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**The European Water Framework Directive:
responsibility under conditions of uncertainty,
ignorance and complexity**

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The European Water Framework Directive: responsibility under conditions of uncertainty, ignorance and complexity¹

Thomas Petersen

The European Water Framework Directive (WFD) adopted in the year 2000 pursues the objective of exacting protection of bodies of water. Not only should damage to groundwater, surface waters and coastal waters be prevented, but rather more a good general condition of the waters concerned should be maintained or attained within a predefined period which has yet to be specified today.

The European Water Framework Directive (WFD) asserts much higher demands on state environmental policy/politics than have been accepted so far by national legislative bodies such as that of the Federal Republic of Germany. Are, for this reason, real improvements of protection of waters to be expected? More than a few researchers and environmental experts are apparently of this opinion.³ Critical views also exist, however, pointing out that application of the Water Framework Directive is not conformable with the institutional structure of German water protection measures and that implementation of the Water Framework Directive is associated with numerous uncertainties. It then appears questionable whether current environmental policy is at all effective in terms of the ambitious objectives of the Water Framework Directive and is in a position to accept responsibility in achieving the said objectives.⁴

This paper starts with the hypothesis that the model of integrative protection of bodies of water sketched in the Water Framework Directive will confront environmental policy with of uncertainty and ignorance.

This has effects on the aptitude of environmental policy to take over responsibility for the objectives allocated to it and claim to be acting effectively. For this reason, I shall analyze the consequences in terms of the guiding principle of responsibility deduced from implementation of the Water Framework Directive, most specifically for the protection of waters and more generally with respect to environmental policy.

Human behavior is almost always characterized by uncertainty and ignorance. It occurs under conditions which may change unexpectedly and provoke consequences, reactions of third parties and other results, which are either entirely unexpected or at least cannot be foreseen with any certainty. This way, activities sometimes bear results which, from the viewpoint of the persons undertaking the action, are undesirable or may even be dangerous for them.

An important aspect of the undesirable or threatening consequences of any action taken involves the environmental problems induced. Environmental problems are the undesirable and usually unforeseen consequences of commercial/economic activities which impair both life and health and may even question the very foundations of human life. As far as the environ-

¹ Our thanks to Malte Faber, Bernd Klauer and Wolfgang Köck for constructive information.

³ Such as the authors represented by Keitz/Schmalholz (2002) and Moss (2003) in the Expert Council for Environmental Questions (see for example SRU (Expert Council for Environmental Questions) 2000: txt. fig. 638 f.)

⁴ Wolfgang Köck (2005: 334/5) commented as follows: "The environmental protection integrated in investment rights and integrated river basin management in accordance with the Water Framework Directive – both of which are attributed to British concepts – generates expenditure where the results are highly questionable in terms of being appreciably beyond the implementation-friendly concepts of German Immission Protection Law. However, the noble claims of comprehensive river basin management in accordance with the Water Framework Directive do not fit in with the institutional operating conditions of the water protection authorities."

ment is concerned, uncertainty and ignorance may inculcate a danger to the natural basis of life in much the same way as they signify failure and danger to prosperity in the economy.

Therefore, uncertainty, as partial ignorance, and also total ignorance concerning the consequences of one's activity entail insecurity in the sense of threat and hazard. Both politics and the state are negatively inclined to both uncertainty and insecurity. The state creates *security and certainty* by means of law and its legal system; otherwise expressed, it eliminates uncertainty and insecurity. It guarantees the existence of common rights and protects its citizens against threats to their lives, their freedom and their property. For this reason, the state also exerts influence against environmental problems, including water pollution. In the same way, the state looks after *expectational certainty* among its citizens by means of its legal system. Everybody knows what they are allowed to do and that normal conduct will assert itself, whereas violations of normal conduct will be sanctioned. The state prescribes a specific non-damaging mode of activity and at the same time makes sure that damaging modes of activity are disallowed. In other words, everybody can certainly know what they may expect in the spheres of activity regulated by the state and what the results of their activity are likely to be.

Security and expectational certainty are not established everywhere by the state. Individual economic failure is as unlikely to be prevented by the state as the failure of a career or well-planned life. And, of course, the state is unable to protect an individual from illness. The state has restricted itself to general aspects of its citizens' existence: securing their rights, elementary existential welfare and the existence of the community as a whole.

As far as security and expectational certainty are concerned, the state bears the *responsibility*. The state can only properly adhere to this responsibility and guarantee security if it has the power to assess and monitor its own activities as well as those of its members and their consequences. This means that the state needs to possess expectational certainty with regard to the consequences of its own activities, insofar as the latter are associated with spheres subject to its regulation by law; it must possess comprehensive knowledge about these consequences.

Should environmental problems confront the state and its policy with uncertainty and ignorance, however, we are obliged to ask ourselves how it can maintain its elementary responsibility, particularly with regard to the natural foundations of life and environment of mankind under these conditions. The state and its policies clearly need greater instruments of power to deal with environmental problems in spite of their complexity and the uncertainty associated with them. These greater instruments of power are frequently foreseen in forms of environmental governance, the introduction of which would lead to changes in the political institutions involved (Moss 2003). But how are such forms to be judged in the light of the terms "responsibility, uncertainty and ignorance"? And to what extent will they bear uncertainty and ignorance with an additional diffusion of responsibility into the realms of political decision-making? I will initially pursue these questions by discussing the terminology of responsibility, uncertainty and ignorance (Part 1). Part 2 will address the problem of complexity in human activity. On the basis of these terms, I will then compare the classical approach to the protection of bodies of water with that of the Water Framework Directive (Part 3). Part 4 then reviews the difficulties emerging from the complexity of political responsibility. The final Part 5 will subsequently try to assess the environmental governance in question here.

