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Trade, environment and development: the issues in perspective

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Abstract

This special issue on trade and the environment brings together a number of papers that are constructively critical of the conventional economic wisdom on the topic. We think that this criticism is warranted because of the decidedly uncritical way in which 'free trade' has been advocated in much of the literature, and especially in policy. The papers analyse the validity of the underlying assumptions on which the conventional wisdom is based, and provide suggestions for ways to facilitate trade that is also adequately protective of the environment, sustainability, and other social values. In this introductory piece we discuss trade, the environment, and sustainability, summarizing arguments in the papers included in this issue, and adding a few additional points not covered by them.

Key words: Free trade; Sustainability

1. Introduction

During the Second Meeting of the International Society for Ecological Economics, 'Investing in Natural Capital; a Prerequisite for Sustainability', held at Stockholm University, Sweden, in August 1992, the session with contributed papers on trade and environment gathered a large crowd, was very successful, and stimulated much debate on this very timely and important topic. Two of the papers in this issue by Røpke and by Steininger were presented at that ISEE conference session on trade and environment. The others were submitted independently to *Ecological Economics*, and all contributions have been reviewed according to the normal peer review procedures of the journal.

In this introductory commentary we summarise issues which we think are of importance for a constructive debate on the role of trade in relation to environment and sustainability. We examine the potential gains from trade from this perspective, and in the context of the criticism and

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suggestions of the other papers in this special issue. The commentary ends with a discussion of how we might move towards a more sustainable trading system.

2. The gains from trade

Contrary to popular belief and some academic assertion, the conventional theory of international trade does not subscribe uncritically to the notion of 'the superiority of free trade'. Thus Corden (1974, p. 8) stresses: 'Theory does not "say" — as is often asserted by the ill-informed or badly taught — that "free trade is best". It says that, *given certain assumptions*, it is "best".' Prominent among these assumptions is that of the smooth functioning of the price mechanism. Findlay (1970, p. 132) specifies some of the 'imperfections or impediments' to such smooth functioning as 'such factors as increasing returns to scale, external economies and diseconomies, monopoly and so on'. He continues: 'The superiority of free trade to no trade is no longer certain in these cases, and situations can arise in which free trade is definitely worse than no trade'. Samuelson, in his celebrated paper 'The Gains from International Trade Once Again' (1962, reprinted as Samuelson, 1969) showed that it is potentially possible to increase social welfare in a country when the borders are opened for trade. But Samuelson emphasized that analyses of gains from trade have to be related to social welfare functions before a pronouncement can be made as far as welfare is concerned. He states, 'Practical men and economic theorists have always known that trade may help some people and hurt others' (p. 175), and continues: 'What in the way of policy can we conclude from the fact that trade is a potential boon?... We can actually conclude very little' (Samuelson, 1969, p. 180). His conclusions to the paper include:

> 3. Free trade will not necessarily maximise the real income or consumption and utility possibilities of any one country – even though by ideal bribes the international winning countries could bribe the losers into a unanimous vote for free trade.
>
> 4. Free trade will not necessarily maximise the income, consumption and utility possibilities of a subset of persons or factors within a country.
>
> If ideal lump-sum reallocations are not feasible the above conclusions (those that specify the gains from trade) need serious modification and qualification. The same is true when we introduce imperfections of competition, uncertainties, induced changes of an irreversible type and game-theoretic struggles for power and welfare. (Samuelson, 1969, p. 182)

There is no clearcut consensus in economic theory for the kind of economic journalism that uncritically equates 'freer trade' with 'huge economic benefits' or 'the greater social good' (Economist, 1993, p. 19). Similar statements are also made in reputable academic work on this issue. Thus Robertson (1972, p. 16) citing the very paper of Samuelson just quoted, says: 'Samuelson has shown that free trade is superior to no trade. He has also established that some trade is superior to no trade; but this does not mean that any trade is better than no trade'. As our quotation from Samuelson has shown, the first sentence is misleading when the assumptions are not highlighted; and the second, drawing an unspecified distinction between 'some trade' and 'any trade' is confusing.

A similar interpretation is made by Bhagwati (1969, p. 149) who elevates the statement that 'free trade is superior to no trade' to the status of 'Samuelson's classic theorem', again citing Samuelson's 1962 paper, despite the fact that Samuelson does not make such an assertion in the form of a theorem or otherwise.

In the 1970s and 1980s, advances in the modeling of imperfect competition and economies of scale led to the emergence, in the writings particularly of Paul Krugman (1986, 1990; Helpman and Krugman, 1985), of 'the new trade theory', which led Krugman to ask in 1987 'Is Free Trade Passé?' (Krugman, 1987). Krugman noted that 'the defense of free trade' was 'as close to a sacred tenet as any idea in economics', but claimed that 'the case for free trade is currently more in doubt than at any time since the 1817 publication of Ricardo's Principles of Political Economy' (Krugman, 1987, p. 131). While Krugman answered the question in his title in the

negative, his conclusion was that '(free trade) can never again be asserted as the policy that economic theory tells us is always right' (Krugman, 1987, p. 132), echoing a position which was, as we have seen, already explicit in Samuelson's writings. Time will tell how robust these theories are and how useful they will be for policy.

