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EPISTEME

REVISTA DE EPISTEMOLOGIA E HISTÓRIA DAS CIÊNCIAS E DAS TÉCNICAS DA UNIVERSIDADE TÉCNICA DE LISBOA

SEPARATA

CENTEP

Epistemology, Policy and Diversity

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Section 1: Introduction

Ideally, science and knowledge belong together as project and product, truth or the approximation thereof being the result of scrupulously following correct procedures for formulating and testing hypotheses and interpreting results. In the course of history, a special class of human beings who devote their days to research in universities and research institutes has emerged, people who are expected to be the model citizens of the city of knowledge: scientists. Their behaviour has become the almost exclusive research object of epistemology, of the history of science — and of the sociology of science. Radical representatives of the last discipline, united under the flag of the so-called Strong Programme in the Sociology of Knowledge (SPSK), argued that scientists in real life are far removed from the epistemological ideal: their research questions would be guided by unscientific motives (politics, power, status and money), their activities aimed at creating desirable results, their experiments and ideas messy, their memories selective, their appreciation of alternative explanations and theories negligible or hostile, their discoveries often purely accidental (cf. e.g. Barnes 1977, Latour 1987). In recent years, post-modern theorists have gone even further than SPSK by claiming that truth itself is a non-issue. Human practices, including scientific research, would be ruled by — or worse, be involuntary effects of — 'discourses', sets of theories and norms that determine which issues, questions and acts are correct or incorrect, relevant or irrelevant, sensible or meaningless. Truth is a function of interpretation, of the way in which 'significants' (phenomena) are 'signified': the rules of discourses determine what truth is, within the context of a given discourse (for a classical account see Foucault 1966). There would be no way of rising above the discourses, of uniting or of criticising them: a metadiscourse would simply be another discourse creating its own new reality. So far, no post-modern theorist has ever been embarrassed by the paradoxical observation that postmodernism must itself be one of these only contextually meaningful discourses.

For decades now, the questions raised by SPSK and postmodernism have dominated the agenda of epistemology. It seems to be relatively easy to answer SPSK's critique by pointing to the distinction between the context of discovery and the context of justification. Let it be true that Newton got his ideas about gravity from his encounter with an apple; let it be true that Kékulé got his best idea in a dream; let penicillin be the discovery of an extremely messy scientist in an extremely dirty laboratory; let it be true that the agenda of academic research these days is a product of opportunistic political decision making. Let all this be true — as long as *x* is an experiment that can be repeated under (ideal, clean) laboratory conditions, an interpretation or a theory that can be reconstructed or added to the body of existing knowledge using correct procedures — as long as what has been discovered can be justified, it will still be true, good or reliable knowledge.

Postmodernism is less easy to beat, exactly because it turns the idea of a context of justification against science. It is the discourse of a particular scientific discipline that 'produces' truth: its collection of myths (existing knowledge) that help us interpret phenomena and locate them in this larger framework, and its taboos and commandments (epistemological criteria) that control the perception of new information and its access to the minds of interpreters. Hence, the epistemologist's proposition that scientific truth is scientific truth no matter how it was discovered makes perfect sense within the discourse of epistemology but none whatsoever within that of SPSK, because SPSK is not interested in the nature of scientific knowledge but, pathologically, in the nature of science as a social process of (re)producing attitudes and codes of behaviour. By the same token, real communication among the discourses of scientific disciplines and between them and those of non-academic life is impossible: different discourses interpret the same proposition or phenomenon according to their own rules. The grocer and the astronomer live in different worlds, and never the twain shall meet.

If postmodernism is right, then what is knowledge in one context need not be the same thing in another context, and worse, what is true in one context can be untrue in another: the proposition that mankind and apes have common ancestors would be as true in biology as it would be blatant nonsense in fundamentalist Christianity. So is communication really impossible, is the quest for universally valid knowledge futile?

One of the few redeeming qualities of postmodernism is that it reminds us of the often neglected fact that knowledge is not produced in academic circles only. The difference between academic knowledge and knowledge elsewhere is, or so tradition says, that academics pursue knowledge for the sake of knowledge, whereas others have more practical purposes in mind, which might induce them to be less scientifically sincere than the ideal scientist. Two remarks are in order here. Firstly, knowledge is in fact seldom pursued for its own sake. Apart from the fact that

the average researcher will find it difficult to convince a government that his research should be financed exactly because it will not have any practical use — even the academic himself seldom believes in the intrinsic value of knowledge. He may believe in the intrinsic value of the *pursuit* of knowledge as valuable in itself, but this does not fully explain the actual genesis and development of his research, like why one scientist investigates one topic and a second another, or why one research question would lead to another. At this point, there is no harm in giving in to SPSK — we are after all only talking about the context of discovery. Secondly, the (in)famous divide between theory and practice, science and the real world, may help to explain why phenomena are observed differently in both walks of life or in other discourses, why some are interesting in one and others in another and why different issues are considered relevant in different contexts — but, as I hope to show, that same divide cannot make knowledge more or less true depending on which side of the divide one lives.

If the epistemologist's reply to SPSK is correct, it should not matter how knowledge is made or discovered — what matters is whether it can be reconstructed, hypothetically, as the logical result of correctly applying the right justification procedures under ideal circumstances in an ideal world. Thus, if the epistemologist is right, truth is truth regardless of the context. Whether truth is *recognised* as such is a totally different question. So far, the postmodernist can still agree with the epistemologist. His claim appears to be simply a restatement of the latter's position: scientific truth remains scientific truth from a scientific point of view and can at the same time be religious untruth from a religious point of view. But here the epistemologist cannot go along: for him, there must be a truth above and beyond the boundaries of contexts. Now if we can show that there is, or can be, at least one instance of communication between a scientific and a non-scientific discourse where both agree on the same standards for a phenomenon both understand as truth, then the postmodernist's hypothesis would appear to be refuted. It is my intention to do precisely this.