1. Responsibility, uncertainty and ignorance

1.1. Responsibility

1.1.1. Allocation and commitment

Responsibility is a key notion in political discussions and the associated philosophical and scientific deliberations, which often is used ambiguously. Attribution of responsibility to somebody for something means allocation of a certain responsibility and commitment to them, making them answerable in the process. Whoever bears responsibility is obliged to assume liability in some form or other for whatever they do, either accepting liability for omissions or having to endure reprimands. The term responsibility has achieved particular significance in modern politics, which is shaped by functionally interacting fields and commitment groups. The sociologist Arnold Gehlen, therefore, is calling responsibility "the mechanized form of duty" (2004: 67). In other words, modern politics can only reach its specific objectives if everybody does and is expected to do their own bit in these various fields and commitment groups, in addition to which it has been predefined with exactitude what their own bit actually is. Doing one's own bit is seen as the responsibility borne by every person or representing the duty they have to fulfill.

What does the term "responsibility" really mean then, and how is it linked to knowledge and ignorance? i) In its primary sense, responsibility is a category of accountability. Someone is responsible for an action or activity and its consequences. This action is viewed as their own; they wanted it and at least accepted the consequences of their own action with approval. Responsibility takes freedom of performing an action or its voluntary nature for granted. One can only be held responsible for an action performed on a voluntary basis. An action can only be considered voluntary if one has not been forced to do it – either externally or internally – and also knows what one is doing. This has been pointed out by Aristotle (1995 Edition: 44-48) in the *Nicomachean Ethics*. Although it's fairly apparent what it means to be forced or not, the expression "to know what one is doing" needs some explanation. One knows what one is doing if one knows how the action will be understood by others, whether the action is appropriate, may be necessary and adequate and whether the means used are in correct proportion to the objective pursued. With regard to a measure associated with the protection of bodies of water, one needs to know whether it is normatively called for and is suitable to achieve the desired objective under conditions of reasonable use.

In addition to the above, "to know what one is doing" is also awareness of the consequences of an action. As well as the purpose pursued, its primary intended consequence, actions may also show side-effects which are not intended and may be unforeseeable under certain circumstances. Whoever bears or wishes to bear responsibility for their own actions has to be aware of the consequences of such action to a certain extent. They must know which side-effects will definitely occur or which are likely to occur with a certain probability. This knowledge should not only cover the immediate consequences of the action but also indirect results such as operating hazards derived, for example, from a motor vehicle or from an industrial facility, independent of any concrete activities – or omissions. In this context, responsibility is borne for the consequences and side-effects of an activity, of which one was aware or should have been aware – whereby it is decisive from a moral and legal point of view whether obtaining this information could be expected of the person actively involved (Lübbe 1998: 47-49). In accordance with the above, there exists an essential correlation between responsibility and knowledge. Free and responsible activity requires prior knowledge about the circumstances of the activity.

Responsibility for the activity and its consequences as such has no immediate legal or moral significance, however. Responsibility in this sense only represents the basis, e.g. of legal li-

ability for the consequences. If responsibility is considered a *principle of accountability* for activities and their consequences, then responsibility may also be described as competence in a second sense of the term. The person conducting the activity is not primarily considered to bear responsibility for the activity itself and its consequences but rather for someone else, something else or for the observation of regulations and norms. Responsibility as a *principle of competence* has the significance of an obligation: if one bears responsibility in this sense, one is equally obliged to properly observe a norm or to take more or less comprehensive care of the conservation, well-being or good condition of an object or person. Responsibility for a person or an object may also be further differentiated into negative and positive responsibility. Negative responsibility for someone or something is borne if one has the duty not to damage something or someone. In principle, we all have this negative responsibility or damage avoidance commitment towards everyone else and every external object. On the other hand, we have positive responsibility for someone or something if we are duty-bound to actively take care of the well-being or conservation of someone or something, as in the case of parents and their children. This positive responsibility may vary in its definition. In extreme cases, it may demand that the actively responsible person does everything possible in their own power; on the other hand, it may be limited by certain boundaries of reasonableness (cf. Lübke 1998: 47-49). Positive responsibility for a person or an object may, however, be unlimited in the sense that the responsible person is in the position of a guarantor for the well-being, good condition or conservation of a person or an object. The guarantor is obliged to vouch for who/whatever is under their responsibility by the assets at their disposal, their existential livelihood or their moral integrity. In this sense, the state is guarantor for the validity of law and the legal system; maintenance of this state of affairs is its *raison d'être*. Whoever is in the position of guarantor not only has to use their own strength in the interest of those under guarantee and keep the consequences of their own activities under control; they are also obliged to monitor the behavior of third parties and deter them from endangering that for which the guarantor is responsible.

This means we are in a position to make a triple differentiation in terms of responsibility for a person or an object:

- i) Negative responsibility, damage avoidance commitment; this is fulfilled when damaging activities are omitted,
- ii) Positive responsibility or commitment to promote the conservation, well-being or good condition of a person or object within certain reasonable boundaries,
- iii) Principally unlimited commitment of a guarantor to vouch for the conservation, well-being or good condition of a person or object without unnecessary constraints.

Proper responsibility in this sense of authoritative delegation not only demands prior freedom and voluntary nature of the action involved, but also *power*, this means the ability to decisively influence the environment by one's own activity. These demands on the power of the acting party are of modest significance in cases of negative responsibility, whereas they are of major significance and simultaneously most problematic in cases of guarantor commitments. Under certain circumstances, the guarantor may not even refer back to *ultra posse nemo obligatur* (no-one can be placed under obligation beyond their own assets). In every case, however, responsibility in the sense of authoritative delegation assumes that the party is aware of the consequences of its own activity and can keep them under control.

