

ENVIRONMENTAL PROBLEMS, MORALS AND INCENTIVES IN MODERN SOCIETIES

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Summary

Solving environmental problems we face a double problem: so far unknown dimensions of uncertainty and at the same time lost possibilities of solution. The first aspect focuses on specific patterns of risk perception and the problem of an increasing lack of knowledge in terms of what we should know in order to make decisions. The second aspect focuses on what follows from basic features of modern society. The crucial point is that these features constitute systematic limits to individual problem solving by means of strengthening individual morals and responsibilities. As a result there are systematic limits in the prevailing efforts to integrate ecological and sustainability criteria into decision making by means of information and moralizing. One answer to that is a change of the institutional framework and resulting incentive structures, so that it become easier to respond to changing ecological scarcities. But the crucial question remains, how to narrow the gap between prevailing short-run rationalities of the economic and the political decisions on the one hand and the requirements of long -run sustainability on the other. Institutionalizing new platforms of communication and participation may be a suitable option to tackle this problem.

1. Introduction

Whenever we face problems in modern societies we observe a tendency in mass communication to explain them as a result of inadequate behaviour due to inadequate values or lacking awareness. Consequently strategies of problem solving under discussion are, in public opinion, usually based on information, enlightenment and appeals to morals in order to generate the desired behaviour voluntarily. And if this strategy fails, political regulations are usually expected to be an appropriate substitute.

We can also observe these patterns as far as environmental and sustainability problems are concerned. Strengthening environmental awareness and environmental regulations are the strategies preferred. These strategies are basically familiar to our political culture. But we have to go beyond if we really want to approximate sustainability in modern societies. In modern societies, behaviour and overall results are more and more determined by the (moral) quality of institutions and resulting incentive structures and less by the (moral) quality of motives and individual morals. I will outline this view by first referring to the global dimensions of environmental problems, which are of special concern to the modern societies of the north. But in contrast to the size of the task and compared to the knowledge needed in order to solve these problems our available knowledge is rather poor. Moreover, problem solving mechanisms which were effective in the past, like influencing behaviour by norms commonly shared, fail more and more. The crucial point is that, nowadays, appealing to morals in order to strengthen those norms will be successful only under certain conditions, and rather by exception than as a rule. Because of certain characteristics of modern societies we suggest to focus on the moral quality of institutions and resulting incentive structures. But implementing an ecologically favourable institutional change into the market and political system demands new platforms of communication and participation to bring about and also to make use of an intensified environmental awareness, which is more sensitive to questions of suitable institutions.

2. New dimensions of environmental problems

Human beings have always affected their natural environment. Many environmental problems as a consequence of human behaviour can be taken as examples out of history. An example often mentioned is the cutting down of forests for economic purposes like agriculture and cattle-breeding, building vessels or producing coal. But it was not before the last decades that interventions in the natural environment were noticed as a serious and perceptible problem for mankind. This was not only because of their local, national and global impacts on life in terms of `costs` and `benefits`, but also because environmental questions seem to become more and more important elements of individual morals and personal identity.

In former times `nature` was regarded, above all, as a threat to mankind. Human life was immediately and obviously linked to natural phenomena. Individuals knew quite well that - generally speaking - there was no possibility to escape from the constraints, put upon them by their natural environment. Human life was dependent on and therefore to a much greater extent than today adjusted to the surrounding nature. Consequently, the development of science and technology in the evolving civilizations aimed at diminishing the dependence of mankind on natural forces. The outcome was the process of industrialization which brought about an immense increase in wealth and material freedom, a far-reaching liberation from the burden of constraints so far put on human life by nature. But the price, as we now know and start to feel, was a severe decrease in environmental quality. Today the stability of ecological circles is endangered, above all, by prevailing technologies, consumption-patterns and a dramatic increase in world population. Nowadays, mankind causes a threat to `nature` although nature has the habit to fight back, as we can learn from new kinds of diseases as well as from unintended results of implementing large technological projects, for example dam and irrigation projects.

