, and moderate in regard to our expectations from science. Immodesty would upset the balance of harmony that proponents of precautionary logic implicitly or explicitly view as the core of our existence.

Secondly, I will use the word in the sense of ‘avoiding extremes of behaviour or expression: observing reasonable limits’.⁵⁹ Administrations, but also groups of civilians, will adopt the role of moderator in order to harmonise the smooth interplay of relationships and negotiations that shape politics within society. People and ideas that cannot be filtered out of the discourse in this way will be banned to the fringes of society.⁶⁰ Moderation as a tool of politics amounts to tweaking unwanted elements in society. Moderation does not aim at rooting them out but at moderating their effects. Harmony is restored by targeted interventions, moderate in scope. Moderation in this view is the soft but definite and all-encompassing discipline that is used to force actors to be

⁵⁸ The word ‘moderation’ is also linked etymologically to the word ‘medium’. The stem ‘med’ or ‘mod’, means ‘measure’. A moderator also acts as a medium, taking an in-between position, guarding the balance.

⁵⁹ This meaning can be found in Merriam Webster’s online dictionary, under ‘moderate.’ <<http://www.merriam-webster.com/dictionary/moderate>> (accessed 8 December 2008).

⁶⁰ M. Schuilenburg, ‘Een politiek van versplintering. Over eilandjes, denizens en margizens’ in H. Boutellier and R. van Steden (eds.), *Veiligheid en burgerschap in een netwerksamenleving* (Den Haag: Boom Juridische Uitgevers 2008).

moderate in their own life styles, their demands, and their use of resources. Moderation thus understood is coherent with the presuppositions of precautionary logic. Extremes threaten the harmony of the whole. This harmony is fragile and so a constant wariness of disruptions is in order. We do not know the effects of our measurements and so the best policy is to exclude possible forces of disruption. These forces may be excessive sexuality, excessive eating, anti-social behaviour, or product and process innovations, all the consequences of which we can not yet foresee. The morality of moderation is enforced by moderation as a policy instrument, a subtle exclusionary disciplining.

What would this mean in concrete terms? It would entail a curbing of individual freedoms to increase the strength of the collective. It would also give more space to specifically moral policy initiatives. The diminishing importance of specific Enlightenment ideals of untrammelled subjectivity would give way to holistic, communitarian ethics. The collective is seen as fragile, however. Therefore the new initiatives would be idealistic, but with a certain conservative and cautious bend. Political initiatives would be aimed at reducing what is seen as disturbances of any kind. This would extend to the environmental domain. Here we would see a more restrictive approach to innovations in research and production. Standards of safety would be tightened, which would make innovations more costly to develop. This approach would lead to a more static society, with the exception perhaps of the development of technologies seen as being friendly to the environment. Investing money in 'sustainable' funds would become interesting and would create opportunities for 'green' investors.

The conservative, religious, green mix of societal aims would also lead to a new moderation or 'new temperance'.⁶¹ In the fields of consumption and life style, politics frugality would be stimulated and perhaps even demanded. This new moderation is seen in our worries for resource depletion, but also in the gradual restraining of activities such as smoking, drinking, and sex.

It is my expectation that due to the egalitarian nature of the presuppositions that underpin precautionary logic, the administration would, where possible, refrain from using hard law. It would instead resort to providing incentives to acquire the behaviour it desires from the public. Incentives would be the carrot and uncertainty and belief in human frailty might be the stick. By this I mean that the government would actively point out the fragile nature of our bodies and our ecosystems and the insecurity that accompanies our day-to-day living in order to have people refrain from behaviour that is considered risky.