1.1.2. Individual and collective responsibility

Who, however, is adjudicated responsibility for someone or something? Who is in fact authorized to do what and in what manner? One may distinguish between individual and collective responsibility with respect to the bearer of responsibility. Individual responsibility is borne by natural persons or legal entities; collective responsibility is borne by constitutional and/or organized political associations (cf. Part 1). Individual responsibility is limited in typical cases and the position of a guarantor is seldom assigned to an individual. Individuals primarily bear the negative responsibility of preventing damage to third parties. This implies that individuals only need to account for the consequences of their own activity within a limited framework. Contrary to this, political associations or collectives are assigned extensive responsibility for equally extensive objects or purposes: validity of the legal system, protection of individual freedom, protection of the environment, economic prosperity – the reason for this that collective entities possess power in terms of their organization. On account of the said power, they adopt a guarantor position with respect to many of the objectives pursued and for which they take responsibility. They guarantee protection of the environment and adherence to the legal system. Most specifically the state and its existence vouch for the validity of the law. A state that fails to meet this commitment ceases in fact to be a state; this has been a topos or commonplace of political philosophy since the times of Thomas Hobbes. And even if this dramatic consequence does not materialize – a state, a collective that fails to come to grips with the task assigned to it – risks its own delegitimation. For this reason, collectives and political associations acting as guarantors for specific purposes, must be in a position to hold a command view of all consequences of their own activities insofar as they are of significance for this purpose. In addition to this, they must also be able to overlook and monitor the activities and consequences of third parties. Extensive knowledge about such consequences is a prerequisite for the latter.

Ignorance and uncertainty expound the problems associated with holding responsibility, or of authority delegated in some way or other with respect to a person or object.

1.2. Uncertainty and ignorance

Whoever wishes to or is obliged to bear responsibility has to know what they are doing and the consequences thereof. What does "know about the consequences" mean then? The acting party has to be aware of any relevant – i.e. not negligible – results that their own activity is likely to have; they may not be lacking information on the subject. Ignorance with regard to relevant consequences of an activity has itself to be handled differentially. Then there are certain forms of ignorance which themselves represent partial knowledge. One can in fact distinguish between different forms of risk and uncertainty actually lurking in complete ignorance (cf. Faber et al. 1992). Where risks are concerned, one may well recognize the possible characteristics of an incident; in this case, possible consequences of the activity, as well as their probability. Throwing a dice will display one of the numbers 1, 2, 3, 4, 5 or 6, with a probability of 1/6 in each case⁵. In an uncertain situation, we may know which characteristics a particular case will have – the possible number of dots on the side of the dice in our example – but contrary to the risk we don't know the probability of the throw because a cheat may have changed it. Risk and uncertainty with respect to the possible consequences of activity have one thing in common: we know the possible consequences and learn to accept them⁶;

⁵This may be represented somewhat differently in a more complex view of the dice throw, taking the speed of throw and angle etc. into account, for example (cf. Klauer/Brown 2004: 125).

⁶ If such consequences are relatively improbable, they are legally non-attributable according to the *adequacy principle*, i.e. need not be accounted for (Köck 1994: 13 f.).

however, although well aware of a possible consequence of a specific activity, we are unaware of whether it will occur or not.

Among these forms of relative ignorance, risk and uncertainty, the actual ignorance may be distinguished. As far as the actual ignorance is concerned, we don't know which consequences of a particular activity are possible as a whole; in other words one may be surprised by the results of one's own activity. Whether ignorance or only uncertainty exists in a particular situation depends on the representation of this situation – its depiction in the eyes of the acting party. The representation may be so highly abstract and general that all possible consequences are covered by its abstractness: One may simply ask, for example, whether a particular activity is environmentally harmful or not. A question such as this can only induce uncertainty; should one regard the possible concrete damage to the environment, however, ignorance is conceivable since some form of damage may occur unexpectedly.

Ignorance may be "open" or closed". If the case of closed ignorance, we don't know that we don't know something. We may be of the mistaken opinion that we are aware of all possible consequences of a particular activity. In other words, we consider ourselves knowledgeable where in fact we aren't. Only by knowledge about this ignorance will the closed ignorance turn into an open ignorance. An open ignorance may prove to be either reducible, if it can be transformed to knowledge and we become aware of what is not known at present, or irreducible if such a transformation is not possible. Reducible ignorance may be either individual or of social context. Purely individual ignorance may be reduced by falling back on socially current knowledge; social ignorance by scientific research and its institutions.

Irreducible, however, is ignorance about which nothing can be known in advance: This may be, for example, the appearance of genuine new concepts, creation of activity and thought processes and true invention.

2. Responsibility, complexity and joint production

This raises the question of what uncertainty and ignorance signify for the possibility of taking over responsibility for one's own activity with its own issues and objectives in different situations. Accepting responsibility demands knowledge about the activity and its consequences. The consequences of activity have the tendency, however, to propagate to infinity; every consequence may itself trigger a new consequence, and so on and forth. Complete knowledge can never exist in terms of this sequential movement towards infinity. Even if ignorance about all consequences were in principle a reducible ignorance, our mental agility would not be sufficient to completely reduce this ignorance. In addition to the above, activity may always lead to unpredictable reactions by other parties or interlink with the activities of others in unforeseeable ways.

This ignorance, unavoidable in principle or merely in fact, should not for this reason question our ability to act with individual responsibly. Ignorance about remote/vague consequences should not disquiet us since we can neglect such consequences as a rule. And unexpected reactions of third parties, should they thwart our own – legitimate – objectives, can be blocked by the state and legal system. In all such cases, ignorance may be reduced to simple uncertainty: other parties either accept our offer or not, the professional objective pursued will be achieved or not. Such uncertainty may be also be countered if we calculate the possible consequences of the activity concerned (Petersen/Faber 2005: 95 f.) and are able to decide on which of the possibly arising consequences we are prepared to account for.

It is, however, not always possible to neglect remote consequences, about which we usually know nothing. This particularly applies to comprehensive issues and objectives for which political associations claim collective responsibility. Responsibility for objectives such as

protection of our natural environment, validity of the rule of law or economic prosperity are an essential prerequisite for more extensive control of activities and their consequences than individual responsibility for limited issues and objectives.