On a world-wide level we have to distinguish between at least two different (but not independent)

kinds of environmental problems: poverty-caused environmental destruction in the south and wealth-caused exploitation of resources and pollution in the highly industrialized countries in the north. Here we concentrate on the latter, bearing in mind that the production and consumption patterns in modern northern societies have a severe impact on those in developing countries. So the consumption patterns of the north are, in fact, models for the south. But at the same time they can, if at all, only be practised as long as the overwhelming part of the world population remains excluded. Adding the challenge no longer to endanger the options of future generations leads to the new normative model of 'sustainable development'. This model begins to influence the discussion about the way to a consumer society in the north, while the south still seems to remain restricted to more traditional growth in order to meet basic needs of the population so far not satisfied. We have to realize and to take into account that environmental awareness as an indispensable prerequisite to tackle environmental problems presupposes the satisfaction of basic needs and, as a matter of fact, is positively correlated to wealth indicators. But despite an evolving environmental awareness in rich societies, in the aggregate, we observe a continuation of traditional growth patterns and continuing ecological damages and destructions. We still are, if at all, at the very beginning of our way to a 'sustainable' society.

For several reasons it is not possible to give a positive description of what sustainability means in detail to everyday life as an aim to be achieved within a certain time. What is known quite well are violations of sustainability in prevailing production and consumption patterns and the direction into which we have to change everyday life. Starting from modern societies this way has to be based at first on growing **efficiency**, that is growing resource productivity effecting a decreasing use of resources, energy and environment per product or activity respectively. But economic growth will probably overcompensate these effects in many sectors. That is the main reason why, additionally, the strategy of **sufficiency** is regarded as necessary, aiming at a decreasing level of resource- and energy consumption and an overall dematerialisation of life styles. Efficiency has to be put into practice above all by **technical innovations**. Usually technical innovations are generated by competitive markets using their specific abilities as search and problem-solving mechanism. Can they be also used in favour of environmental protection? Up to now these abilities have been used successfully to increase labour productivity substituting labour by capital as a response to increasing wage/interest ratios. The question arises if the abilities of competitive markets as search and problem solving mechanism can also be used in favour of environmental protection, generating increasing resource productivity. We will deal with this question later on. Sufficiency is based on **social innovations** on different levels of society generated by using and developing democracy. Sufficiency is a special challenge to democracy because it means a departure from the 'philosophy of more'. This philosophy is deeply bred in prevailing norms and values. It cannot be changed in the short run. The same is true as far as the institutions of modern societies are concerned. We cannot change our institutional surroundings and the resulting incentive structures by completely replacing one setting by another, but we have to alter them as soon as possible, yet gradually, in a certain direction. The crucial question therefore is what is to be done in modern societies to bring about both kinds of innovations? This is, above all, a question of institutional change.

What has been done up to now is far from enough. As a reaction to noticeable environmental problems and at the beginning not accompanied by an elaborated or even evolving ecological awareness, environmental policy in western countries in the late sixties started with pragmatic policy

approaches. These approaches focussed on technical solutions in different subject areas at the end of production and consumption processes (end-of-the pipe policy). Today lasting environmental problems that have been perceived as more severe need to be discussed more basically in the broader context of the fundamental principles of our political and economic order and in basic categories of morals and ethics.

But looking for solutions we face a double problem: So far unknown dimensions of risk and insufficient knowledge, on the one hand, correspond to lost possibilities of risk avoiding and problem solving - due to special characteristics of modern societies - on the other hand. Both are basic with special regard to the discussion of environmental and sustainability problems.

2.1. Knowledge and risk

The first aspect focusses on specific patterns of risk perception and the problem of an increasing lack of knowledge in the process of knowledge growth. In the past the stock of knowledge was rather small compared to that of today. But as in traditional societies, where societal and economic structures altered only slowly if at all, most of the knowledge was gained from experience and observations, which were commonly shared, this knowledge was at the same time rather high with reference to the knowledge necessary to manage every day life. Due to sciences and specialisation of sciences today we face a so far unknown increase in knowledge, but in the course of the development of new knowledge new questions arise, which are to be answered only by so far undiscovered knowledge. Nowadays both knowledge and ignorance are increasing at the same time: Today we know much more than our ancestors. But at the same time we have to realize that our knowledge is rather small compared to what we should know in order to manage our life in a more and more dynamic and complex society. Deep and severe interventions in ecological circles by high technologies and by aggregated results of production and consumption patterns in modern civilization cause risks of high and irreversible damages. The ecological and the economic systems work according to different times of adjustment and the basic problem is that we have to make decisions without having knowledge available or even without making use of the available knowledge about their impacts. Here we can identify a first systematic task of institutions in modern societies. Institutions can be regarded as mechanisms to initiate a creative search for more and better knowledge and to make it available at the point of decision. This aspect is important for at least three reasons.

