

Stocker, Ferry

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Can 'Austrian Economics' Provide a  
New Approach to Environmental Policy? Ferry Stocker

Institute of Economic Theory and Policy  
University of Economics and Business Administration Vienna Revised

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Whereas 'traditional environmental economics' { considering pervasive 'market failure' in the form of negative externalities as the root cause of the problem of environmental degradation { argues for speci c government intervention in the market process via a host of di erent measures to correct that 'perceived failure', this paper sets out to challenge that somewhat super cial view. At least since the seminal contribution of Coase it has become clear that it is the 'underlying institutional structure' of the market economy, the structure of the 'property rights', that determines the 'degree of e±ciency' in a particular 'real economy'. However, taking the dynamic and more encompassing view of North the pivotal question becomes asking about the determinants of the evolution of appropriate institutions to protect the environment and what can be done to foster that development. This calls for a 'retreat' of the pervasively meddling state in this respect, highlights the pivotal role of the Schumpeterian entrepreneur in a typical 'Hayekian setting' and constitutes a new { an Austrian { approach towards environmental policy. **Key words:** Property rights, institutional evolution, entrepreneur. Address of

the Author:

Univ. Ass. Mag. Dr. Ferry Stocker  
Institute of Economic Theory and Policy  
University of Economics and Business Administration Vienna  
Augasse 2 - 6, A - 1090 Vienna, Austria  
Tel. (01) 31 336-4523, Fax: (01) 31 336-727  
e-mail: Ferry.Stocker @ wu-wien.ac.at

'As technology, population growth, and resource needs draw the nations of the world closer together, the relevance of collective action increases. An understanding of collective action and its supporting processes and environment will allow policymakers to foster the required preconditions to achieve effective collective action. With current fiscal crisis confronting cities, counties, states, and nations, the ability to promote collective action without resorting to government intervention increases in importance. Collective action is achievable when the configuration of incentives to participants is supportive. This formula for successful collective action can be designed into emerging institutions.'

Todd Sandler

### 1. The 'Traditional View'

Contrary to widespread preconceptions economic theory has a long tradition of dealing with 'environment'- or 'natural resource'-related topics and problems. Two of the 'founding fathers' of economics, David Ricardo as well as Thomas Robert Malthus, were primarily concerned with the long-term economic development and therefore with its limitations, the prime being the insurmountable appearing scarcity of natural resources { although 'natural' resources by that time primarily meant the agricultural production capability. Neither should the fundamental contributions of John Stuart Mill with respect to a wider view of the 'quality of life' be overlooked (Mill 1862). It must be admitted, however, that apart from William Stanley Jevons' concerns ('The Coal Question' 1865) such 'natural-resource' or { as we are used to say nowadays { 'environmental concerns' receded { if not vanished completely { during the 'Neoclassical' and 'Keynesian Revolutions' which shifted the emphasis either towards perfect competition and (its 'big brother') general equilibrium models or macroeconomic problems. Environmental and resource economics as a distinct and well-established sub-discipline of economics exist only since the late sixties, when such questions started to come increasingly to the forefront of political and scientific discussion (Kneese-Russel 1987). In their own view economists then were well prepared for the upcoming task (Baumol-Oates 1988), firmly rooted in the neoclassical par-

adigm and mostly still little worried about the relevance of the insights of the Public Choice School (Buchanan-Tullock 1962). 'Traditional' environmental economics, as it nowadays appears in most modern textbooks and journal articles, is strongly based on the concept of externalities which was first elaborated in great detail by A. C. Pigou (Pigou 1920) in the early twenties of this century and which is so frequently and, of course, also wrongly confused with the completely different concept of 'market failure' (Ledyard 1989). However, it seemed that most economists were so hooked by the 'externality-problem-setting' and the proposed solution, the famous idea of the 'Pigouvian tax' that could internalize external costs perfectly and so restore Pareto-optimum that they overlooked not only the insurmountable informational requirements for the successful implementation of the Pigouvian tax (Hayek 1945) { thereby wrongly justifying state intervention { and proceeded starry-eyed on the fiction of a benevolent government but { what, of course, amounts to much more { failed to recognize also the root cause for the very existence of externalities, be they positive or negative.

