Proclamation became effective six days later.

Other agreements such as a Joint Statement issued in Madrid following meetings in February 1990 dealt with:

- establishment of a system of reciprocal information and consultation for movements of their armed forces in areas of the southwest Atlantic;
- establishment of direct communication link between the Falkland Islands and the mainland in order to reduce the possibility of incidents;
- formulating a set of guidelines of reciprocal behaviour for aid and naval units of their armed forces when operating in proximity;
- agreeing on a mechanism for emergencies designed for facilitating air and sea search and rescue operations in the Southwest Atlantic;
- establishment of a system of exchange of information on the safety and control of air and maritime navigation;
- continuance of bilateral consideration of the above issues.

Despite the apparent irreconcilability of the positions of United Kingdom and Argentina on the sovereignty of the Islands there are, in the agreement for the conservation of fisheries, and other maritime matters, ground for cautious optimism. The substantial increase in the utilisation of the fishery resources of the waters surrounding the Falklands, particularly squid, has increased the need for careful management. Confidence building measures such as those mentioned in the Joint Statement and the establishment of a fisheries conservation zone can only be positive steps toward the long-term benefits to not only the inhabitants of the islands of the southwest Atlantic Ocean but also to the people on the adjacent mainland.

1. We thank Lt. Commander C.M. Carleton, Territorial Waters officer, UK for providing copies of some of the statutory instruments on which this article is based, and Gerardo E. Bompadre, Secretary of the Argentine Embassy, Canberra for analogous material from Argentina.

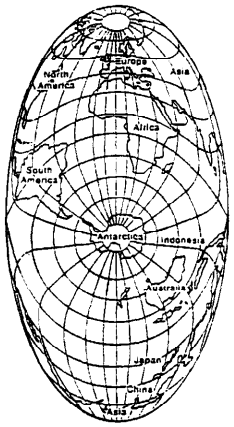
2. Dr Patrick H. Armstrong is a Senior Lecturer in Geography, specialising in the geography and biogeography of remote islands. Mr Vivian L. Forbes, a former merchant mariner, is a professional cartographer and Map Curator. His research interests lie in the determination of maritime boundaries. Vivian Forbes and Francis Auburn, *The Timor Gap Zone of Cooperation*, Boundary Briefing No.9, International Boundaries research Unit, Durham, UK, 1991.

"A Natural Reserve, Devoted to Peace and Science": Antarctica Today.

Peter J. Beck[1]

On 25 November 1992 nearly one hundred governments, meeting at Copenhagen under the auspices of the 1987 Montreal Protocol, agreed to bring forward from January 2000 to January 1996 the deadline for phasing out the chlorofluorocarbons (CFCs) adjudged responsible for destroying the ozone layer shielding the earth from the sun's damaging ultra-violet rays.[2] In time, this measure should contain the problem, although in the short term the position might deteriorate further, as implied by recent reports by the World Meteorological Organisation (WMO) that the past year witnessed an "unprecedented" thinning of the layer, particularly in Antarctica and the Arctic.[3]

In this manner, recent controversies about the "ozone hole", global warming and climatic change have focused attention on Antarctica's integral role in global environmental systems, including its influence upon world sea levels as well as upon atmospheric and oceanic circulation patterns.[4] Antarctica has moved towards centre stage for governments, non-governmental environmental organisations (NGOs) and public opinion because of its role in the initial identification and subsequent monitoring of the "ozone hole". Indeed, for Jacques Cousteau, a prominent participant in recent Antarctic debates, "the survival of the human race depends on the survival of Antarctica".[5]



During the mid-1980s research by the British Antarctic Survey (BAS) yielded the first unequivocal evidence about the depletion of the earth's ozone layer.[6] In turn, a 1991 UN report on the Antarctic environment, drawing upon materials submitted by specialised agencies, like the Food and Agriculture Organization, the Intergovernmental Oceanographic Commission of UNESCO, the UN Environment Program, and the WMO, acknowledged that "Antarctic scientists have made a major contribution to the study of global issues".[7]

> *"These (scientific) studies suggest a multilineal relationship between the Antarctic environment and the global system. Antarctica is not only an important venue for determining global change but is also clearly influenced by them. Thus, the Antarctic environment offers unique opportunities for detecting changes in the Earth's atmospheric systems, and for assessing the impact of pollutants on global ecosystems. For several reasons, Antarctica offers favourable conditions for many kinds of scientific observations."*[8]

The New Protocol on Environmental Protection.