3. Basic theory

The theory upon which the conventional trade theory is based dates from the earliest days of classical economics, notably the work of Ricardo in the early nineteenth century, and draws on two related but quite distinct concepts: comparative advantage and specialisation.

3.1. Comparative advantage

For trade to take place there must be a demand for the produced goods or services, and the goods must be competitive in the market place. Competitiveness depends on price. The cheapest goods (of a given quality) are those that will be sold. Assuming that price is inversely related to real productivity, the producer of the cheapest goods may be said to have an *absolute advantage* in that line of production.

Specialisation does not guarantee absolute advantage. Other producers may be similarly specialised, more talented or otherwise more favourably endowed. There is no guarantee, therefore, that specialised producers will be able to exchange the goods produced that are surplus to their domestic demand. Needs intended to be met by imports may remain unmet.

The theory of comparative advantage shows how this may be averted. In the simplest case, the comparison in question is between two goods and two countries. The theory shows how, provided that each country specialises in the production of the good in which it has the greatest cost advantage compared to the other country, then:

(i) the total production of the countries will be maximised;
(ii) provided that both countries demand some of both products, each country will be able to trade its specialised products (because, by definition, each country's comparative advantage is unique to that country, so that each country is producing most of a different good, one country being completely specialised in one of them).

The two-country, two-good model can be easily extended to either a multi-good or a multi-country situation when a 'chain of comparative advantage' (Findlay, 1970, p. 62 ff.) can be derived.

Comparative advantage is influenced by the relative abundance of factors of production and the technology of production. The factor-proportion theory, or the Heckscher–Ohlin theory, emphasises the interplay between the proportions in which different factors of production (e.g., natural resources, manufactured capital, human capital) are available in different countries, and the proportions in which they are used in producing different goods.

A major problem from an environmental point of view is that in reality, but also in theory, the factors of production are too narrowly defined. For example, natural capital — an increasingly scarce resource for economic development — is generally hidden under land or simply ignored, despite the fact that many ecological services can be considered as part of a country's comparative advantage.

3.2. Specialisation

All individuals, or countries, have a range of productive possibilities and can choose to produce either a lesser quantity of a broad range of goods, or by specialising in the activities they do relatively well, a greater quantity of fewer goods. Because of greater innate talent, favorable geographical, historical or other circumstances, the benefits of practice or rational organisation and, perhaps, the achievement of economies of scale, it is usual for specialisation to produce a greater total volume of product than unspecialised production. If the produced surplus of specialised goods can be exchanged through trade for other goods, which either could not have been made or because of specialisation were not made in the desired number, specialisation will normally lead to the availability of a greater total number, vari-

ety and value of goods and services. Comparative advantage leads to specialisation. The dependence of the specialised producer on trade is, however, an inevitable source of vulnerability (Runnalls and Cosbey, 1992, p. 32).

4. Assumptions

As was stressed earlier, the above characterisation of international trade depends for its validity on a number of crucial assumptions, including:

4.1. No externalities

In the real world, trade occurs according to only market, not total, comparative advantage, and leads to misuse of the world's resources because factors outside the market place tend to be ignored (Young, 1994, this issue). Since prices do not reflect the full cost of production, economic inefficiencies are introduced, and countries' real comparative advantages will be mistaken. Trade will thus be distorted and not correctly reflect social and environmental values. For example, unaccounted support from scarce ecological services as well as environmental degradation may cheapen a product, causing the producer country to believe falsely that it has a comparative advantage in this production. Subsequent specialisation in this production would distort the trading system and reduce this country's social welfare (Daly and Goodland, 1994; Røpke, 1994; Young, 1994, all this issue).

4.2. Stable prices

Comparative advantages are calculated on the basis of cost of production. Prices, however, are set on the basis of a complex interaction between cost of production, supply and demand, and market power. Economic theory states that firms cannot affect market prices. In the real world, clearly, sometimes they can. The question is whether they can affect prices to the extent that the theory becomes invalid.

4.3. Equally dynamic comparative advantages

Comparative advantages are determined at a single point in time, but the long-term benefits of specialising in them depend on their dynamic effects on the economy. For example, two countries may at present have comparative advantages in bananas and chemicals, respectively. Specialisation in bananas does little for technological innovation, the development of labour-skills, or diversification into high value-added products. Specialisation in chemicals performs well in all these areas. Where comparative advantages are thus unequal, the countries that specialise in the least dynamic comparative advantages may find themselves locked into economic stagnation and the bottom end of growing inequality.

