

THE PRINCESS ELISABETH ANTARCTICA- TESTING THE LIMITS

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ABSTRACT

The Princess Elisabeth Station was inaugurated on the February 15, 2009, and became the first “Zero Emissions” research station in Antarctica. It brought to the Antarctic continent an important touch of modernity, but more than that it demonstrated that environmental protection did not just entail paying lip service to the good intentions embodied in international agreements, it meant delivering an outcome that could revolutionise the way that operations were carried out in this unrelentingly hostile environment.

KEYWORDS

Princess Elisabeth Station, Antarctica, Zero Emissions.

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THE INTERNATIONAL POLAR YEAR 2007-2009

The construction of the Princess Elisabeth Antarctica (PEA) was carried out during the International Polar Year 2007-2009, as a symbolic gesture to mark a symbolic event. The intention was to adhere as closely as possible to the Antarctic Treaty System's environmental philosophy and objectives. While the primary texts themselves give little guidance, much work has been done at Treaty Meetings to try to clarify the intent behind them, and adhering to the principle of "do no harm" appears to be a sound basis for operating.

To begin, an exploration of existing technological solutions was required to demonstrate how observance of the Protocol could be modernised according to the "state-of-the-art" of the day. During the spate of station building of the International Geophysical year 1957-58, the Belgians had constructed the Roi Baudouin Station, which was abandoned to its fate as the moving glacier enveloped it. In the 1950s, the speed of the moving ice streams was not really appreciated, and it was only through trial and error that these issues could be addressed. What would a new station do differently to capture the spirit of a new age?

For a start, the tools available are far superior to anything available to the hardy scientific explorers of the 1950s. In particular, the communication and navigation possibilities far exceed anything that could have been imagined at the time. Technological advances in building materials, logistics possibilities and energy, water treatment and communications choices have made it possible to deliver a state of the art facility, in the middle of a wilderness covering more than four hundred thousand square kilometres of uninhabited land. The PEA is equipped with a smart energy grid fed by renewable energies, and a space age water treatment system, which dramatically reduces the environmental impact of the activities, and the costs of operations. In addition, broadband satellite connections permit remote management of the facility.

The aim of the IPF was to deliver a modern station, which demonstrated respect for the spirit and the letter of the law, or in this case the Protocol. The station was built in a part of the Antarctic which was poorly served in terms of station infrastructure, and provided access to important new research, in areas which contain several interesting features, including geological formations dating to the period of the formation of Gondwana, meteorite fields, lakes containing cyanobacteria and ice streams running from the plateau to the coast. The PEA is thus able to deliver on the technological challenge whilst providing an infrastructure for research in an area of scientific interest.

The IPF's science support activities were also extended to include information for the general public and policy makers in regard to the relevance of polar research in addressing fundamental questions, such as those raised by climate change and its attendant environmental ramifications.

In April 2009, at the end of the International Polar Year, proceedings were held in the US State Department in Washington, to mark the run up to the fiftieth anniversary of the Antarctic Treaty, the United States being the Depositary State of the Treaty. At the thirty-second annual meeting of the Consultative Parties to the Treaty (the ATCM XXXII), held in Baltimore during the same period, the International Polar Foundation presented the PEA station at the

Plenary session of the Consultative Parties. At the end of the session, the Russian delegation congratulated the Belgians, and suggested that the “Belgian model” was perhaps the way to follow for future operations in Antarctica.

But what exactly was the “Belgian model”? Attempts to get to the root of the question came up against a wall of tergiversation. It being maintained in some quarters that the role of the private sector might be poorly considered by certain Treaty Parties, the traditional grey areas of Antarctic regulatory practices kicked in, and the question was relegated to a damp corner of an unlit archive to languish, until such a time that it was thrust once again to the forefront by events.

The “Belgian model” in the eyes of the World had delivered a game changing result, and deserved to be better understood in order to investigate how this might apply to the existing environmental management practices in the Antarctic as a whole. It was primarily born out of the International Polar Foundation’s desire to raise the profile of the important research that was being carried out in Antarctica. In order to deliver this project, civil society banded together with industry and government to create the conditions necessary for its realisation, including the financial conditions. In addition to the purely financial support, many companies contributed manpower and technical know-how necessary to conceive of and build the facilities and systems.

DRIVING CHANGE

Historically the attitude of Belgium to Antarctic affairs has been one of an intermittent and slightly idiosyncratic nature. Blink and you risked missing them altogether in the vastness. This intermittent interest can be explained by the fact that frequently it was due to the drive and insistence of individuals that Antarctica came into the national story at all. A few passionate individuals formed, financed and carried out the first expeditions. In both cases, the aim was largely the pursuit of scientific endeavours.