## 2. Coase and the Consequences

It took more than 40 years before the almost unanimously accepted Pigou solution was severely challenged by the seminal contribution of Ronald Harry Coase (Coase 1960) that spawned a hot and fruitful debate { sometimes even a fierce controversy { by ultimately spotting the real cause that gives rise to externalities, namely transaction costs which, in turn, are crucially influenced by the 'state of the property rights' (Coase 1992). Besides the still raging controversy about the 'true contents' and 'meaning' of the so-called 'Coase-Theorem' (Stigler 1989) { which is not the subject of this paper { Coase, almost undoubtedly, raised the right question, the question for the causes of existence of externalities that was hitherto almost completely neglected since externalities were simply taken as given. And Coase came up with the right answer: Absent, improperly defined, or simply (at a certain stage of development) undefinable property rights and therefore too high transaction costs ultimately give rise to externalities. In this view existing externalities are not deemed worthy of internalization by the affected parties, because otherwise they would have already taken the appropriate action to internalize them. In economic language: the marginal costs associated with the effort of internalization must exceed the marginal benefit of doing so,

thereby leaving the situation rightly unchanged and, what is much more, 'efficient' (Coase 1960). From the economic point of view then, there is no reason for internalization either, and therefore no justification for state intervention in the market process can be given on economic grounds. Except, of course, in one case: Some public goods which, without any objection can be viewed as (positive or negative) externalities, affect so large a number of people that the ensuing transaction costs for their provision become insurmountable. In this case government could { and even should { step in acting on behalf of the people and therefore { if not avoiding the problem of transaction costs altogether { at least reducing them. If we adhere to the classification of transaction cost given by North (North 1994a), what can be avoided in this case are the insurmountable bargaining cost of all the affected parties, however not the information as well as the surveillance and enforcement costs on the part of the intervening government.<sup>1</sup> However, a second and equally important insight that counts especially in the environmental context is that the 'market mechanism' or 'market process' always works on the basis of existing { sufficiently or insufficiently distributed { property rights which therefore hold the key to the 'degree of efficiency' of the outcome of the allocation process: 'what becomes immediately clear is the crucial importance of the legal system in this new world' (Coase 1992, 717).<sup>2</sup> Coase goes on: 'As a result, the legal system will have a profound effect on the working of the economic system and may in certain respects be said to control it.' (Coase 1992, 718). The legal system or, broadly speaking, the institutional framework within which the economic agents operate, is, however, assumed to be given by the traditional economic theory and therefore not subject of its investigation. One of the central insights of Coase therefore is that the 'degree of efficiency' achieved by the market process always depends on the underlying 'institutional structure' which is primarily the structure of the property rights that simultaneously determines the level of transaction costs and therefore ultimately what { composition and level { is being pro-

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<sup>1</sup>Besides, this instance demonstrates the fruitfulness of the 'Coase-controversy' because it shows that the Coase theorem can be interpreted even as an argument in favor of state intervention, at least in certain cases. As Coase himself remarks: 'it does not imply, when transaction costs are positive that government actions (...) could not produce a better result than relying on negotiations between individuals in the market' (Coase 1992, 717).

<sup>2</sup>With the attribute 'new' Coase refers to the distinction between his approach and the traditional 'neoclassical' one.

duced: 'as these institutional arrangements determine to a large extent what is produced' (Coase 1992, 714). And it is exactly this that matters in the environmental context and in the formulation of successful environmental policy since private production of 'environmental goods' undoubtedly falls short of expectations. Economists have mostly been concerned with the initial distribution of property rights ('factors of production', 'goods', in fact, however, 'bundles of rights') and never hesitated to stress this aspect (which indeed should not be overlooked) when talking about the famous fundamental welfare theorems. But besides the distributional issue there is another, and hitherto almost completely overlooked one. Once one leaves the theoretical construct of perfect information characteristic to the standard economic model, transaction costs begin to matter in a most fundamental way. Because in a 'real world setting' { far from perfect information { the distribution of property rights is a key determining factor of the level of the transaction costs and therefore also of the final outcome as seen from the 'efficiency point of view'.<sup>3</sup> If the structure of property rights leaves too much room for externalities, i.e. there is uncertainty about what can be done with certain resources (like e.g. air and groundwater, oil-fields or fish grounds etc.) the handling of these resources can almost with certainty assumed to be far from efficient. Seen from an 'Austrian' point of view it is essential that the Coasean insight must not be interpreted in a static way, as is commonly being the case, and even Coase himself seems to be unaware of the crucial dynamic implications of his finding. Because demographic conditions, technology and preferences, and consequently particular environmental scarcities continually change, so will the costs and benefits associated with internalization efforts. Therefore { seen against the background of the property rights structure { what is or might appear to be 'efficient' today, need not be 'efficient' tomorrow. Now, according to the Austrian view it is inefficiencies that give rise to entrepreneurial activities (Vaugh 1996) that tend to eradicate them. So, apart from the above mentioned 'demand side' for environmental output there is a 'supply side', too. What counts, however, the most, is that the structure of the property rights determines at the one hand to an enormous degree the new

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<sup>3</sup>The 'strict' and therefore utterly unrealistic interpretation of the Coase-Theorem, namely the allocative neutrality of the distribution of the property rights never holds in a real world setting, where property rights themselves influence the level of the transaction costs.

knowledge that is being produced and therefore the particular way 'environmental development' will take and, on the other hand, that property rights are themselves { as shall be shown { subject to change (Dasgupta 1991). As North puts it: "Institutions determine the payoffs. They are the structure that humans impose on human interaction, and therefore they define the incentives that (together with the other constraints { budget, technology, and so forth) determine the choices individuals make that shape the performance of societies and economies over time." (North 1994b, 48).