- Firstly, there is a lack of scientific or expert knowledge, necessary to assess the impact of human behaviour on environment, for example the impact of new technologies like nuclear energy plants or genetic engineering. Even if we react to this problem by intensifying research, we cannot escape from the dilemma that the more we know the greater our ignorance becomes at the same time. We know, for example, that we can take short run economic advantages of the law of mass production. But obviously we are unable to predict all the (unintended) results. So producing meat according to the law of mass production leads to questions of animal diseases, then to questions of prophylactic use of medicine, then to questions of medicine enrichment in food chains and finally to problems of antibiotic immunity. Generalizing we can take a picture from literature: If knowledge is the content of a balloon and ignorance surrounds it, then the more one blows up the balloon full of knowledge

the larger the extent of its surface becomes being in touch with ignorance. Of course the picture also indicates that there is no alternative to scientific research because shrinking the volume may make the balloon crash down. But as ignorance grows with our knowledge, institutional settings directed at attitudes of openness and flexibility in running our civilisation may be the appropriate answer. For instance using trial and error procedures under the conditions of competition is an important way to avoid lasting errors.

- Secondly, there may be a lack of knowledge at the point of decision, although knowledge is available elsewhere. This is a problem of risk perception, risk communication and organizing decision processes. Our increase in knowledge is generated by the increasing specialisation of scientific research. As a result, in dealing with modern risks the relevant knowledge is not available to a single person or group. It is spread among different sciences and experts working in a more and more specialized way and, by doing so, gaining more and more knowledge about decreasing parts of the whole. That is one main reason why we need cooperation among experts and also have to make the people concerned participate in risk-management. Moreover, we can observe typical patterns in the perception and acceptance of risks. These patterns depend as well on personal criteria, like differences in risk aversion, as on criteria that are related to the special context of decisions, like the kind and the extent of damages, whether a person is exposed to the respective risk voluntarily or not, whether risks are perceivable or not, etc.. For example, risks of a rather high probability and a low damage, like car accidents with one victim are judged less severe than risks of rather low probability and high damages like a crash of an aeroplane with many victims, even if there is the same number of victims in the same range of time in both cases. The result of distorted risk perception is that we fail to concentrate our necessarily limited efforts of risks reduction to the most urgent ones. Different and especially distorted patterns in risk perception offer an important argument in favour of institutional rules like, for instance, mediation processes with their inherent cooperation and participation which increase acceptance and legitimacy of decisions, aiming at environmental protection.
- Thirdly, there may be knowledge about risks at the point of decision, but one does not make use of it. This is a problem of morals and incentives directly related to the existing institutional framework. The institutional settings of ex post liability rules, for instance, determine to a great extent the level of ex ante caretaking. Today we basically know that certain forms of behaviour in everyday-life situations affects severe environmental damages. Nevertheless, many of these activities are still carried out even by those who seem to have a pronounced environmental awareness. Will we succeed in solving this apparently paradoxical phenomenon by strengthening morals as mainstream thinking seems to believe which is rather blind to the impact of existing incentives? Or do we have to focus on characteristics of situations realizing that special characteristics of the respective situations prevent morals to be put into practice? We will discuss this in more detail turning to the question of lost possibilities of problem solving in modern societies.

2.2. Morals, incentives and the role of institutions in modern societies

Whenever human behaviour leads to undesired results we can observe a tendency to moralize,

claiming efforts to strengthen basic values and social norms of society. As a consequence environmental problems often were attributed to selfinterest and materialism, which, in turn, should be replaced by a stronger environmental awareness. From this one usually expects an environmentally less harmful behaviour. But we have to realize that appealing to morals as a way of problem solving in modern societies, in contrast to former times now faces severe obstacles for several reasons:

1. In former times life was dominated by `face to face` relations. Today the individuals` everyday life depends to a much greater extent on decisions of other individuals, who are and remain unknown to him. As a result, the part of everyday-life decisions, which are based on sympathy and empathy today, is much smaller than in former times. This contributes to a decreasing influence and obligingness of social norms to the single individual in an urbanized, anonymous and highly mobile world.