This presents the problem of complexity for collective political responsibility. Complexity means that many of our activities take effect in ever more distant regions and provoke serious consequences there, which we may not neglect. Since we accept our own responsibility for these consequences, the philosopher Weyma Lübke (1998: 20 ff.) in view of this phenomenon speaks of an "accountability expansion". The consequences we account for interlink with the activities of others and their consequences. It may now happen, that such consequences aggregate and undergo systematic organization. In this case they may achieve much greater weight than the purposes of the original acting parties.

A paradigmatic example of complexity of this nature is to be found at the beginning of modern economic science. According to an observation by Adam Smith (1978 Edition) everyone pursuing only their own best interests in modern market economy also systematically promote general prosperity without actually intending it. The reason for this is that their own activity and its consequences are interlinked with those of others so that exactly this promotion of prosperity takes effect and this, rather than the self-interest purposes of individuals, is the essential feature of market economy within the perspectives of economic science.

These further consequences and effects of their activities need not become a problem for individuals only pursuing their own purposes and bearing individual responsibility within this framework. They will, however, take effect on the state or political community pursuing economic prosperity as a direct objective and bearing collective responsibility for the same. The state or political community, on the other hand, is potentially confronted with the problem of complexity of activities and their consequences in all fields where they pursue extensive activity and bear responsibility. For this reason, the political community – bearer of collective responsibility – has to seek as complete a control of its own activities and consequences as possible. This, on the one hand, is not sufficient for achieving and warranting collective objectives. And is why, on the other hand, it is essential for the political community to be acquainted with and in a position to decisively influence the activities of others, insofar as these concern the issues and objectives it is required to warrant and take responsibility for. Attention to the problem of complexity is particularly urgent since state collective activity is also subject to systemic legitimacy and may come to conclusions counteractive to the original purpose of the activity. Such phenomena find particular attention these days in the so-called New Political Economy. The "Economic Theory of Bureaucracy", for example, has diagnosed tendencies for administrative activity to undertake expansion of the administration or "bureaucracy" alongside their original purpose, and this effect appears to the New Political Economy (Downs 1967, Petersen/Faber 2000: 18-23) to be the most dominant.

Complexity of activity consequences is of particular significance in all questions of environmental protection and environmental policy. In this context, complexity is not only a social but also a natural issue. Activities may not only have consequences that can propagate without limitation in the social world, but may also have unpredictable effects on the natural environment.

Natural complexity may also be visualized on the basis of the ecological economic concept of joint production. "Joint production" is a term originating in the study of national economics but which has been used almost exclusively for business economics since the nineteen thirties. It denotes an unintentional and simultaneous co-emergence of other products, the so-called

joint products, during a particular production process⁷. On the basis of thermodynamics, the business economic concept has been generalized and now means: not only every material production but every other activity with a material and an energetic facet induces at least one change in our natural environment, or in other words, generates at least one joint product which may, under certain circumstances, possess other self-propagating effects in our natural environment (Baumgärtner et al. 2006). For this reason, human activities such as transportation/traffic, agriculture or industrial production always have effects/repercussions on our natural environment, which are frequently not immediately recognized.

The concept of joint production has now shown that not only have problems of uncertainty or of "uncertain knowledge" (Köck: 2005: 328) become apparent in the sphere of environmental effects, but that we are also confronted with ignorance and even irreducible ignorance. On the one side, the concept of joint production draws our attention to possibly unrecognized consequences of human activities in nature. On the other side, the economic aspect of unintentional joint production is of decisive importance, whether deliberate, i.e. useful, or accidental, i.e. harmful. In most cases, environmental problems can in fact be understood as the result of unwanted joint products. The usefulness or harm of joint products cannot, however, be considered as once and for all state of affairs, but can be reversed to the opposite effect by a transformation of preferences or technology (Petersen/Faber 2004: 190, cf. Baumgärtner et al. 2006: 237-240). This transformation of preferences or technology often has the character of novelty, however, and is basically unpredictable; in this respect an irreducible ignorance has been brought into existence this way (Petersen/Faber 2004: 192).

As far as environmental effects are concerned, not only social but also natural complexity has to be taken into account; in both cases complexity is coupled to ignorance.

Generally speaking, two consequences become apparent in terms of environmental policies and environmental protection:

- 1) Environmental policy (makers) should bear in mind that not only the activities of private economic enterprises but also their own efforts, such as the substitution of environmentally harmful by environmentally friendly activities, may themselves, under certain circumstances, have initially unrecognized harmful effects on our natural environment. Such effects may also aggregate and undergo systematic organization in nature as well as in the social world. Activities may act here as triggers of processes which, similar to the greenhouse effect, have an immeasurably greater and more significant weight on the life-interests of mankind than the purposes pursued by the original activities.

- 2) Effective protection of the environment influences all activities which have environmental effects. For this reason, environmental policies (or politics) cannot be driven by sector, but require an integration of environmental policies with other political fields such as transport/traffic policies, agricultural policies and regional planning.

It has become apparent that the collective responsibility of political communities for protection of the environment as well as collective responsibility in other matters is confronted by uncertainty and, above all, by ignorance – and that to a considerable extent.

⁷ A detailed description of the phenomena of joint production from the viewpoint of business economics is presented by Riebel 1955.

3. Policy approach of the European Water Framework Directive and the complexity problem

3.1. "Classical" environmental policy

Assignment and responsibility of the state are located in environmental protection in much the same way as in the guarantee of security and the fending off of danger. In classical environmental policy the state shows its full awareness of this responsibility by means of legislation for the limitation or prohibition of undesired or harmful joint products. The state has laid down emission and immission (emission absorption) boundaries for such harmful joint products, most specifically pollutants, which must be observed by norm-addressees. This may be enforced by statutory regulations or by the application of economic instruments which indirectly control emissions.

This way, the state takes care of safety/security and clearly defined responsibility structures. It warrants the attainment of certain immission and emission targets for certain pollutants. This is achieved by imposing a clearly defined commitment or responsibility on the individual protagonists not to generate certain pollutants – or joint products of their activities in each case, either at all or only within specific limits, or pay a (tax) levy for their production (Baumgärtner et al. 2006: 258-260). Problems in terms of the ignorance are actually not to be found here and those related to uncertainty only insofar as it may be doubtful whether the state is also in a position to assert the norm it has set, or whether this fails as a result of the so-called implementation deficit.