Institutions, in particular the property rights structure, determine the 'efficiency' of an economy. ###

### Demographic, technological, preference changes ... ###

### lead to changes in the costs-benefit relation of internalization efforts that, in turn, leads to ... ###

### 'entrepreneurial response': Creation of 'new property rights' to generate and preserve a scarcity rent.

### 3. Economic Development and Environmental Problems

Central to the Austrian view is the emphasis on limited and, in particular, dispersed information and evolution with the latter to be interpreted as a continual process to reduce the level of ignorance thereby allowing better decision making and increased wealth. We live in a world that is constantly evolving, with continual change being the constant feature of modern society. Due to continual and significant technological, demographic and economic developments, with these changes themselves quite often being initiated by reformed or new property rights, so that the process is one of mutual reinforcement, the institutional structure needs appropriate adaption from time to time if too high a degree of inefficiency in dealing with the natural environment { and sometimes even outright disaster { is to be prevented. This can be neatly exemplified by the discussion about the so called 'free goods', with

air (the atmosphere in general) or other main parts of the 'public' natural environment being prime examples. As long as these goods were so abundant { economically speaking: at a price of zero supply exceeded demand { there was no need to handle these goods economically since no problem of scarcity existed at all. In other words: the good 'air' has been treated efficiently, simply by not caring about it. However, long gone are those days (Dales 1968)! Due to dramatic demographic and economic progress almost all natural resources, be they land, air, or other precious natural materials, are in high demand. Not so much to the surprise of economists those natural resources that can be traded { in other words: for which property rights are well and rightly established { do not pose an (efficiency) problem. Even despite the enormously increasing demand during the last decades their prices in real terms have not risen much, in some cases even subsided markedly. The explanation given by resource economists { based on the central Hayekian insights as to how the market operates as a discovery process (Hayek 1968) { is as simple as it is convincing: Since scarcity was signalled through the price, successful substitution { sometimes even technological substitution that makes the natural resource nearly superfluous { is a mere question of time (cf. e.g. Beckerman 1995). It is essential to recognize that the necessary precondition for 'having a price' is that some forms of property rights, that rightfully exclude non-owners from using that resource without explicit or implicit permission of the rightful owner { must have been established.<sup>4</sup> Those natural resources, however, for which property rights so far have not been established or have been established improperly do pose a great problem indeed. In these circumstances the danger of the depletion or extinction of these resources arises with possibly harmful or even devastating effects on the entire mankind. If one thinks of the overuse of the atmosphere or the 'imminent' destruction of the rain forests or of the extinction of some valuable species like e.g. the blue whale, it becomes immediately evident that what these goods have in common is that they are public ones ('common' heritage) and that therefore the problem structure of the 'Tragedy of the Commons' applies (Hardin 1968). Being 'public', however, is and remains determined by property rights. Seen from this point of view it becomes imperative to governments and policy makers to see to it that such property rights are

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<sup>4</sup>Here again Coase is right in urging 'mainstream economists' to 'include in our analysis 'features so obvious that (...) they have tended to be overlooked.' (Coase 1992, 713).



being defined for almost all scarce goods { with scarcity itself a reflection of demographic, technological and specific demand conditions { that the process of their conservation or successful substitution gets started. Nothing new, one might say: it's the problem of missing markets! This, however, expresses the typically neoclassical static view which then almost automatically leads to the call for government interference, mostly in form of state provision of public goods. The proposal advocated here and based on Coasean and Austrian insights is that { in the light of dispiriting past experiences with massive public interference of different kinds { most environmental problems can be 'solved' or 'remedied' neither by state provision of the good in question nor by the hitherto dominating 'command-and-control' approaches (themselves, of course, specific forms of property rights)<sup>5</sup>, but quite on the contrary, by retreat of the state and simultaneously granting maximum 'institutional flexibility', preferably and in particular on a local basis.

