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The status of stations under the Antarctic legal regime

ABSTRACT: Polar stations became subject of keen interest of law-makers as the most effective manifestation of human activities in Antarctica. Legal procedures governing the establishment and regulations on operation and decommission of Antarctic stations are presented in this paper.

Key words: Antarctica, law and politics, polar stations.

Introduction

Unlike the other parts of the world, Antarctica is uninhabited and void of cities or even permanent settlements in the common meaning. Their role play there small bases and polar stations, modestly staffed and widely dispersed all over the vast continent and the continguous islands. The very presence there of human beings, representing various nations, performing manifold tasks and functions, and entering into complex relations and transactions, requires adequate legal regulations. Their, drafting must take into account not only the extremely harsh climatic and environmental conditions, but above all the unique (*sui generis*) political and legal regime of that polar region. At the actual turn of centuries, the legal rules determining the status and regulating the operation of Antarctic stations are shaped by following interacting factors: science and technology, politics, economy and ecology.

Since most human activities in Antarctica are taking place either within or around polar stations, the precise definition of their status and adoption of rules governing their functioning is of utmost importance for the sake of that region and its extremely sensitive environment, as well as the peaceful international cooperation in that part of the world.

Scientific inverstigation remains the predominant human activity in Antarctica, while its main instruments are the research stations. After the Third Interna-

tional Geophysical Year (IGY 1957-58) they became permanent element in that part of the world and the chief manifestation of the manifold interests of States there.[1]

The typical modern Antarctic scientific stations is a complex combination of different basic elements such as: the premises with buildings and instalations (*i.e.* roads, airstrips, harbours, *etc.*), staff, often multinational and equipment (research labs, machines,installations *etc.*) mostly provided and owned by governments.[2] That coincidence of elements and circumstances raises juisdictional problems calling for solution under international law. Thus, the definition of status of the Antarctic station requires the determination of rights and duties both of States and individuals concerned, their legal and political position and reciprocal relations and intercourse, as well as the settlement of arising conflicts of law.[3]

Since 1959, when the Antarctic decision-making took the shape of an agreed international instrument, the problem of the status of scientific polar stations became subject of a continuous concern of the Antarctic Treaty Parties (ATP) and their Consultative Meetings (ATCM). That resulted in the promulgation of numerous rules and regulations of differentiated legal force, concerning directly or indirectly Antarctic stations, the status of which is subject of an analysis in the present paper.

Basic factors determining the status of Antarctic stations

To determine properly and precisely the status of man-made installations and constructions erected within the Antarctic Treaty area, it is not enough to refer to the relevant ATS legal documents, but it is necessary to reach also for legal analogies, in order to confront them with the status of similar constructions in other areas and spaces, especially international and common spaces, comparable with the Antarctic legal regime.

Political and legal premises defining the status of Antarctic stations. — Antarctic polar stations fulfill manifold functions, such as: scientific, political, ecological, economic, social, cultural *etc.* Each of these factors has adequately affected the determination of their status.

The Antarctic Treaty, functioning effectively for the last forty years [4], has established a relatively durable and compromising, but deficient regime, characterized by unresolved political conflicts and territorial claims, as well as unsettled fundamental legal problems with sovereignty and jurisdiction in the forefront. These issues which were left mostly in abeyance, confronted with current political, scientific, economic and ecological problems and interests, have shaped the regulations governing the status and operation of Antarctic stations (Fig. 1).

Scientific activities and research are with a few exceptions fundamental in Antarctica.[5] But governments which are only generally interested in basic research

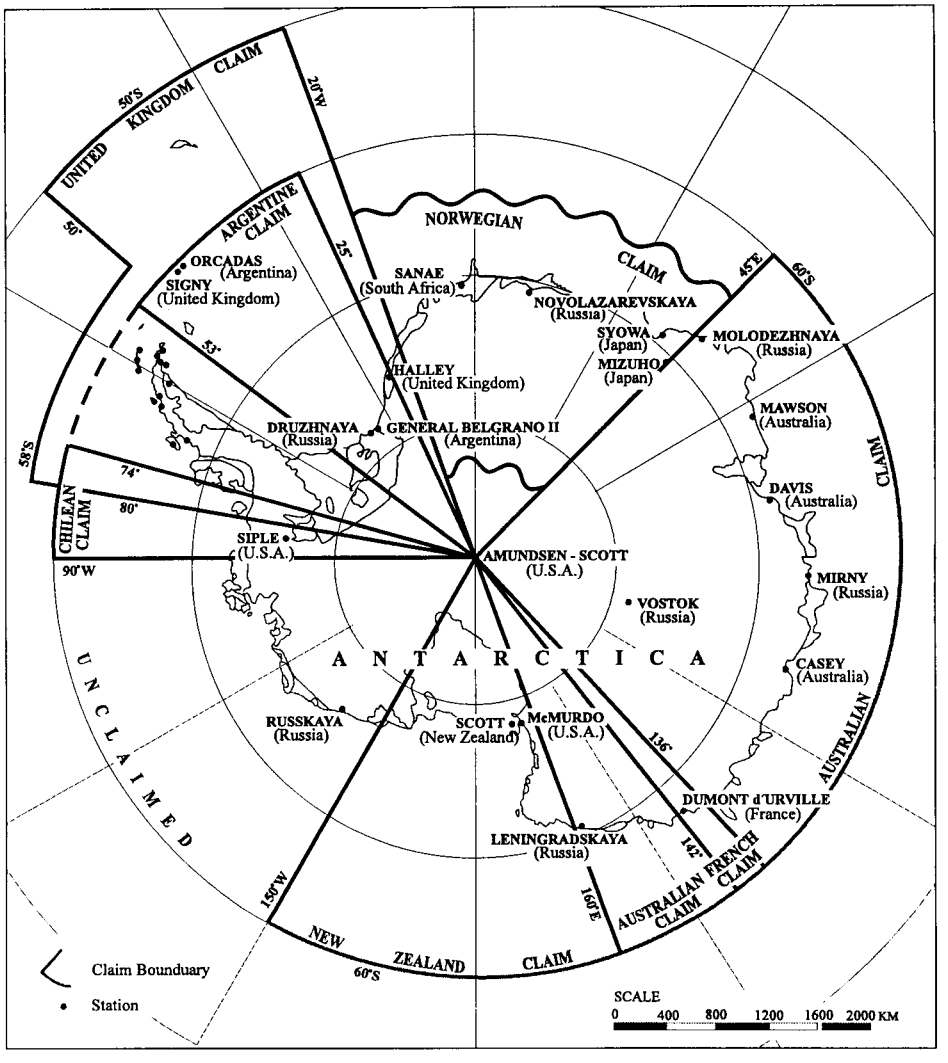

Fig. 1. Antarctic claims and main scientific stations.

and seeking rather immediate practical results of science, support it in Antarctica mainly as the means of presenting their national interests in that part of the world. That attitude is distinctly reflected in their policy towards the Antarctic stations, where political and economic interests often overshadow the purely scientific considerations and ecological needs. Although generally Antarctica has been so far insulated from the detrimental effects of global politics, mainly due to the satisfactory functioning of the ATS, sometimes world conflicts affect the ATC Meetings and indirectly also the operation of the Antarctic stations. Their domination or even monopolisation by extra-scientific activities might fundamentally change

their character and status under the Antarctic legal regime, undergoing itself slow but constant changes.

The main goal of the Antarctic Treaty is to take care that its area should remain a zone of peace and science undistrubed by international discord.[6] In practice the Antarctic stations are sometimes a potential source of such discord. For the very existence and operation of stations in Antarctica crucial is the political attitude of States concerned which are divided there into claimant [7] and non-claimant countries. The former, in spite of many objections see in the 1959 Antarctic Treaty the best protection available for their claims because of their inability to assert sovereignty by usual methods, such as preventing unlicenced entry, establishment and operation of stations *etc.* within the claimed sectors. One of the devices adopted by them during the IGY was to open widely the door by issuing unilateral formal invitations to countries sending expeditions and establishing stations, so disgusing their inability to shut it in any case.

Among the different requirements of international law for the acquisition of sovereignty over unclaimed territory, one of the most important is its effective occupation. One of its recognized manifestations is the establishment of a station. Effective occupation requires less in the Antarctic than it does elsewhere because of the lack of population, isolation and severe atmospheric conditions, but there is a general trend to raise the standard of legal requirements.

To display the *animus occupandi* required by law, some claimant states established in Antarctica stations as a cheap means aimed at the creation of appearances of administration which were not likely to require expensive enforcement by law.[8]

Since the Second World War and in particular after the IGY, Antarctic stations have undergone a real revolution in respect of technological transition. Introduction of additional facilities, such as permanent runways, supply facilities, year-round radio and satelite communications or even nuclear power stations, is bringing them ever closer to more normal standards of permanent and effective occupation. To amplify them, some claimants, especially Argentina and Chile – calling for the theory of contiguity and regarding Antarctica as an extension southwards of their national territories – do not content themselves with the permanent character of their polar stations. They are introducing there ever more indications of permanency in the fuller sense, raising considerably the general standard for acquisition and sovereignty in the region, but are making also more complex the task of determination of the legal status of polar stations.[9] Nonetheless, no current Antarctic claim can be justified on the effective occupation of a polar station (AT art. IV). They are mostly situated on islands or on the coast and control a small area around, extending to several hundred meters only. Such control can in no way support a territorial claim to vast areas of hinterland thousands of miles away, even if accessible from the station for rescue or the humanitarian operations which do not involve the enforcement or administration of laws. Even less arguments in support of such territorial claims give the inland Antarctic stations, including the American *Scott-*

Amundsen Station on the South Pole. They are supported logistically by air from coastal bases and entirely dependent on them in the delivery of supplies, fuel and manpower.

Although identical legally, different politically is the position of stations operated in Antarctica by States without territorial claims there or even without basis of such claims. The non-claimant States involved in Antarctica are motivated mainly by scientific and sometimes also economic interests.[10]

ATP claim exclusive competence over Antarctic affairs, including stations operating within the Treaty area. No third party claims contesting that position or threats to the regime itself have been noted, except the actions at the United Nations aimed rather at the wider opening of the ATS to them. But their tourist ships in the Antarctic have raised problems when large numbers of passengers visited stations. Non-Treaty Parties' then, Italian and Spanish tourist ships visited a number of Antarctic stations, while in 1976 a private Italian expedition set up a base in Admirality Bay on King George Island.[11] As a general rule, treaties do not bind third States without consent and any steps taken to ensure compliance by third parties have no legal grounds. But it has been argued by some politicians and writers that the Antarctic Treaty can be enforced against third parties.[12]

Some governmental and non-governmental international organizations like the Scientific Committee on Antarctic Research (SCAR) and the Intergovernmental Oceanographic Commission (IOC) have made a number of attempts to carry out activities related to Antarctic stations.[13] Although there have been lengthy discussions on third party State expeditions to the AT area, no practical means for coping with them have emerged. Private expeditions often setting foot on land and establishing there small bases proved to be able to operate independently apart from the ATS. The ATCP have not taken steps to regulate the entry of non-governmental groups limiting their action to measures relating only to visits to stations.[14] So far there were no attempts by the ATCP to lay down rules preventing third parties sending to Antarctica expeditions or establishing there stations probably fearing that it might raise the controversial unsolved issue of sovereignty. Despite the "freezing" of territorial claims by the Antarctic Treaty, behind closed doors and on the backstage of the ATCM and related meetings, the sovereignty issue has been repeatedly raised in different forms, affecting also the polar stations. While Argentina and Chile declare their political purposes related to stations openly, other nations take a similar position without publicity to avoid suspicions of a breach of Treaty provisions.

Jurisdiction is one of the most important forms of the exercise of sovereign rights by states also in respect of Antarctic stations. But both sovereignty and jurisdiction remain major unsolved legal issues of the Antarctic regime. Disagreement on their exercise affects directly the regulations on the stations and operation of stations within the Treaty Area, which is considered as being beyond the limits of national sovereignty and jurisdiction.

That approach excludes jurisdiction based on territorial sovereignty which would allow the claimants to treat foreign stations operating within the claimed sectors as if they were situated in their homelands, to apply there the domestic laws of the home country and to treat the legal status of such stations under the laws of the home country, so long as that legal status did not conflict with international law. The Antarctic Treaty which rejected the idea of "exclusive rights" did not give clear answer on the practical scope of rights and duties of claimant and non-claimant States in respect of stations operating within its area.[15]

The term "jurisdiction" encompasses in law a variety of meanings and operates on several different levels, while under the often ambiguous Antarctic legal regime also in respect of stations. It has become common to speak of "jurisdiction to prescribe or legislate" the regulations concerning stations, "jurisdiction to adjudicate" them in respect of the State's own nationals and foreigners. In the Antarctic, the seven claimants assert both territorial claims and claims to jurisdiction over persons, objects and events within those claimed areas, including the stations situated therein.