In the framework of the aforementioned differentiations, the state itself takes on a negative responsibility here; it guarantees no intact environment, even if preservation of the environment is the actual sense of its activity and has been laid down as target in the corresponding laws. The state merely guarantees that damage to the environment does not occur or remains within certain limitations in any case. In this context it must be assumed that the state has the necessary power and means to deal with its responsibility.

3.2. Uncertainty and ignorance in the water protection objective of the Water Framework Directive

The European Water Framework Directive (WFD) has set up an integrative concept for the protection of bodies of water against the classical approach to environmental policy which is oriented towards exactly defined objectives. In this concept, immission and emission objectives play only a minor role since the primary objective pursued by the directive is quality. The Water Framework Directive assigns the task and responsibility of making sure that the waters concerned are of good general condition (cf. Art. 4 WRRL) to the member states of the Union, this means taking care of good chemical and ecological status of surface waters or good chemical and quantitative status of the groundwater. In this process, reduction of the emission of certain pollutants no longer plays center stage; where water protection is more directly oriented towards the quality objective of good water, every possible damage to the waters must be taken into consideration, in addition to which suitable measures must be taken to first establish such a status where it does not otherwise exist, and to preserve it where nature itself fails to do so. Different to the classical approach of environmental policy, the Water Framework Directive formulates positive responsibility of the state for the condition of its waters in its strongest possible form of guarantor commitment; the member states ultimately have to vouch for the good status of their waters (Art. 4 WRRL). With this broader regulation for the protection of bodies of water, the old problems of uncertainty and ignorance, which obviously played no part or only a minor part in classical environmental policy, have returned to the pack. Uncertainty exists primarily within the definition of good water status itself. It

cannot be generally specified, but has to be defined in terms of the type of water and natural region, the use of water in each case etc. Then, however, there is leeway in the question as to which parameters and which pollutant threshold values exist for such a definition. This means that uncertainty exists for each protagonist playing a part in water protection or who is affected by the measures involved, and how other protagonists have defined what is valid as good water status.

The problem of ignorance and complexity initially plays an important role on the physical natural stage; the pursuit of a series of a series of emission and immission targets is insufficient for the attainment of a good water status. Rather more one is obliged to take every possible human – and natural – activity into consideration where the products and joint products are likely to impair and worsen the water status. In any case, water protection measures are scarcely able to cover/integrate all the emitters of such joint products or pollutants. In addition to this, the occurrence of new or so far unknown or unrecognized joint products or pollutants has to be constantly borne in mind in water protection. From this aspect it becomes apparent that integral water protection, as foreseen by the Water Framework Directive, is dependent on cooperation with the relevant scientific sources to a greater extent than classical environmental policy (cf. SRU 2004: txt. fig. 1300).

Complexity and ignorance are also a problem in the political and social contexts of the protection of bodies of water. A short time ago we discerned that water protection in terms of the Water Framework Directive should leave no human activity out of consideration which may influence the water status. This makes it necessary to expand water protection both factually and spatially: in other words, to expand it on the one hand factually – beyond the simple regulation of emission from point sources, of water sampling and structural changes to the waters, and on the other hand spatially – beyond the so-called "main stem" interconnection of surface waters and groundwater arteries. This way, the Water Framework Directive provides water protection with a clear spatial frame of reference (Moss 2003: 25). The spatial aspects for the protection of bodies of water not only cover the waters themselves in the narrowest sense of the word, but also include river basin units. Since the entire territory of the EU can be allocated to such river basin units, the spatial reference frame of the Water Framework Directive is EU-internally unlimited. The objectives associated with the protection of bodies of water should also pursue cultivation of the river basins in accordance with the Water Framework Directive. Objects of this cultivation include all activities which may influence the water status, even when these refer to the delegation of authority and responsibility of other political arenas such as agricultural policy, transport/traffic policy, land allocation etc. Water protection is becoming a complex matter since it is of common interest to political protagonists of different areas (municipalities, German Federal States, EU-member states and non-member states) and of different spheres of influence which are defined by quite different and opposing interests. Water protection is moving into a field of unforeseeable and unpredictable action and reaction, the complexity of which can scarcely be kept under control, if at all.

4. The complexity of activity circumstances as a threat to activity effectiveness

4.1. Complexity and the environment

As shown in the issue concerning the protection of bodies of water, complexity determines, even generally speaking, environmental policy/politics and its outrigger, the environmental problem. Environmental problems are the result of the undesired effects of commercial activities on our natural environment. Our natural environment is that sphere wherein it is particularly difficult to draw a line between the relevant and irrelevant consequences of activity. Initial consequences which appear to be insignificant and harmless may unfold into dangerous effects over a longer period of time. The chlorofluorohydrocarbons used as coolant since the nineteen thirties were considered as completely harmless for a long time since, as extremely stable chemical compounds, they are neither poisonous nor combustible. At the beginning, no-one had predicted that once released into the atmosphere they would concentrate in the stratosphere – precisely because of their stability – and take their toll in destruction of the ozone layer (Luhmann 2001). In a similar manner, it was gradually noticed that sulfur dioxide (SO₂) formed by burning fossil fuels induced an acidification of soils and damage to the forest.⁸

Ignorance is a continuous problem in terms of the environmental consequences of production and consumption since we were unable to predict all these consequences. And these consequences can propagate without limitations as do the consequences of activity in general (Funtowicz/Ravetz 1990).

The complexity of human activity in general and the environmental consequences of human behavior in particular have led to a situation where environmental policy is insolubly linked to other political fields and cannot be conducted sector-for-sector in a sensible manner. Emissions derived from agriculture and transport may contaminate the waters, and for this reason water protection also depends on transport policy and agricultural policy.