Despite its historic whaling role and contemporary speculation about offshore oil and gas, Antarctica's current utility proves largely a function of its status as a continent for science, as ensured and safeguarded by the 1959 Antarctic Treaty which became effective in June 1961.[9] Scientific data prove its key export, although Antarctica's environmental role should never be under-estimated. In particular, NGOs, seeking to transform "the world's last great wilderness" into a world park, have attached a symbolic value to Antarctica, whose management is interpreted as testing man's green credentials. The relevance of Antarctic research, in conjunction with the growing focus upon environmental issues, was reaffirmed in 1991, when the thirtieth anniversary celebrations of the - to quote the view of the 40 Antarctic Treaty Parties (ATPs) - "outstandingly successful" Antarctic Treaty regime were complemented by Antarctica's designation as "a natural reserve, devoted to peace and science" by the Protocol on Environmental Protection (PREP) to the Antarctic Treaty.

> *"Adoption of the Protocol in 1991 is a fitting tribute to the thirtieth anniversary of the Antarctic Treaty and signals the commitment of Parties to the future strength of the Treaty."*[10]

The 27-article Protocol plus four annexes - these covered *Environmental Impact Assessment; Conservation of Antarctic Fauna and Flora; Waste Disposal and Management;* and the *Prevention of Marine Pollution* - were adopted by consensus and signed by most ATPs meeting at Madrid in October 1991. A few days later, the Antarctic Treaty Consultative Meeting (ATCM) held at Bonn adopted a fifth annex (on *Area Protection and Management*), while asserting the absolute priority of the earliest possible ratification and entry into force of PREP and its annexes.[11] In the meantime, the Bonn ATCM agreed that they should be treated as being in effect.

PREP's establishment of a comprehensive environmental protection regime means that henceforth conservation interests *"shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area"* to avoid what are variously described as "significant changes", "adverse effects", or "detrimental changes" on environmental systems, like climate and weather patterns, or species of fauna and flora. Human activities are to be assessed and monitored to determine not only their acceptability but also the conditions under which they might be performed, amended or even discontinued. However, *"any activity relating to mineral resources, other than scientific research, shall be prohibited"* (Article 7), thereby halting, at least for the time being, the moves undertaken between 1982-88 towards an Antarctic mineral regime. This provision, though reviewable after fifty years (Article 25), can only be removed by majority vote and if replaced by agreed binding regulatory measures.

In theory, PREP, when implemented, should ensure that Antarctica's environment is the best protected of all continents. Whether or not this will mean adequate protection will have to wait until the Protocol becomes effective. However, non-ATPs, concerned about PREP's adoption in defiance of UN resolutions, have supported NGO criticisms about weak compliance provisions, the lack of a role for the UN and UNCED, and the absence of a permanent mining ban.[12] Malaysia pointed to the lack of control on human activities except for the resolve and conscience of an individual country: *"As we all know, conscience is a fragile commodity which can always compromise commitment".* [13] The central anxiety arose from the manner in which PREP allegedly duplicated the flaws characteristic of the so-called restrictive, unequal and discriminatory Antarctic Treaty System (ATS); thus, Indonesia complained that *"a minority of states has continued to exclude the vast majority from decision-making processes, despite the fact that activities in Antarctica will have a world-wideimpact".*[14]

UN debates about Antarctic science and conservation.

