Vogon Economics

and the hyperspatial bypass

John Adams, for *New Scientist,* 11 August 1993

> *Cost-benefit analysts are now being employed by the Intergovernmental Panel on Climate Change (IPCC). They insist that a rational response to climate change requires that all the costs and benefits be expressed in monetary terms.*

The Hitchhiker's Guide to the Galaxy begins with a tale of two bypasses. Both threatened the house of Arthur Dent, the bemused character at the centre of the story.

A bypass presents a classic problem for economists. If built it will produce *benefits*, usually in the form of time savings for motorists, and relief from traffic in the locality bypassed. It will also impose *costs*; it will take land and often a few houses, and bring the disturbance of traffic to a previously tranquil area. Of the two bypasses threatening Arthur Dent's home, one was a common-or-garden local bypass of the kind that Britain's Department of Transport routinely justifies with cost-benefit analysis. The second was a Galactic Hyperspatial Express Route that required the demolition not just of Arthur Dent's home but planet Earth as well. Although the *Hitchhiker's Guide* fails to say whether cost-benefit analysis was used by the Alpha Centauri planners, it is obvious that it must have been. In all other respects the practices of the Alpha Centauri planners and their earthling counterparts are identical. Throughout the Galaxy it seems planners react to protesters in the path of their projects with the same dismissive irritation. In his last announcement, before energizing the demolition beams that vaporized earth the head of the Vogon Constructor Fleet explained that

> `all the planning charts and demolition orders have been on display in your local planning department in Alpha Centauri for fifty of your Earth years, so you've had plenty of time to lodge any formal complaint and it's too late to start making a fuss about it now.'

Cost-benefit analysis is the British Treasury's test of whether a road scheme is value for money. It has been used to justify building roads through Twyford down and other environmentally sensitive areas. Flushed with their success in the road building industry, economists are now applying cost-benefit analysis to a Vogon-scale problem - the threat to the Earth of the greenhouse effect.

In `To slow or not to slow: the economics of the greenhouse

effect' William Nordhaus[1] explains that an efficient global strategy requires that `the costs of steps to slow climate change be balanced on the margin by the benefits in reduction of damages from climate change.' More recently Fankhauser and Pearce have set out the case for global scale cost-benefit analysis as follows.

> `A monetary assessment is crucial to design the optimal policy response. A comparison between the costs of greenhouse prevention and the benefits of avoided warming, which forms the backbone of an economically rational greenhouse response, is only feasible if damage can be expressed in monetary terms.'[2]

The economists are attempting to attach cash values to physical effects about which there is still great scientific uncertainty and dispute. For the purpose of their analysis they are obliged to make assumptions. Nordhaus *assumes* for his cost-benefit analysis that the `damage function' increases as greenhouse gases increase. He goes on to say `I have little confidence in this assumption', but nevertheless proceeds to base his analysis upon it. He estimates the total cost of a doubling of CO_2 at a mere 1% of global GDP.

Some economists appear to be so anxious to play a significant role in the greenhouse debate, that they are prepared to assume things that they do not believe. The essence of Nordhaus's conclusion is that even if the greenhouse damage function is increasing, it would not cause `substantial net economic damage'. Fankhauser and Pearce, compare Nordhaus's estimate (*based on an assumption in which he has little confidence*) with those of two subsequent studies and report a reassuring convergence on Nordhaus's view that a doubling of CO_2 is not very important. They say

> `Despite differences in individual damage categories, the three studies roughly agree on the overall result, with a $2xCO_2$ damage in the order of 1 per cent to 2 per cent of GNP. This range turns out to be surprisingly robust. Even when picking the most pessimistic figure for each damage category the total only modestly exceeds 2 per cent of GNP. Conversely it does not fall below 3/4 per cent in the most optimistic case.'

If the scientists of the IPCC are right, the inhabitants of large parts of Bangladesh face the loss of their homes and livelihoods, and the inhabitants of small island states face the loss of their countries. How are such losses to be valued? Fankhauer and Pearce provide a fairly specific answer; for land whose existence is threatened by sea-level rise they assume a value ranging from $2 million per square kilometre to $5 million (in 1989 US dollars). This would value the loss

of the low-lying island state of Tuvalu at between $6,000 and $15,000 per inhabitant. In the `developed' world a London/New York day return by Concorde costs $7000 and, as Nordhaus observes, we have air conditioning and can afford to build dikes.

The application of cost-benefit analysis to the greenhouse effect is breaking new ground in one further important respect - the Vogon-scale time frame of the analysis. Economist William Cline insists that the analysis must be extended to embrace effects 250 to 300 years in the future[3]. 300 years ago the US dollar did not exist and most of the North American continent was still owned by the Indians. One way of appreciating the magnitude of the task that the greenhouse economists have set themselves, is to imagine them transported by time machine back to 1693, and set the task of doing a cost-benefit analysis of the European conquest of North America - with the net present value of the conquest calculated in 1693 wampum.

A failure to build more roads to accommodate traffic growth would, Britain's Department of Transport argues, retard economic growth. For those who equate rationality with the reduction of all concerns to cash, all projects are to be judged by their effect on Gross Domestic Product. Over zealous attempts to slow the greenhouse effect would, they argue, retard the growth of Gross World Product; they would divert resources from other projects with higher rates of return. Where the costs and benefits of projects are measured in US dollars the concerns of those with the most dollars loom largest. The *project* being appraised by a cost-benefit analysis of the greenhouse effect is the promotion of world economic growth. It is comparable to a by-pass through a poor suburb of Alpha Centauri to carry the growing traffic of wealthy Vogons travelling in air-conditioned space ships . For Vogon economists the problem is straightforward. The benefits of the project are great. The costs are negligible. The benefit:cost ratio is substantially greater than one. The project should go ahead.

There is one small problem with this comparison. Should their project run into difficulty the Vogon economists have another planet to which they can retreat.

1215 words

1. William D. Nordhaus, To slow or not to slow: the economics of the greenhouse effect, 5 February 1990.

2. The Social Costs of Greenhouse Gas Emissions, paper presented to the International Conference on the Economics of Climate Change, OECD, 14-16 June 1993.

3. William R. Cline, Scientific basis for the greenhouse effect, *The Economic Journal*, 101, July 1991, 904-919.