Krugman (1981, reprinted in Krugman, 1990) has formally modeled such a situation through the concept of external economies in the industrial sector, claiming 'this process... captures the essence of the argument that trade with developed nations prevents industrialization in less developed countries' (Krugman, 1990, p. 93).

These kinds of considerations are also finding expression in some recent work in growth theory. Thus the model in Lucas (1988) emphasises the importance of initial conditions to future development: 'an economy beginning with low levels of human and physical capital will remain permanently below an initially better-endowed economy' (Lucas, 1988, p. 25). Solow, in a recent review article of growth theory, writes: '(Lucas') particular model suggests, although it does not quite imply, that the countries specializing in high technology will grow faster than the others and thus reinforce their comparative advantage' (Solow, 1991, p. 407). Solow arrives at a similar conclusion from considering the implications for international trade of increasing returns to scale, when 'the allocation of comparative advantage can be dominated by the historical accident of who came first, either through pure scale effects or through learning by doing' (Solow, 1991, p. 407).

Such arguments are, of course, highly reminiscent of those that have long been used in favor of infant industry protection, as surveyed, for example, in Corden (1974) and Røpke (1994, this issue). They bear repeating here because, as Findlay (1987, pp. 515–516) says: 'The pattern of comparative advantage itself depends upon the

complex interaction of technology, factor proportions and tastes'. Such patterns should not simply be taken as given or constant. They are continually changing as economies evolve, and it is an inevitable and perfectly acceptable fact that countries will seek to influence in their favour the direction of that change.

4.4. *International immobility of factors*

Ricardo's elaboration of the concept of comparative advantage is based explicitly on the assumption that factors of production are not mobile internationally, that is, that each country's capital and labour stay exclusively within its own borders to produce according to that country's comparative advantage. As Findlay (1970, p. 17) says: 'Several of the major assumptions of the classical theory such as perfectly competitive markets, the absence of transport costs, the complete mobility of factors within countries and immobility between countries are still made in the basic formulations of the modern theory'. Findlay (1987, p. 515) is also explicit about the implications of labour mobility between countries: 'In the numerical example considered here, Ricardo stresses the fact that England can still gain from trade even though she has an *absolute* advantage in the production of *both* goods... Suppose that labour in Portugal could produce at English levels, *if it moved to England*... Then, if labour were free to move, and in the absence of "national sentiment", all production would be located in England and Portugal would cease to exist'. Thus, with factor mobility comparative advantage from the perspective of nations becomes a less relevant concept because factors from different countries will instead flow across national borders according to the logic of absolute advantage (Daly and Goodland, 1994, this issue). Countries without such advantage experience pressure on wage rates, working conditions, environmental regulations and anything else perceived to hinder competitiveness.

5. The gains from trade again

The 'gains from trade' arise because, by permitting countries to specialise in their areas of relatively least-cost production, the opportunity to trade can increase the total volume of goods produced and therefore available for consumption. Those benefited by trade will be able to consume more even if they fully compensate those hurt by trade (through 'ideal lump-sum reallocations'). Thus the 'gains from trade' reside in the greater consumption of one sector of society with all other sectors at least consuming no less. Several comments on the significance of this greater consumption are in order.

First, it is clear that the gains from trade will be systematically overstated in economic statistics, especially as far as less industrialised countries are concerned. This is because such countries still have substantial sectors of subsistence production and consumption which are routinely ignored in economic accounts. When resources used for unaccounted subsistence production are shifted to production for trade, where the product does appear in economic accounts, the whole traded product will incorrectly be accounted a 'gain from trade', whereas the actual gain is the traded product less the subsistence product it replaced. Of course, this argument applies to the growth figures of countries in general, which are exaggerated to the extent that they do not net out subsistence production foregone, but the exaggeration also applies to perceptions of 'gains from trade'.

Second, consumption is not the same as welfare. Hueting (1992, p. 257) considers that economic welfare derives from at least the following factors: production (or income or consumption), environment, employment, leisure, working conditions, income distribution, health, and safety of the future. Increased production is bound to affect some or all of these factors, positively or negatively, sometimes in ways which will be very difficult to take into account through conventional externality analysis. This, of course, is why Samuelson insisted that analysis of 'gains from trade' had to be related to social welfare functions (Samuelson, 1962, pp. 180–181) before a pronouncement could be made as far as welfare is concerned.

Third, and most obviously in the real world, not only are those hurt by trade not compensated

by 'ideal lump-sum reallocations'; they are often not compensated at all. The fact that the phenomenal expansion of world trade since the Second World War has been accompanied by growing income differentials between countries, and within some of them, suggests at least that the gains from trade have been very unequally divided, and at worst that trade may have acted as a vehicle of redistribution from poor to rich. Great disparities in wealth and power both within and between countries, combined with poverty, make it unlikely that processes of production and exchange will be both voluntary and fair.