Antarctica's contemporary visibility is reflected also by its status as an agenda topic in a wide range of international bodies, including the Non-Aligned Movement (eg. the Heads of Government meeting, Jakarta, September 1992) and the Organization of African Unity. But the prime forum for debate has proved the UN, where the "Question of Antarctica" has been argued at length in annual sessions held since 1983.[15] Non-ATPs, seeking an allegedly more democratic and universal body for an area treated as the common heritage of mankind, have proposed the ATS's replacement by a UN-based regime. Of particular interest since 1989 has been the UN's focus upon Antarctic science in the environmental context. This aspect, albeit touched on in previous years, was now pressed with a view to action. In practice, most delegates appeared to be motivated by political considerations; thus, Antarctica's environmental and scientific problems - these included the rapid growth in the number of research

stations and base overcrowding at certain locations (eg. King George Island, South Shetlands) - were generally presented as an inevitable by-product of a "defective" regime. For example, overcrowding was regarded as a function of attempts to satisfy the "substantial research activity" criterion required for Consultative Party (ATCP) status.[16] ATCPs were also accused of the unnecessary duplication of research and logistical activities as well as of the performance of mineral prospecting and exploration under cover of scientific research. Most critics, glossing over the way in which environmental problems like the ozone hole arose principally from activities conducted *outside of Antarctica* (ie. CFCs used in the developed world), moved on to emphasise adverse impacts deriving from human activities in Antarctica, such as those arising from tourism, oil spills from ships providing logistical support for research (eg. the *Bahia Paraiso* incident of 1989), or waste disposal, constructional and other activities at bases. Before the recent adoption of the ban through PREP, critics pointed also to the threat posed by mining.

Therefore, the critique of Antarctic science reinforced the attack upon the ATS, while providing the foundation in 1990 for a Malaysian proposal for *"a United Nations-sponsored station in Antarctica with a view to promoting coordinated international cooperation on scientific research"*, allowing the UN to exercise a visible role in the region, and checking base overcrowding and research duplication.[17] However, the initiative raised several questions. Would there be only one UN station, or more? How many UN stations would be required to meet the needs of science? What were the proposal's financial, logistical and scientific implications? Given their antipathy towards UN involvement in the region, would the ATPs prove cooperative? If not, where would the UN secure the requisite polar expertise? Would any existing bases be closed down? Would the UN's involvement improve or reduce the quantity and quality of Antarctic science, particularly that illuminating global issues?

Inevitably, ATPs adopted a different view. They pointed to over three decades of meaningful international scientific cooperation, the cooperative working relations forged with the UN specialised agencies, like the WMO, the ready availability of Antarctic research data, and the UN's scarce resources. It was deemed preferable to use existing facilities rather than to create additional stations, particularly as the UN proposal seemed politically motivated: *"Since no scientific rationale has been advanced for the proposal, it is our conclusion that the proposal has a political purpose"*. [18]

In October 1991 the UN report reached a pessimistic conclusion regarding the proposal, which was described variously as a *"formidable"* and *"complicated exercise"* requiring the *"active involvement on the part of the Member States with expertise in the area"*. [19] As a result, the resulting resolution merely requested the UN to keep the matter under review and to report annually on the state of the Antarctic environment.[20]

A Critical Focus on Antarctic Science.

UN discussions contributed to an emerging debate about Antarctic science, as highlighted by an editorial published in *Nature* at the close of 1990. *Nature*, though acknowledging the vital role of science, asserted that existing research was often *"of marginal interest on the margins of Antarctica ... Much of the research carried out in Antarctica is too ill designed to deepen understanding of any kind"*. [21] Other weaknesses included the slow exchange of

data and the inadequate monitoring of projects. NGOs seconded the need for "fundamental change".

> *"For Antarctic science, this means that we can no longer allow any activity, irrespective of its impact, so long as it carries the magical label `science' ... Care of the Antarctic environment is vital if we are to be able to continue to use it for science."* [22]

But, there were other sides to the debate. In October 1990 David Walton and Elizabeth Morris, two senior BAS scientists, provided a confident and positive view of the range and quality of Antarctic science conducted within the ATS framework.