#### 4. 'Government failure'

This case can be forcefully buttressed theoretically as well as empirically. Especially in the environmental context public goods create problems, even ones, neoclassical economic theory { due to its static character { tended to overlook. A prime analytical example in this context with high time for re-thinking is the widely accepted theorem of welfare economics which states that if the consumption of a good yields positive marginal utility but is not associated with marginal costs, then the good in question { usually characterized by indivisibilities { should be provided free of charge to the users (Blomel-Pethig-Hagen 1986). However, this theorem becomes quite questionable on environmental as well as on economic grounds, simply because of the consequences that are almost bound to come { in a dynamic setting. Two can be expected almost with certainty: First: Sooner or later overcrowding will set in, so that finally some costs of consumption accrue or utility vanishes, provoking ultimately the 'tragedy of the commons' (one certainly need not be reminded of the enormous costs of the public road system and the manifold problems that ensued, which shows the self-reinforcing developments of

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<sup>5</sup>Seen from the property rights perspective, the usual distinction of the instruments of environmental policy becomes somewhat blurred. Because even command and control approaches constitute property rights in that they stipulate what must not be done with a certain good.

the existing property right structure). Second: Since the good in question is provided freely, no substitution will take place on the supply side, which means that it leads to crowding out of private supply. Under these conditions private firms have no incentive to provide similar goods via the market. They simply cannot compete with the state who provides those goods freely.<sup>6</sup> Due to this 'institutional setting' then there is the danger of massive environmental degradation with the danger of extinction of some valuable sites or species.<sup>7</sup> In addition to this kind of government failure there are others like drastically wrong-placed government incentives and disincentives due to specific property rights, in particular as to the right to the results of individual work effort: On the one hand heavily taxed labor makes natural resource inputs relatively cheaper and therefore increases its demand and consequently its usage. It also works as a heavy tax on recycling and therefore prevents a better preservation of the material stocks. On the other hand there are 'foolish' subsidies abound, not only for industries that strongly damage the environment like the coal and steel industries in 'Western' Europe, not to mention the environmental problems due to state subsidizing of agriculture (Stocker 1995) but also for the fishing industries which results in a dramatic run down of world wide fish stocks (Johnston 1992). All these state subsidies are not only doing direct and indirect financial harm and therefore constitute a burden on the states' budget, but ultimately lead to a massive overuse, if not outright destruction of natural resources as well.<sup>8</sup> Seen from

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<sup>6</sup>However, the ensuing deterioration in the quality of the publicly offered good will make some people look for other { superior { solutions. Then private supply will ultimately spring up, however just for those who can afford.

<sup>7</sup>A related question is, whether the governmental management of the natural resource itself is done efficiently. It certainly is not an open question, since the people in charge usually lack the right incentives for ensuring efficiency. So in this case another source of waste exists.

<sup>8</sup>In addition one should bear in mind the environmentally deleterious effects of protectionism, a trade policy still widely adopted in different guises among industrialized as well as developing countries. Up to now { the successful completion of the Uruguay-Round of the GATT talks notwithstanding { especially Third World Countries have therefore been denied to fully specialize in those fields where their competitive advantages really lie. So they are forced to look for other sources of income, and the pressure on natural resources grows, with the destruction of tropical forests being one short-term promising alternative. Not surprisingly the right property rights to the tropical forests have in most cases not yet been established. What happens there is the 'tragedy of the commons'.

this point of view, the 'state' { not the market { is to blame for not supplying the appropriate institutional structure and { even worse { for resisting and discouraging its adaption towards new necessities. Creating the appropriate institutional framework, therefore, becomes the prime task! But how can this be brought about?