For this purpose, I shall discuss environmental policy (section 2), and I use the term policy in a strict sense. In a broad sense it is the reasoned development and application of means to pre-given ends — a definition that includes almost every form of human behaviour from laundry cleaning to science. In a strict sense, policy is an activity performed exclusively by political actors through administrative organisations. Although I define environmental policy in this strict sense, we should keep the broad version in mind; as we shall see later, it can help us understand the role of epistemology in science and practice. There is no reason why specifically *environmental* policy would be interesting — it just happens to be a field I am familiar with and one that offers ample opportunity to illustrate my claims.

In the development and implementation of policy, knowledge is an instrument and the absence of knowledge an obstacle. Now common sense tells us on the one hand that policy makers should have an interest in accurate information, i.e., in scientific knowledge, whereas on the other policy makers have their own agenda and their own criteria for success, criteria according to which the 'solution' of an environmental *policy* problem may well differ from solving an environmental problem as such. If we consider policy in light of the first perspective and assume the availability of adequate knowledge, it could be as totally uninteresting for an epistemologist as perfect science — it would be a purely technical affair. Policy making is only epistemologically interesting in so far as knowledge is absent or insecure — in so far as it is a way of not-knowing what we do not know. It is for this reason that this will be an essay on epistemology but not as we know it: I intend to discuss ways in which we do *not* know what we do *not* know.

I hope to show, among other things, that the logic of the environmental policy discourse can force policy makers to deal with environmental problems as such. Second, their logic forces them to recognise the absence of information as a problem. Third, absence of information can take more forms than that of a lack of empirical knowledge alone — in fact, it is information of a moral and political nature that they most want. Fourth, it is in some respects a lack of information and in others its presence that justifies policy diversity, i.e., the employment of different rather than similar policies.

In section 3, I draw conclusions of two types from my analysis of environmental policy. On the one hand, I discuss the role of (non-)knowledge in policy and science, and conclude that the two can, do and should communicate — albeit not because this would be mutually advantageous, let alone because it would realise the classic Greek ideal of unity of practice and theory, but merely because the two need each other in a relation of mutual exploitation. On the other hand, I discuss science as a form of policy and argue, by analogy, in support of scientific diversity, hence also for an open, sceptic and self-critical epistemology, i.e., scientific diversity.

In section 4, I address the implications of the necessary relation between policy and science for the post-modern critique of truth. I shall introduce a third dimension next to the contexts of justification and discovery: the context of meaning. Without denying that the development of science, like that of policy, has an ethico-political background (the context of discovery) and context-dependent effects (the context of meaning) it still has an *a priori* claim to context-independent truth (context of justification). I hope to show that the post-modern critique is correct in one respect, i.e., in its observation that the rules for attaching meaning to phenomena differ from context to context, but this is hardly a new theory. I also hope to show that it wrong in another perspective, viz., in confusing the

meaning of a proposition in a given context and its 'communicability', its value as an approximation of context-overarching validity. Consequently, there is still room and a task for epistemology.

Section 2: Policy diversity

Environmental policies differ from context to context and country to country (Weale 1992, Wells 1996): there are direct and indirect tax policies, regulations for producers, retailers and consumers in the form of prohibitions and duties, information, propaganda, rewards and stigmatisation; there are policies at national, sub- and international levels; there are political, private sector and so-called non--governmental organisations that implement policies; there are end-of-pipeline and source-regulating policies; there are policies aimed at air, water or soil pollution, at re- and deforestation, at atmospheric conditions, and so on and so forth. I shall call this phenomenon policy diversity.

Some causes for the existence of policy diversity relate to the parameters that determine how policy realms (like the European Union, states, communities) will try to solve any policy problem: the political system, the regulatory system and the culture. A second set of explanations is equally obvious: environmental problems themselves differ from place to place. Think of what it takes, just intuitively, to see the same policy implemented everywhere: political systems differ, regulatory systems differ, cultures differ; all that would have to be neglected or eliminated. We would all have to be confronted with the same problem or same set of equally serious problems — and the same causes —, and we would all have to interpret them in the same manner.

It is no wonder then that there exists such a thing as policy diversity. The concrete forms of policy diversity demand explanation, the fact itself hardly does. And it is in a sense virtually useless — not meaningless but useless — to ask if policy diversity is a good or a bad thing, for the same reason that we usually do not bother to ask if life or death are good or bad things: it is useless in so far as these things cannot be changed themselves but only, at best, the way we perceive them. But policy diversity implies options, choices: instead of policy x, y could have been chosen. One has to believe at least that, and one has to believe that at least in principle, or else any investigation into the way these and other determinants influence the choice of policies would be as useless as asking if life is a good thing. There is then really some sense and use in asking whether concrete policies are good or bad — in more formal terms, under which conditions policy diversity in environmental problem solving can be evaluated positively or negatively. It is this aspect of policy choice that I shall investigate in this section: the normative

quality of policies. Note that normative and moral are not the same things; the moral is but an aspect of the normative. We use norms to evaluate nearly everything, but most of us do not primarily evaluate the order of the alphabet or a landscape by its moral message, that is, by what it says about the way we should treat one another. Hence, an in other respects or overall 'good' policy is not necessarily a moral policy.

I shall, firstly, take a look at standards for a good policy. As we shall see, whether or not policy diversity is a good thing depends to a large extent on the nature of policy itself and on the quality of particular policies. Subsequently, I discuss standards for the 'goodness' of diversity and ask if there are also drawbacks to policy diversity. The section ends with an overall assessment of policy diversity in environmental problem solving. My primary object at this moment is simply to make explicit some of the standards used (mostly implicitly) in policy making and policy choices. In sections 3 and 4, I shall return to the deeper epistemological questions raised by the argument for policy diversity.