2. In **traditional societies** the individual was closely embedded in his surrounding community. Generally accepted social norms shaped above all by religion became, on the one hand, part of a person`s identity. In this perspective norms influenced behaviour as **internal constraints**. On the other hand, norm observance or deviation were rewarded or punished respectively by other members of the community. In this perspective norms worked as **external constraints** on individuals. In both cases, norms influenced the behaviour to a large extent. Under these conditions norms effectively prevented the exploitation of, for instance, common property and public goods by individual behaviour. The norms and rules of rather small communities were obeyed by all, because interdependencies among the members of the group made any violation of norms noticeable and obvious to all. No member of the community was able to take lasting advantage of activities by putting parts of the burden of his behaviour on others against their will. In social settings in which individuals interact repeatedly and where they know each other they are mutually able to reward conform and to punish deviating behaviour, thus reinforcing the validity of respective norms.

In **modern societies** the relations among individuals become more and more anonymous and the interdependency between individual and community is slacking more and more. Taking advantage of social and economic activities by externalizing parts of their costs to third parties, who are not involved, is much easier, because it becomes impossible to hold a single person responsible for overall resulting risks or even damages. Woods, for example, suffer from all emissions causing acid rain. Car driving, which at its beginning did not have any noticeable environmental effect, now contributes as a mass phenomenon to acid rain. As a consequence of these (and similar) developments we face the problem that the results of everyday-life decisions are no longer fully attributed to the deciding individual.

The important difference to former times is: In former times the results of individual behaviour appeared **internalized from the community`s point of view**. Today results of individual behaviour appear **externalized from the individuals point of view**. To give an example: In clearly structured village communities of traditional societies the norms and rules regulating the use of common property for the purpose of cattle breeding, for instance, prevented `free riding` and the exploitation of common property by putting out too many animals on a pasture, because any deviation from the well-established and well-accepted norm was noticeable to the others. Norm-deviating behaviour could easily be identified and punished, not only by penalty, but also by withdrawing trust and

friendship. Life was to a much greater extent ruled by `private good situationsA, characterized by a close relation between benefits and costs for the user. Today we face more and more `public good situationsA characterized by the fact that users have more or less open access to benefits without at the same time being compelled to contribute to their costs of production or conservation respectively. As public good theory predicts today we face the exploitation of commons like fishing grounds in the oceans, (clean) air or the destruction of attractive but unprotected nature. The `tragedy of commonsA evolved when the norms and rules so far regulating their use and their access were replaced more and more by `open accessA, due to new technologies and social change in the course of increasing material wealth. Basic characteristics of social change in modern societies are the pluralism of values, individualisation and growing anonymity and complexity, all of them contributing to a decreasing acceptance of in former times commonly shared norms.

3. We have to realize that most of the problems we worry about today and which we try to solve by strengthening morals are caused by the characteristics of the respective situations rather than by the characteristics of the individuals involved. Environmental problems can be regarded as **unintended and aggregated by-products** of everyday-life decisions. With the exception of criminal behaviour, nobody intends to do any harm to environment. Nobody goes by car instead of using a bus, train or bicycle in order to pollute the air. Using the car is usually an unconscious, but most efficient way to solve individual mobility and transport problems. Pollution is an undesired by-product, which usually does not even come into mind at the point of decision. The same is true for the wide range of activities causing environmental problems only on an aggregated level.

Looking at environmental problems not only as unintended, but also aggregated results of individual behaviour we have, choosing an analytical perspective to illustrate basic incentive structures, to face a double consequence: On the one hand, everyday-life behaviour of a single individual affects the environmental quality only in logical terms, but not in any noticeable dimension. On the other hand, as a rule, it is impossible for a single individual to contribute noticeably to a better quality of the environment by changing his behaviour. Reducing or giving up car driving by a single person, for instance, will have no noticeable effect on air quality, but imposes well noticed `costsA on him in terms of less comfort, less mobility, more time needed and possibly even more money. At the same time it is without any noticeable effect on air quality. The quality of air does not depend on the good example of the few already actively involved, but on the answer to the question whether `the othersA follow the good example. And due to characteristics of relevant situations in modern societies we have to doubt that `the othersA will follow. As they cannot be excluded from the benefits of clean air and as air quality in general is completely independent from a single person's behaviour, individuals, from their individual point of view, are best off, if they refuse to change their behaviour. Under prevailing conditions each of them is in the best position if he saves the `costsA of changing behaviour, but at the same time tries to benefit from the improved air quality. This is what we can learn from many (not all) examples in reality and what the theory of public good predicts. The incentives, effective in many individuals' everyday-life situations come into conflict with generally accepted norms and morals. In these `social dilemma situationsA the best choice from an individual's point of view leads to undesired overall results. Or the other way round: the realisation of generally accepted and desired goals implies a systematic avoidance of the best available alternative from an individual's point of view. And because those who behave according to their increased environmental awareness remain exploitable they have to be afraid to play the role of a

`moral fool` that is bearing the costs of a desired behaviour without a noticeable effect on environmental quality.