John Gray points out that millenarian political systems – like Marxism and Nazism – are always prone to violence. I have argued thus far that

⁶¹ This phrase was coined by David Wagner; D. Wagner, *The New Temperance* (Boulder Colorado: Westview Press 1997).

precautionary logic is a set of presuppositions that points towards similar millenarian green politics. Yet, I do not think it would be associated with such crude violence as Gray shows is inherent in fascism or communism. The political system precautionary logic favours would be ecologism, in which wholesale violence threatens to upset the natural balance, be it violence against nature or against humans. That does not mean that this politics might not be repressive. It would use moderation as repression, a gentle tweaking of our daily activities via warning systems, labels, consumer awareness through science, education constant monitoring and identification, and instilling a forward-looking attitude in humans. It would be a non-liberal policy, because we no longer tolerate allowing the preferences of the few to dominate the many.

What follows is a reresponsabilisation of ordinary people. We see this reflected in the obesity debate for instance and in the illusion that our activities will mean something for our environment as a whole.⁶² In criminal politics it can be foreseen that considerably more behaviour will be criminalised, but that the sanction will have the same moderating character. This will entail a reduction in generic prison sentences but an increase in measures that impinge upon the lives of the convicted: for instance, by using restraining orders or by means of tailored prohibitions that are designed to stop the target from displaying unwanted behaviour.

Our policies will also become more forward looking. There will be more scope to make early interventions in processes without much need for scientific justification. Instead, policy will revolve around ethics. This ethos will be one of harmony in which there will be little room to deviate from the norm. Deviations will not necessarily be punished, but moderated. They will be filtered out, tweaked, and blunted by early intervention, education in the spirit of harmony, tailor-made orders, and the mobilisation of public consciousness and awareness.

10 Conclusion

Precautionary logic is a stronger term than, say, precautionary discourse. A logic system implies that a certain way of reasoning has become fixed. It has found its place and can now act as an arbiter of truth. When precautionary logic is dominant in a certain domain, arguments for precautionary measures are considered valid herein.

Precautionary logic concerns not the form of an argument but the content. The content of the argument is made plausible by a set of absolute presuppositions implied in the argument. These presuppositions are axioms that

⁶² I consider the slogan ‘a better environment starts with yourself’ as a forerunner to this trend. The slogan was used in the Netherlands in the 1990s.

are considered true and do not need to become the subject of further questioning or research. In this article, a number of such presuppositions have been mapped out.

Firstly, humans and their environment are vulnerable. This is a given. Almost all precautionary arguments will display this presumption of vulnerability. Secondly, we are faced with a world of uncertainty. Science cannot help us cope with the risks and does not make weighing risk possible. Science and technology are part of the problem and not of its solution. The actions of humankind in general should be viewed with suspicion, since they may already have caused a disharmony in our ecosystems that might lead to catastrophe. At this point though, sometimes referred to as the time of reflexive modernisation, humankind has come to realise the wisdom of foresight.⁶³ If science, production, and consumption were to transform in the spirit of foresight, we might achieve a harmonious society, especially in the interest of generations to come. Vulnerability, uncertainty, limited science, imminent catastrophe, and salvation by foresight and a perspective of harmony are absolute presuppositions of precautionary logic. In domains where precautionary logic is a dominant line of reasoning, only discourses that affirm these presuppositions would be condoned. Other discourses would be marginalised.

These presuppositions represent a turn from traditional Enlightenment notions such as the autonomous subject, the benefits of culture over nature, and an era of progress under the aegis of science. However, they do not represent a turn from Western thought in general. They hearken back to an older set of presuppositions current in early Christian and mediaeval philosophy and theology. These presuppositions underpin an apocalyptic and eschatological vision that represents a secularised religion in which nature has taken over at least some of the duties of God. This new religious fervour will have consequences for politics, which may see the rise of a new ethical revival. This politics will not treat the individual subject as its main locus of concern. Instead it will focus on fostering harmonious relations within the collective.

It is ironic that a thinker who informed a great deal of ecological thinking, Martin Heidegger, lamented in the 1970s that ‘only a God could save us’.⁶⁴ Perhaps his prophecy will be fulfilled.

⁶³ U. Beck, A. Giddens, and S. Lash, *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order* (Cambridge: Polity Press 1994).

⁶⁴ M. Heidegger, interview (1966) *Der Spiegel* (published 31 May 1976).