When is a policy good? When I considered this question and had made a list of the criteria I could think of, I recognised for the first time a feeling often ascribed to the Dr. Nos of fiction, plotting to take over the world: my God, why do we leave such things in the hands of politicians instead of specialists? The criteria look simple enough, at first sight, but a mere surface analysis is enough to show that every one of them raises questions about further criteria and deeper questions about deeper criteria, leading us ever farther away from policy as a technical activity to policy as the conclusion of a philosophical discourse. The list I give here is only part of a far longer list I made — and even that one was far from complete. It is divided in three parts: Syntax, Semantics I and Semantics II.

The first part deals with criteria for what a logician would call 'a well formed formula' — the purely syntactical aspect of policies, that is, regardless of what they are for, what they do and what means they use:

(1) there must be criteria for success (otherwise the whole idea of a good policy vanishes);
(2) it must be possible for policy *x* or any policy to meet these criteria (there must exist means to reach the goals, i.e., efficacy must be possible);
(3) policy *x* must actually meet these criteria of success (it must be effective)
(4) policy *x* must meet these goals efficiently, that is,
  (4a) either more efficiently than other alternatives or
  (4b) it must be efficient enough, rise above a certain minimum level of efficiency.

Note that syntactic criteria taken by themselves tell us virtually nothing about whether or not a policy is effective or efficient: the metastandards for these two have to come from somewhere else. So we move to Semantics I.

Semantics I deals with what I would call the objective or empirical criteria for the quality of a policy, as opposed to Semantics II, which deals with normative criteria. It follows from our syntactical criteria 1 and 4 that there must be higher standards: definite goals and means. And from this in turn it follows that:

(5) the initial situation must be adequately described:
  (5a) the problem itself;
  (5b) the physical environment of the problem;
  (5c) the political environment of the problem;
  (5d) the policy/regulatory environment (etc.);
(6) the possible means must be adequately described;
(7) the objectives must be adequately described.
(8) there is a standard for adequacy: truth (reference theory, consistency theory) or the approximation of truth.
(9) there is a decision rule for the choice of means.

Once more we see that we still do not have enough criteria to assess the quality of policies: we need even higher standards to tell us which decision rules should be applied, which objectives to choose and which theory of truth to apply. So we move to Semantics II for these standards. In discussing Semantics II, I shall ignore the issue of theories of truth. The importance of these theories for policy making lies not so much in the precise theory to which one adheres, but in the fact that scientific knowledge is in practice always uncertain, regardless of the theory of truth. Uncertainty can be reduced by further research and experiments but we can never totally get rid of it. As a result, the foundations on which policies are erected are not things called facts but things we should call probabilities, and probabilities, as we shall see, cannot be evaluated *but* from a normative point of view. Now back to Semantics II:

(10) the objective must be moral:
  (10a) at least as good as others, or
  (10b) minimally good, as measured by our moral standard
(11) the means must be moral:
  (10a) at least as good as others, or
  (10b) minimally good, as measured by our moral standard

Now if the reader feels that all this is rather abstract, I agree. Lack of time forces me to forget about illustrations here, nor would they be directly relevant to our subject. The one thing I want to point out here more than anything else is that policies are by nature deeply normative. I would argue that the Syntax list, Semantics I and Semantics II will remain abstract as long as we do not have the following, explicitly normative, theories (still assuming that the aim of environmental policy is to solve environmental problems):

(1) A theory of the sustainable environment, which presumes:
(2) A theory of the sustainable society, which presumes:
(3) A theory of political feasibility;
(4) A theory of economic feasibility;
(5) A theory of social feasibility; and
(6) A theory of risk evaluation; and all of the above presume:
(7) A moral theory of ends and means.

That we need the first theory is obvious: without an idea of how nature works, how we want it to work, when and where, all talk of efficacy and efficiency is meaningless. But there is no one *unique* indisputable theory of the sustainable environment because there is no single answer to the question what a sustainable environment looks like (cf. Dobson 1995). If we kill off all humans, the remaining world will be as sustainable as it can be: nature will manage on its own. The more common definitions of sustainability assume that the presence of humans is a *conditio sine qua non* of sustainability: the so-called Brundtland Report defines it authoritatively as ensuring the satisfaction of present needs without harming the interests of future generations (WCED 1997: 282). Definitions like these are — and this is an understatement — open to interpretation (cf. e.g. Beckerman 1994). If we want there to be humans in the world, we must admit the possibility of many scenarios. The world could be transformed into one gigantic Yellowstone Park, it could be turned into William Morris's dream of England as a perfect English garden, or into a global copy of the Netherlands — cities, grass, cows, greenhouses, grain and nothing else — or even into a world-wide Manhattan without the Park, fed on synthetic food. All of these are imaginably sustainable worlds, and none of them *need* be unpleasant for all those who live in them.

Hence, as long as we want humans to be part of the sustainable world and even if we value the environment for its own sake, that is, independent of its instrumental value to humans, we need to establish what humans need and want — thus what a sustainable *society* would have to look like. And this brings in elements like economic sustainability (in other words, pure survival) and social sustainability (survival as more than working poor). And all this requires a theory

of political feasibility: we may question whether existing political institutions are fit to transform society into a sustainable society, but whatever institutions we put in their place, a policy cannot succeed if whoever designs and implements it is not recognised as legitimate. Moreover, society is like a small ecosystem within the larger global system, and politics in turn can be seen as an ecosystem within society. All have their own laws, nearly laws of nature, the foremost being that what matters most is the immediate survival, on a day to day basis, of individual politicians and citizens.

Next, we need a theory of risk evaluation, partly because all scientific knowledge is uncertain, albeit to varying degrees, and partly because policies are never exclusively beneficial. They always involve sacrifices: financial resources that could have been used in other ways, economic and social opportunities, and so forth. One way to represent policy choices is in the form of a cost-benefit analysis. In such an analysis, we put environmental risks and costs on the one side and required sacrifices and benefits on the other, and if the sacrifices are smaller and if we are rational, we choose to do something about the risks.