On the other side of the coin, comprehensively organized water protection regulations have their effects on agriculture and transport. For this reason, water protection is in interaction with all other political fields involved during compilation of the Water Framework Directive.

Two complementary but opposing developments can be observed under conditions of such complexity. On the one hand, the spatial and temporal range of human activity is ever increasing; even survival of the natural foundations of life clearly depends on this activity. This means that particular responsibility for these natural foundations of life or the status of the environment is attributed to mankind (in the sense of allocating consequences and responsibility) and simultaneously claimed (as authoritative delegation). Hans Jonas (1979: 27) declared that "an issue of entirely new magnitude, no less than the complete biosphere of the planet, has been added, for which we are obliged to bear responsibility since we have power over it". This not only leads up to the "accountability expansion" ascertained by Weyma Lübke (see above), but also to expansion of the authority delegated. In other words, we not only have to attribute ever more extensive consequences to our own activity. More than this, the circle where we have to take care of conservation, well-being or good condition is widening ever more. This implies that "responsibility for future generations " (Birnbacher 1995) may be demanded or asserted.

⁸ On the contrary, possible consequences of the enrichment of the greenhouse gas carbon dioxide (CO₂) on climate development were pointed out by researchers early on; however without any appreciable public resonance.

4.2. Complexity and the power of judgment

Expansion of responsibility stands opposed to a decline in the monitoring of one's own activity and its consequences. Under conditions of complexity – and joint production – an estimation of the consequences of the activity, what these consequences themselves imply and their importance is only possible when accompanied by ignorance and uncertainty: consequences may always occur and joint products develop effects one was unable to forecast. If one is unable to forecast or adequately oversee any relevant consequences in complex activity contexts, then, strictly speaking, one no longer knows what one is doing. On the other hand, it is also difficult to oversee which consequences of the activity of other parties will have a positive or negative effect on achieving the objective of one's own activity.

In complex activity situations, ignorance prevails as well as uncertainty in attaining the objective of the said activity with regard to the relevant consequences of one's own activity and that of third parties. This does not only mean that one cannot know whether the aspired target will be reached and that no probability values can be assigned to various possible activity results. Uncertainty also has a subjective component, as emphasized by Klauer and Brown (2004: 125): in this context, an protagonist feels unsure if he/she can set no confidence in the fact that one or no specific results will be generated (*ibid.*, 126). This confidence is confidence in the normal circumstances of an activity. Such confidence is required since, as Aristotle saw it, one is always unsure and even unknowing with reference to the circumstances of an activity. Then the things we have to do with in an activity may always behave differently – at least in detail – to what we expected (Aristotle 1995 Edition: 137; cf. Petersen 2005: 121, Petersen/Faber 2005a: 99). Activity constantly moves in a sphere of vagueness. A particular mental asset refers to this vagueness in which conclusions can never be formulated with ultimate certainty. This is the power of judgment in its function as practical wisdom; Aristotle refers to this asset as *phronesis* from the verb *phronein* which means much the same as "being reasonable".

Phronesis is not oriented towards logical principles, from which decisions may be deduced with certainty – as may sometimes be the case in technical questions. Phronesis or practical wisdom more often follows rules and terms that need interpretation. These rules always poses an exception as well, composed of "pragmatic user rules" where wisdom "merely approves *prima-facie* validity – standby validity on call" (Wieland 2001: 157). For this reason, wisdom involves concepts that only appear reasonable after interpretation in an individual case, and permit adaptation of an activity to the requirements and unexpected circumstances of the said case. Such terminology includes "proportionality", "adequacy" and "practicability".

Power of judgment is typically demanded in the form of practical wisdom whenever an *average* between two extremes needs to be met and where the said average cannot be derived from a generally valid mathematical rule. This is always the case when the definition of deficiency and surplus is dependent on a multitude of individual circumstances in a particular situation (Aristotle 1995: 34-35). When the precautionary principle is used as well, as shown by Wolfgang Köck (2005a: 95), practical wisdom has to find such an average when, for example, non-precautionary activity is just as expensive as overcautious activity. One only knows that careless activity endangers the environment and that overcautious behavior is best suited to hamper competing rival interests with more environmental protection than necessary and, for example, to handicap innovations (Köck 2005a: 86). Ultimately, an overcautious attitude could itself damage the environmental policy objectives.⁹

⁹ Köck (2005a: 93) points out the frequently quoted fear "that a strict precautionary policy generates more risks than it eliminates".

On these grounds, power of judgment always comes into play where conflicting interests and points of view have to be weighed against each other and a generally acceptable balance between the two parties needs to be found. It is exactly in such a constellation that somewhat unusual terminology also appears in the Water Framework Directive. In Article 5, for example, curtailments of the "strict environmental objectives" are allowed if "achieving these objectives were [...] *disproportionately* expensive", "pollution *at reasonable discretion* could not have been avoided" and when "all *practicable* precautions have been met" to prevent negative effects on the water status (Article 5, Sections 5, 5a, 6a), (highlights from the author). In order to consider the use of expressions such as discretion, proportionately and practicability considerations, one must be in a position to assess the situation in each case. One must be in a position to make such an assessment although one will never be able to overview all the consequences of certain activities and measures and which affects one's own activity may approximately have. For this reason, activity and practical wisdom require confidence in the normality of the circumstances involved, confidence that one will be able to distinguish the relevant and probable consequences of one's own activity. Complexity, however, questions exactly this confidence in normality of the circumstances of an activity since the latter may be dominated by its own unpredictable side-effects. This way, complexity jeopardizes activity possibilities, which in turn means the power of the protagonist. Complexity may thus signify loss of power.

For this reason, the expanded attribution of responsibility under conditions of complexity possesses paradox features. It is not accompanied by a gain but with a loss of the possibility of really taking over responsibility. Expansion of responsibility then leads to "complaints" about the delegation of authority to cover regions which "nobody's activity would ever reach" (Heidbrink 2003: 19). This means: The attribution and transfer of responsibility under conditions of complexity indeed signifies *obligatio ultra posse*, – commitment above and beyond the actual power of the protagonist.