Consequently, the disputes centred on such related questions of the limits of national jurisdiction like which law should be applied and which authority should be empowered to legislate and to enforce it in the Antarctic stations? Under international law these questions refer to territorial jurisdiction (*in rem*) in respect of the stations' premises and personal jurisdiction (*in personam*) in respect of their staff, residents and visitors.[16]

When the Antarctic Treaty was being drafted, several countries wanted jurisdiction based exclusively on nationality, but certain claimants objected. The compromising Article VIII par. 1 provides that "without prejudice to the respective position of the Contracting Parties relating to jurisdiction over all other persons in Antarctica", observers, exchanged scientific personnel and members of the staffs accompanying any such persons, "shall be subject only to the jurisdiction of the Contracting Party of which they are nationals in respect of all acts or omissions occuring while they are in Antarctica for the purpose of exercising their functions." That privilege apparently inures in both criminal and civil cases,[17] while Article IX par. 1e provides for consultation on "questions relating to the exercise of jurisdiction in Antarctica".

In specific fact situations arising in and around the stations, the diverse legal rules may overlap or exclude themselves and create legal gaps, giving one or more nations concurrent jurisdiction, leading to conflicts of law between countries as they disagree about the scope of particular jurisdictional basis. The jurisdictional difficulties regarding application of the law to Antarctica, just like the issue of general jurisdiction and law enforcement there, have led to various models being proposed for resolving these problems in respect of stations operating within the Treaty Area.

The formal position of claimants – contested by non-claimants – is that jurisdiction is exercised in their claimed Antarctic territories as it is elsewhere in their

homelands. Thus, their own and foreign Antarctic stations, sited within the claimed sector, are considered as operating within the national territories of the claimant countries. But in fact, they never tried to enforce their laws on the Antarctic stations of other nations situated within the claimed sectors, limiting themselves to formal protests and spectacular demonstrations of ostensible control and effective occupation. In the sphere of law emphasis has been placed rather on indirect sanctions to enforce compliance with the observation by foreigners of the Treaty provisions and ATCM recommendations. To date, claimants have been willing to cooperate on Antarctic stations in a regime which leaves the difficult consequences of unsolved issues on sovereignty and jurisdiction in abeyance. Generally those countries having specific legislation for their claimed Antarctic territories endeavour rather to go further than the terms of theTreaty in defining the limits of their jurisdiction. But even the most active claimants, like Argentina and Chile, refrain from exerting territorial or personal jurisdiction over foreigin polar stations operating within their claimed Antarctic sectors. Were the claimants strictly to insist upon the compliance, with their laws by such stations and their staffs, severe international conflicts could occur. Nonetheless, incidentally certain practical jurisdictional problems are arising in the operation of Antarctic stations, especially in the area of law enforcement, leaving unresolved the question of domestic capacity to prosecute for Antarctic crimes and of the extraterritorial jurisdiction within the Treaty Area in general and within the polar stations in particular.[18]

As long as all parties to a suit are from the same national jurisdiction the choice of applicable law might be relatively easy, but this view does not resolve the choice of applicable law in case of persons from different national jurisdictions. Due to the developing international cooperation in the Antarctic, it is ever more common to have various nationals on a station staff, requiring choice of applicable law in case of crime or dispute. But due to the earlier discussed political and jurisdictional factors, the choice between *lex fori* and *lex loci delicti* encounters there many difficulties unknown to conflicts of law in other parts of the world.[19]

Generally, in the absence of clear-cut statutory rules, Antarctic practice has been to rely on limited expedients designed to avoid legal issues and connected with them political or territorial controversies.

The status of installations in international and common spaces and other analogies. — To fill the gaps and to dispel the doubts about ambiguities of the Antarctic regime in respect of polar stations, it is necessary to reach for adequate legal analogies in other regions and spaces of comparable status.

Paradoxically, the analogy with the status of Arctic stations is here of limited practical value, due to the disparate legal status of the two opposite polar regions. The main exception here are the polar stations on floating ice, drifting on the surface of open seas of the Arctic Ocean. Only few criminal cases related to Arctic stations may serve as useful precedents in the Antarctic legal practice. The same refers to civil law cases and transactions, especially those mentioned ealier and car-

ried out to support sovereignty claims, like wedding and baptismal ceremonies, as well as the legal validity of suitable certificates issued in result. But even without such intentions, civil law transactions carried out in Antarctic stations may raise some doubts as to their validity, arising from ealier mentioned conflicts of laws.[20] For marriages performed in Antarctic stations the closest analogy may be drawn from merchant ships on the high seas or in aircraft flying over common spaces. In particular cases, however, the fundamental differences between the common law and the continental law systems, as well as the arising conflicts of law must be taken into consideration.

Another arctic analogy might be sought in the status of polar stations on Spitsbergen (Svalbard), which is enjoying also a special, but much different from the Antarctic, international legal status. Articles 6, 7 and the Annex to the 1920 Spitsbergen Treaty[21] provide special rules on the possession and occupation of land, methods of acquisition, enjoyment and exercise of the right of ownership of property, substantiated in Chapter IV of the 1925 Norwegian Svalbard Act[22], which are relevant also to foreign bases and polar stations operating within the archipelago.

More suitable legal analogies than the Arctic offer us other areas which are closer in legal terms to the Antarctic regime and are defined by law as common or international spaces.[23] From among them, particularly useful for our considerations are the high seas and outer space, both like Antarctica placed by law beyond the scope of sovereignty and jurisdiction of States. Thus, the legal analogies between the status of different installations situated there, and the Antarctic stations, might be helpful in the determination of the status of the latter.

The inadmissibility of claims of territorial sovereignty governs the legal status of both the Antarctic, as well as the high seas and outer space including celestial bodies therein, determining alike the status of stations and installations situated within all these areas and spaces.

Against such legal background a principal sovereignty-oriented political idea has surfaced since 1983 when the United Nations have taken up the "question of Antarctica." It attempted to reconcile the Treaty regime with the aspirations of certain Third World countries who would like to declare Antarctica the "common heritage of mankind". These intentions would aspire to make Antarctica a common space regime (*res communis*) managed commonly by all States and not only the ATP – which were labelled as an "exclusive Antarctic club" – with all nations ostensibly entitled to share in the distribution of any benefits derived from that area.[24] The adoption of such idea would change fundamentally the Antarctic regime and strongly affect the status of polar stations there.[25]

For the Antarctic, the high seas and for outer space many political and legal issues, including those concerning bases, stations and other installations situated there, are evolving with regard to the related analogies, taking into consideration the differences of the three environments. In their frontier nature, the remoteness of access, the difficulty in exploration and human existence, all three bear a close resemblance in-

ducing to the drawing of analogies. While these analogies may be sometimes imperfect, they till do provide some guidance on the formulation of procedures and regulations governing the establishment and operation of stations in these areas. The adoption of these analogies makes the Antarctic stations legally comparable to the offshore installations and constructions such as artificial islands, oil riggs *etc.* in the maritime zones[26] and also space and lunar stations or bases on other celestial bodies[27], providing interesting parallels on the exercise of jurisdiction there.

In the absence of territorial jurisdiction in international and common spaces, some authors (Kish, Hayton, Simsarian, Taubenfeld, Hanessian, Mouton) are according the stations operating there the jurisprudential **flag jurisdiction**, drawn from analogies with the relevant law of the sea provisions.[28] The principle of the jurisdiction of the flag state was established in the maritime law in the middle of the 19th century and was extended in the 20th century on the air and space law. Lateron, jurisprudence has extended it on the law of international spaces [29], applicable partly to Antarctica and polar stations therein.

The accordance of flag jurisdiction to the Antarctic stations makes the position of its leader comparable to that of the captain of a ship, an aircraft or spaceship. Like them, he must have authority to direct the stations's activities and provide for the safety of its personnel, including the foreigners, even when their governments disapprove his methods. The nationality of an Antarctic station is manifested by its name and the flag hoisted by the State entitled to exercise jurisdiction over it and other national markings like coat of arms *etc.* The presumption of the station's legitimate flag nationality prevails in international spaces unless the contrary is proved.

Flag jurisdiction cannot result in a territorial claim, as the effective control of the flag state is limited to the period of the operation of stations and the area necessary to protect it. The authority of the flag state extends to Antarctic airfields[30] and station's port facilities.

The system of personal jurisdiction in Antarctica practically recognizes the authority of the flag state over its stations there. The general rule of the exclusive personal jurisdiction of the flag state determines the status of the staff and persons in Antarctic stations – both nationals and foreigners. The only exception of that rule are persons mentioned in the ealier referred Article VIII par. 1 of the Antarctic Treaty.

Flag jurisdiction based on the rule that no state may exercise jurisdiction over installations of any other state in international spaces, guarantees the Antarctic stations both the exclusion of territorial soveregnity and the protection of national activities and interests there. Flag states have not only authority over their Antarctic stations, but also responsibilities for their activities which must comply with the 1959 Antarctic Treaty.

Despite efforts of the ATP to avoid formal recognition and acceptance of an international space regime in Antarctica, in practice they accepted *de facto* the existence there of its many manifestations and in particular the idea of flag jurisdiction in the daily operation of Antarctic stations.

Legal procedures governing the establishment of Antarctic stations

In the decision-making process on the establishment of Antarctic stations due consideration must be paid to a number of requirements concerning the proper choice of their site, the assessment of local environmental, climatic and sanitary conditions, careful study of real estate rights *etc.* Any negligence in that early and preparatory founding procedure threatens with imminent dangers for the future operation of the station. To avoid them and also to protect the sensitive Antarctic environment, the ATC Meetings have elaborated a set of rules governing the procedure of the establishment of polar stations.

Siting of Antarctic stations. — In the early days of the Heroic Age, when Antarctica was still an unclaimed *terra nullius*, decisions on the siting of expeditions' bases were dictated simply by the logistic convenience, such as the accessibility, favourable landing, atmospheric and environmental conditions, proximity to the South Pole, the main target of a number of expeditions (Amundsen, Scott, Shackleton) *etc.* The changes in the status of Antarctica have resulted in the widening of the range of motives guiding the decisions on siting of modern stations, adding scientific, political, economic and other arguments.

Planning the localisation of an Antarctic station requires advance decision-making both at domestic and international levels. In the early days of Antarctic exploration the expeditions have set up their bases wherever like without any consent, faced only with necessity of weather, ice or other natural conditions. Scientific and political arguments on siting of Antarctic stations were advanced already during the First (1882–83) and Second (1932–33) International Polar Years. The first comprehensive international plan to cover Antarctica with a net of research stations[31] was agreed during the Third International Geophysical Year (IGY 1957–58). But even that scientific plan had to be compromised with political and economic objectives of the 12 participating states, including all claimants.[32] The global scientific aims of the IGY required stations along the three meridional pole-to-pole lines with adequate coverage of the Antarctic continent and representative coverage of its interior. This demanded careful advance consideration of the siting of observing stations and their geographical distribution, to detect gaps and to eliminate unnecessary duplication wherever it might occur.[33]

The IGY ended on 31 December 1958, but after its termination the network of permanent research stations not only remained in Antarctica, but has since then considerably developed both in number and size of bases. Permanent stations, previously confined to the northern coasts of Antarctic Peninsula and the nearby archipelagos, were now established around the continent and extended to inland, including the South Pole (Fig. 2).