> *"Recent developments in Antarctic science have at last firmly placed the continent in the correct global context. It is no longer a scientific backwater, peopled merely by explorers. Today the Antarctic scientist looks forward into the 1990s towards a bright future in which the region's unique features will be fully utilised in the pursuit of science ... The foundation of all this is the Antarctic Treaty System. As long as this survives ... Antarctic research has a good chance of continuing to make a major contribution to global science and the cause of international cooperation."*[23]

Soon afterwards, Richard Laws, speaking as President of the Scientific Committee on Antarctic Research (SCAR), asserted that:

> *"the very great value of Antarctic science has been demonstrated in recent years ... Scientific knowledge is the major Antarctic resource".* [24] *Laws, fearing the consequences of strict conservation measures, observed that "in relation to the vast area of the Antarctic, impacts from scientific activities are currently insignificant overall and likely to remain so".*

Subsequently, he used the pages of the *New Scientist* to develop these arguments.

> *"Where there is a permanent scientific station, the impact may be relatively large, but is extremely localised ... the "footprint" of a scientific station, in terms of significant pollution, is on average no more than 2 square kilometres ... There are about 50 occupied scientific stations, and therefore about 100 square kilometres of the Antarctic may be "significantly" affected, while 99.999% remains virtually unaffected by the impact of human activity. Is the "polluted" 0.001% sufficiently important to weigh against the value to the world of Antarctic science, much of which has an essential global role?"*[25]

At the national level David Drewry, the Director of BAS, established the manner in which British research reconciles scientific and conservationist objectives.

> *"The policy of the BAS is to undertake cutting-edge science with minimum environmental impact, exploiting the unique natural laboratory conditions of Antarctica to study questions of global concern ... We must beware of inadvertently throwing out this carefully nurtured scientific effort along with the political bathwater."*[26]

The debate continues.

Conclusion.

Although it returned to the "Question of Antarctica" for the tenth successive year at the close of November 1992, the UN proves still a marginal factor in Antarctic affairs. Surprisingly, the recent renewal of faith in the UN and acceptance of its part in reshaping the post-Cold War world has done little to change the situation. The forty ATPs, albeit easily outnumbered in the General Assembly, comprise the UN's most influential members, like China, France, Germany, Japan, Russia, USA and the United Kingdom. The ATCM held at Venice from 11-20 November 1992 was used to reaffirm their belief that the ATS is still the most appropriate framework for their pursuit of shared norms concerning the avoidance of points of friction and the promotion of common interests.[27] In particular, the regime furnishes an appropriate framework for multilateral cooperation between an ever-increasing number of states on a widening range of Antarctic interests and responsibilities. ATPs remain strongly opposed to UN interference in Antarctic matters, as evidenced by their continuing non-participation in relevant debates and votes and consequent refusal to implement annual resolutions urging a more active UN role in the management of Antarctica, particularly in the spheres of science and conservation.

> *"The Antarctic Treaty parties are aware of the need for concerted international action to protect the Antarctic environment from external environmental disturbance which could accelerate serious global environmental change."*[28]

ATPs, viewing "concerted international action" as being acceptable only if undertaken within the parameters of the ATS, believe that critics should accede to the treaty and seek change from within the regime rather than to seek an alternative arrangement negotiated - to quote from recent UN resolutions - *"with the full participation of the international community ... within the context of the United Nations system".*

> *"Being the countries active in the region, they have developed measures, and will continue to develop measures, to protect the fragile Antarctic environment from the impact of the limited human activity within the region."*[29]

Fears of its use for an additional avenue for attack led ATPs to oppose attempts by UNCED to single out Antarctica for discussion at the 1992 Rio Earth Summit.[30] So ATPs, acting under chapter 17 of Agenda 21, merely agreed to continue making publicly available information of global value.