5. **A Strong Case for 'Institutional Adaption and Evolution'**

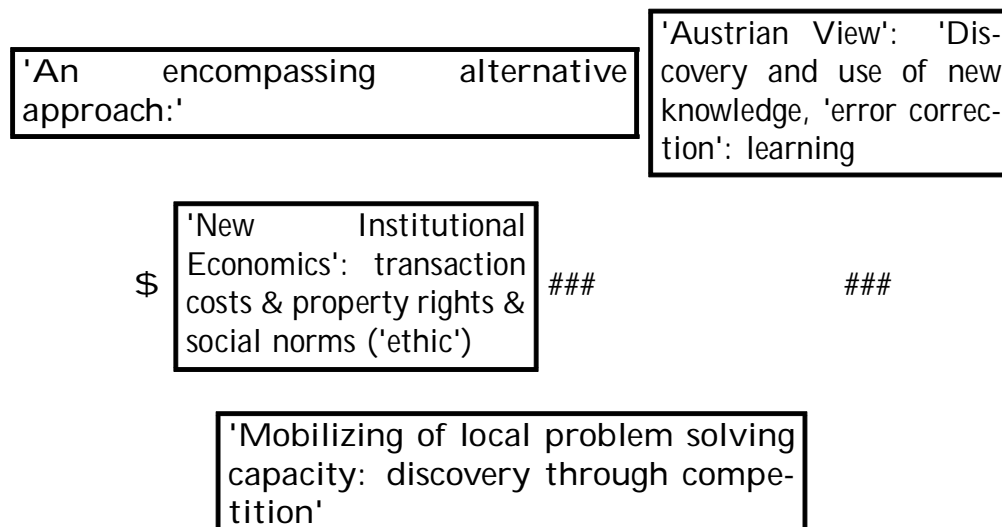
'Orderly' privatization of public natural goods ensures that there is an owner of the 'accordingly defined' (Wegehenkel 1984) natural resource in question who has a strong and powerful incentive to protect, conserve, and cultivate it, or otherwise to put it into that use which is the most profitable for him as well as for the society as a whole. Apart from excludability, what is particularly important is easy transferability of the property right since then the 'true' opportunity costs are taken into account (Anderson-Leal 1991). All that counts here is 'orderly privatization' as opposed to 'unorderly' privatization, a process which is going on wherever one encounters the 'tragedy of the commons'. One must not forget that in whatever setting of the 'Tragedy of the Commons' privatization takes place as well, however in an unorderly manner { people take away some valuable resource }, so that { unless the institutional framework is changed either 'from above' or evolutionary 'from below' } the resource in question will be depleted or destroyed. As a consequence, more { not less } room for markets as well as for voluntary club transactions is required to improve the situation (Sandler 1992). What the government can do in this respect is not to hamper the development, but to provide the proper institutional structure which is sufficiently open to reform and change. As seen from the Austrian perspective the institutional underpinning must first and foremost make sure that people (have strong incentives to) come up with different problem solutions, so that a competition for problem solution is fostered, a discovery process stimulated and ensured. It is therefore decisive that the institutional structure leaves enough leeway for an endogenous evolutionary development, especially for solutions 'from below' according to the 'subsidiary principle'. "The ideal incentive framework will not only reward productive activities but will provide a hospitable environment for the creative designing by entrepreneurs of new institutions to solve new problems" (North 1994b, 49). According to North a market economy with well defined property rights has proven to be the most suitable institution for wealth creation. This insight should be increasingly applied in environmental policy, because "where the underlying institutional structure provides the proper incentives ... they can deal with a wide range of "common" problems" (North 1994b, 69) which is also supported very well empirically (Ostrom

1991, Ostrom-Gardner-Walker 1994). Especially the empirical studies show that 'public goods problems' should { wherever possible { be 'put' first on a local basis, so that on the one hand the number of affected parties diminish thereby sharply reducing transaction costs and on the other the prospect of an increasing rent to be reaped from a local public good materializes (Foldvary 1994). As environmental scarcity increases and the costs of exclusion of valuable environmental resources decrease { once again a fruit of the 'discovery process' inherent in a market economy { alert entrepreneurs will try to take advantage of the arising profit opportunities and thereby even define the needed property rights. The property rights approach for natural resources shows that property rights evolve through time crucially depending on the costs and benefits of defining and enforcing them: the discounted asset value is put against the costs of the technology for monitoring and bargaining resource use. "Rising values of recreational and environmental amenities will provide an incentive for entrepreneurs to develop new technologies and institutions for producing and marketing these goods (Anderson-Leal 1991, 76).<sup>9</sup> In other words and generally speaking: the Austrian perspective advocates a process which allows individuals to search for new knowledge, being able to acquire some property right in what is being discovered, thereby ensuring that the person has an incentive to discover what is valuable for others.<sup>10</sup> The 'mechanism' responsible for the unprecedented increase of knowledge and wealth in the 'Western World' should therefore be applied to environmental problems as well: 'Environmental patents', patents for environmental goods, generally speaking: 'ways in which to handle environmental scarcity successfully, i.e. so that a particular scarcity is reduced' should be introduced or made appropriable. Then 'imperfections' such as externalities { once they become economically relevant { will with high likelihood lead to the creation of 'private' institutions { sole entrepreneurs or clubs or other institutional arrangements { that try to internalize them.

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<sup>9</sup>However, a problem arises here: entrepreneurs may not only be quick to design institutions to capture externalities and as a by-product conserve valuable natural resources, they can also turn to the state in order to ensure them a position not merited on economic grounds ('rent-seeking in the traditional way').

<sup>10</sup>Neoclassical analysis, on the other hand, does not explain how knowledge is acquired and produced.