What follows from all this? The challenging problem is not only to bring about a change in awareness and behaviour to get people involved, as the strategy of moralizing and mainstream thinking presumes. The crucial point above all is to make sure that the contribution to problem solving of the people involved does not remain exploitable by the `free riding` of others. Under the prevailing conditions of modern society we have to expect that morals which remain exploitable will be exploited. Morals which are exploited as a rule cannot be prevented from erosion. What we have to realize is that moralizing cannot only fail to strengthen morals and to bring about the desired behaviour, but, as an unintended result, may even lead to an erosion of morals.

4. The strategy of moralizing ecological problems, as a rule, claims more **responsibility** of all individuals for the environment. Hans Jonas in his famous book `Das Prinzip Verantwortung` postulates a basic `principle of responsibility` for the environment. He regards environment as an object of individual responsibility and suggests changing our perspective from an ex post causal attributing responsibility to a prospective care-taking responsibility as a basic principle of ethics. But there remains the problem that under the conditions of modern societies no single person is able to take responsibility for environmental quality. In the past a single farmer was able to leave soil of high quality to his descendants, because the quality of soil directly depended on his own kind of farming. Today we as an anonymous community have to leave to our descendants an acceptable level of environmental quality, though, at the same time, no longer able to contribute to this as an individual in any noticeable manner. As far as certain global environmental problems like emissions of carbon dioxide are concerned this is even true for single nations.

A concept of care-taking responsibility seems useful with regard to problem solving only, if it allows to identify those who are responsible and those who are not. If all, i.e. we as a local, regional or national community or even as mankind, are held responsible in the end, actually no one is responsible. A short story by an unknown author about four people, named Everybody, Somebody, Anybody and Nobody, paraphrases this:

`There was an important job to be done and Everybody was asked to do it. Everybody was sure Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought, Anybody could do it, but Nobody realized that Everybody wouldn't do it. It ended up that Everybody blamed Somebody, when actually Nobody asked Anybody.`

In modern societies we face more and more such dilemma situations as described above. In these situations the behaviour of self-interested individuals will unintentionally cause undesired overall results like, for instance, environmental damages. The moralizing of problems in this way will have rather limited effects on problem solving because of the prevailing misleading incentive structures in anonymous dilemma situations. But there are also important arguments from a more systemic point of view concerning possibilities of problem solving by moralizing that have been lost in modern societies.

5. Modern societies are characterized not only by increasing complexity, individualisation and pluralism of values, but also by another important criterion, the functional differentiation. That is the

emergence of more and more specialized subsystems, separated from transcending communication and each of them working according to its own rationality. In the past, for instance, production and consumption, working and consuming, manufacture and household were close together. Today we face a deep separation of consumption and production and a division of society in subsystems like markets, politics, science and others. All of these subsystems work according to their own logic and rationalities. According to this approach the rationality of the subsystem market, for instance, is based on monetary terms like costs and prices. The rationality of politics counts in terms of gaining or losing votes at the point of elections and the voters' loyalty in between. The rationality of science counts in terms of reputation among the members of the scientific community. Religion and others may define their rationalities in terms of morals. The basic thesis is that the respective systems will select information and react to it only in terms of their own rationalities. Competitive markets as basic institutions in modern societies will systematically select only that information and respond to it which can be expressed in monetary terms like prices, costs, income etc. The highly specialized competitive economic system is basically blind to moral signals, as long as they have not been translated into monetary terms. To illustrate this argument, changing from the systemic to a microeconomic level: managers of firms as individuals may understand and even prefer moral objectives in running their business. But if they follow them systematically neglecting economic objectives it will end up in the bankruptcy of the firm. Politicians may know quite well in a specific situation, what is necessary in order to support common welfare, but if they ignore the acceptance of the voters or the interests of groups with a great influence on public opinion, they will lose political loyalty and finally elections.