Now let us consider how we assess risks. We do not just say that 'there is' a risk and that 'therefore' something should be done; instead, we put a weight on risks: some are worth taking, others are not. And we assess the value of whatever is at risk: a 90% chance of one single ant getting killed is usually considered far less important than a 20% chance of a 10 feet rise of the sea level. At first sight, one would say that we evaluate the cost side, the environmental risk side, of a policy as follows:

$$a(\text{risk})^b \times c(\text{costs of possible effect})^d$$

in which the weighing factors a and b depend on one another, as do c and d.

We have, according to this formula, one standard to evaluate the costs of say pollution and another, independent from the former, to evaluate risks as such. Hence, if we put a high (dis)value on risks, we have more reason to act — or in other words: the greater the uncertainty, the greater the need for precaution. Environmentalists often refer to this idea as 'the precautionary principle', and oppose it to what they see as the traditional attitude of policy makers, viz., to interpret uncertainty not as risk but as absence of contradictory information. Over the last ten years, particularly since the 1992 United Nation Conference on Sustainable Development in Rio de Janeiro, the precautionary principle has been introduced in 'modern' environmental policy as well. While there seems to be little consensus among environmentalists and modern policy makers on a more precise formulation of the principle (cf. Jordan and O'Riordan 1995, Francis 1996), they do agree that the existence of uncertainty (in their case, about the environmental

effects of human actions) is enough to put the onus of proof for the acceptability of potentially environmentally dangerous activities on those who propose such activities.

That the precautionary principle is a sound principle is a widely shared view but, I think, one that is basically incorrect — as incorrect, in fact, as the alleged 'traditional' conception of environmental risks. It might seem an academic point but just wait a moment for the consequences. First, consider this: the weight of risks themselves seems to depend on the weight we give to the object of the risk. Imagine that all you have to do to protect yourself against pickpockets is to wear your wallet upside down; the costs of doing this, the efforts involved, are really negligible. Now a 50% chance of losing ten pence usually does not incite us to take the same or more precautions than a 50% chance of losing 500,000 pounds, or a 25% chance, or even a 5% or 1% chance. We simply do not find the risk of losing 10 pence worth considering — because we care less about the money, and because we care less about risks *because* we care less about the money. Hence, risks are evaluated by one and only one standard: the value we attach to possible effects:

$$c(\text{risk})^b \times (\text{costs of possible effect})^d$$

in which b and d are functions of c.

Now note the consequences of this view. In ordinary discourse, environmental probabilities are used in two ways: proponents of environmental policies argue that they are risks and that something should be done about them because they are risks, whereas opponents of environmental policies argue that they are uncertainties and that we should at least wait until we know more (cf. Weale 1992). The effect of my interpretation of risks is that probabilities themselves count for nothing; they have no independent role. Hence, any appeal to the concepts of risk and uncertainty to either do something or do nothing are misleading and at times simply rhetorical. What matters when we evaluate environmental policies is the fact that we are certain or uncertain about effects, but how we weigh those effects, how we value, say, a polluted and unpolluted beach.

And so we come to the last requirement of good environmental policy: we need a theory of the good ends and means, of what is valuable — not only to determine the morality of means, nor only to choose the weights attached to risks, but also to evaluate conceptions of ecological, social and political sustainability. This is, necessarily, a moral theory: even if we would opt for a democratic or majoritarian or in general positivistic theory of what is valuable, we would have to explain why we prefer this positivistic theory to more substantive moral theories — which is itself a moral question.

Finally, note that all these theories define separate conceptions of sustainability: the set of ecologically sustainable worlds is not identical with the set of economically sustainable societies, which is not identical with that of socially, politically or morally sustainable societies. If the set of societies that meet all these criteria is empty, we have a long series of second-best worlds to choose from; if it contains more than one element, a choice between first-best worlds. At any rate, it is quite unlikely that there is only one overall sustainable world — it is therefore equally unlikely that there is only one good environmental policy.

One may now argue that moral pluralism, i.e., the reason why there are so many conceptions of sustainability, can be reduced — but that, as a matter of fact, is neither true nor opportune. It is not true because ethical truth cannot be proven, only assumed, or if it could be proven might still not convince, and because any suggestion that ethical truth can be proven is as valid as the assumption that it cannot. Hence, *if* one believes in morality, one should at least in principle be neutral and at least in principle recognise as equally worthy all sorts of theories of the good, of the good life and of the good environment. Nor is it opportune to try to reduce moral pluriformity: it is a fact of life, difficult to change, and attempts to change it seriously reduce the feasibility of environmental or other policies. (Since this is perhaps not the right place to engage in a debate on ethical truth, I must leave these claims undefended.)

We have seen that environmental policies can diverge for moral as well as empirical reasons. But exactly when and why is policy diversity good?

First of all, note that from a single-mindedly syntactical point of view, this question is irrelevant. If all we care about is efficacy, the effects of environmental policies, then the difference between a sledgehammer and a fitting key as means to open a door is totally immaterial. And if all we care about is efficiency, then policy diversity is as likely as policy similarity to lead to conflict. Imagine two neighbouring countries trying to rid themselves of air pollution by building higher chimneys so that the wind will blow the filth away. If the wind between the two blows from the first to the second country 50% of the time and in reverse direction during the rest of the time, the net effect will be zero: the two countries merely exchange pollution. From the syntactical point of view then, what matters is that policies are compatible, not that they are different or similar.