Fourth, the dependency created by specialisation represents a serious risk inherent in deep involvement in the world trading system. Production for export is often financed by foreign debt, the need to service which makes it imperative that the exports actually materialize. It will not generally be possible to costlessly shift factors involved in production for export to production for home consumption, should changes in world market conditions render export industries unviable. Failure in export markets resulting in foreign deficits will invite structural adjustment that involves further integration into and dependency on the world trading system. Freedom to trade or not, depending on whether the conditions are right, can easily become replaced by a compulsion to trade on almost any terms, what Røpke (1994, this issue) terms 'forced trade'. Such considerations of the political economy of trade provide an essential reminder that conclusions about the gains from trade are arrived at under assumptions which have far more to do with the desire for mathematical tractability than applicability to the real world.

6. Do the assumptions hold?

Plenty of evidence can be mustered in support of an argument that, today, the assumptions discussed above for trade to be beneficial to all parties are not fulfilled in the real world. With regard to the first, the level of unaccounted environmental damage associated with production is proof of the pervasiveness of externalities. Concerning the second and third, according to the UNCTAD Secretariat: 'The price index of principal non-fuel commodities exported by developing countries fell by a staggering 50% in real terms between 1979/81 and 1988/90... The main reason for these price declines is over-supply of almost all commodities due to productivity improvements and export subsidization especially in developed countries, and to increased production in developing countries prompted by debt-service obligations and structural adjustment efforts. There has also been a fall in demand for some commodities as consumers move to synthetics or technologies that need fewer commodity inputs' (UNCTAD, 1992, p. 1). Further evidence of this trend came from the 1992 UN World Economic Survey, which reported that in 1991 African exports rose by 4% in volume, but declined in value by 6% because of a 9% decline in their average price. Frances Stewart and colleagues calculate that, for Sub-Saharan Africa, its share of world exports in coffee, sugar, cocoa, groundnuts and sisal (60% of its agricultural exports) exceeds the price elasticity of demand, so that an increase in the volume of exports leads to a fall in earnings (Stewart et al., 1992, pp. 32–33). Overall Africa's terms of trade worsened by 7% in 1991 alone (UN, 1992, p. 51). This general deterioration in the terms of trade of commodity producers indicates both oversupply of commodities and the relative stagnation of specialisation in commodity production as opposed to manufactures.

Concerning the fourth assumption, and with regard to labour, even within the Single Market of the European Community, 'national sentiment' and language differences act to limit labour mobility. But the same is not true of manufactured capital, the mobility of which is now almost total, adding to the competitive pressures on all countries. The interdependence between countries has never been as pronounced as today. As Bhagwati (1991) graphically expresses it: 'This "spider's web" phenomenon (global integration) has meant increasingly that everyone tends now to be in everyone else's backyard, making import competition in one's own market, and export competition in the other's market and in third markets, ever more fierce' in an atmosphere 'reminiscent of the

struggle for the sun in a dense tropical forest' (Bhagwati, 1991, pp. 16–17).

7. Trade and environment

As Whalley (1991, p. 188) has observed: 'Our global trade institutions (especially GATT) have evolved as if there were no environmental linkages to trade'. When evidence of environmental damage from economic activity, and pressure from environmentalists (e.g., Hines, 1990; Shrybman, 1990; Arden-Clarke, 1991, 1992; Lang, 1992), meant that such linkages could no longer be ignored, the proponents of free trade sought to treat the environment much like any other good by arguing that free trade protects the environment by helping to generate the economic growth that both increases the demand for environmental protection and provides the resources necessary for it (GATT, 1992, pp. 19–20). However, as with the general arguments about the benefits of trade, realizing this benign outcome depends on several non-trivial conditions being met.

First, it must be recognised that if the structure and behaviour of the economy generates pervasive negative environmental externalities, proportionate economic growth will increase the absolute level of externality, i.e., the environmental damage. At present, this situation is hardly an exception, but more of a rule (Røpke, 1994, this issue). This means that following an economic growth path based on biophysical throughput expansion, a certain amount of extra environmental protection is necessary even to maintain environmental quality, let alone improve it.

Second, for economic growth to benefit the environment, it is not enough for it to generate resources that *could be* spent on environmental protection; they must actually be so spent. It is a common observation that growing economies around the world often have a deteriorating environment because they do not allocate the resources necessary even to maintain environmental quality in the face of growth, let alone improve it.

And, of course, the whole argument depends on the resources generated by growth being *capable* of repairing the environmental damage their generation has caused. Where there is irreversible damage to the environment, with no scope for reparation (e.g. when species are made extinct), this is clearly not the case. So although the 'free trade produces growth which benefits the environment' argument emerges as a theoretical possibility, it is not easily put into practice.