After the IGY, the ATC Meetings have taken up the task of coordination of siting of stations in the Treaty Area on the ground of Article VII par. 5b of the 1959 Antarctic Treaty which provides for an advance notification by each Contracting

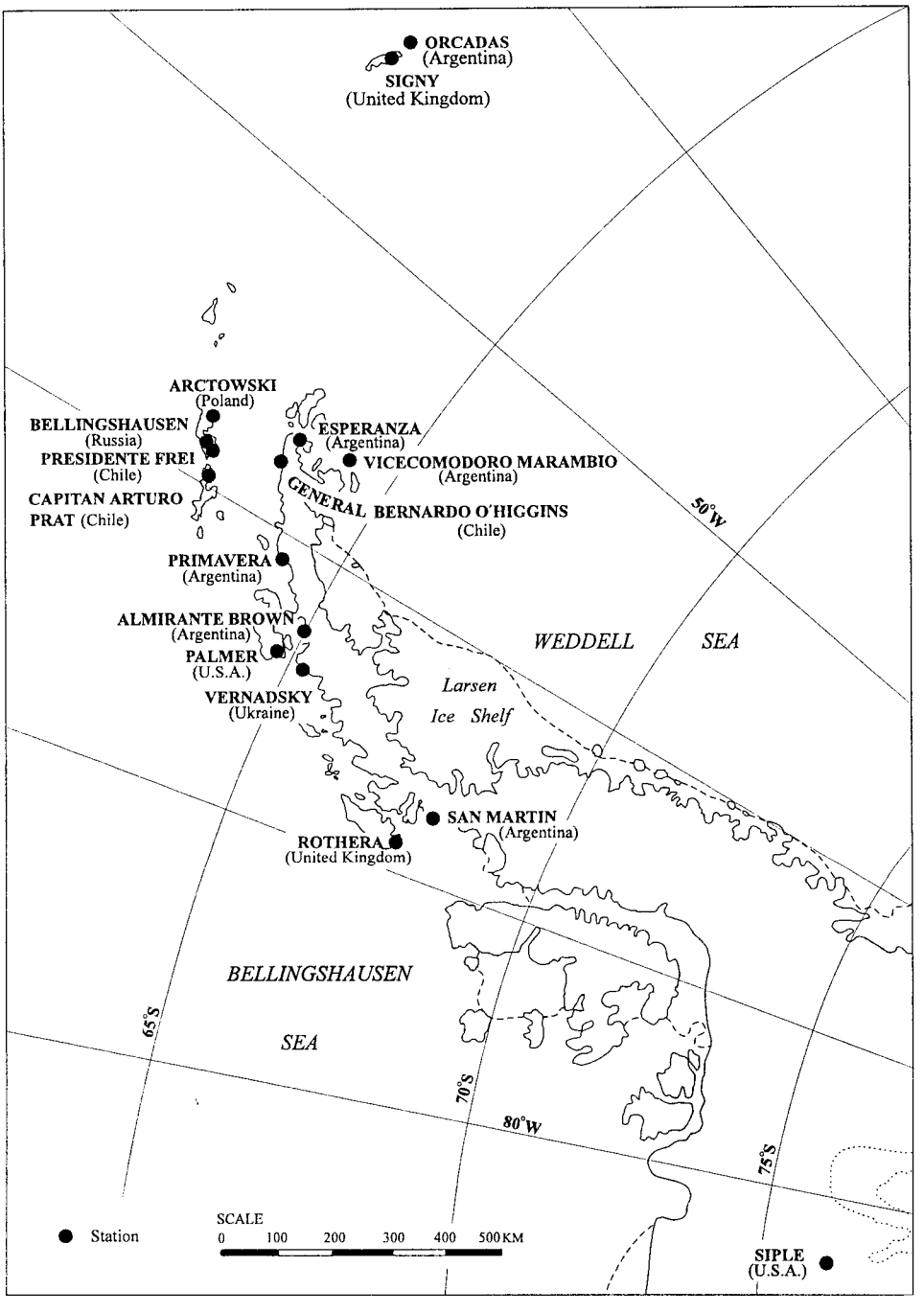

Fig. 2. Main scientific stations in the Antarctic Peninsula region.

Party to the other Contracting Parties of "all stations in Antarctica occupied by its nationals".

That has led to the adoption by the ATC Meetings of special regulations in this respect. Without prejudicing the freedom of scientific investigation[34] as set out in Article II od the Antarctic Treaty, the ATCM have adopted since 1985 two important recommendations on the siting of stations. [35] They are aimed at the facilitation and promotion of international co-operation in scientific investigation in Antarctica, as provided for in Article II of the Treaty.

These recommendations have recognized that, while there are scientific, environmental and logistic advantages to be gained from stations being in proximity to one another, there can also be disadvantages which can be avoided by appropiate consultation. For that purpose the ATCM have recommended the governments that where stations have been established in the same vicinity, the concerned national Antarctic operating agencies should consult together, by whatever means found appropriate, so as to safeguard existing scientific activities, avoid operational logistic difficulties and avoid undue adverse environmental effects arising from cumulative impacts.

The South Shetland Islands and in particular the King George Island, being the easiest places to get in the Antarctic Treaty Area, have attracted a large number of stations, established there for scientific, political, economic or other reasons. That has led to an excessive concentration of stations, giving rise – among other SCAR – to concern of major environmental effects, unproductive duplication of scientific programmes and disturbances in international cooperation. Some of the Antarctic shore stations have been set up to have easy access to fauna or other objects for scientific research. While primary intent of that siting was to facilitate study, the consequences have often been the attraction of visitors and tourists, not only disturbing research work, but also affecting seriously wildlife, or historic sites situated in the stations' area.

To avoid it, the ATCM urged consultations and recommended that adequate prior notice be given at intent to undertake a development or scientific activity that is likely to have a major environmental impact. With this aim on mind, a process of consultation is needed to start as early as possible in the planning stage of the new station and to continue through subsequent stages, including the development and implementation of routine operations.

Recognizing that the establishment of a new station or major logistic support facility is an activity which is likely to have more than a minor or transitory effect on the environment, the ATCM have drawn attention that the siting of stations is subject to the Comprehensive Environmental Evaluation procedure described in Recommendation XIV-2 (1987). To refute charges that the ATCM members are trying to discourage third parties from activities in Antarctica and to keep them outside the exclusive "Antarctic Club", the ATCP have emphasized and affirmed in their recommendations that the adopted measures are not intended to interfere

with the possibility of a non-Consultative Party establishing a station in Antarctica, but to ensure that such Parties may maximize their contribution to knowledge and the protection of the Antarctic. Therefore, in the case of a station or facility which the national Antarctic programme of a non-Consultative Party proposes to establish, they offer assistance to the managers of that programme with respect to the choice of site and the preparation of the Comprehensive Environmental Evaluation, with a view to maximizing the scientific output of the new programme and minimizing its environmental impact.

Alongside scientific intentions or political interests laying behind the decisions on the siting of Antarctic stations, sometimes also economic considerations are indicated. The majority of Antarctic bases established since the early 19th century by the seal and whale hunters were of purely economic character, although not void of scientific significance. Now, in particular after shelving the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities, economic intentions laying behind the decisions on the siting of stations are rather concealed.[36]

At present, the most frequent and strongly critizied motive of the establishment of new Antarctic stations is the intention to satisfy the requirements to acquire the Consultative Party status. The problem has arisen in 1960 after Poland was denied it on the pretext that its seasonal, summer *Dobrowolski* Station in Bunger Oasis was not a "scientific station" in the literal meaning of Art. IX par.3 of the Antarctic Treaty. This arbitrary and biased legal interpretation of the Treaty provisions has for sixteen years barred from the ATCM not only Poland, which in 1977 was granted the consultative status only after opening its second, permanent year round *Arctowski* Station on King George Island. Several other states, especially the developing countries unable to bear such burden, which signed up to the Antarctic Treaty and were waiting in line to be admitted to Consultative Meetings, have protested vehemently against such policy. Under the impact of actions at the United Nations these restrictive criteria were slightly lessened after 1983 when Brazil was granted consultative status even before it opened its own research station on King George Island.[37] Now, for ecological reasons, there is a strong pressure on the Consultative Parties to drop the requirement of opening a permanent Antarctic station, as a criterion of admission to the ATCM. It was pointed out that such stations, often of little scientific value are leading only to multiplication and to an unproductive increase in number of people and equipment in Antarctica, increasing considerably the threats to its sensitive polar environment.

To avoid and to limit them, it is necessary to give due consideration in the decision-making process on the siting of Antarctic stations to the requirements of Annex V on Area Protection and Management of the 1991 Madrid Protocol on Environmental Protection.[38] Many of these stations especially those established previous to the Madrid Protocol, are situated precariously close to the Specially Protected and Specially Managed Areas, where many activities are prohibited, restricted or managed in accordance with Management Plans adopted under the

provisions of that Annex. Thus, in the planning of the siting of a station, in order to avoid clashes in its operation with the regulations of the neighbouring protected area, it is necessary to confront the station's plans with that area's Management Plan drafted in accordance with the provisions of Art. 5 of Annex V.

Comprehensive environmental evaluation. — Although protection of the environment was practically left out from the text of the 1959 Antarctic Treaty, it has been a recurrent theme of the Consultative Meetings from their very inception. That interest in the environment resulted in numerous ATCM recommendations and culminated in 1991 Madrid Protocol on Environmental Protection which has filled the gap in the Antarctic Treaty text. Most of these legal texts and particularly Annex I to the Madrid Protocol on Environmental Impact Assessment referred directly or indirectly to the Antarctic stations' activities from the moment of their planning till the discontinuation of their operation.

The procedure mainly referred to as Environmental Impact Assessment (EIA) is now applied in Antarctica to all major works and actions likely to have an effect on the environment. Its primary purpose is to draw attention of the decision makers on the likely environmental effects of proposed ventures, especially such as the establishment and operation of polar stations. To meet this purpose effectively the EIA has to be undertaken well in advance of the decision making, and its results and findings need to be circulated amongst those who might have an interest. What the EIA identifies is among other the range of alternatives decision makers should consider (*i.e.* alternative sitings of a station), in particular the likely environmental effect of each option and the changes that could be made to lead to particular options becoming more acceptable environmentally.

The EIA procedures need not to be considered as just another hurdle for decision makers before they can get on with real work on the construction or overhaul of station. Their purpose is rather to improve its planning, construction and realisation of projects so as to protect the environment at the least cost. That exercise brings together a range of information which are aimed at the assistance to the decision makers at all levels, both domestic and international. All kind of activities in Antarctica, including scientific, need to be controlled to the extent where it can be said with reasonable confidence that there will be a minimum of environmental harm. The EIA is therefore a most useful instrument both for states and scientists embarking on a particular research project and for any new logistic installations, including those realized by states new in Antarctica, which are planning to establish a station there. Thus, the purpose of EIA procedures is not to restrict research work, but rather to encourage its sensible planning. That encompasses the reduction and elimination of interference between scientific and logistic support functions which need to be defined at the earliest stage to set up the advisory and supervisory functions in respect of environmental conservation in the stations' area.[39]

Another important task in this respect is the settlement on cooperative arrangements between stations operating in very close proximity on a relatively small area.

A concentration of stations seems inevitable in the situation when ever more states are engaging in Antarctica. Their stations are mostly concentrating in those areas which are most accessible, leading to situations when there are as many as four stations within a three by six kilometer area.[40] In such circumstances, without the EIA procedures, conflicting scientific and logistic land usage interests might most cenartainly increase rather than decrease.

A good deal of the way goes the 1991 Madrid Protocol to providing measures designed to discourage overcrowding of stations in Antarctica. There are a number of provisions which if rigorously observed could well limit such overcrowding causing duplication of research effort and repetitive science which might result in environmental damage. In particular Annex I on EIA emphasizes the need to encourage the development of planning cooperation in science and logistic activities based on the protection of the hypersensitive Antarctic environment.

Article 8 of the Madrid Protocol and its Annex I have set out detailed procedures on initial and final comprehensive environmental evaluations of all proposed activities in Antarctica which are likely to have more than a minor or transitory impact on the ecosystems. The establishment of a new station or major logistic support facility were ealier recognized as such in the ATCM recommendation XV-17 (1989). These assessment procedures apply also to any change in the stations' activity whether the change arises from an increase or decrease in the intensity of an existing activity, from the addition of an activity, the decommissioning of the station or otherwise. Where activities are planned jointly by more than one party, the parties involved shall nominate one of their number to coordinate the implementation of EIA.

The general principles on the EIA formulated in Art. 8 of the Protocol, have been substantiated in eight articles of Annex I. They contain detailed evaluation procedures set up for each step and related also to the establishment of Antarctic stations, beginning with preliminary stage (art. 1), initial environmental evaluation (Art. 2) up to the detailed comprehensive environmental evaluation (Art. 3 and 4). Special attention was paid in Annex I to the monitoring of key environmental indicators, to assess and verify the impact of any activity (Art. 5), as well as the circulation and publication of information on environmental evaluations (Art. 6). Annex I does not apply in cases of emergency relating to the safety of human life (i.e. members of stations' staff) or of ships, aircraft or equipment of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in this Annex (Art. 7).