The posture of the power of judgment towards complexity is conflicting. On the one hand, the power of judgment makes it possible to act at all under conditions of complexity. And activity frequently takes place in complex situations. The acting party "finds itself in a situation which it has not as a rule brought about itself and has never completely looked into, but which forces it to act and at the same time presents alternatives" (Wieland 2001: 162 f.). The power of judgment makes it possible to act under these conditions – i.e. under ignorance and uncertainty. The power of judgment is in fact the ability to master complexity. The said ability may, however, be put in question by two factors and robbed of its effect:

- 1) The complexity of the activity situation may be over-dimensional, meaning that the conditions under which one acts become too unpredictable. There is then no longer any normality of the situation, where essential and non-essential consequences of the activity can be distinguished from each other to a certain extent. The acting party here underlies a fundamental subjective uncertainty (Klauer/Brown 2004) with regard to any possible results and consequences of his activity, making it impossible to control the situation to any extent.
- 2) On account of the complexity of the situation, the objective pursued by the acting party places demands on its acting ability which it may not be possible to meet under the current structures. Should attainment of the activity objective be essentially dependent on factors which the acting party cannot or can only slightly influence, the activity situation will also become unpredictable.

We can visualize this situation using the example of a business that can only maintain its existence by sale of its products and the example of a licensed medical practitioner in the German health service in the year 2006. The business as well as the physician act under conditions of uncertainty and ignorance. The business cannot know exactly just how large the demand and

willingness to pay for its products is nor how the two may develop. The business can, however, react to fluctuations in demand and changes in the willingness to pay by making changes in the production process, with new or changed products which are cheaper or dearer than the originals, and by attempting to influence demand and payment to its own advantage. The practitioner, on the other hand, finds himself in a completely different situation. As a practitioner affiliated to one of the "statutory" health insurance institutions/companies he is only allowed to receive remuneration for certain services predefined by the insurance institutions. The individual practitioner cannot influence the amount of this remuneration; he cannot offer his services at a cheaper or dearer rate. At the same time, however, the amount of the remuneration is not fixed; the practitioner has no security in this respect since the amount of the individual remuneration depends on a complicated budgeting process where a fixed sum is distributed over an aggregate of all services required. Above and beyond the current public discussion of whether a practitioner in this system can receive adequate income, the actual problem here is that the amount of the income is decisively influenced by a series of factors where the practitioner himself has no influence, whose effects he cannot predict, and where he is not able to react to any changes made

The question now posed is whether the situation of the protagonists in the implementation of the Water Framework Directive is similar to that of the businessman or that of the licensed practitioner. It has to be asked: is the activity of these protagonists not subject to limitations they cannot influence and which jeopardize achievement of the planned objectives?

5. Complexity, responsibility and new *Environmental Governance*

5.1 Opportunities and limitations of the *Environmental Governance*

The comprehensive water protection system, oriented towards a quality objective and taken to task by the European Water Framework Directive, confronts environmental policy/politics with the problems of complexity, uncertainty and ignorance. This is why the guidelines of the Water Framework Directive take the state as responsible for water protection up to the limits of its possibilities: a threatening lack of power, and inadequate delegation of authority may make it impossible for member states to undertake really positive responsibility for water protection and to guarantee the quality objective of good water status. These difficulties can be faced up to by a redistribution of delegated authority between the European Union, the member states and federal units (the Federal States in the Federal Republic of Germany) which would enable political institutions to better meet their individual responsibilities (cf. Petersen 2006: 24 f.).

A new regulation of the authority delegated in this way does not appear to be sufficient however. The tasks imposed by integral protection of bodies of water make a much greater demand for the *expansion and increase of state power*. This interest in state power expansion determines – when at times without ready acknowledgement – the current discussion about new *Environmental Governance* (cf. SRU 2004: txt. fig. 1189 ff.), covering forms: a) objective and result-oriented control, b) cooperative government, c) environmental policy integration and d) "activated self-regulation", participation or public contribution (cf. Köck 2005: 338). All these forms play an important role within the Water Framework Directive. The setup is oriented towards the objective as a whole, cooperative government is dealt with in Article 3, WFD, environmental policy integration is referred to in consideration 16, and participation of the public is dealt with in Article 14, WFD.

Starting point of the discussion about *Environmental Governance* is the increasing doubt in environmental policy as to whether the control model or " 'traditional' state activity" in environmental policy (SRU 2004: txt. fig. 1185) – the "command to control" model (Moss 2003:

132 f., 138-140) – really still allows state and politics to attain exacting environmental policy objectives. This model is based "on a hierarchical approach, on sovereign jurisdiction of legally binding commands, on implementation and supervision of the commands by the environmental administration of the Federal States and on control and (careful) advancement of the system by the courts" (Köck 2005: 327).

In place of this hierarchical asymmetry between the state and Federal States (Länder) on the one side as well as citizens, businesses and social interest groups on the other, *Environmental Governance* establishes forms of symmetrical cooperation between these two sides. Then wherever such cooperation is not explicitly foreseen, "negotiable solutions" of equally entitled partners are in the foreground instead of state hierarchical order (Fichter 2003: 198, SRU 2004: txt. fig. 1298). An orientation of this kind, based on cooperation and negotiating systems, will moreover be greeted *inter alia* as a gain in freedom and democracy by restraining hierarchical state activity (SRU 2004: txt. fig. 1179). This will hardly apply in all reality however. On the one side, the state makes the establishment of norms dependent on the willingness of the norm-addressees to cooperate. This brings a moment of uncertainty and non-calculability into the state activity which is unaware of hierarchical "traditional" state activity. On the other side, however, it broadens the possibilities of state power since: cooperative control can "spare" the intervention capacity of hierarchical control by negotiable solutions in the foreground (SRU 2004: txt. fig. 1299). Using cooperative control, the state can achieve a politically undesirable environmental behavioral pattern by the norm-addressees without having to force it; in other words, it has the opportunity to apply and better concentrate its limited possibilities of enforcing behavior more selectively. Above and beyond this, it may achieve that the norm-addressees show desirable behavior, which cannot be forced, such as environmentally friendly product innovation etc. this way. In this process it broadens the leeway of state politics and increases its possibilities of reaching comprehensive environmental objectives. In addition to this, it is mostly coupled with an increase in state activity since "the (mainly cooperative) governance forms [...] urgently introduced to ease the burden on the state are partly associated with considerable administrative capacity demands" (SRU 2004: txt. fig. 1297).