Nevertheless, UN sessions are not completely irrelevant. Annual debates, acknowledging that *"the issue of the protection of the global environment cannot be separated from the question of Antarctica"* (Malaysia), have fostered international understanding and growing recognition of the region's wider significance, while encouraging a critical focus upon Antarctic science and conservation in terms of balancing an Antarctica free from pollution with one open to human activity.[31]

Whereas the ATS's 30th. anniversary and adoption of PREP conveyed an impression of success and durability, UN debates offer salutary annual reminders that this view does not command universal acceptance. ATPs and non-ATPs remain divided by differing perceptions, most notably, about the best way to represent the interests of the international community in the affairs

of Antarctica. Divergent responses exhibited towards the recent proposal for a UN-based research station merely reaffirmed the apparent incompatibility of the ATS and UN contexts. Significantly, PREP failed to bridge the gap. Whereas it was interpreted by ATPs as moving the ATS into new directions appropriate to the 1990s, critics saw PREP as merely replicating and reinforcing a flawed regime. Its failure to bring about a consensus indicates that it is perhaps premature to anticipate an early termination of UN involvement on Antarctica. At present, all that ATPs and their critics seem able to agree upon is the importance of Antarctica as a zone of peace, continent for science, and - to quote Antigua and Barbuda - *"a barometer of the Earth's environmental health"*. [32] In the meantime, ATPs and SCAR, alongside specialised agencies and NGOs, will continue to study and monitor Antartic developments at first hand, whereas the UN, acting on behalf of non-ATPs, will monitor the Antartic scene at second hand largely on the basis of information furnished by ATPs, specialised agencies and NGOs.

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6. J.C. Farman, B.G. Gardiner, and J.D. Shanklin, "Large losses of total ozone in Antarctica reveal seasonal ClOx/ Nox interactions", *Nature*, 16 May 1985: 207-210.
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8. UNGA 46th. Session. *Report of Secretary-General on state of the environment in Antarctica*, 25 October 1991, UNGA A46/590: 4.
9. Peter J. Beck, *Why Study Antarctica?* (Apex Centre, Kingston Polytechnic, Kingston upon Thames: 1991): 31-35.
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11. *Final Report of the XVIth. Antarctic Treaty Consultative Meeting*, Bonn 7-18 October 1991: 11-12.
12. ASOC Information Paper 21, *A Critique of the Protocol to the Antarctic Treaty on Environmental Protection* (Antarctic and Southern Ocean Coalition: 8 October 1991).
13. 46th. Session. 38th. meeting of the First Committee, 18 November 1991, A46/GA/PS/2899: 5.
14. UNGA 46th. Session. 39th. meeting of the First Committee, 20 November 1991, A46/C1/PV39: 6.
15. Peter J. Beck, *Why Study Antarctica?* (Apex Centre, Kingston Polytechnic, Kingston upon Thames: 1991), pp.8-9; Peter J. Beck, 'The 1991 UN session: the environmental protocol fails to satisfy the Antarctic Treaty System's critics', *Polar Record*, vol.28, no.167), 1992: 307-314.
16. The Antarctic **Tre**aty provides for a two-tier membership, with Consultative status reserved for the original signatories and other countries adjudged to satisfy the research activity criterion. Other ATPs, though recognising the Antarctic Treaty's principles, are only entitled to observer status at ATCMs.
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18. UNGA 45th Session, 20 November 1990, 42nd.meeting of the First Committee, A45/C 1/PV42: 13.
19. UNGA 46th. Session. Report of Secretary-General on an UN-sponsored station in Antarctica, 25 October 1991, A46/583: 5.
20. UNGA 46th. Session. 39th. meeting of the First Committee, 20 November 1991, A46/C1/PV39: 43.
21. "Editorial: Antarctic Wilderness", Nature, 22 November 1990: 267-268.
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23. D.W.H. Walton and E.M. Morris, "Science, environment and resources in Antarctica", Applied Geography, vol.10 (4), 1990: 283.
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25. Richard M. Laws, 'Unacceptable threats to Antarctic science', *New Scientist*, 30 March 1991: 4. Antarctica's area is about 14 million sq.kms.
26. Letter to the editor, The Independent, 1 December 1990.
27. Beck, *Why Study Antarctica?*: 20-23.

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29. UNGA 46th. Session. Report of Secretary-General on state of the environment in Antarctica, 25 October 1991, A46/590: 15.
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31. UNGA 45th Session, 27 September 1990, 10th.meeting of the General Assembly, A45/PV10: 68.
32. UNGA 46th. Session. 26th. meeting of General Assembly, 8 October 1991, A46/PV26: 10.