From a semantical perspective, there are three clusters of reasons in favour of policy diversity. Firstly, the learning effects: one may expect a diversity of policies to produce more knowledge about the efficacy and efficiency of policies, even if both means and objectives differ, and also more knowledge about the semantical aspects of policies. To explain the latter point: policies developed 'within' a culture & policy *X* will not be too creative or unconventional; yet what happens in country *X* may well be something we in *Y* perhaps would not have

thought of, for example all those beautiful free-market solutions the Americans have invented, things we Europeans would probably never have thought of ourselves. Note, however, that learning effects do require international exchange of information, and note the similarity between biodiversity and policy diversity: the more diversity (or so the theory goes), the greater the chances of survival in and adaptation to changing circumstances.

Secondly, policy diversity can contribute to sustainability on a far larger scale than ecological sustainability alone: in the given context of a region, nation, whatever, it is far more likely than uniformity to produce optimal strategies for cultural, economic, social and political (etc.) sustainability.

Thirdly, whereas the former argument focused on political or at least practical feasibility, there is also a moral argument in favour of policy diversity: it allows a multitude of conceptions of the good life and of the good environment to be realised, thus offering room — more room at least than uniformity — for the recognition of value pluralism and the realisation of individuals' equally worthy plans of life. Note, incidentally, that there is a difference between practical feasibility and morality: the most or only feasible practical environmental policy does not have to be the best one from a moral point of view. Hence, even if you, the readers, would all agree on some ideal of a sustainable society and I want something else, purely hypothetically speaking because I would prefer the Manhattan type of society over any other, then neither your nor my ideal will be feasible; unless one party forces the others to its knees, we will end up in a second-best world.

Yet there are drawbacks to policy diversity; it is not unconditionally good. It makes life more complicated, for one. On a more serious note, policies can contradict one another or counteract: inside a policy realm, policy x may result in the negation of policy y — but that is more a matter of co-ordination. What is worse is that policy realm X may go for the Manhattan type of sustainability and Y for Yellowstone park, each counteracting the other through bordercrossing effects. Moral pluralism is a good thing, even as regards conceptions of sustainability, but here it could result in all parties being frustrated. The implication is not (necessarily) that the two cannot exist next to one another or that unanimity is required, that there should be one and no more than one conception of sustainability — the implication is that the physical and political borders of policy realms should not be considered as sacrosanct if we aim for efficacy.

Secondly, the division of the world into policy realms may result in the extinction of, say, species x or generally in Effect x in country X, a result that, by the standards of Y (where Effect x does not exist or occur) is unacceptable or immoral. This is not a specific problem for environmental policy; think of human rights violations of all sorts. In absence of a superior alternative to politics, i.e.,

negotiations and public debate, we may well have to walk the uncomfortable middle road between uncritical policy pluralism and uncriticisable policy uniformity — if only because that seems best in terms of our own chances of survival.

A last disadvantage is a special case of the former: the obstinacy of some environmental scientists or theorists who claim to have exclusive knowledge of what sustainability is and requires, people who run up against both feasibility problems and differences in conceptions of the good or the good environment. I would like to repeat the point made (implicitly) above: there is no one true answer to what sustainability is or requires, since it is a deeply normative concept: it requires prior agreement on how we would like the world to look like. And even if this rather anthropocentric view on ethics were not morally defensible, even if there are things that should be done or prevented despite the fact that no human wants this — even then it is a fact of life. Note, by the way, that consensus among a community, say that of environmental scientists, is no guarantee of truth — an opinion does not become more true if there are more people who believe in it.

In summary: whether policy diversity is good or bad is determined by two factors. In the first place, policy diversity must itself be appropriate, not only or merely because, and where and if, political, regulatory and cultural determinants differ, but also, or even more so, because views of the good, of the good life and of the good environment differ. Secondly, policy diversity is a positive thing if the diverse policies themselves are good, both in general by the standards of syntax and semantics, and in particular if they are morally justified, meaning, once more, that they recognise the pluriformity of opinions that exists on the good, the good life and the good environment. In short, policy diversity is good if and only if it is an adequate reply to moral pluriformity, one that respects rather than restrains moral diversity.

Finally, let me mention two relatively independent reasons why policy diversity is a good thing: firstly, because it may remind policy makers and environmental scientists of the existence of moral uncertainty and binds them to impartiality regarding life styles and visions of sustainability. Secondly, because of a similarity between biodiversity and policy diversity. I do not think I need to explain in detail how unwise it is, how risky, how bad for a species' chances of survival, to overspecialise or, by analogy, to reduce numbers and kinds of policies. Diversification is indispensable in the pursuit of knowledge and, hence, in the survival of mankind, particularly of man in a free and equal society.

From one's private point of view, theory of the good, plan of life and conception of sustainability, policy diversity may not always be maximally effective and efficient. Nevertheless, if one admits fallibility, if one admits to not having exclusive access to some ultimate Truth, then it is, to quote a famous closet liberal, a good thing that 100 flowers blossom.

Section 3: Scientific diversity

To oversimplify matters a little: we have seen that good policy takes account of the absence of knowledge and of the practical impossibility of discovering conclusive knowledge in two senses, empirical and normative, and we have seen that the degree to which (a lack of) empirical knowledge matters is a moral factor. To be more precise, is it the aims and ends of policy that determine which kinds and amounts of knowledge are required. Now all through the last section I have assumed that the aim of environmental policy making is to solve environmental problems; hence, the kinds of normative and moral theories needed were supposed to be theories about society and environment.

In section 1, I referred to this assumption as the first perspective on policy making. I also mentioned a second perspective: policy makers have their own agenda, according to which solving an environmental problem may not always be the best way to solve a policy problem. This is a more cynical perspective on policy making — and also one a representative of SPSK or postmodernism would want us to focus on. It allows us to think of policy makers as rational actors in a social environment and of (environmental) policy making as a discourse in its own right, a discourse with its own standards for truth and relevancy.