Rather than directly evaluating different policy options as is the case in neo-classical analysis it gets imperative to create an institutional environment in which the affected agents can easily come up with many different proposals for the problem solution. What counts especially in environmental respects is the 'possibility of evaluating the institutional environment in terms of its potential to inspire genuine discovery' (Kirzner 1992). It must therefore be ensured that legislation and government agencies do not stand in the way, but, quite on the contrary, devise policies to reduce transaction cost. As opposed to the 'traditional' welfare economics with its closeness to 'social engineering' what can be termed as 'Austrian' approach leaves the engineering to those who dispose of the relevant knowledge, however, assisting them in providing incentives or letting those incentives come into being of their own. In devising environmentally friendly institutions hospitable to the creation of new and the diffusion of relevant information (Carraro-Siniscaldo 1994) quick error correction (Vaughn1996) should be ensured. The whole concept advocated here therefore is based on the paramount importance of making the best possible use of dispersed knowledge to accomplish environmental goals of the people affected.

## 6. Conclusion

For the market to work 'efficiently' and therefore to minimize also ecological harm it is essential that the appropriate 'institutional underpinning', a

system of sufficiently defined property rights, is provided. This, however, is no static affair, but something that evolves continually, adapting and responding to the demands of time and place. In order to overcome many environmental problems, especially the ones relevant on a local or regional level, 'sufficient built-in leeway' in the institutional structure is essential, in order to ensure an endogenous 'bottom up' evolutionary development. As a first step towards such a 'rebalance of the property rights structure' a retreat of the state is required as regards the provision of certain public goods as well as other intrusions in form of too high taxes on labour as well as subsidies for energy, industry, and agriculture, simply because this has proven to be a major impediment for the solution of environmental problems. A second step, however, has to follow. It consists in creating a climate in which many new solutions can be developed and appropriate new property rights established according to the current and future demands and necessities of environmental protection. In this process a central requirement must be fulfilled, especially as seen from the Austrian point of view. The new property rights must foster the creation of new knowledge and ensure quick error correction. All this served to solve and prevent problems, the source of which was already well known to Adam Smith who observed in the *Wealth of Nations*:

"Laws frequently continue in force long after the circumstances, which first gave occasion to them, and which could alone render them reasonable, are no more."

## 7. References

- Anderson, T. L. and Leal, D. R (1991), *Free Market Environmentalism*. Boulder - San Francisco - Oxford: Westview Press.
- Andreoni J. (1993), An Experimental Test of the Public-Goods Crowding-Out Hypothesis. *American Economic Review* 83, (Dec.), 1317 - 1327.
- Arrow, K. J. (1969), *The Organisation of Economic Activity: Issues Pertinent to the Choice of Market versus Nonmarket Allocation*. United States Congress: The Analysis and Evaluation of Public Expenditures: The PPB System. Vol. 1, 47 - 64, Washington D.C.: Government Printing Office.
- Baumol, W. J. (1991), Toward Enhancement of the Contribution of Theory of Environmental Policy. *Environmental and Resource Economics* 1/4, 333 - 352.
- Baumol, W. J. and Oates, W. E. (1988), *The Theory of Environmental Policy*. 2nd ed., Cambridge: Cambridge University Press.
- Beckerman, W. (1995), 'Small is stupid': Blowing the whistle on the greens. London: Duckworth.
- Binger, B. R. and Hömann E. (1989), Institutional Persistence and Change: The Question of Efficiency. *Journal of Institutional and Theoretical Economics* 145, 67 - 84.
- Bromley, D. W. (1991), *Environment and Economy: Property Rights and Public Policy*. Cambridge et al.: Blackwell.
- Buchanan, J. (1969), *Cost and Choice: An Inquiry into Economic Theory*. Chicago: Markham Publishing Co.
- Buchanan, J. and Tullock, G. (1962), *The Calculus of Consent*. Ann Arbor: University of Michigan Press.
- Caldwell, B.J. and Boehm, St., Eds. (1992), *Austrian Economics: Tensions and New Directions*. Boston, Dordrecht, London: Kluwer Academic Publishers.
- Carraro, C. and Siniscaldo, D. (1994), Environmental policy reconsidered: The role of technological innovation. *European Economic Review*. 38, 545 { 554.
- Coase, R. H. (1937), The Nature of the Firm, *Economica* 4, 386 - 405.
- Coase, R. H. (1960), The Problem of Social Cost. *Journal of Law and Economics*. 1 - 44.
- Coase, R. H. (1992), The Institutional Structure of Production. *American Economic Review*. 82 (Sept.) 713 { 719.
- Coase, R. H. (1994), *Essays on Economics and Economists*. Chicago - London: University of Chicago Press.
- Cornes, R. and Sandler, T. (1996), *The Theory of Externalities, Public Goods and Club Goods*. 2nd edition. Cambridge, New York, Melbourne: Cambridge University Press.
- Cropper, M. L. and Oates, W. E. (1992), *Environmental Economics: A*