When world trading rules (such as those laid down by GATT) permit countries to protect their own environments, but not to protect their domestic industry from competitors who do not do so, then only the countries with the strongest economies will be able to maintain domestic environmental protection, which will be under continual siege from those concerned with international competitiveness. Young (1994, this issue) suggests trade-related environmental agreements (TREA) and ecologically accelerated trade liberalisation agreements (EATLA) to cope with this; DeBellevue et al. (1994, this issue) discuss recompensing duties and retributive environmental impact taxes; and Steininger (1994, this issue) argues for counterbalancing measures based on product life-cycle analysis, and disparities in environmental impact avoidance costs across countries.

Pearce (1992) has argued that there is no intrinsic difference in economics between externalities generated by the consumption of products and by the processes and production methods that created them (Pearce, 1992, pp. 21, 29–30). If the potential environmental benefits of free trade are to be realized, trading rules, such as those developed by GATT, must recognize that environmental externalities are, in effect, environmental subsidies (which are as economicallly distorting and unfair as any financial subsidy), and that environmental externalities are pervasive. The GATT rules should discourage such 'eco-dumping' and they must permit countries to protect themselves against 'eco-dumping' by others (Daly and Goodland, 1994, this issue). These requirements would entail major reform of current GATT regulations.

A precondition for trade is transportation. Transportation requires fuel, normally fossil fuel. It has been estimated that international trade is responsible for one-eighth of world oil consump-

tion (Madeley, 1992, p. 33). Thus trade contributes substantially to energy-related environmental damage, such as carbon dioxide emissions and other air pollution. If this damage were reflected (internalized) in the price of oil, the trading system and production and consumption patterns might be quite different from today's. Yet in much of the trade literature transport costs are either explicitly assumed to be absent (e.g., Findlay, 1970, p. 17) or simply ignored (e.g., Anderson and Blackhurst, 1992).

Trade is a mechanism for transfering goods and services produced in one place to be consumed in another place. If commodities to be exported are produced in a more environmentally destructive fashion than goods destined for domestic consumption, then producing goods for trade may increase environmental damage (DeBellevue et al., 1994; Røpke, 1994, this issue). For example, growing cotton, the great majority of which is exported, accounts for 25% of all pesticide use (Madeley, 1992, p. 106). The curing of the UK's imports of tobacco burns up nearly 200 000 ha of woodland every year (Wells and Jetter, 1992, p. 180).

Furthermore, opportunities for trade can result in changes in land ownership and other property rights. This may be trade's most important, and least studied, environmental effect. Where land is perceived as only valuable for growing food for subsistence, traditional smallholders and indigenous people are more likely to be left undisturbed. Where it is perceived as being able to grow food for export (i.e., able to grow money, and foreign currency at that), then powerful interests immediately have an incentive to expropriate it from its original farmers (Ritchie, 1992). The farmers may then migrate into forests, up hillsides or onto marginal lands not suitable for export crops where they cause enormous environmental damage. Myers (1989, p. 2) has called such farmers 'shifted cultivators'. The environmental damage they cause is often blamed on their poverty. Less often is their poverty seen to be the result of powerful expropriators keen to corner the benefits of trade, unrestrained by effective and counteractive domestic, regional and international policies. Such developments simultaneously increase the need for internalisation, while at the same time making it more difficult to achieve (Røpke, 1994; Steininger, 1994, this issue).

A similar case concerns mangrove forests in coastal areas. These ecosystems have served as producers of domestic commodities for centuries. They are cut down on a large scale to make room for intensive farming of shrimp, a rapid-growth activity that only lasts a few years (Primavera, 1993). The shrimp are produced mainly for export markets. The shift in production, triggered by trading opportunities, has led to severe socioeconomic conflicts and environmental problems in the countries concerned (Meltzoff and LiPuma, 1986; Bailey, 1988) and has been compared with the pattern of tropical deforestation (Southgate, 1992).

If, on the other hand, commodities produced in an environmentally benign way are traded, trade may contribute to improving the environment as well as to development. For example, in Sweden firms in the textile industry have realized that consumers are increasingly concerned about the environment, and so have begun importing commodities that are produced with environmental care, mainly for competitive reasons.

Hence, there is a need for empirical analyses of how the driving forces related to trade actually affect the environment in the real world. Without a better understanding of such complex relations, an uncritical support of free trade as beneficial to solving environmental problems is, in our opinion, a very dangerous approach; particularly since the enormous support values of ecological services, biodiversity and healthy ecosystems — the basis for human welfare — are hardly ever accounted for. Similarly, an uncritical rejection of trade is equally flawed since trade does not necessarily have to be environmentally and socially detrimental (Daly and Goodland, 1994; Steininger, 1994; Young, 1994, all this issue).