On this second perspective — and in a pessimistic mood — we might find that policy makers are bureaucrats or incrementalists, whose interests are power, status, money, survival, etc., rather than service to the community, and whose aim it is — assuming them to be rational individuals — to use the most effective and efficient means available in order to satisfy those interests. Thus, their optimal solution to an environmental policy problem could be to institute research and planning committees, choose the right people to sit on them so as to assure maximum controversy within and among committees, ensure the production of mutually contradictory reports after a long delay, and then draw conclusions that would support a need for further research, that would prolong the need for environmental policy making, or would redefine issues or discard them as not or no longer politically or scientifically relevant.

The interesting thing about this second perspective is that, if correct, it would not only be consistent with the case made by SPSK and postmodernism, but that it is also still compatible with a series of inferences that support the case of classic epistemology. For starters, it makes it possible to argue (against SPSK) that policy makers, regardless of their personal or professional agenda, may in the long run still have to address environmental problems *as such*. The political issue for which they have been asked to design solution strategies defines their field of operation, and no matter how often and how fundamentally they redefine it, their success in achieving their own aims is ultimately determined by how their performance on

the original issue is judged. Consequently, in addition to all the smokescreens and diversions they may prepare, it is by their own bureaucratic logic prudential for them to gather all relevant information on the original issue and design policies that address it adequately — just to be prepared. Outside influences (the political system in particular) may even force them to implement these policies. Now since policy making in general is an iterated game, i.e., an activity that requires repeated co-operation between policy makers and their surroundings, it is rational for policy makers to actually implement at least partly successful environmental policies at least part of the time, and to be able to explain as clearly as possible in all other cases why no (better) policy could have been chosen. To paraphrase Machiavelli, the best way to ensure being perceived as a good prince (or policy maker) is to be one. As often as necessary. On an SPSK perspective then, no matter how intrinsically uninterested policy makers may be in the issues they are expected to deal with and in designing 'good' policies from the point of view of outsiders (i.e., citizens and politicians), the structure in which they operate logically obligates them to perform as well as they can. It should of course be noted that this argument presumes that outside forces are actually capable of controlling the policy making process — a condition that is often not met (or easy to meet) in real life.

Secondly, an analysis of environmental policy making in terms of our cynical second perspective allows us to assert that policy makers have an intrinsic interest in gaining (from a bureaucratic perspective) adequate knowledge both about the issue at hand and about the normative criteria outside forces impose on them. If we replace the aim of environmental policy making as solving environmental problems by purely bureaucratic aims, what changes is the kind of knowledge policy makers require — and not its quality, i.e., its being reliable or approximating truth. And this in turn makes it possible to argue, against post-modern views, that policy makers must be able to communicate with others, learn from them and understand the rules of their discourse, just as much as these others will need to be able to communicate with policy makers. As a matter of fact, policy makers do communicate with politicians and experts at least in such a way that they can be said to import data and export results. They may or may not refer to the information they transfer as 'truth', they may even reject others' points of views as myths. Yet the point is that whatever they communicate is an intersubjectively (interdiscursively) useful commodity. Whether all parties interpret data and results in the same way or whether their discourses make them see different things is of no consequence: what matters is that they *think* they understand each other, act upon this thought and seem able to repeat such processes without total disappointment.

Thirdly, regardless of whether policy makers are selfish rogues or social heroes, they use information originating in, and export information to, persons involved in different discourses — the political and ethical discourses as much as,

if not more than, scientific discourses. This supports the idea that although scientific (and other) disciplines may be discourses, even universes in their own right, there is a quality to or property of the exchanged information *itself* rather than a property of the context (discourse) that determines, at least in part, whether it can make sense in different contexts.

Fourthly, our analysis provides us with further circumstantial evidence against postmodernism. On a post-modern view, the existence of policy diversity would have to be explained by differences between local policy discourses, other local discourses and their interaction. For the last of these, no overarching conceptual framework of language, culture or logic is required, merely the interpretation of one person's 'significants' (propositions) in terms of one discourse as 'signifiable' phenomena by another person operating in accordance with the rules of another discourse. From what we have seen, however, we can conclude that another explanation is equally well possible. On this account, it is not a dialogue between the deaf mutually signifying their significants as signifiable, hence an overload of information, that explains diversity, but rather the absence of knowledge. As we have seen, developing policy is not a straightforward matter of picking the right tool to do a pre-ordained job. It is a learning process in its own right, like scientific work, where the locally available (empirical, political and ethical) information determines the shape of policies, and through which new information can be gathered. On this view then, absence of and the quest for information are responsible for the phenomenon of policy diversity.

We should then conclude at the very least that there can be and appears to be communication between environmental policy makers and their environment, so that discourses cannot be totally self-sufficient systems. It may be that the rules for truth and relevancy of two distinct discourses are incompatible, the fact remains that, to avoid the term truth, 'data' can be exchanged as 'propositions', hence mutually understood, due to a quality of the data themselves. This is not to say that we can (or should) totally reject all ideas about discourses. We have seen that there is some kind of exchange of information, not that the same information is not treated differently in different contexts. The sociologist of science needs information about scientific aims, activities and results, but he interprets them differently than epistemologists or natural scientists. By the same token, policy makers need scientific data and scientists need real-life data to perform their separate jobs, but they may interpret their data differently.

For the classic Greek philosophers, practice or policy, science and philosophy belonged together and required one another to be 'good'. Policy was impossible without knowledge on empirical circumstances and ethical criteria; science was impossible without a practical purpose and ethical guidelines; philosophy was the

most practical of all in being able to transform random acts into reasoned behaviour. It seems that this is not how policy and science, let alone other spheres of human activity, currently relate and interact. The policy maker does not have to be scientist or philosopher, he can simply work on the basis of data these others supply. The same applies to scientists and philosophers: they may or may not care about the practical uses of their work, or about what is politically relevant, and they may or may not reflect upon philosophy, policy or science — none of this diminishes the 'local' relevancy of their work.