In the light of the above provisions, first and foremost the Antarctic environment must be protected from indiscriminate activity of any kind, including the operation of stations. But at the same time it is also necessary to protect as well the the proper implementation of scientific programmes. Much depends, however, upon the attitude of the parties in practice. A serious weakness of Annex I is seen in the fact, that the decision whether to proceed with the activity forthwith, or require an initial and/or comprehensive evaluation, is left with the parties. But the same

weakness is found in most domestic EIA procedures. In essence, Annex I relies upon self-assessment and self-monitoring, which may result in a dilution of the substantive standards set forth in the Protocol. In particular, the capability to evaluate overall effects upon the Antarctic environment and to exercise external control is reduced if not effectively eliminated. In the present situation within the ATC Meetings, there is a danger, that the preparation and circulation procedures of EIA may in relation to stations simply become part of a wider public relations exercise aimed at the mitigation of rather political than environmental risks.[41]

Legal implications of Antarctic stations' land usages. — Under the complex territorial status of Antarctica the problems of use of land (if that term means anything on the continent of ice and snow) by polar stations acquire unusual legal proportions. Normally, that kind of problems, concerning among other land possession, property, acquisition, enjoyment and exercise of the right of ownership *etc.* are regulated by norms of private law. In the absence of it under the Antarctic legal regime, it is necessary to reach for other means.[42] The framers of the Antarctic Treaty did not envision the present situation, where not only rights of governments, but also of private individuals and companies are affected. In the majority of cases they are related to the Antarctic stations. In this situation the answer to the simple question: who is landlord and who owns the Antarctic station, is not easy. To answer it, we must first establish the legal status of land on which the station's premises are situated, doing it against the background of the *sui generis* status of the Antarctic territory. While the ealier referred flag jurisdiction theory might solve certain strictly jurisdictional matters, it is not helpful in the solution of land use questions of Antarctic stations.

Referring to the fundamental, general problem of Antarctic territorial claims, F.M. Auburn poses the question, whether limited claims to small portions of Antarctica, occupied by stations can be made? In support to his negative answer he argues that "research has nothing in common with administration, and cannot contribute to claims".[43] But, as we have ealier seen the scientific character of the stations' operations does not necessarily deprive them of political effect.

Antarctic stations may be occupied continuously (as it is the case since IGY), but due to their specific environmental and climatic conditions, their population remains small, highly specialized, fluctuating and never fixed. And at this juncture, F.M. Auburn poses the next question: whether such – mostly very expensive – stations constitute effective occupation in the meaning of international law? He considers that first of all the stations' transit population must comply with the requirements of international law and next the base itself must have at least some measure of permanent occupation. Pointing out that a substantial number of Antarctic stations has been abandoned, closed or transferred to other States, he considers that "once this has taken place, customary international law must regard the rights from the base as having ceased to accrue."[44] Referring further to analogies with sea-beacons and buoys, F.M. Auburn considers that "the weight to be attached to an

unmanned observatory would depend upon the magnitude and expense of the undertaking".[45]

The doubts about real estate rights, ownership and possession rights on the Antarctic stations, their acquisition and recognition, as well as legal and political consequences, are best illustrated by the mentioned by F.M. Auburn cases of their uncontested transfers from one nation to another.[46] In essence, the Antarctic stations' transferred property was dealt with on a contractual basis as if it were movable, allowing to by-pass the controversial political and territorial issues. Such reasoning would, however, have provided no solution for a potential dispute over premises, in which case it would be necessary, if the issue arose, to decide whether the structure concerned was an immovable. Many modern, prefabricated and easy transportable buildings used at Antarctic stations are of unclear legal status in this respect.

The *Ellsworth* and *Wilkes* stations' custody arrangements avoided the property problem by dealing with the issue as one of contract. As the parties were governments, any dispute would have been settled by political negotiations under international law. But, if private business ventures should utilise land or premises in Antarctica (*i.e.* ever more frequent private expeditions) for any length of time, they will require secure tenure, by obtaining a lease, the best from a claimant State, because any form of contract with a non-claimant government in relation to immovables situated within the AT Area would be of even more doubtful validity. As the non-claimants deny to recognise any rights over the Antarctic site at international law, it would have difficulty in justifying any grant to rights. Moreover, that might also create a danger of violating Art. IV par. 2 of the Antarctic Treaty.[47]

Another serious problem is posed by the size of the area occupied by an Antarctic station. That raises the issue of validity of a title – if any – for the area immediately contiguous to the station and of its perimeter controlled. Despite Antarctica's proportions, the number of points in it suitable for the functioning of stations is quite small, due to accessibility and environmental obstacles. That, as we have seen, has already caused in certain places overcrowding.

According to Kish, areas around installations and stations in international spaces, including Antarctica, are subject to the exclusive authority of the flag state. Such a control is, however, limited temporally to the period of the operation of stations, and territorially to the area necessary for the protection of stations. Consequently, the limited temporal and territorial control by the flag state indicates an unsatisfactory degree of capability of national appropriation, and, thus, the inadmissibility of territorial acquisition in all international spaces.

Art. 2(b) of the ATCM Recomendation VI-7 (1970) on effects of tourists and non-governmental expeditions to the Antarctic Treaty area provides "that all tourists and other visitors comply with any conditions or restrictions on their movements which the station commander may stipulate for their safety or to safeguard scientific programmes being undertaken at or near the station." From that, rather

vague regulation, Kish draws a far reaching and rather unfounded conclusion on the existence around the Antarctic stations of undefined "security zones."[48]

Nonetheless, apart of the doubtful existence of such security zones, it should be pointed out that the ATCM Recommendation III-1 (1964) provides for exchange of information on such facilities, closely related to Antarctic stations' activities like: bases, subsidiary stations, area or areas of operation, airfields, shelters, unoccupied refuges and rocket launching places.

Another legal problem pose the Antarctic stations' sea and navigation facilities. Most of these stations are situated on the coast and use the adjacent marine areas for the purpose of transportation, research, construction of harbours, landing places, small repair docks *etc.* These activities raise legal problems similar to those concerning the use of land by stations. Without entering into the details of the controversial problems of the law of the sea and its concept of maritime jurisdiction as applied to Antarctica,[49] the most logical seems the acceptance of the following view taken by two authors, who consider that: "If there is no national sovereignty over the land area, still less can there be sovereignity over adjacent marine areas."[50] In result, the staff of the station would be free to use the adjacent marine areas subject compliance with the relevant rules of the law of the sea including the 1982 Law of the Sea Convention and in particular its Article 234 on the ice-covered areas and Part XIII (Articles 238–265) on marine scientific investigations, as well as the relevant provisions of the 1959 Antarctic Treaty and Annex IV of the 1991 Madrid Protocol on Prevention of Marine Pollution and conventions for the Conservation of Antarctic Seals (1972) and Antarctic Marine Resources (1980) and the ATCM recommendations.[51]

Legal regulations governing the operation of Antarctic stations

Antarctic stations differ much not only in size, number of staff and geographical location (coastal, insular, inland), but primarily in outline drawing, achitecture and facilites. Some of these stations are confined to one or two primitive cabins, while other resemble rather small townships, with streets, rows of buildings, power and communication systems, own airport and port facilites *etc.* Some inland stations, like the American *Amundsen-Scott* Base on the South Pole, are burried deeply under the snow and ice cover. All these differences must have been taken into consideration when drafting relevant legal regulations governing the operation of Antarctic stations, which are binding to all of them alike, without any exception.

Adherence to the rules of conduct for Antarctic stations. — Despite the apparently routine nature of modern Antarctic stations' operations, they require strict observance of legal regulations to avoid accidents, loss of health and life, as well as damages to the pristine polar environment. Failure to observe such requirements

could well be seen, having regard to the dangerous nature of Antarctic conditions, as civil negligence, with far reaching legal consequences both for States and individuals involved. All standards of behaviour on Antarctic stations demanded by the law, require adaptation to meet the specific local polar conditions prevaling there, in particular isolation and harsh weather, but last not least also the unique political and legal status of Antarctica. The objective of any good maintenance program is to optimize the use of an organization's resources by keeping the existing extremely costly facilities and equipment operating efficiently, thereby prolonging its useful life.[52]

The 1959 Antarctic Treaty refers directly to bases and stations only in general terms and in few instances, such as the prohibition of the establishment of military bases (Art. I par. 1), exchange of scientific personnel between stations (Art. III par. 1b), freedom of access to and inspection of stations (Art. VII par. 3 and 5b) and the establishment of a scientific station as demonstration of interest in Antarctica (Art. IX par. 2).

More definite in this respect is the 1991 Madrid Protocol which establishes detailed environmental principles and imposes on stations specific obligations contained in its annexes.

Perhaps most outspoken on the subject of stations was the 1988 Antarctic Minerals Convention which, however, was shelved and did not enter into force.

The rules governing the operation of Antarctic stations have not been codified so far in a single uniform document but remain dispersed throughout numerous ATS instruments of different importance and legal force. This is leading from time to time to confusions.

Practically the most important source of legal regulations governing the operations of Antarctic stations are, alongside the Antarctic Treaty provisions, numerous ATCM recommendations, many of which are directly or indirectly referring to the activities of stations. Although these recommendations do not legally constitute authoritative decisions, the requirement of acceptance by the new parties of the existing and future effective recommendations as "part of the overall structure of co-operation established by the Treaty"[53], is promoting them to the basic source of legal regulations governing the activities of stations.

While diplomacy in Antarctica is conducted at the ATC Meetings, its scientific forum belongs to SCAR, which is vitally concerned with the operation there of research stations. Thus, SCAR Constitution and its Standing Resolutions are another important auxiliary source of information and guidance in the determination of the Antarctic stations' status. One of the purposes of SCAR is to coordinate national Antarctic scientific programmes, including the maintenance and operation of research stations, which are even serving as the main basis in the assigning of the Committee's financial contributions.[54] The ATC Meetings are frequently making on SCAR demands concerning stations, the operational success of which depends largely on the Committee. But the absence of clear formal link between SCAR and

ATCM and of a clear-cut demarcation line between their competences has resulted in the emergence of gaps and controversies in the sphere of logistics, which are dealt with by the SCAR Working Group on Logistic established in 1962 in result of an Antarctic logistics symposium.[55] In this situation, the governments which support most of the Antarctic stations are able to veto any unwelcome SCAR proposal not only in the ATCM, but simply refusing logistic cooperation. In practice, however, SCAR is usually accepting the ATCM interpretation of the Treaty in respect of stations and is responding in principle positively to ATCM demands addressed to it on these issues. It means that scientific reasons and grounds can neither prevail in the operation of stations nor justify the claim of SCAR to monopolise the planning of Antarctic science at the international level.

Antarctic stations are operating on the basis of freedom of scientific investigation which is a major purpose of the 1959 Treaty. [56] But the stations' scientific activities are only relatively non-controversial, because they are posing a number of doubts of legal, political, economic and social characcter. Scientific investigation is undefined in the Treaty which does not warrant the drawing of a line between pure and applied science, that has led to controversies during the negotiations of the 1988 Antarctic Minerals Convention. [57] Since freedom of scientific investigation and co-operation toward that end are subject of the Treaty provisions, any limitation on that right must be found in its text. Accordingly, the limitations on the operation of Antarctic stations, as well as the scope of their rights and duties must be found first in the Treaty itself, but auxiliary also in related international legal instruments, including the ATCM recommendations, measures, decisions and resolutions, as well as declarations and messages.

In 1975 the ATCM, "desiring to minimise the impact of man on the Antarctic environment", formulated a **Code of Conduct for Antarctic Expeditions and Station Activities** (hereinafter: Code of Conduct)[58], which the governments are bound to observe at their stations "to the greatest extent feasible." That Code of Conduct, supplemented by subsequent ATCM recommendations, constitutes a kind of *corpus iuris*, containing the basic rules regulating the operation of Antarctic stations.

Although the Code of Conduct concentrated mainly on problems of the environmental protection, such as the procedures of solid and liquid waste disposal in stations and their removal from the Antarctic Treaty Area, introduction of alien species and distrubance of breeding colonies and concentration of birds and mammals, it contained also important guidelines for Antarctic operating organizations planning major Antarctic Projects and scientific programmes for detecting and assessing changes occurring in the Antarctic environment.

The subsequent ATCM recommendations, supplementing the environmentally oriented Code Conduct, emphasized the role of stations in the promotion of international scientific cooperation in Antarctica. With this appreciation growing was the awareness that the capacity of these stations to absorb scientific

effort was far greater than that being applied so far. It became therefore crucial to call upon making their avaiable scientific capacity as productively as possible (ATCM Rec. XV-14/1989).