What follows from this approach is that we cannot run a modern competitive economy by moral categories, aiming at the motives of individual decisions of managers, politicians, consumers etc. against effective incentives, resulting from existing institutions. Additionally and above all we have to translate moral categories into monetary terms as central part of the economic incentive system. We have to make morals part of our institutions. If we want to avoid lasting violations of basic goals like the protection of the environment in running the economy, in modern societies we have to focus on the effects of institutions and resulting incentives rather than on the moral quality of motives. In modern societies desired morals will be put into practice on a large scale by institutional change aiming at a change in incentive structures or the implementation of morals will fail.

3. Costs of moral behaviour and strategies of cost reduction

This is of course not a pleading against individual morals, which remain of utmost importance also as far as certain aspects of economic behaviour are concerned. For instance, a shift of consumers' demand towards ecologically more favourable products is necessary to bring about a lasting corresponding supply in a competitive economy. But can we really expect a lasting shift of demand in favour of ecologically less harmful products and activities if it remains more expensive or less comfortable compared to available alternatives? What we tried to explain is that under conditions of modern society the general strategy of moralizing has not only limited results with regard to desired objectives but as an unintended result may also contribute to an erosion of morals. Then the question may arise, whether we have to run a society without morals.

Individuals are not only self-interested as we have argued up to now, they are also interested in their own self. With regard to personal identity moral arguments seem to gain more and more importance for everyday-life decisions. Concerning environmental problems: We have, for example, not only to observe an increase in environmentally harmful forms of mobility although we all know that these

kinds of mobility can be neither a model for mankind nor for future generations. We also observe that people in many European countries separate their waste and punish products and firms by withdrawing demand if they get to know that the use or production facilities of the respective products violate generally accepted environmental or social values. A well-known example is the punishment of the Shell company by a strongly decreasing demand of its fuel in several countries, when it intended, in accordance with the vote of experts and the permission of the British government, to dispose of the platform 'Brent Spar' in the Atlantic. What arguments can be found to explain the completely different behaviour of the same people in the respective situations convincingly? Taking the most important argument from literature we have to focus on complete different 'costs' of putting individual morals into practice. 'Costs' are not only to be counted in terms of money, but they also include time, physical efforts, less comfort etc.

There is a trade-off between the 'costs' of the (morally) desired and the practised behaviour indicated by the following graph. Reducing or giving up car-driving is close to point B. Punishing Shell company without any reduction in car driving and fuel consumption by merely changing from this company's petrol stations to those of competitors is close to point A. The same is true for separating waste, provided the necessary infrastructure has been established. In these and similar situations the 'costs' of moral behaviour in terms of time, comfort, money etc. are rather low and it can be practised easily.

Trade-off between 'costs' of morals and behaviour

(Frey B.S. u. I. Bohnet (1996), Tragik der Allmende, In: Umweltsoziologie. Sonderheft 36 der Kölner Zeitschrift für Soziologie und Sozialpsychologie. Ed. by A. Diekmann u. C.C. Jäger, Opladen S. 292 -307)

Generalizing we may conclude that morals can be effective in 'low cost situations', if the burden put upon those who want to live in harmony with moral objectives in everyday-life decisions is not too high. Here internalized norms or intrinsic motivation respectively may lead to an ecologically more favourable behaviour even if it is combined with a (limited) burden. In face-to-face situations or in small group contexts, for instance in families, neighbourhoods, among colleagues at working places, in schools and classrooms etc. generally accepted norms may also ensure desired behaviour. Here

effective social control implies rather high costs of norm deviation to each member of the respective group. In this case desired results may be based on extrinsic motivations which in the course of time, if the norms get internalized, may turn into intrinsic motivations. Under these conditions strategies of education, enlightenment and information may be quite effective.

But

- the larger the group,
- the more anonymous the context of the respective situation is to the individual and
- the higher the costs of environmentally more favourable behaviour are to the individual, the less realistic is the explanation of undesired behaviour by a poor moral quality of motives, and the more important become arguments which explain undesired results by poor moral quality of institutions and resulting incentive structures.

Of course, it is possible to influence the costs of morally desired behaviour as well as the costs of norm-deviation by changing institutional settings. A credible eco-labelling informing consumers about the ecological impacts of products, for example, can effectively reduce information costs, when looking for environmentally less harmful alternatives, and facilitate their purchase and use respectively. Environmental restrictions and their control increase the costs of norm deviation to consumers or firms. Restrictions are of special importance as far as the above mentioned strategy of sufficiency is concerned.