The interaction between policy, science and philosophy need not even be mutually advantageous. What may be relevant to the scientist may be irrelevant to the other two, and vice versa. (The scientist's complaint that contract research for businesses is seldom scientifically relevant, or the student's complaint about the abstractness and inconsequentiality of philosophy illustrate this very well.) The best we can hope for is a relation of mutual exploitation: the policy maker takes from the available scientific data that which is most relevant for him, the scientist looks at those aspects of policies that make scientific sense. In a way, this really is the best relation possible: it allows each to operate in his own sphere and none to dictate others how to operate.

Data, scientific or otherwise, are like money: to one, money means power, to another food, to a third odd little blinking bits of metal; to one, data mean business, to another understanding, to a third totally useless drivel. This is true for policy in relation to scientific data, as we saw, but also from the point of view of one scientific discipline in relation to others or to policy. Like policy in a strict sense, science is a matter of effectively and efficiently using the right instruments to a given aim. In the case of science, efficacy is expressed in terms of proof, of conjectures and refutations, tests and verifications; efficiency in terms of for instance Ockham's razor; instruments in terms of hypotheses, logic and tests; the aim in terms of a research question.

Most of the semantical and syntactical criteria by which we judge a policy can be applied, *mutatis mutandis* but without any difficulty, to scientific research — in fact, demands to the effect that there must be criteria of success for a research project and that the project must be so designed as to be able to have success, or that there should be a standard for adequacy (scientific truth or validity) are rather trivial, to say the least. What would be less trivial is a claim that scientific research, like policy, must be moral in means and ends, and that it must be based on normative theories about the research field or research object. This particular claim may not only open the door to SPSK and postmodernism, but may also bring back black memories of the claim to superiority of socially relevant, read society-critical, read Marxist scientific research. It may also appear to support the current tendency to demand that scientific research be 'useful', read: demand-sensitive and marketable.

I have no intention of repeating the old and worn arguments used by any of these parties. However, their existence as well as their effects on the development of scientific disciplines and individual research projects shows that science *can* be guided by moral and political considerations. The point I would want to make, and one does not have to adhere to SPSK to acknowledge this, is that it also *must* be guided by normative ideas — willy nilly. Scientific research is never mindlessly searching a dark room without corners for something that may or may not be there. It is always embedded in theories: theories about the research object, theories about the links between object and field, theories about the discipline in itself and in relation to others, theories about the relevancy of a research question. Each of these theories, particularly the last one, contains normative elements. It will not come as a surprise that this is unavoidable in the social sciences, where background theories describe 'humans' and 'society' as organic entities, as rational actors and a co-operative venture, as subjects and the instruments of an elite, or where the first are endowed with free will or seen as products of their environment. Albeit less obvious, the same is true for the more 'natural' sciences: background theories are linked to ever deeper theories — down to causality, the laws of gravity or thermodynamics, etc. — all of which are, as scientific theories, basically uncertain. The decision to accept such theories, even in the absence of alternatives, is a normative choice; the decision to opt for specific research questions is often one with practical and (hence) political implications. If we want science to 'explain' phenomena, then the more it explains the better it can be. Hence, being conscious of these background theories and accounting for them is better than operating in relative theoretical darkness. Ideally then, good scientific research recognises its normative assumptions and is able to defend them. Note that this is a purely formal conclusion. It does not imply that science *must* be useful, critical or enlightening; there is no principal reason why scientists should not be moved, partly or totally, by purely scientific norms of relevancy and purely scientific reasons for adhering to background theories — provided these exist.

The comparison between science and policy shows that scientific research is equally 'underdetermined', to use a Marxist phrase, equally dependent on a theory of truth, on imported data and on normative guidelines. The conclusion to draw from this is that science needs diversity as much as policy does. In absence of normative truths and an undisputed theory of scientific truth, it must be diverse and open as well as sceptical and self-critical; its research questions cannot arbitrarily be limited to what is expected to be useful, marketable or liberating. It can learn from experiences gathered in non-scientific contexts like policy making, but it is the scientist's research question and its relevancy within the discipline and given its background theories that determine the relevancy of data — whatever their origins.

Section 4: Epistemology after postmodernism

Let us return now to our point of departure. We discussed two types of critique of classic epistemology: SPSK and postmodernism. Whereas the first cannot count as a serious threat to the epistemological axiom that knowledge can be more or less reliable and that this can be tested and supported in a 'context of justification' regardless of its actual origins (the context of discovery), postmodernism is less easy to deal with. The postmodernist's claim is that the context of justification is part of the background theories and rules of a specific discourse or interpretation scheme. Hence, microbiology has a context of justification, sociology has one, environmental policy has one, ethics has one, and each of these is unique and creates its discourse-specific versions of truth. Any attempt at interdiscursive communication is bound to fail: a direct translation of a proposition *p* from one discourse into the language of another creates a second proposition *p'* that simply cannot mean the same as *p*; any attempt at translation by means of a metadiscourse merely adds another discourse and a new translation *p''*.

If postmodernism were correct, we would expect communication between discourses to be impossible. For this reason, we took a close look at the environmental policy 'discourse' and its rules for good policy making. What we found was, firstly, that the environmental policy discourse is (necessarily) incomplete: good policy requires the use of empirical and moral-political information that the discourse itself cannot generate. To be operational, it *needs* to communicate with other discourses. Secondly, environmental policy makers actually use information from external sources, and these in turn learn or can learn from experience gathered in the implementation of environmental policy: there *is* communication. Thirdly, it appears to be possible to generalise our conclusions in the case of environmental policy making to every discourse in which (a pleonasm:) knowledge is used and produced — that is, to all forms of policy in the broad sense, including the sciences.