With this aim on mind the ATC Meetings have produced further recommendations developing and substantiating the main ideas of the Code of Conduct. Practically, all ATS instruments and regulations are pertaining in one or another way directly, the Antarctic stations. It is, therefore, not possible to discuss them in the present conscise paper all with full particulars. Thus,we are compelled to point out only some specific areas of ATCM's interest and of particular importance to the effective operation of Antarctic stations.

Of such character are the regulations on meteorology and telecommunications.[59] In this respect two objectives were of primary concern of the ATCM: to enable the stations to transmit meteorological observations in Antarctica for the benefit of the rest of the world and to exchange meteorological observations between the Antarctic stations for more immediate practical and logistical purposes. To these objectives had to be added the administrative need for stations' staff to keep in touch with their home countries and communicate with other stations and field parties, more particularly in emergency cases. Although none of these objectives is particularly unique to Antarctica, telecommunications in and from polar stations are in fact most difficult because of the unique character of the Antarctic upper atmosphere, the southern auroral belt and geomagnetic phenomena. Over the years technology has developed to combat these obstacles and the breakthrough came with the development of satellite communications. These achievements are reflected in the relevant regulations provided in ATCM recommendations. But Antarctic telecommunications, whether for meteorological, administrative or operational purposes of stations, have always required compromise and close cooperation between the operators and users. As a result of the difficulties imposed by the physical nature of Antarctic telecommunications environment, and because of the varying pace of technological development of particular polar stations, it became inevitable to take these matters up by the ATCM. Following its relevant recommendations, at three Meetings of Experts of Consultative Parties on Antarctic Telecommunications held in Washington (1963 and 1979) and Buenos Aires (1969) important technical decisions were taken on the operation of telecommunication in the Antarctic stations.

The other complex of issues vital to them, widely discussed at ATC Meetings and reflected in their recommendations[60], is the place and role of stations within the overall Antarctic logistic system. Present-day scientists and scientific support personnel owe a great deal to the major pioneers of the Heroic Era to overcome the main obstacles to living and working in Antarctic stations and survive in the hostile polar environment. Much of mutual advantage gained from exchanging modern technical logistical information have been published in the reports of logistic symposia organized in 1962 in the United States and in 1968 in Japan by the

SCAR Working Group on Logistics and the Standing Committee on Antarctic Logistic and Operations (SCALOP). The cost of getting to the Antarctic and of moving around has always been a major component of the cost of maintenance of stations there. It was not, therefore, surprising that the logistic meetings have turned their attention to whether a cooperative sea, land and air transport system might provide savings in these heavy logistic cost. The main difficulties encounterd have been of technical and financial nature apparent in the relevant legal regulations.[61]

To the drafting and formulation of guidelines and rules of conduct for research stations considerably has contributed SCAR, charged with the initiation, promotion and coordination of scientific activities in the Antarctic.[62]

In the ATCM practice a custom has developed of sending "Messages to stations in the Antarctic", containing information on current developments and work of the Consultative Parties, on new recommendations and other legal instruments. These messages emphasize the importance of stations within the ATS and in ATCM proceeding and are a direct formal link of cooperation between them.

Until 1966, virtually all Antarctic expeditions and stations had been organized and financed by governments. Since then, however, there have emerged in Antarctica commercial non-governmental activities and large tourist groups have appeared using ships and since 1977 also aircraft. The most frequently visited places by tourists in Antarctica are the stations.[63] The fastly rising number of tourists, creating imminent environmental threats and disrupting the stations' work, became the concern of the ATCM, resulting in a series of recomendation on that subject, some referring directly to stations.[64]

Most ATCM recommendations did not demand obedience by individuals, because they were addressed to governments and called for action by them. Nonetheless, some of the recommendations, relevant to individuals, among them not only members of expeditions and staff of the stations, but also tourists and other visitors to Antarctica, are calling upon to comply with them.

To cope with the new challenges posed by tourism and non-governmental activities in Antarctica, which were not anticipated in the 1959 Treaty, the ATCM responded in the usual way by adopting relevant recommendations. Recognizing the adequacy of national regulations and international station entry rules, the ATCM have initiated in 1970 the elaboration of a comprehensive long term policy on tourism in Antarctica and of adequate legal regulations. In 1975 the ATCM has designated Areas of Special Tourist Interest (Rec.VIII-9) intended to divert tourists from stations and from ecologically protected areas. Acknowledging that in Antarctica "tourism is a natural development and that it requires regulation", the ATCM formulated conditions regulating tourist visits, covering guidance for visitors to the Antarctic and containing standards of their behaviour at and near the stations.

The adopted regulations are calling both on the organizers of tourist groups and visitors, as well as stations' staff to comply with certain rules. They are providing

among other that final station visit arrangements should be made at least twenty-four hours before arrival of visitors, who must comply with conditions or restrictions on movement stipulated by the station commander for their safety or to safeguard scientific programmes at or near the station, while visitors are not allowed to enter the specially protected areas and must respect designated historic monuments.

The rather narrow scope of conditions imposed on visitors to stations reflected the inability of ATC Meetings participants to agree at that time on truly effective measures which would involve the controversial exercise of jurisdiction. Nonetheless, except in emergency cases the organisers of tour groups were requested to visit only those stations for which consent be contingent upon reasonable assurances of compliance with the Treaty, effective recommendations and conditions applicable to the stations to be visited (Rec. IV-27). Since frequent visits to stations and undue dependence on their facilities can prejudice the research work, it was required that the organizers of tourist group should furnish well in advance notice on special forms (annexes to Rec. VIII-9) about the planned visit, to enable the station leader to refuse or accept, laying down conditions upon which permission is granted.

The growing tourist traffic has forced some Antarctic stations to make significant changes in their outline drawings. In particular they had to develop a system of marked, ecologically safe tourist routes or trails within and around the station area and environs, to organize for visitors educational facilities and set up centres with material for display and sale, as well as to identify areas close by for zodiac (inflatable boats) tourist cruises.

The setting up of the Areas of Special Tourist Interest at a far distance from stations raises problems of supervision, control and enforcement of ATCM regulations for which the bases might not be equipped. Already several incidents in Antarctica, involving tourist vessels and aircraft have been reported and at least some of them created problems for stations. Thus, non-governmental expeditions were to be urged to carry adequate insurance cover against the risk of incurring financial charges or material losses (Rec. X-8).

Exclusive dedication of Antarctica for peaceful purposes does not exclude the use of military personnel or equipment for scientific research or any other peaceful purpose. The Treaty provision (Art. I par. 2) which enables Antarctic stations to take advantage of military and naval logistic support, are raising rather little objections. Several stations were set up and are maintained by various branches of the armed forces of the countries concerned without protest that it might be contrary to the Treaty provisions specifically prohibiting the establishment of military bases in Antarctica. More difficulty and controversy is posed by research projects with military implications. But even with that problem the ATCM were able at least so far to cope with , as well as with the problem of the use of nuclear power installations and radio-isotopes in the Antarctic stations.[65] The debates on relevant regulations disclosed the need for a precise definition of the term "peaceful purposes" in the meaning used frequently in the Antarctic Treaty. Anyway, the use of military per-

sonnel and equipment by Antarctic stations requires advance notice (AT Art. VII par. 5c). Telecommunications (apart from military equipment), a basic element of any Antarctic station's operation, does not fall within either the scientific or the diplomatic exchange provisions, but is now governed by ATMC Rec. X-3 of 1979 on the improvement to telecommunications in Antarctica and the collection and distribution of Antarctic meteorological data.

The adherence to the Code of Conduct by stations is not something that can be achieved alone by legal regulations or ATCM directives. It is something which governments, members of expeditions and staff of stations must seek to create through a well balanced climate of opinion which values both Antarctic science and international cooperation. That attitude is reflected in the legal framework created by the 1991 Madrid Protocol in respect of the ecological requirements for operation of Antarctic stations.

Ecological requirements for operation of Antarctic stations. — Despite the conspicuous absence of provisions on environmental protection from the 1959 Antarctic Treaty, the ATCM recomendations have taken up that issue from the very beginning[66] and became all strongly ecologically oriented. Saturated heavily with ecological contents they imposed on Antarctic stations numerous, sometimes burdensome, obligations and tasks aimed at the preservation and protection of the polar environment. A real breakthrough in that was policy brought by the 1991 Madrid Protocol on Environmental Protection. In that comprehensive and legally binding instrument, the number of ecological obligations imposed on Antarctic stations has increased considerably, but at the same time they were systematized and substantiated.

Practically all station's activities constitute potential dangers to the unique pristine Antarctic environment. But the impact of stations' operations needs consideration in legal terms taking into account the non-antagonistic interests of both science and environment. In this spirit the Preamble to the 1991 Madrid Protocol concludes "that the development of a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems is in the interest of mankind as a whole".

Antarctic stations are bound in particular to comply with Protocol's specific provisions on basic environmental principles (art. 3), environmental impact assessment requirements and procedures (art. 8 and Annex I), emergency response action (art. 15) and liability for environmental damages (art. 16). More specific on the Antarctic stations' ecological obligations are the Protocol's Annexes.

In its nine articles, Annex II provides for detailed and strict regulations on the conservation of Antarctic fauna and flora, prohibiting any taking or harmful interference, except in accordance with special permits issued under rigorous procedure (Art. 3). No less rigorous are the procedures regulating the introduction of non-native species, parasites and diseases, as well as importation of domestic plants and laboratory plants including viruses, bacteria, yeast and fungi (Art. 4). But noth-

ing in Annex II shall apply to the vital for stations importation of food, provided that no live animals are imported for this purpose and all plants and animal parts and products are kept under carefully controlled conditions and disposed of in accordance with Annex III to the Protocol, on disposal and waste management. All dogs, so popular and helpful during the Heroic Era, had to be removed from Antarctica by 1.IV.1994 and their bringing into the Treaty area is forbidden (Art. 4 par. 2).

One of the most harmful effects of stations on the Antarctic environment is waste and sewage disposal. Alarmed by the growing littering and increasing accumulation of rubbish and garbage in Antarctic stations, the ATCM and SCAR have adopted a considerable number of recommendations and guidelines relating to waste disposal.[67] Their aim was to reduce the amount of wastes produced, or disposed off, in Antarctica to the maximum extent possible so as to minimize also impact on the environment, but minimize interference with scientific research, or other legitimate uses of the Antarctic.

In this sprit, Annex III to the 1991 Protocol on Waste Disposal and Waste Management has outlined in its 13 articles a comprehensive legally binding system of waste disposal by removal from the Antarctic Treaty Area (Art. 2), by incineration (art. 3), other waste disposal on land (Art. 4), disposal of waste in the sea (Art. 5) and storage of waste in Antarctica (Art. 6). Art. 7 contains a list of products the introduction of which to Antarctica is prohibited. The coherent system of waste management planning, set up in Art. 8 contains a classification of produced wastes into five groups, according to their harmfulness, while Art. 9 provides for detailed circulation and review of waste management plans. Management practices (Art. 10), as applied to stations, require designation of a waste management official to develop and monitor waste management plans, while in the field this responsibility shall be delegated to an appropriate person at each site. Members of each expedition must receive training designed to limit the impact of its operations on the Antarctic environment.

Provisions of Annex III apply to all activities undertaken in Antarctica, including stations and tourism and all other governmental and non-governmental undertakings, with the aim to minimise the impact of wastes on polar environment and to minimalize interference with the natural values of Antarctica. They have imposed upon stations great responsibilities for waste storage, disposal, removal, recycling and source reduction.

Annex IV to the 1991 Protocol on prevention of marine pollution is practically an extension of Annex III on the marine environment and its provisions are of particular importance to the Antarctic coastal stations.

During its three decades activities, the ATCM have built up a highly developed and complex Antarctic Protected Area System (APAS), composed of eight types of specially protected areas and sites, with differentiated conservation regimes, submitted to management procedures formulated in relevant recomendations. The

protected areas and sites, the total number of which reached 157 by the year 1992, were growing fast both in number and size, approaching the existing stations sometimes precariously close, while new stations were often erected in areas of outstanding ecological interest. That generated conflicts of interests: environmental, scientific and economic, leading to controversies and disputes, raising criticism of the ineffectivenes of APAS. Thus, the Consultative Parties have recommended to replace it with a new more rationalised system, but without any loss to the existing quality of environmental protection.