But looking for explanations of environmental problems in market economies and searching for possibilities to reduce costs of moral behaviour we have to focus on **systematic market failures** at first. Keeping in mind that not all that is ecologically valuable can or even should be expressed in monetary terms we face the situation that the economic subsystem selects and responds to monetary signals in terms of costs and prices. Differences in prices in principle indicate differences in values of the respective goods. But the prices of many environmental resources, like for instance air or the water of lakes and rivers, are zero due to their public good characteristics. Then prices signal affluence and indicate a zero value to respective economic decisions although meanwhile these resources have become scarce and of high value for human activities.

A basic rule in liberal societies is the principle that anyone who takes advantage of an economic activity like producing or consuming has to bear all the costs, which evolve in the course of the respective activity. This principle does not only correspond to ideas of justice and fairness. It is also basic to the performance of competitive markets and the ecological results of market economies. Costs are usually indicated by the price which has to be paid for the product. But only if prices reflect all costs they give a useful orientation to economic decisions and lead to the desired economic results. To give an example: If car driving causes noise and this noise causes decreasing value to all properties closely located to roads and highways, then the price to be paid for car driving (fuel, insurance, repairs etc.) does not cover all costs of this activity. Part of the costs of car driving is passed on to third parties making this activity cheaper and more attractive to car drivers. Costs privately calculated are lower than the costs which have to be borne by society as a whole. Market prices then only reflect part of the costs. They are cheaper than they should be. As a result of this kind of general cost externalization prevailing economic activities are - compared to their environmentally less harmful alternatives - economically more attractive. From a societal point of view this leads to a kind of collective bilking.

Appealing to a caretaking responsibility or putting environmental restrictions on the respective activities does not change anything of the misleading incentive structures. This kind of environmental policy has to stand up against `economic laws` instead of using them in order to facilitate environmentally desired innovations by integrating the use of environmental resources appropriately into price signals. Policy approaches aiming at an internalization of so far externalized costs, bringing prices closer to the `ecological truth` of respective activities are for example the implementation of eco-taxes, (tradable) permits or changes in liability rules. These measures are necessary elements of an institutional change, inevitable to make economic decisions in a world of uncertainty and lacking knowledge more compatible with moral objectives concerning the environment. In the short run prices will give better information concerning ecological impacts. In the longer run innovations go into an ecologically more favourable direction, offering new and so far unknown, reversible possibilities of substitution to producers and consumers. Both can be regarded as a reduction of costs of environmentally less harmful behaviour.

This is the main reason why we have to change the institutional framework of markets, so that markets become able to respond to changing ecological scarcities in an open and reversible manner within the limits of economic rationality. We do not refer to basic principles of markets for ideological purposes or because market orders in reality have proved stronger than central planning systems. The main reason is that market economies can be regarded as historical achievements aiming at economic wealth and individual freedom. Markets surrounded by a certain order of principles, rules and regulations can be seen as efficient institutions securing individual freedom and wealth against the disorder in the (inefficient) Hobbes-jungle as well as against an (eco-) totalitarian state. Under certain idealistic but not completely unrealistic conditions that we cannot deal with here in more detail, institutional settings of democracy and markets can be regarded as applied ethics, securing freedom, justice and efficiency as well as it is possible in a modern society. Fundamental criticism of the market systems tends to ignore these evolutionary aspects as well as existing possibilities of improving market performance by institutional change. We often find a plea for abolishment or substitution of market decisions by political and administrative regulations. But there is no convincing a priori argument in favour of political mechanism compared to market mechanism. On the contrary: the discussion concerning feasible ways to approach sustainability seems to underestimate the innovative capacity of competition-based markets. At the same time it seems to overestimate the possibilities of politicians and bureaucracy, which have neither sufficient information, decision and control capacities, nor sufficient incentives to achieve a proper balance between ecological, social and economic goals. Moreover, a new balancing of these goals in order to approach sustainable development in democratic societies is possible only in a consensual way. And the necessary consensus is only to be found on the level of basic rules not on the level of single decisions. Up to now the rules of competitive markets seem to have been the best known mechanism to create and to disseminate new, so far unknown solutions as open and reversible responses to respective incentive structures. Changing incentive structures by integrating an ecological frame into market economies and after that using the market mechanism instead of substituting it seems necessary although not sufficient if we want to put more morals i.e. more environmental protection into practice.