The question we must now ask is whether this can count as a refutation of postmodernism. In the last section, I already hinted at an answer: yes *and* no. On the one hand, we have identified the existence of a property of 'data' or propositions that allows them to serve as an interdiscursively transferable commodity. Participants in different discourses at least use the same proposition *p*, *believe* they understand each other and believe they understand each other's way of producing propositions. On the other hand, none of this necessarily contradicts the post--modern claim that scientists, policy makers, epistemologists and grocers live in different universes where they 'signify' their 'significants' according to their specific discursive rules and interpret the same proposition or phenomenon differently. Hence, *p* is money to one and mud to another. Despite the fact that *p* is transferable, it can still at the same time be transformable. The postmodernist will vehemently

defend the latter position, and there is little a classic epistemologist can say in reply. In Popperian terms, the idea that translating *p* in the vocabulary of other discourses necessarily involves transformation is immune to falsification. Since mutual understanding across the borders of discourses is assumed to be impossible, any two representatives of different discourses discussing *p*, claiming to be truly understanding one another and exchanging arguments are, in post-modern eyes, merely cheating themselves. No matter how long and deeply they talk, they will continue to talk at cross-purposes — they merely do not notice it.

Where does this leave us in our attempt to defend classic epistemology? First: in a position to turn the tables once more and show that even if postmodernism is correct, it cannot refute the axioms of classic epistemology. If there is no way to disprove that two people can discuss *p* without interpreting *p* in the same way, then there is also no way to prove it. Second: it leaves us in a position where the advocate of classic epistemology nevertheless cannot afford to simply axiomatise the existence of a discourse-independent quality to data.

Classic epistemology does not have to reject all post-modern claims, and in fact it should not. Yet it must reject the idea that *p* necessarily means something completely different in different discourses, or else there is no way in which we can ever say that knowledge is more or less reliable, that *p* is true or untrue, and hope to be saying something meaningful. If it cannot reject this thesis, any *p* is true — to prove its truth, all that is needed is to construct a context, a discourse, with a set of grammatical and semantical rules that make *p* true: 'contextually' true.

We have to take three steps to save the idea of discourse-independent truth. The first step is one we have already taken: we must assume that there are two aspects to data or propositions. One is the quality that makes them transferable, the other their contextual meaning. Postmodernism focuses on this latter aspect, the context of meaning, and neglects the first. Classic epistemology can accept that there is such a thing as the context of meaning, as much as it can live with the idea of a context of discovery. After all, a proposition *p itself* does not change merely because it is *interpreted* differently, turns out to be totally or partly irrelevant or at odds with accepted theories in other discourses. Classic epistemology can even, in a way, live with the idea that *p* is true in one discourse and untrue in another. To this purpose, we must take step two.

For a proposition to be true in one discourse and untrue in another, it is necessary to accept a consistency interpretation of truth, i.e., the idea that a proposition's truth depends on the degree to which it is consistent with other propositions in a given theoretical framework — in this case, with the rules and theories of a specific discourse. Thus, the proposition 'there are too many people' can be true in the context of the environmental policy discourse, provided the latter

acknowledges e.g. that resources are physically scarce. The same proposition is necessarily untrue in a fundamentalist Christian discourse, where 'go forth and multiply' is part of the vested theory and the vested theory is axiomatically the standard of truth. Purely pragmatically speaking, even a correspondence theory of truth (i.e., *p* is true if and only if *p* corresponds with known empirical facts) is compatible with the consistency theory: correspondence between *p* and our ideas about the 'real' world comes down to compatibility between *p* and other propositions *q*, *r* ... as much as consistency between *p* and the Bible comes down to correspondence between *p* and the real world of the Bible.

Lastly, we have to come up with an alternative to the theory that (a) truth is purely context-dependent and (b) the transferability of some proposition *p* to other discourses is a pure coincidence. The alternative must then support two ideas: (a) that, regardless of the truth theory we adhere to, there is something about *p* that is true in a sense different from contextual (discourse-dependent) truth and (b) that there is a sense in which any *p* is necessarily true or untrue regardless of the context of a discourse.

Now the history of epistemology abounds with theories supporting such claims. Aristotelian and Kantian schools, for example, refer to inborn properties of mankind that predestine any human being to follow the same rules of observation, interpretation and argumentation, thus ensuring completely commensurable basic data. In the tradition of the Wiener Kreis, it is possible to argue that basic, atomic or elementary propositions exist, propositions that are either unambiguously true or unambiguously false and that cannot be further reduced to more elementary propositions. The problem with most of these theories is that they may still be vulnerable to the postmodernist's objection of 'creating' a distinction between truth and untruth only by using undefended prior rules for the relevancy of propositions.

The post-modern objection is directed against 'imperialist' claims made on behalf of the semantics of specific, particularly scientific, discourses. It loses its force in the case of a third type of theory, according to which *p* is transferable and has a context-overarching validity due to the existence of logical consistency between the proposition and the *grammar* of discourses. Hence, *p* will not derive its inter-discursive 'truth' value from its content but from its adaptability to other discourses. This tells us little about whether or not *p* is actually true: truth remains context-dependent. Yet it still helps us compare and evaluate distinct discourses.

On the grammatical view, it is not the (scientific or other) truth of data that helps to refute, say, astrology but the inability of the latter to incorporate data. Astrology, for instance, cannot deal with the concept of a relatively independent actor or agent — whether human or chemical. It knows only slaves to the stars.

The more data a theory (discourse) can incorporate, the better it would seem to be. This is one view postmodernism cannot reject without rejecting the idea that any theory, postmodernism included, must at least be open to logical analysis. If it does reject this idea, it becomes meaningless small talk. If it does not, it has made itself superfluous. We do not need postmodernism to be reminded of the basic question in epistemology: how is knowledge possible? It appears then that there is still work to be found for William Ockham's razor.

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