With these wishes on mind, Annex V to the Madrid Protocol on Area Protection and Management was drafted. In its 12 articles the revised system of protected areas was outlined with the objective that "activities in those Areas shall be prohibited, restricted or managed in accordance with Management Plans adopted under the provisions of this Annex "(Art. 2). Annex V reduced the complex APAS to two basic types of protected areas, including marine areas, namely: Antarctic Specially Protected Areas (ASPA – Art. 3) and Antarctic Specially Managed Areas (ASMA – Art. 4), as well as Historic Sites and Monuments (HSM – Art. 8). The Meeting agreed that the definition of ASMA, set out in Art. 4 would allow such areas to be established for the purpose of prohibiting, restricting or managing activities, including tourism. Entry into an ASPA requires special permit issued under Art. 7, while entry into an ASMA does not require such permit.

Art.5 on Management Plans is the focal point of the entire Annex V and is referring directly to stations, providing among other for such technicalities like the boundary markers, pedestrian and vehicular routes witin the area, and aircraft routes and landing areas, the location of structures including scientific stations, research or refuge facilities, both within the area and near to it (Art. 5 par. 3e), the installation, modification, or removal of structures, the location of field camps *etc.* To conform to the requirements of Article 5 the ATCM has elaborated a Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas[68] helping the stations to contribute to these important environment instruments.

The earlier discussed effects of tourism and non-governmental activities on the Antarctic environment, affecting directly the operation of stations, will be the subject of the future Annex VI to the 1991 Madrid Protocol, drafted now by the Consultative Parties.[69]

The 1991 Madrid Protocol and its Annexes with their legally binding ecological requirements, have introduced into the operation of Antarctic stations new elements of discipline profiting by considerable improvement in their environmenatal planning and management.

Regulations on the control of operation of Antarctic stations. — Even the best regulations and procedures might prove inffective in the absence of adequate instruments of control of their observance and implementation. The 1959 Antarctic Treaty and the related ATS legal instruments provide for far-reaching rights of inspection and observation. They included among other complete freedom of access

at all times by observers designated by Consultative Parties to all areas of Antarctica, including stations, installations and equipment (Art. VII), as well as aerial inspection. Inspection may be exercised even if no measures for facilitation have been agreed upon (Art. IX par. 5).

Although the terms of the Treaty on inspection are very wide, they are not unlimited. Inspection is permitted in relation to stations, but people cannot be searched. Ships may be inspected at points of discharging or embarking cargoes personnel in Antarctica, but floating or submerged equipment not coming within the definition of "ship" or "ships at sea" could not be examined.

The purposes of inspection are in the Treaty not clearly defined. In the early days the on-site no-warning inspections of stations were seen for the most part as means of enforcing the demilitarization Treaty provisions.[70] Later and now, the inspection right came to be seen rather as an important means of encouraging adherence to environmental measures.[71] More recently the CP have been moving towards international cooperation to share and reduce the logistic cost, and towards the adoption of check lists to assist in the structuring of inspections, as well as to encourage joint inspections between two or more Parties. But on the basis of avaiable official reports it is difficult to acknowledge the Antarctic inspection experience as an unqualified success. Doubts has raised the practice of providing advance warning of inspection. Even if frequently justified by polar logistics, it permits concealment of possible violations. Some authors see in the regular exchange of scientists and visits between stations belonging to different nations a much surer indication of compliance with ATS rules than a one- or two-days inspection by an official contingent of observers.[72]

Closely related and amending the inspection system are the provisions on international information exchange (Antarctic Treaty Art. III par. 1 and Art. VII par. 5), concerning also Antarctic stations.The Treaty provisions on the exchange of information on stations and their staff have been reinforced and substantiated by relevant ATCM recommendations.[73]

By 1975 there were numerous ATCM recommendations on exchange of information procedures, partly consolidated in a Standard Format for the Annual Exchanges of Information. That Format requests the expeditions and stations to submit annually very detailed information on bases and subsidiary stations established or planned to be established in the Antarctic Treaty area, names of the officers in charge of each of them, the number, occupations and specialisations of personnel, who are or will be stationed there, including members of the military services, together with the rank of any officers and the names and professional affiliations of personnel engaged in scientific activities, as well as the number and types of armaments possessd by personel. Further information concern the station's programme of work done and planned, scientific equipment, transportation facilities and communication equipment, rescue facilities, full description of unoccupied refuges, annual return of the numbers of each species killed or captured, use of radio-isotopes, scientific research rockets *etc.*

In addition to exchanges of information under the Treaty itself, important obligations to exchange information on stations' activities arise from the 1991 Protocol on Environmental Protection and its Annexes.[75]

Some ATP complained that the information exchange provisions have created substantial burden and that some of the information exchanged may not be reaching those to whom it is most use. In addition, it was suggested that some of the information exchanged is received too late for it to be useful planning expeditions. It was further recognized that there is potential for duplication of some categories of information exchanged, especially by SCAR members. It was concluded that the exchange of information among the ATP needed constant further improvement.

At a time when there is growth both in the level and types of Antarctic stations' activities, the control of the rights to inspection and the exchange of information are important to the maintaining of general confidence that the ATS provisions related to stations are being fully realized.

Legal issues arising from discontinuation of the operation of Antarctic stations

Operator's responsibility does not expire with the discontinuation of the operation of an Antarctic station. The scope of the arising legal implications is defined by relevant ATS provisions which approach it in three aspects: (1) historic, (2) environmental and (3) expediency.

In recent years there has been considerable controversy between scientists and environmentalists as to the extent of the impact of abandoned stations on the Antarctic environment. Some environmentalists have argued that they cause damage, pose a real hazard to the Antarctic ecosystem and should be promptly dismantled and removed. There is a case for removing them quickly as potentially toxic and hazardous waste. But the dismantling and demolition of abandoned stations raises complex legal, financial, technical and management issues which require careful and considered attention. Some historians for instance, indicate that at least a part of these stations are of historic and cultural value requiring preservation and conservation. Other issues of concern are: problems of ownership and custody of the abandoned bases, increasing numbers of tourist visits, hazards to man and environment of the removal of building materials and general risks of the overall impact of clean-up operations on sites of scientific, ecological and historic importance.

The earliest primitive bases, considered as forerunners of modern stations, were erected in Antarctica in the period called the era of heroic expeditions. At that time, this part of the world was an unclaimed no man's land – *terra nullius* – without any local authority or international control to regulate siting and construction of buildings there.

These early structures, today of historic value, fall into two categories: (1) sealing and whaling hunters' bases and (2) early Antarctic expeditions' bases.[76]

There had been a marked increase in the number of Antarctic expeditions prior to the IGY. Some of these expeditions established their stations in traditional areas where the huts, shelters and other remnants of ealier expeditions of the Heroic Age of Antarctic exploration (1895–1916) still existed. The New Zealand and United States expeditions on Ross Island led the way in restoring, protecting and curating the huts of R.F. Scott (1901–03, 1910–13) and E.H. Shackleton.

The need to take steps to protect in Antarctica historic sites and monuments was apparent since the first ATC Meeting in 1961 at which a relevant recomendation (I–IX) on historic sites was adopted. With due regard to Art. IV of the Antarctic Treaty (on territorial claims), the ATCM recommended restoration and preservation of any tombs, buildings or objects of historic interest from damage and destruction.

At the V ATC Meeting in 1968 it was agreed to draw up lists of historic sites and monuments (Rec. V-4), while at the VI ATCM in 1970 these lists were consolidated into one list of historic monuments prepared by consultation through diplomatic channels (Rec. VI-14).

Such "List of Historic Monuments Identified and Described by the Proposing Government or Governments", containing 43 items, submitted to the VII ATCM in 1972 was approved as an Annex to its recomendation VII-9 with a reservation that "the Consultative Meeting does not approve or disapprove the place names appearing in the text of this List in different languages", obviously referring to places being subject of clashing claims.[77] Since then the List is amended by interested governments and is counting now more than 70 items, including rather human artifax than sites or areas, among them huts, shelters, abandoned installation, stations *etc.*[78] The historic monuments in Antarctica are periodically visited by the CP. Their state is checked and if necessary restored, preserved and maintained. Reports on the results of such inspections are submitted to the ATCMs. Recent such reports contain alarming information on damages inflicted on historic monuments, some of them by visitors. The inspectors have drawn attention to the need of continued preservation of monuments once restored. They urged to post warnings on those buildings and give notice to tour operators to prevent access from visitors to such premises, pending their eventual restoration. The same would apply to signposts containing misleading information and constituting visual obstruction, particulary when dispersed, thus requiring removal, decrease in number and concentration in one key place. Some nighbouring Historic Monument Sites (HMS) require merging into a single historic protected area. In addition to area protection, steps must be taken to prevent removal of valuable historical remains. With this objective in mind some Parties have proposed a system of automatic protection of these remains.[79]

Important regulations for their protection are contained in Annex V to the 1991 Protocol on Environmental Protection. Its Art. 8 on Historic Sites and Monuments,

stating that they shall not be damaged, removed or destroyed, provides their protection within the ASPA and ASMA systems.

The inclusion of the Historic Sites and Monuments into the legal framework of Antarctic environmental protection has added that problem a new dimension which is reflected in 1991 Protocol's provisions on decommissioning of scientific stations.

The Waste Disposal and Waste Management Annex III of the 1991 Protocol on Environmental Protection contains tough measures to ensure that abandoned stations, bases and work sites in Antarctica are cleaned up. For some countries, especially those with long standing traditions in Antarctic investigations these provisions are particularly difficult to fulfill especially due to great diversity, inaccessibility and large geographical spread of abandoned or left unoccupied huts, bases, stations *etc.* To ensure compliance with the Protocol, some states have undertaken inspection surveys of such abandoned objects, mainly in order to remove hazardous waste, fuel and litter.[80] But any clean-up operation undertaken in Antarctica requires extreme caution; it must be expedient and pragmatic, carried out so as not to disrupt scientific programmes and to threaten the environment in the operation of dismantling or demolition of buildings, constructions or facilities. Before taking up such task, widely consultations with other national operators must be undertaken in order to find out whether any interested in taking over and using such abandoned station exist.

To satisfy the requirements of Protocol's Annex I on Environmental Impact Assessment, in the first instance a feasibility study for each such station must be undertaken, examining the options for clean-up and removal, repair, overhaul and maintance as an emergency refuge or, conservation and restoration as an Historic Monument under Art. 8 of Annex V on Area Protection and Management of the 1991 Protocol.

Thus, Parties to the 1991 Madrid Protocol are faced with a difficult dilemma how to comply with the requirements of its Annex III and V. Most of them prefer rather to carry out scientific research in Antarctica than to engage in the protection and conservation of historic sites and monuments or take up costly cleaning-up operations of long-abandoned bases and field huts. Especially that such comprehensive removal or maintenance programmes are very expensive, need considerable advanced planning and steady work, lasting sometimes several years. It requires efforts not only of single countries but broad cooperation among them within the framework established by ATS.

Art. 8 par. 3 of Annex III requires each Party "as far as practicable, also prepare an inventory of locations of past activities (such as traverses, fuel depots, field bases, crashed aircraft) before the information is lost, so that such locations can be taken into account in planning future scientific programmes (such as snow chemistry, pollutants in lichens or ice core drilling)."

In principle, art. 1 par. 5 of Annex III requires the cleaning up of all past and present waste disposal sites on land and abandoned work sites of Antarctic activi-

ties by the generator of such wastes and the users of such sites. But this obligation shall not be interpreted as requiring the removal of any structure designated as a historic site or monument; or the removal of any structure or waste material in circumstances where the removal by any practical option would result in greater adverse environmental impact than leaving them in its existing location.

No doubt, any clean-up operation of abandoned stations is in Antarctic environmental conditions an extremely complex, difficult and expensive task. Noteworthy, therefore, in this respect is the successful British experience, showing the whole complexity of such operations.[81]

Conclusions

In conclusion of this review of regulations and procedures governing the establishment and operation of Antarctic stations, most proper seems to ask the question on the perspective of the development of their status on threshold of XXIst century. The status of Antarctic stations has developed gradually under the impact of three basic factors. First, economic, when in the XIXth century the sealing and whaling hunters' bases were established. Next, political, after in 1908 the first territorial claim has been laid. These claims have blurred the picture of the status of Antarctica as a potentially international or common space. But the status of stations situated within the unclaimed Antarctic sector (between 90° and 150° W) is leaving enough room for speculations in this respect. Finally, the last but not least, scientific factors, have most distinctly shaped the outline of the status of modern Antarctic stations, with their highly sophisticated technical equipment. Should in the ATS continue the trends initiated by the 1991 Madrid Protocol and be projected into the forthcoming century, the status of Antarctic stations will undoubtedly be dominated by another factor: ecological. Its growing impact on the Antarctic stations' operations has been comprehensively presented in this paper.