As can be seen, *Environmental Governance* is a somewhat discordant phenomenon. Its forms of cooperative government may lead to a real broadening of state power, but with the price that the clear responsibility of the state to vouch for attaining the environmental objectives is threatening to disappear. Then this concerns a cooperation of state and non-state protagonists, the latter of whom bear no public or political responsibility. The Environmental Council fears that "the new environmental governance [...] creates a tendentially diffuse and unmanageable responsibility structure which ultimately reveals a decline in effectiveness: if everybody is authorized and responsible, then finally nobody is." (SRU 2004: txt. fig. 1230) One could express the dilemma associated with the environmental governance as follows: exacting environmental objectives can only be attained by the state, and the problems of complexity, uncertainty and ignorance be counteracted in that the state itself takes uncertainty into its government activity fold. It can only accept greater responsibility by itself taking over the "danger of dissolution of responsibility structures" (SRU 2004: txt. fig. 1221). On this account, one may in fact be in doubt as to whether "the results would proceed beyond the altogether performance-friendly concepts of the German Immission Protection and Water Protection laws to any appreciable extent." (Köck 2005: 334)

These reservations about "the noble claims of comprehensive river basin management based on the Water Framework Directive" (Köck, loc. cit.) would appear to be right in every case. Then the danger of unclear and diffuse responsibility structures really exists in implementation of the Water Framework Directive, as shown in particular by the problematic cooperation and coordination regulations of Article 3 (cf. Petersen 2006: 20 ff.). On the other hand, the

current environmental problems are difficult and water protection a complex task. Politics and the state will have to search for possibilities of expanding their power here and sparing their meager capacities in hierarchical control. But then, however, the forms of environmental governance open up – an important opportunity, in spite of all interlinked uncertainty, which should not only be judged in terms of its initial failures, which were possible and perhaps even to be expected.¹⁰ In a longer term perspective they should be viewed as tentative steps forward, by means of which the state and political community is adapting its activities and possibilities to the requirements of modern economy and its environmental effects. The Environmental Council also considers it to be reasonable as a supplement to classical state activity (SRU 2004: txt. fig. 1319) as long as the state is able to fulfill the role of "guarantor which in case of failure of supra-national or sub-national problem solving would take over the ultimate responsibility" (SRU 2004: txt. fig. 1221). This request should only be underlined: "the correct and important discussion about new control concepts may not question this responsibility." (Köck 2005: 338).

5.2 *Homo politicus* in environmental politics

The route proceeded along by environmental politics in the company of environmental governance should scarcely lead to a "retreat of the state" after all has been said. Nonetheless, following this route in the process of expanding state power will depend on not surrendering the uniqueness of state ultimate responsibility. This demands much power of judgment along with a steadfast orientation in line with the general interest of the political community. We have awarded both of these are virtues elsewhere to the political protagonists as *homo politicus* (Faber et al. 1997, Petersen/Faber 2000, Faber/Petersen/Schiller 2002). These virtues will have to be displayed by the politically responsible – not only the selected politicians but members of the environmental administrations as well – in particular those from the ministerial administration – who will hardly have any choice in viewing themselves as political officials (Petersen/Faber 2000).

5.3 Will *Environmental Governance* destroy state sovereignty?

A final comment: having just said in the above text that the ultimate responsibility of the state must be safeguarded in the process of expanding state power by means of environmental governance, this is neither a non-committal expression nor a demand for the squaring of the circle. The term "ultimate responsibility" in the political sense means nothing else than "sovereignty". Both mean that a final legal and binding decision will be made and put into effect and that somebody will vouch for it; this is how uncertainty is replaced by security. Thomas Hobbes, one of the founders of modern state philosophy voiced his fear that a subdivision of power would infallibly destroy sovereignty – and alongside this the structures of political responsibility if one so wishes. One form of the subdivision of power is also that discussed and operated under the title of environmental governance.

In opposition to the doctrine of Hobbes, however, a number of entirely different authors argued that the subdivision of power or separation of powers and sovereignty are not in essence contradictory to each other and that such division may on the contrary increase and stabilize the power of the sovereign state (Hegel 1970, Luhmann 1974, Arendt 1994). Hegel, above all, demonstrated this with the example of the power of public opinion. The more public opinion

¹⁰ In the German waste disposal industry an instrument known as "activated self-regulation" has been put into effect with some success for more than fifteen years, otherwise referred to as *voluntary self-commitment* in trade and industry (cf. Faber/Petersen 2001: 77).

participates in state activities via freedom of the press and public observation of the government, the greater the acceptance the government may expect for its activities – and at the same time use public opinion to check particular interests.¹¹ The participation of the public foreseen in Article 14 of the Water Framework Directive may have exactly this function alongside a strengthening of political basic rights. Should the estimation of the Environmental Council that "the commitment to provide information and particularly to listen to the public is not appreciated as a welcome enrichment by the authorities but rather as an obstacle" (SRU 2004: txt. fig. 422), the authorities would be misjudging an important chance for their own interests.

¹¹ Hegel 1952: 294: " The principle of the modern world requires that what anyone is to recognize shall reveal itself to him as something entitled to recognition. Apart from that, however, everyone wishes to have some share in discussion and deliberation. Once he has had his say and so his share of responsibility, his subjectivity has been satisfied and he puts up a lot."

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