Survey. *Journal of Economic Literature* 30 (June), 675 - 740. Dales, H. J. (1968), *Pollution, Property, and Prices*. Toronto: University of Toronto Press. Dasgupta, P. S. (1991), *The Environment as a Commodity*. In Helm, D. (Ed.), *Economic Policy Towards the Environment*. Oxford: Blackwell. Dasgupta, P. S and Heal, G. M. (1979), *Economic Theory and Exhaustible Resources*. Cambridge: Cambridge University Press. Demsetz, H. (1969), *Information and Efficiency: Another Viewpoint*. *Journal of Law and Economics*. 12, 1 - 22. Eggertsson, T. (1990), *Economic Behavior and Institutions*. Cambridge: Cambridge University Press. Eggertsson, T. (1993), *The Economics of Institutions: Avoiding the Open-Field Syndrome and the Perils of Path Dependence*. *Acta Sociologica*, Vol. 36, 223 - 237. Farrell, J. (1988), *Information and the Coase Theorem*. *Journal of Economic Perspectives*. 1, No. 2, 113 - 129. Foldvary, F. (1994), *Public Goods and Private Communities: The Market Provision of Social Services*. Aldershot: Edward Elgar. Friedman, M. (1994), *Introduction*. In: Hayek, F. A. *The Road to Serfdom*. Fiftieth Anniversary Edition. Chicago: University of Chicago Press. Hahn, R.W. and Stavins, N. (1992), *Economic Incentives for Environmental Protection: Integrating Theory and Practice*. *American Economic Review. Papers and Proceedings* 82, 464 - 468. Hamlin, A.P. (1992) *On the Possibility of Austrian Welfare Economics*. In: Caldwell, B.J. and Boehm, St., Eds. 193 - 206. Hansmeyer, K-H. und Schneider, H.K. (1992), *Umweltpolitik: Ihre Fortentwicklung unter marktsteuernden Aspekten*. Göttingen: Vandenhoeck und Ruprecht. Hayek, F.A. (1945), *The Use of Knowledge in Society*. *American Economic Review* 35, 519 - 30. Hayek, F.A. (1949), *Individualism and Economic Order*. London: Routledge and Kegan Paul. Hayek, F.A. (1968), *Competition as a discovery procedure*. In: *New Studies in Philosophy, Politics, Economics and the History of Ideas*. Chicago: University of Chicago Press. Hayek, F.A. (1994), *The Road to Serfdom*. Fiftieth Anniversary Edition. Chicago: University of Chicago Press. Hardin, G. (1968), *The Tragedy of the Commons*. *Science* 162, 1243 - 1248. Helm, D. (Ed.) (1991), *Economic Policy Towards the Environment*. Oxford: Blackwell. Holm-Müller, K. (1993), *Neuedefinition von Eigentumstiteln zur Lösung umweltpolitischer Probleme: Die Rücknahmeverpflichtung im deutschen Abfallgesetz*. *Jahrbuch für Nationalökonomie und Statistik* 212/5-6, 480 - 496. Horbach, J. (1992), *Neue Politische Ökonomie und*