Notes and references

1. During the IGY in Antarctica following 12 states have established 60 research stations: Argentina (10), Australia (3), Belgium (1), Chile (9), France (3), Japan (1), New Zealand (5), Norway (1), South Africa (2), Soviet Union (6), United Kingdom (12) and United States (7). In 1958 on the uninhabited Antarctic continent were wintering more than 700 persons, namely 340 in 7 American stations, 175 in 5 Soviet stations and more than 200 in the stations of other nations. Even if these numbers might seem small in relation to the 13 millions sq. km of that continent's area, they have marked a quantitative and qualitative leap in the operation of polar stations there. After the IGY both the numbers of stations and their staff, as well as States running them have grown considerably.
2. In the absence of a uniform definition of Antarctic station and the alternately use in the ATS documents of terms like base, work site, field site, building, construction, installation, facil-

ity, hut, shelter, observatory, lighthouse, automatic station *etc.* to denominate the various types of structures, for the purpose of the present paper the term "station" means any permanent construction erected by man within the Antarctic Treaty Area. See H. Tüg, An Autonomous Antarctic Observing Station. *In*: Proceedings of the Fourth Symposium on Antarctic Logistics and Operations, São Paulo, Brazil 16–18.VII.1990, pp. 278–286; C. Reijmer, Antarctic automatic weather stations. *In:* Circumpolar Journal (Netherlands), 1997, Vol. 12, No. 3–4, pp. 3–8.

3. Beverly May Carl, The Need for a Private International Law Regime in Antarctica. *In*: The Antarctic Legal Regime, Dordrecht 1988, pp. 65–95.
4. Jacek Machowski, Forty Years of Antarctic Treaty. *In:* The Polish Quarterly of International Affairs, 1999, No. 4, pp. 82–97.
5. See Antarctic Treaty, 1 December 1959, 12 U.S.T. 794, 796; T.I.A.S. No 4780; U.S.T.S. 71; Preamble and articles II, III, VII, VIII and IX [hereinafter cited as AT]
6. See AT Preamble and articles I, IV, V, VII and VIII
7. From the beginning of the XX century, seven States have advanced in Antarctica territorial claims allegedly justified by: (1) discovery and occupation, (2) performance of administrative acts and (3) the concomitant principles of contiguity, continuity and the polar sector theory. These countries known as the "claimant States" were: the United Kingdom (1908), New Zealand (1923), Australia (1933), France (1938), Norway (1939), Chile (1940) and Argentina (1942). All these claims were left in abeyance by Art. IV of the 1959 Antarctic Treaty.
8. Some of these actions having a touch of comic opera, include the presence of coroners without inquests, justices without cases, priests without worshipers and so on. Argentina points to the existence of a postmaster at Laurie Island since 1904, Byrd's establishment in 1934 of a post office in *Little America* in the Ross Dependence caused an official British protest, New Zealand's *Scott* Base post office, like many other post offices in the Antarctic stations were set for the same political purpose.
9. The two South American States, to reinforce their territorial claims are trying, so far rather unsuccessful, to establish permanent settlements in coastal parts of the Antarctic Peninsula and adjoining islands. From 1977 at *Esperanza* Base, Argentinian soldiers live with their families; the first Antarctic child, Emilio Marcos Palma, was born to the wife of the base commander and baptised there in January 1978. The colonisation of *Esperanza* was underlined by a wedding carried out there by an official commissioned by the government. Chile sent 10 families to its *Marsh* Station as colonisers of a base populated by 34 permanent residents. In addition, the Chileans operate there a 40-room lodge for tourists and conferences. Some wives and children have lived in sub-Antarctic South Georgia Island and a French baby was born there in 1979. Beverly May Carl *op. cit.* p. 66 and 1982, F.M. Auburn, Antarctic Law and Politics, London, p. 42.
10. Sudhir Chopra, The Legal Consequences of Antarctic Stations. *In:* Antarctic Challenge III, Conflicting Interests, Cooperation, Environmental Protection, Economic Development, Proceedings of an Interdisciplinary Symposium 7–12.VI.1987, Berlin, pp. 389–395.
11. More "Day Trips" to Antarctic. *In:* Antarctic, 1978, No. 8 (8), p. 292; see also ATCM Rec. VIII-9 (1975) on Effects of Tourists and non-governmental Expeditions in the Treaty Area.
12. M. Phleger, Department of State, "The Antarctic Treaty", Hearings, Committee on Foreign Relations, Senate 86th Cong. 2nd Sess. (1960), pp. 42–43, also 1995 Anna Wyrozumska, Evolution of the legal status of Antarctica and the third parties (in Polish), Łódź.
13. F. M. Auburn, *op. cit.* pp. 115–129.

14. ATCM Rec. X/8 (1979) on Effects of tourists and non-government expeditions in the Antarctic Treaty Area.
15. At the XVIIIth ATCM in 1992 in Venice a Working Paper (XVII ATCM/WP17) was submitted on the unsolved so far question relating to the exercise of jurisdiction in Antarctica.
16. The Australian legalisation implementing the Agreed Measures for the Conservation of Antarctic Fauna and Flora applies even to "foreign persons and property" within its Antarctic sector [Antarctic Treaty (Environment Protection) Act No 103 of 6.VI.1980, art. 4, par. 1a]. New Zealand in contrast, excludes nationals of other Treaty parties. The non-claimant United States regulations are limited to American citizens, but some of the relevant prohibitions, such as illegal importation of Antarctic wildlife, do apply to foreigners if they are in the United States; see: Beverly May Carl, *op. cit.* p. 70.
17. There are, however, some exceptions, for instance the Australian 1954 Antarctic Territory Act which confess jurisdiction on the Supreme Court of the Australian Capital Territory for claims arising in the Australian sector of Antarctica. Some other claimant states, like Argentina (Decree Law No 2 of 28.II.1957), Chile (Law No 11 of 17.VII.1955 and Decree No 297 of 17.VII.1956), France (Law No 5 of 6.VIII.1955), New Zealand (Antarctic Act of 1960), Norway (Laws No 3 of 27.II.1930 and No 17 of 2.VI.1960), United Kingdom (Antarctic Territory Order in Council No 401 of 1962) have specifically enacted legislation governing criminal conduct in Antarctica or consider their own domestic criminal legislation to be applicable. Also non-claimant South Africa has expressly provided that its domestic legislation applies to criminal conduct in Antarctica by South Africans (South Africa Citizens in Antarctica Act No. 55 of 1962).
18. R. B. Bilder, Control of Criminal Conduct in Antarctica. *In:* Virginia Law Review, 1966, No 52, pp. 231–252; J. H. Michael, Department of State. *In:* Extraterritorial Criminal Jurisdiction, Hearing, Subcommittee on the Judiciary, House of Representatives, 95th Cong. 1st Sess., 21.VII.1977, p. 66.
19. F. M. Auburn, *op. cit.* 184–204.
20. Jacek Machowski, The status of polar ice under international law. *In:* Polish Polar Research, 1992, Vol. 13, No. 2, pp. 149–175; see also: the *Escamilla Case*, US v Escamilla 467F. 2 d. 341 (1972) and C. O. Holmquist. The T-3 Incident. *In:* US Naval Institute Proceedings, September 1972, pp. 45–48; the Polish marriage cases Merker v Merker (1963), p. 283 and F. M. Auburn, *op. cit.* p. 193.
21. Treaty Concerning Spitsbergen, Paris 9.II.1920, in 2 LNTS/8; Jacek Machowski, Scientific activities on Spitsbergen in the light of the international legal status of the archipelago. *In:* Polish Polar Research, 1995, Vol. 16, No. 1–2, pp. 13–35.
22. Report No 40 to the Norwegian Storting 1985–86, concerning Svalbard of 1986, Appendix 2, pp. 73–76.
23. 1973, John Kish, The Law of International Spaces, Leiden (the Netherlands); 1982, The New Nationalism and the Use of Common Spaces, New Jersey; Christopher C. Joyner, Legal Implications of the Concept of the Common Heritage of Mankind. *In:* International and Comparative Law Quarterly, January 1986, No 35, pp. 190–199 and Sudhir K. Chopra, Antarctica as a Commons Regime: A Conceptual Framework for Cooperation and Coexistence, in: 1988, The Antarctic Legal Regime, Dordrecht (the Netherlands), pp. 163–186.
24. This notion earmarks already the status of the deep seabed beyond the limits of national jurisdiction in the 1982 Law of the Sea Convention [see: Part XI of the Convention on the Law of the Sea done on 10.XII.1982 in Montego Bay (Jamaica), UNDoc. A/CONF.61/122 of 7.X.1982 and Francisco Orrego Vicuña, The Law of the Sea and the Antarctic Treaty

System: New Approaches to Offshore Jurisdiction. *In*: 1988 The Antarctic Legal Regime, pp. 97–127 and 1992 Christopher C. Joyner, Antarctica and the Law of the Sea, Dordrecht] and the moon in the 1979 Moon Treaty [see: the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, UNDoc. A/AC. 105/L. 113/Add. 4 entered into force on 11.VI.1984, also 1959 P. Jessup and H. Taubenfeld, Controls of Outer Space and the Antarctic Analogy, New York and Howard J. Taubenfeld, The Antarctic and Outer Space. *In:* 1988 The Antarctic Legal Regime, pp. 269–281 and C. Christol, The Common Heritage of Mankind Provision in the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. *In*: International Law, 1980, No. 24, p. 429].

25. 1992, Emilio J. Sahurie, The International Law of Antarctica, Dordrecht (the Netherlands).
26. See: Articles 60 and 80 of the 1982 Law of the Sea Convention.
27. See: Articles VIII and XII of the 1979 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies and 1979, Delbert D. Smith, Space stations. International law and policy, Boulder, Colorado.
28. See: Articles 90–94 of the 1982 Law of the Sea Convention.
29. J. Kish, *op. cit.* pp. 126–127.
30. See: ATCM Rec. III/1 (1966) on Exchange of information, providing for the exchange of information on facilities for the landing of aircraft in Antarctica and containing a requirement of notification which indicates the authority of states over their Antarctic airfields.
31. See: note 1.
32. In 1955 Argentina and Chile made a declaration regarding IGY stations coordination, referring to "certain primary requirements" which may be inferred rather of political than scientific nature. In fact, all claimants' Antarctic stations during IGY were situated within their claimed areas. 1963, M. M. Whiteman, Digest of International Law, Vol. 2, p. 1242 and 1958, M. Nicolet, the IGY Meetings, Annals of the IGY, pp. 178–181. In August 1973 President and Cabinet of Argentina visited Marambio Base and proclaimed that station temporary capital of the Republic and issued an Act of Affirmation of Sovereignty in the Argentinian Antarctic; see: Base *Marambio*: Capital Accidental de la Republica. *In:* Antártida, 1974, 19 at 23.
33. H. S. Jones, The inception and development of the International Geophysical Years. *In:* Annals of the IGY, 1959, No. 1, p. 393.
34. Jacek Machowski, The Right to Freedom of Research under the Antarctic Treaty System. *In:* Polish Polar Research, 1990, Vol. 11, No. 3–4, pp. 419–434 and Jacek Machowski, The Right to Freedom of Scientific Investigation under Space Law. *In:* Polish Yearbook of International Law, 1993, Vol. 20, pp. 151–173.
35. See ATCM Recommendations: XIII-6 (1985) and XV-17 (1989) on siting of scientific stations and related Recommendations I-I (1961), VI-4 (1966), VII-1 (1972), VIII-11 and 13 (1975), IX-5 (1977), XII-3 (1983), XIV-2 (1987) dealing with exchange of information on scientific programmes and impact on the environment .
36. In 1975 the Soviet *Druzhnaya* Station on the Weddell Sea was set up with an official announcement of the non-ferrous mineral prospects and potential oil and gas reserves of the area, see: Filchner ice shelf stations major project this summer. *In:* Antarctic 1975, No 7 (7), p. 211.
37. F. M. Auburn, *op. cit.* pp. 147–153 and Jacek Machowski, Poland's Policies Toward Antarctica. *In*: German Yearbook of International Law, 1991, Vol. 34, pp. 63–91.