Whether trade and environment will be in conflict or in symbiosis depends on the institutional structures within countries and between countries, and the various driving forces — economic, social, political, cultural — that exist within these structures. It is the institutional framework that transmits the signals to the actors

in society. It is therefore important that the 'pre-analytic vision' of the institutional framework is closely related to real world conditions, not only within the economy as such, but in the larger ecological economic system, and that this vision works towards sustainability. Since about 70% of world trade is handled by multinational enterprises (MNEs), and since only 350 of those account for almost 40% of world merchandise trade (Daly and Goodland, 1994, this issue), the need for regional and global institutional frameworks, such as GATT, OECD, EC, and NAFTA, to provide signals for governments and enterprises to behave in an ecologically as well as socioeconomically sustainable fashion, and to develop green markets, becomes crucial. This aspect is stressed by the authors in this special issue.

8. Towards sustainable trade

Bhagwati (1991) is afraid that the world's trading system is at risk, a situation he views with great alarm. It is also an almost undisputed fact that the global environment is at risk, as expressed in a joint statement by the UK Royal Society and the US National Academy of Sciences:

> Unrestrained resource consumption for energy production and other uses... could lead to catastrophic outcomes for the global environment... Man's own prospects for achieving satisfactory living standards are threatened by environmental deterioration, especially in the poorest countries where economic activities are most heavily dependent upon the quality of natural resources. (Royal Society and National Academy of Sciences, 1992)

If the world's trading system were to collapse, doubtless much hardship and suffering would result. But, if the global environment were to collapse, the result would be much worse. Insofar as the world's current trading system leads to 'unrestrained resource consumption' that risks 'catastrophic' environmental damage, its operation is a serious cause for concern. Proposals for environmentally sustainable trade must seek to secure the benefits accruing to orderly world trade, but in the context, and only in the context, of moving determinedly towards environmentally sustainable patterns of economic activity. It would be a profound distortion of priorities, of great potential harm to human welfare, for the priorities of the trading system to be allowed to impede progress towards sustainability.

As we have seen, little more can be said about the benefits of trade in general than that 'some trade is better than no trade', in the sense that, for any situation of autarky, there probably exists a possible trading situation that makes all parties to trade better off. Such a statement says nothing about the political feasibility or otherwise of attaining this situation in terms of, say, the necessary redistributions to enable those hurt by trade to be fully compensated for that hurt. Its normative assessment also assumes that all 'externalities' have been taken into account in the transaction.

Where these externalities have not been taken into account, as is often the case with environmental externalities, one can readily agree in principle with the GATT Secretariat and trade theorists that the first-best means of addressing domestic environmental damage is likely to be through domestic policy that directly tackles the environmental problem, rather than through trade policy (e.g., GATT, 1992, p. 21; Anderson and Blackhurst, 1992, p. 20). However, this first-best response may not be politically feasible, and is certainly not likely to be so if it has serious negative implications for the competitiveness of domestic industry. The appropriate environmental policies may only be politically feasible if trade policies are used to protect environmentally compliant domestic industry against foreign competitors who have lower environmental standards (see e.g., Costanza, 1993).

Similarly, one may readily agree that the first-best approach to global environmental problems is through international treaties involving all the relevant parties. But such treaties are notoriously difficult to conclude. Not only can unilateral actions, which may involve trade policies, sometimes be an effective way of moving towards such treaties, but trade policies may be among the only available instruments whereby countries that agree among themselves not to damage the global

environment can prevent others from doing so. On the subject of unilateral action, OTA 1992 concluded: 'The justification for unilateral measures to regulate conduct abroad seems stronger when the environmental impacts extend beyond the targeted country... However, it is by no means unprecedented for one country to seek change in another's policies, even when those policies have only internal effects' (OTA, 1992, p. 75). Of course, acceptance of the principle of unilateral action in some circumstances does not diminish the need to guard against the risk that powerful countries, or groups of countries, might seek to use environmental arguments to justify discrimination against smaller countries for purely economic reasons.

Even with such provisions it should be possible for countries to seek to exploit differences in environmental preferences and endowments to gain competitive advantage in the market place, just as countries exploit differences in wages and social conditions to gain such advantage. However, just as some forms of social exploitation are either not permitted at all (e.g., slavery) or are ruled invalid for the purpose of gaining competitive advantage (e.g., prison labour, see GATT Article XXe (GATT, 1986, p.38)), so too should the rules of the world trading system permit exceptions to encourage moves towards environmental sustainability and to discourage acts of large-scale environmental damage or unsustainable exploitation. After all, it is the basis, the precondition for human life that is at stake.

These exceptions will not be easy to define. Perhaps at the GATT level they should be left as statements of broad principle, only charging that countries that break GATT rules for stated environmental reasons are in fact able to prove under challenge that their action did not discriminate between domestic and foreign producers and could be expected to yield substantial environmental benefits (DeBellevue et al., 1994, this issue). OTA (1992, p. 7) recommends that changes in the GATT rules 'might include general guidelines for the use of unilateral trade measures for environmental purposes; while each dispute would still be resolved individually on its own merits, the guidelines could be given some weight'. To promote environmental sustainability, certainly countries should be able to target production processes and methods as well as products. Certainly they should be able to use trade policy to protect the global commons and life therein, as well as environmental assets of global or continental importance. Certainly, too, it should be stressed that the use of trade policy in these instances is inferior to, and should be used to encourage the adoption of, appropriate domestic environmental policies on the one hand and binding treaties for international environmental protection on the other. To be socially efficient, trade needs an internationally coordinated environmental policy.