In 1897-98, Adrien de Gerlache carried out the first Belgian expedition, forced into overwintering off the Antarctic continent, when his ship was caught in the ice. His was also the first international scientific expedition to the Antarctic. He had onboard his ship, the Belgica, such polar luminaries as Dr Frederick Cook, and a young Roald Amundsen.

Then, in the first half of the twentieth century, while other nations were racing to the pole, or flying over the continent prior to staking out claims, the Belgians lived through two bloody wars fought over their lands, and an even bloodier recession. Culturally, the population was focussed on more pressing needs than the financing of foreign adventures. Antarctica was allowed to lapse back into the collective subconscious.

With the arrival of the International Geophysical Year (IGY) in 1957, Belgian interest in Antarctica was reactivated amongst the scientific community and the resolve was formed to return with a scientific expedition. So it was then that the Roi Baudouin station was built on the coast of Queen Maud Land. Financed by private partners, such as the industrialist Ernest Solvay, the expedition managed to collect a wealth of data over a wide geographical area. After the IGY57-58, national

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interest evaporated. The scientific community tried valiantly to carry on, but the State had no appetite for costly research on the other side of the World, and despite signing the Antarctic Treaty in December 1959, after a few years the intention to ensure the viability of future operations was absent. Once again, there were more pressing questions to handle slightly closer to home.

In July 1961, the H.E. Mr. Willy Stevens, leader of the Belgian Delegation to the ATCM made an interesting contribution to the meeting of the Parties held in Canberra . He stated:

“Belgium is well aware that it has a part to play here. It has no territorial ambitions. The Belgians are an industrious people, and their prosperity is proof of their courage and energy. Belgium has at all times, and in various fields of activity, lent its assistance in formulating principles for international cooperation. We can hardly be suspected of ulterior motives in regard to Antarctica. Our activities in this region have been concerned only with scientific research. As you are perhaps aware, the first men to spend a winter within the Antarctic Circle were Belgians”.

He added with great prescience:

“The success of the various recent Belgian Expeditions at Roi Baudouin Base is evidence of the value of Belgian collaboration in the scientific exploration of Antarctica. This collaboration may be counted on to the limit of our resources; and if my country can make its voice heard at this present Meeting, it will be the voice of reason, of mutual understanding, of reassurance and of loyal and generous co-operation”.

Despite continuing since the 1960s to participate in the meetings of the Consultative Parties, Belgium did not have infinite resources for Antarctic activities. The Belgian scientists admirably persisted with their Antarctic “folie”, and even when the Roi Baudouin station was lost to the ice, they carried on working with the Dutch and the South African Expeditions to try to keep the flame alive in the face of their dwindling means.

In 1985, there was again a flurry of short-lived interest when the Antarctic Treaty Consultative Parties met in Brussels, and new funds were made available for scientists, but again the thorny question of expensive infrastructure on a far-flung field of ice was adroitly avoided. It was arguable whether or not the Consultative Parties were required to operate research stations.

In 2004, having been in contact with the veterans of the IGY57-58, and working with other Antarctic die-hards like the glaciologist Prof. Hugo Decler, the International Polar Foundation proposed to the Belgian government that the IPY 2007-08 was a good time to return to operations in Antarctica. The decision was taken to finance a feasibility study to allow the question to be explored, and it was thus that the first Belgian Expedition to return to the Antarctic after a gap of several decades was again a privately directed expedition.

The pressure on smaller countries to support expensive infrastructure that has no commercial *raison d'être* is always going to be difficult. Unless the science being carried out is vital to key societal challenges, it becomes difficult to justify the expenditure to a recalcitrant domestic public, especially in times of economic hardship. In order to make the building of a new station for research more

palatable, it has to combine other qualities, such as the demonstration of engineering excellence. If then further, the cost of the investment can be removed from the public purse, and the operational costs can be reduced through the use of “free” energy, the whole proposition suddenly becomes more attractive.

Such an outcome could only have been delivered by a civil society organisation, which has the creativity, flexibility and speed of response. State structures are bogged down by burdensome procedures and long response times. With modernisation has come specialisation, and in particular technical specialisation. Training operational staff has begun to take on major proportions, particularly where there is a prototype to manage. In addition, while it is far from being a commercially viable proposition to operate an expensive infrastructure in the Antarctic, technical companies are nevertheless willing to use the extreme nature of the continent as a test bed for various technologies. Bringing together the strands of competences and technologies is easier for a civil society organisation, which has no commercial interests and is therefore an acceptable interface between the public and the private sectors.