4. Conclusion and outlook

We have argued that in modern societies we face systematic limitations if we try to approach environmental protection and sustainability by appealing to individual morals. Nevertheless, we should not underestimate its contribution to solutions for at least four reasons:

First, in the short run morals prove to be ecologically effective in 'low cost situations'. The individual's 'interest in one's own self' comprises the need to live in harmony with shared values and implies the readiness, within certain limits, to bear the costs of a corresponding behaviour. With regard to these situations the implementation of economic instruments or political regulations may even substitute intrinsic motivations by extrinsic ones requiring higher costs of control in the end.

Second, with regard to Brent Spar and lots of similar examples, we can observe that 'low cost decisions' may have 'high cost results' to firms, political parties or governments, forcing them to pay more attention to environmental concerns.

Third and similar to the second argument, environmental awareness as part of consumer morals gives incentives to firms and facilitates observable efforts to make environmental (and social) concerns part of the firm's 'goodwill' and reputation. The more consumers reward these efforts, the more attractive it is to firms to take ecological (and social) criteria into account.

Last but not least, morals and environmental awareness are prerequisites to institutional change in general and specifically to policy approaches according to the fundamental user-pays-principle, as we can learn from obstacles to implement economic instruments in environmental policy, like for example eco-taxes or even tradable permits. As we can learn from the discussion about tradable permits, tradable permits are often compared (and thereby discredited) to medieval indulgences, although their incentives are completely opposite. Today environment can be used free for production and consumption purposes provided environmental regulations are met. Tradable permits, however, effect an increase of costs of pollution and other forms of using the environment, thus making the undesired behaviour less attractive. The medieval indulgences reduced punishment for sins and effected a reduction of 'costs', to be paid for undesired behaviour, thus making it more attractive. From this discussion we can learn that not only morals, but also appropriate **mental models** are of utmost importance as far as the choice of suitable policy measures is concerned.

But because of the characteristics of modern societies and due to the existing institutional framework of the economic (and political) system we have to face systematic limits in the prevailing efforts to integrate ecological and sustainability criteria into (economic) decision making by means of information and moralizing. We also need better incentives.

We have argued that in modern societies misleading incentive structures above all prevent desired results and that we have to implement better incentives into the economic subsystem, notwithstanding administrative restrictions in particular cases. Aiming at environmentally more favourable behaviour by institutional changes of the economic subsystem is necessary, but not sufficient. The reason is that this approach remains tied to a narrow concept of economic rationality, based on monetary signals and, therefore, restricted to what can be expressed in monetary terms. And for the same reason environmental problems cannot be left to the political subsystem, working according to a rationality based on and restricted by the voters' loyalty. The prevailing incentives, effective in the competition among politicians or political parties respectively tend to favour a populist

distortion of `costs` and `benefits` especially with regard to social dilemma situations. Nevertheless, it is the political system, which in the end has to implement incentives and necessary ecological restrictions into the economic system.

What then can be a solution to this? Cancelling the rationalities of the respective subsystems is not a suitable option. As a general strategy it would result in high losses in productivity and wealth and consequently threaten stability, (social) peace and freedom. Instead we should generate or improve respectively democratic institutions aiming at communication, acceptance, legitimation and participation. According to a more pro-active interpretation of democracy individuals have not only the right to vote, but also the right to participate in public affairs. We should therefore establish, strengthen and institutionalize platforms of communication and participation dealing with urgent questions like environmental and sustainability problems on different levels of society - local, regional, national and supranational. The expected result of communication going beyond the subsystems is not only to transport information about (different) interests, but also to transform interests in the process of communication. And the chances to get results with relevance to institutional change is the greater, the more models and forms of participation ensure that the discussion of objectives remains closely linked to a discussion of means suitable to reach them. This is what we have been lacking up to now in environmental education and communication processes. The main task of these platforms is therefore to bring together and to go beyond the short-run rationalities of the subsystems involved leading into open and reversible democratic decision processes. But these platforms can only contribute to long-run sustainability in modern societies if we succeed in adopting institutions as general rules which effectively tackle the problem of externalizing costs of production and consumption activities to third parties. Such institutions can serve as mechanisms to produce new so far unknown knowledge and to make use of available so far ignored knowledge as well as to increase the acceptance and the legitimation of decisions which lead to results being in greater harmony with morals

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