Of course, there will be attempts by lobbies and vested interests to use such exceptions for the predominant purpose of protecting domestic industries rather than the environment, just as the same lobbies and vested interests often resist attempts to internalise their environmental costs. Of course, GATT will need to be vigilant over such attempts. As Anderson (1992) and a string of publications from the World Resources Institute (Repetto, 1985, 1986, 1988; Kosmo, 1987) have shown, protectionism can cause great environmental damage as well as economic inefficiency. But in its deliberation on disputes, GATT will need to be guided first and foremost by the environmental benefits to be secured by trade policies. Bhagwati (1991) may be right about the dangers to the world trading system posed by protectionism. But the dangers pale into insignificance beside the 'appalling pollution and damage' envisaged by the World Bank's World Development Report 1992 (p. 8) unless current patterns of economic activity are transformed. In the real world, trade policies are likely to play an important role in this transformation.

Finally, it must be recognised that the highly integrated global economy of the 1990s, dominated by the activities of a few hundred transnational corporations, bears little relation to the economic configuration of the post-war 1940s in which the GATT rules were conceived, nor to the models of perfect competition which justified their emphasis on free trade. All but the most narrow proponents of the free market recognise that

efficient markets need effective governmental frameworks (Daly and Goodland, 1994; Røpke, 1994; Young, 1994, all this issue). But such a framework at the international level does not yet exist, leaving a vacuum of missing accountability and potential (and sometimes actual) irresponsibility. In this context the exclusive GATT focus on removing national protective measures, or limiting their application, although its intention may be the achievement of important social or environmental objectives, is dangerously inappropriate. Rather, the world will need to move towards a trading system that is predicated on such principles of civil, political, economic and social human rights as are enunciated by the United Nations, and in which basic norms of social justice and environmental sustainability are both promoted and enforced. It remains to be seen whether, through reform, GATT can contribute to the achievement of such a system or whether it will remain an obstacle to it.

References

Anderson, K., 1992. Effects on the environment and welfare of liberalising world trade: the cases of coal and food. In: K. Anderson and R. Blackhurst (Editors), The Greening of World Trade Issues. Harvester Wheatsheaf, London, pp. 145–172.

Anderson, K. and Blackhurst, R. (Editors), 1992. The Greening of World Trade Issues. Harvester Wheatsheaf, London.

Arden-Clarke, C., 1991. The General Agreement on Tariffs and Trade, Environmental Protection and Sustainable Development. World Wide Fund for Nature, Gland, Switzerland.

Arden-Clarke, C., 1992. International Trade, GATT and the Environment. World Wide Fund for Nature, Gland, Switzerland.

Bailey, C., 1988. The social consequences of tropical shrimp mariculture development. Ocean Shoreline Manage., 11: 31–44.

Bhagwati, J., 1969. Trade, Tariffs and Growth. Weidenfeld & Nicholson, London.

Bhagwati, J., 1991. The World Trading System at Risk. Harvester Wheatsheaf, Hemel Hempstead.

Corden, W.M., 1974. Trade Policy and Economic Welfare. Clarendon Press, Oxford.

Costanza, R., 1994. Three general policies to achieve sustainability. In: A.M. Jansson, C. Folke, R. Costanza and M. Hammer (Editors), Investing in Natural Capital: The Ecological Economic Approach to Sustainability. Sinaur (in press).

Daly, H.E. and Goodland, R., 1994. An ecological-economic assessment of deregulation of international commerce under GATT. Ecol. Econ., 9: 73–92.

DeBellevue, E.B., Hitzel, E., Cline, K., Benitez, J.A., Ramos-Miranda, J. and Segura, O., 1994. The North American Free Trade Agreement: an ecological-economic synthesis for the United States and Mexico. Ecol. Econ., 9: 53–71.

Economist, 1993. Trade and the environment. Economist, London, 27 February.

Findlay, R., 1970. Trade and Specialization. Penguin, Harmondsworth.

Findlay, R., 1987. Comparative advantage. In: J. Eatwell, M. Milgate and P. Newman (Editors), The New Palgrave: a Dictionary of Economics, Vol. 1. Macmillan, London.

GATT (General Agreement on Tariffs and Trade), 1986. The Text of the General Agreement on Tariffs and Trade. GATT, Geneva.

GATT (General Agreement on Tariffs and Trade), 1992. Trade and the Environment. In: International Trade 1990–91. GATT, Geneva, pp. 19–48.