Umweltpolitik. Frankfurt - New York: Campus. Illing, G. (1992), Private Information as Transaction Costs. *Journal of Institutional and Theoretical Economics*. 148, 558 - 576. Jevons, W.St. (1865), *The Coal Question: An Inquiry Concerning the Progress of the Nation and the Probable Exhaustion of Our Coal-Mines*. London: Macmillan. Johnston, R.S. (1992), *Fisheries Development, Fisheries Management, and Externalities*. World Bank Discussion Papers No. 165. World Bank: Washington. Kerber, W. (1992), Innovation, Handlungsrechte und evolutionärer Marktprozess. In: Witt, U., Hrsg., *Studien zur Evolutorischen Ökonomik II*. Berlin: Duncker und Humblot, 171 - 195. Kirzner, I. (1992), The meaning of market process. *Essays in the development of modern Austrian economics*. London and New York: Routledge. König, H., Hrsg. (1993), *Umweltverträgliches Wirtschaften als Problem von Wissenschaft und Politik*. Schriften des Vereins für Socialpolitik (Jahrestagung 1992), Band 224, Berlin: Duncker und Humblot. Kneese, A.V. and Russell, C.S. (1987), *Environmental Economics*. In: Eatwell, J., Milgate, M. and Newmann P. (eds.), *The New Palgrave: A Dictionary of Economics*. London: Macmillan, Part II, 159 - 164. Ledyard J. (1987), 'Market Failure'. In: Eatwell, J., Milgate, M. and Newmann P. (eds.), *The New Palgrave: A Dictionary of Economics*. London: Macmillan, Part III, 326 - 329. Leipert, Chr., (1993), *Institutioneller Wandel als Antwort auf die ökologische Krise in Industriegesellschaften*. *Wirtschaft und Gesellschaft*, 19/4, 541 - 562. Medema, S.G.: *Coase, Costs, and Coordination*. In: *Journal of Economic Issues*, Vol. 30/2 (June 1996), 571 - 578. Mischel, W., Streit, M. E. und Witt, U., Hrsg. (1994), *Marktwirtschaft und Rechtsordnung*. Baden-Baden: Nomos. North, D.C. (1990), *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press. North, D.C. (1994), *Economic Performance Through Time*. In: *American Economic Review*, Vol. 84, No. 3 (June 1994), 361 - 368, (North 1994a). North, D.C. (1994), *Constraints on Institutional Innovation: Transaction Costs, Incentive Compatibility, and Historical Considerations*. In Ruttan, V.W. (ed.), 48 - 70, (North 1994b). North, D.C. and Thomas, R.P. (1973), *The Rise of the Western World. A New Economic History*. New York: Cambridge University Press. OECD (1992), *Market and Government Failures in Environmental Management: Wetlands and Forests*. Paris. OECD (1993), *Agricultural and Environmental Policy Integration: Recent Progress and New Dimensions*. Paris. Ostrom, E. (1990),

Governing the Commons. The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press. Ostrom, E., Gardner, R. and Walker, J. (1994), Rules, Games, and Common-Pool Resources. Michigan: The University of Michigan Press. Pigou, A.C. (1920), The Economics of Welfare. London: Macmillan. Pitelis, Chr. (1992), Towards a Neo-classical Theory of Institutional Failure. *Journal of Economic Studies* 19/1, 14 - 28. Pommerehne, W.W., Feld, L.P. and Hart, A. (1994), Voluntary Provision of a Public Good: Results from a Real Word Experiment. *Kyklos* 47/4, 505 - 518. Ramb, B-T. (1991), Privatisierung der Umweltnutzung durch Zuweisung individueller Eigentumsrechte. *List Forum f r Wirtschafts- und Finanzpolitik* 17/4, 363 - 375. Ruttan, V.W. ed. (1994), Agriculture, Environment, and Health: Sustainable Development in the 21st Century. Minneapolis - London: University of Minnesota Press. Sandler, T. (1992), Collective Action. Theory and Applications. Ann Arbor: The University of Michigan Press. Schumpeter, J.A. (1912), Theorie der wirtschaftlichen Entwicklung. Leipzig: Duncker und Humblot. Smith, A., (1976) An Inquiry into the Nature and Causes of the Wealth of Nations. Ed. by R.H. Campbell, A.S. Skinner and W.B. Todd (The Glasgow Edition of the Works and Correspondence of Adam Smith). Oxford: Oxford University Press. Stigler, G.J., Two Notes on the Coase Theorem. *Yale Law Journal* 99 (December 1989), 631 - 633. Stocker, F. (1993), Wirtschaft und Umwelt: Der neoklassische Ansatz der Umwelt konomik. In: Prat de la Riba, E. (Hrsg.): Kurswechsel oder Untergang: Zur kologischen Rettung der Natur. Frankfurt et al.: Peter Lang. S. 179 - 205. Stocker, F. (1995), 'Umdenken in der Umwelt konomik: Umweltprobleme durch Staatsversagen?' Das Beispiel Agrarwirtschaft. Paper presented at the Annual Conference of the Austrian Economic Association. October 1995, Vienna. Streissler, E.W. (1993), Das Problem der Internalisierung. In: König (Hrsg.), S. 87 - 110. Sugden, R. (1992), Austrian Prescriptive Economics. In: Caldwell, B.J. and Boehm, St., Eds. 207 - 214. Tietenberg, T. ed. (1992), Innovation in Environmental Policy. Economic and Legal Aspects of Recent Developments in Environmental Enforcement and Liability. Aldershot: Edward Elgar. Vaughn K.I.: Economic Policy for an Imperfect World. In: *Southern Economic Journal*, Vol. 62/4 (April 1996), 833 -844. Wegehenkel, L. (1984), Property Rights and Entrepreneurial Motivation. In: Leube K.R., Zlabinger, A.H. (eds.): The Political Economy of Freedom. Essays in

Honor of F.A. Hayek. München-Wien: Philosophia.