38. Protocol on Environmental Protection to the Antarctic Treaty, opened for signature in Madrid on 4.X.1991, Doc. XI ATSC M/2 of 21.VI.1991 (hereinafter: Madrid Protocol).
39. Frank Wong and Felicity Newman, Restrictions to Freedom of Scientific Research through Environmental Protection. *In:* Antarctic Challenge II, Berlin 1986, pp. 102–109 and Jacek Machowski, The Antarctic environmental legal regime. *In:* Polish Polar Research, 1992, Vol. 13, No 3–4, pp. 183–214.
40. As extreme examples may serve the relatively small King George Island on which more than 10 stations are active, some very close to each other and Deception Island in the South Shetland Archipelago, where three claimant nations maintained bases within 5 km of each other, namely: Argentina (Decepción), Chile (Presidente Pedro Aguirre Cerda) and United Kingdom (Deception Island) apparently intended to cancel each other out by denying an element of sovereignty, the ability to exclude other States in a tripartite Antarctic territorial dispute. But the commendable use of another nation's support facilities was also a factor in the station's location (*Scott* Base next to *McMurdo* Station).
41. Catherine Redgwell, Environmental Protection in Antarctica: the 1991 Protocol. *In:* International and Comparative Law Quarterly, 1994, July, Vol. 43; Part 3, pp. 599–634; and Protection of Ecosystems under International Law: Lessons from Antarctica. *In*: International Law and Sustainable Development, Oxford University Press 1999, pp. 205–224.
42. Beverly May Carl, *op. cit.* (note 3).
43. F. M. Auburn, *op. cit.* p. 44.
44. *Ibidem*, p. 45.
45. *Ibidem*, p. 46, see also: H. Tüg, op. cit. and C. Reijmer, *op. cit.* (note 2).
46. On 23.I.1959 the Soviet *Oazis* Station in Bunger Hills was formally transferred gratuitously to Poland in result of an agreement signed earlier between the Soviet and Polish academies of sciences and started to operate as *Dobrowolski* Station, see: J. Machowski, Poland's Policies Toward Antarctica, *op. cit.* (note 37). Also in 1959 the United States handed over *Ellsworth* Station to Argentina and *Wilkes* Station to Australia on the basis of arrangements which were to have no effect on rights or claims asserted by them in Antarctica, see: M. M. Whiteman, Digest of International Law, Washington D. C. 1963, Vol. 2, pp. 1239–1240. US Defense Department lawyers had then to deal with the question of the transfer of real estate in *res nullius*, see: Antarctic Journal, 1966, Vol. I and II, p. 27. Accordingly, custody of property, defined as equipment, buildings and supplies belonging to US government, was given to the recipient government. The property was to be used by it without charge or liability in any respect, and except for items consumed, lost, worn out by normal use or damaged, was to be returned, upon mutual arrangement to the custody of the United States, see: Custody Arrangement for Occupancy and Use of Certain United States Government – Navy Department Facilities at *Ellsworth* Station, Antarctica 2.II.1959, Ellsworth (Argentina Antarctica). When the *Ellsworth* Station was closed in 1962 by Argentina, it was confirmed formally that the buildings which were the property of the United States were generally in good condition. Scientific Station Closing Act, 30.XII.1962 and Antarctic Journal, 1966, Vol. I and II, p. 26. Also the former German GDR Antarctic Georg Forster Station was transferred to GFR after the 1990 unification, but it was done under international law on a non-contractual basis, see: Inventory of Locations of Past Scientific Activities of Germany in Antarctica, doc. XXIII ATCM/ IP 31, April 1999.
47. Auburn, *op. cit.* p. 202
48. Kish, *op. cit.* (note 23) pp. 94, 122 and 126

49. Francisco Orrego Vicuña, *op. cit.* (note 24); 1992, Christopher C. Joyner, Antarctica and the Law of the Sea, Dordrecht (the Netherlands).
50. 1980, B. Mitchell and R. Sandbrook, The Management of the Southern Ocean, London, p. 19
51. ATCM Rec. VIII-10 (1975), X-2 (1979) and XI-2 (1981) on Antarctic marine living resources; IX-6 (1977) on oil contamination of the Antarctic marine environment; XI-4 (1989) human impact on the Antarctic environment: preservation, control and response to marine pollution; XVI-3 (1991) Antarctic Protected Area System, New Marine Sites of Special Scientific Interest.
52. A.G. Martin, On development of a preventive maintenance program for *McMurdo* Station, Antarctica. *In:* Proceedings of the Fourth Symposium on Antarctic Logistics and Operations, São Paulo, Brazil 16–18.VII.1990, at XXI SCAR meeting, pp. 220–231. The presence of attended stations under the severe Antarctic conditions is very expensive and therefore limiting the number of permanent observing sites. About 2000 tons expensive logistical material are needed to keep a typical Antarctic station in operation all around the year. Considering that most of the scientific data collection is routine work, automatic observing stations together with remonte sensing satellites are becoming increasingly important in Antarctica. Dozens of automatic weather stations operational there provide us with actual data enabbling the evaluation of climatological conditions in Southern Hemisphere. See: C. Reijmer and H. Tüg, *op. cit.* (note 2) and I. Allison, J.V. Morrissy, Automatic weather stations in the Antarctic. *In:* Australian Meteorological Magazine, 1983, No 31, pp. 71–76.
53. ATCM Rec. III-VII (1964) on Acceptance of approved Recomendations: see also Rec. II-IX(1962) and VIII-8 (1975) on activities of States that are not Consultative Parties.
54. Regular income of SCAR is derived from national scientific organisation in proportion to their Anctarctic activity divided into three classes: (1) nations maintaining at least one winter station, (2) nations, not maintaining a winter station and (3) nations with no current field reaearch activity in the Antarctic; Standing Resolutions, Section 6. Amounts were prescribed by Res. XV-FIN 1, Report to the Finance Committee. XV-SCAR-33 (revised). *In:* 397 SCAR Circular of 3.VII.1978.
55. ATCM Rec. I-VII (1961) and II-V (1962) on logistic problems; see also F.M. Auburn, *op. cit.* pp. 179–180.
56. Jacek Machowski, The Right to Freedom of Research under the Antarctic Treaty System. *In:* Polish Polar Research, 1990, Vol. 11, No. 3–4, pp. 419–434.
57. Convention on the Regulation of Antarctic Mineral Resource Activities, done on 2.VI.1988, Doc. AMR /SCM88/78; see also ATCM Rec. VIII-14 (1975), IX-1 (1977), X-1(1979) and XI-1(1981) on Antarctic mineral resources.
58. Annex to ATCMRec. VIII-11(1975) on Man's impact on the environment; see also ATCM Rec. VI-4 (1970), VII-1(1972); IX-5 (1977), XII-3 and 4 (1983), XIII-4,5 and 6 (1985), XIV-2 and 3 (1987), XV-3,4 and 5 (1989), as well as XV-14,15,16 and 17 (1989) on promotion of international scientific cooperation and facilitation of scientific research and XVII-4 (1992).
59. ATCM Recommendations I-XI (1961), II-III (1962), IV-26 (1966), V-2 (1968), VI-1 and 3 (1970), VII-7 (1972), IX-3 (1977), X-3 (1979), XII-1 and 2 (1983), XIV-7 (1987), XV-18 (1989).
60. ATCM Recommendations I-VII (1961), II-V (1962), III-III (1964), IV-25(1966).

61. ATCM Recommendations I-XII (1961) on postal services, VII-8 (1972), VIII-7 (1975) and IX-4 (1977) on cooperation in transport, XIV-9 (1987) and XV-20 (1989) on air safety in Antarctica, XIV-10 (1987) on marine meteorological and sea ice information services for navigation in the Treaty Area of the Southern Ocean, XV-19 (1989) on cooperation in hydrografic charting of Antarctic waters and Resolution XXII-3 (1998) International Code of Safety for Ships in Polar Waters.
62. ATCM Rec. I-IV (1961), III-X (1964), IV-22 (1966), V-7 (1968), XII-8 (1983).
63. Piotr Ciaputa and Katarzyna Salwicka, Tourism at Antarctic *Arctowski* Station 1991–1997: policies for better management. *In:* Polish Polar Research, 1997, Vol. 18, No. 3–4, pp. 227–239; Bernard Stonehouse, Antarctic shipborne tourism: facilitation and research at *Arctowski* Station, King George Island. *In:* Polish Polar Research, 1999, Vol. 20, No. 1, pp. 65–75.
64. ATCM Rec. IV-27 (1966), VI-7 (1970), VII-4 (1972), VIII-9 (1975), X-8 (1979), XI-3(1981) and XVI-13 (1991).
65. ATCM Rec. VI-5 and 6 (1970) on coordination of scientific investigations involving radio-isotopes and VIII-12 (1975) on disposal of nuclear wastes.
66. ATCM Rec. I-VIII (1961) on conservation of fauna and flora.
67. ATCM Rec. VIII-11 (1975) and XIII-4 (1985) Code of conduct for Antarctic expeditions and station activities: waste disposal.
68. ATCM XXII Resolution 2 (1998) Guide to the Preparation of Management Plans for Antarctic SPAs.
69. ATCM Rec. XVI-13 (1991) Tourism and non-governmental activities in the Antarctic Treaty Area.
70. Józef Goldblatt, The Arms Control Experiment in the Antarctic. *In:* SIPRI Yearbook 1973, pp. 477–481.
71. See: Art. 14 on inspection of the 1991 Protocol on Environmental Protection and Art. XXIV of the 1980 Convention on the Conservation of Marine Living Resources.
72. F.M. Auburn, *op. cit.* pp. 110–115.
73. ATCM Rec. I-VI (1961), II-IV and VI (1962), III-I (1964), IV-23 (1966) and VI-13 (1970).
74. ATCM Rec. VIII-6 (1975) on exchanges of information (consolidation of ealier measures) amended in Rec. XIII-3 (1985).
75. Notably: Art. 17 of the Protocol on annual reports by Parties; Annex I, Art.6 on circulation of information; Annex II, Art.5 on information; Annex III, Art. 9 on circulation and review of waste management plans and Annex V, Art. 10 on exchange of information.
76. First seasonal bases were established on sub-Antarctic islands since the end of XVIIIth century by sealers and whalers, some of them of considerable size, like Grytviken on South Georgia. In 1895 took place the first landing by the Norwegian – British expedition of Carsten Borchgrevink on the Antarctic continent.
77. See ATCM Rec. XV-13 (1989) concerning amendment to description of Historic Monument No 53 celebrating the rescue by a Chilean pilot of the survivors of the British vessel *Endurance*.
78. The List of historic monuments contains now at least 22 items identified as constructions being remnants of abandoned bases of expeditions and stations, namely items 4, 10, 13, 14, 15, 16, 18, 21, 22, 25, 26, 29, 30, 33, 38, 39, 41, 42, 46, 47, 55, and 56. Some of them are dating back to XIX century like the hut built in 1899 by C.E. Borchgrevik at Cape Adare (item 22).

79. Progress report on the Development of HSM No. 71, Doc. XXIII ATCM/IP 107 Corr. 1, May 1999.
80. J.R. Shears and J. Hall, Abandoned Stations and Field Huts – The British Approach to Management. *In:* Proceedings of the Fifth Symposium on Antarctic Logistics and Operations, 8–10 VI 1992 in Argentina at XXII SCAR, pp. 12–26; see also: Antarctic Treaty, Exchange of Information Under Article VIII (5) for 1998–99, United Kingdom Activities, Annex VIII Notification of unoccupied United Kingdom stations and refuges in the Antarctic 1998–1999; Inventory of Locations of Past Scientific Activities of Germany in Antarctica, Doc. XXIII ATCM/IP 31, April 1999.
81. *Ibidem*; the British Antarctic Survey (BAS) which in 1947 inherited 18 stations and 2 field huts abandoned or left unoccupied in Antarctica by British polar expeditions initiated a three phase programme of initial desk study and survey, action plan and future building plan. That work was completed in the early 90's.

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Streszczenie

W nieokreślonej (*sui generis*) sytuacji prawnomiędzynarodowej Antarktyki, ustalenie statusu tamtejszych stacji polarnych natrafia na trudności polityczne i prawne. Stanowi to niekiedy utrudnienie dla ich działalności, którą regulują przedstawione w niniejszym artykule liczne i nie zawsze spójne ze sobą przepisy i regulacje prawne sformułowane w ramach Systemu Traktatu Antarktycznego.