Helpman, E. and Krugman, P.R., 1985. Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition and the International Economy. MIT Press, Cambridge, MA.

Hines, C., 1990. Green Protectionism: Halting the Four Horsemen of the Free Trade Apocalypse. Earth Resources Research, London.

Hueting, R., 1992. Growth, environment and national income. In: P. Ekins and M. Max-Neef (Editors), Real-Life Economics: Understanding Wealth Creation. Routledge, London.

Kosmo, M., 1987. Money to Burn? The High Cost of Energy Subsidies. World Resources Institute, Washington, DC.

Krugman, P.R., 1981. Trade, accumulation and uneven development. J. Develop. Econ., 8: 149–161, reprinted in P.R. Krugman (1990).

Krugman, P.R. (Editor), 1986. Strategic Trade Policy and the New International Economics. MIT Press, Cambridge, MA.

Krugman, P.R., 1987. Is free trade passé? J. Econ. Perspect., 1: 131–144.

Krugman, P.R., 1990. Trade, accumulation and uneven development. In: P.R. Krugman, Rethinking International Trade. MIT Press, Cambridge, MA, pp. 93–105.

Lang, T., 1992. Food Fit for the World? SAFE Alliance, London.

Lucas, R.E., Jr., 1988. On the mechanics of economic development. J. Monetary Econ., 22: 3–42.

Madeley, J., 1992. Trade and the Poor. Intermediate Technology Publications, London.

Meltzoff, S.K. and LiPuma, E., 1986. The social and political economy of coastal zone management: shrimp mariculture in Ecuador. Coast. Zone Manage. J., 14: 349–380.

Myers, N., 1989. Deforestation Rates in Tropical Countries and their Climatic Implications. Friends of the Earth, London.

OTA (Office of Technology Assessment), 1992. Trade and Environment: Conflicts and Opportunities. OTA, Washington, DC.

Pearce, D., 1992. Should the GATT be reformed for environmental reasons? CSERGE Working Paper GEC 92-06, CSERGE, University of East Anglia/University College London.

Primavera, J.H., 1994. A critical review of shrimp pond culture in the Philippines. Rev. Fish. Sci. (in press).

Repetto, R., 1985. Paying the Price: Pesticide Subsidies in Developing Countries. World Resources Institute, Washington, DC.

Repetto, R., 1986. Skimming the Water: Rent-Seeking and the Performance of Public Irrigation Systems. World Resources Institute, Washington, DC.

Repetto, R., 1988. The Forest for the Trees? Government Policies and the Misuse of Forest Resources. World Resources Institute, Washington, DC.

Ritchie, M., 1992. Free trade versus sustainable agriculture: the implications of NAFTA. Ecologist, 22: 221–227.

Robertson, D., 1972. International Trade Policy. Macmillan, London.

Røpke, I., 1994. Trade, development and sustainability: a critical assessment of the 'free trade dogma'. Ecol. Econ., 9: 13–22.

Royal Society and National Academy of Sciences, 1992. Population Growth, Resource Consumption and a Sustainable World. RS, London/NAS, Washington, DC.

Runnalls, D. and Cosbey, A., 1992. Trade and Sustainable Development: a Survey of the Issues and a New Research Agenda. International Institute for Sustainable Development, Winnipeg.

Samuelson, P.A., 1962. The gains from international trade once again. Econ. J., 72: 820–829.

Samuelson P.A., 1969. The gains from international trade once again. In: J. Bhagwati (Editor), International Trade. Penguin, Harmondsworth.

Shrybman, S., 1990. Free trade vs. the environment: the implications of GATT. Ecologist, 20: 30–34.

Solow, R.M., 1991. Growth theory. In: D. Greenaway, M. Bleaney, and I.M.T. Stewart (Editors), Companion to Contemporary Economic Thought. Routledge, London.

Southgate, D., 1992. Shrimp mariculture development in Ecuador: some resource policy issues. Working Paper 5, EPAT/MUSIA-Research and Training University of Wisconsin, Madison.

Steininger, K., 1994. Reconciling trade and environment: towards a comparative advantage for long-term policy goals. Ecol. Econ., 9: 23–42.

Stewart, F., Lall, S. and Wangwe, S. (Editors), 1992. Alternative Development Strategies in Sub-Saharan Africa. Macmillan, London.

UN, 1992. World Economic Survey 1992. United Nations, New York.

UNCTAD, 1992. Commodities: a struggle to survive. Paper UNCTAD/PSM/CAS/380/Add. 12, UNCTAD, Geneva.

Wells, P. and Jetter, M., 1992. The Global Consumer. Victor Gollancz, London.

Whalley, J., 1991. The interface between environmental and trade policies. Econ. J., 101 (March): 180–189.

Young, M.D., 1994. Ecological-accelerated trade liberalisation: a set of disciplines for environment and trade agreements. Ecol. Econ., 9: 43–51.