To avoid the new adventure ending as the previous Belgian forays into the Antarctic, the IPF sought the bulk of the financing from the private sector and working as a private operator built the Princess Elisabeth Antarctica. Once the station was built and the new systems were installed, the station was to be shared with the State, so that operations could benefit from regular and guaranteed funding. The main condition of donation stipulated that the station, being an advanced technological prototype, could only be managed by the entity that had designed, financed and built it, namely the IPF. Furthermore, if at any time the State were to tire of the financial burden, the station would have to be offered back to the IPF, so that another partner could be sought to carry on with financing the operations.

This plan worked well in theory, but in practice, the arrangement was doomed to failure from the outset. A Secretariat was created as a management body whose role it was to oversee the partnership between the State and the IPF. This novel structure was remorselessly attacked, and dismembered by the very people who had been designated to ensuring that it continued to function. The position of privileged partner that was accorded to the IPF was abandoned almost as soon as the ink was dry.

THE SYSTEM

Much ink, in general, has flowed on the subject of the continent of Antarctica, and most of it extols the superlative nature of the place, its whiteness, its coldness, its extreme climate, its fourteen thousand square kilometres. A veritable Olympian, one sees, in the ranks of the continents.

The continent is managed by the Antarctic Treaty System, which consists of the Treaty and its Protocol and Conventions. Consultative Parties to the Treaty are nation States, as are the non-Consultative Parties. The Treaty has suspended all territorial claims and as such, in principle, Antarctica could be considered as part of the global commons, for the pure and simple reason that it is arguably the only land territory of the Earth belongs to no one: the *terra nullius*, or no man's land. Even the Antarctic Treaty Parties must acquiesce to this simple and incontrovertible truth. This raises thorny

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questions on States' jurisdiction in Antarctica, which has been repeatedly examined in the Treaty Meetings. This is one of the grey areas under which the access to the Continent for non-signatory Parties cannot be limited.

When the original signatories signed a suspension of sovereignty in 1959, it was for the undeniably simple reason that fighting over Antarctica would be sheer insanity, costly and unproductive. So Antarctica became a continent dedicated to science and to peace, ironically because of its hostility to man. The main winner of the day was the scientific community, as science became the central preoccupation of the countries present on the continent.

The legal regime in Antarctica is low on the register of public preoccupations, and has remained thus, because of the very muted and opaque nature of the constructs. This is a state of affairs that most Antarctic Treaty Consultative Parties probably prefer. A United Nations type management style has been quietly but firmly resisted, particularly as this would create problems in creating the viable national administrative regimes to support the various territorial claims that would be reactivated when the Treaty expires. The "Question of Antarctica" which was raised with persistent regularity at the United Nations was quietly and firmly quashed, when the chief promoter of the proposition to have Antarctica declared the common heritage of mankind, Malaysia, acceded to the Treaty and abandoned this line.

The Final Report of the XII meeting of the Antarctic Treaty Consultative Parties, held in Canberra in September 1983, where Malaysia, Brazil and a few other developing nations (non-signatories) were invited to attend, the Consultative Parties announced that re-negotiating the Treaty would introduce uncertainty and instability into the question of management of the Antarctic, which of course must continue to be preserved for the benefit of all under the United Nations Charter. In the course of time, many countries acceded to the Antarctic Treaty System, although it is open to question whether or not they had the means or the scientific interest to carry out operations in this forbidding and desolate place.

".....the growing number of states participating in the ATS is testament to its vitality, and it has weathered efforts by some states in the General Assembly to replace the ATS it with a more universal arrangement that would truly vest the Antarctic continent in humanity as a whole. In the long term, the persisting uncertainty about the final status of sovereign territorial, maritime and continental shelf claims will present the greatest challenge to Antarctic stability. The ATS embodies an uneasy truce and cannot indefinitely defer disputes over sovereign title (and thus sovereign rights to exploit Antarctica's riches). The time will come when it may be necessary to reconsider sovereign claims and to desire an alternative legal architecture for securing Antarctica's future".

While, in the minds of the general public the concept of Antarctica as belonging to all of humanity is firmly entrenched, the Antarctic Treaty Parties with territorial claims have a vested interest in maintaining their stewardship, and of gradually limiting access. Demonstrating continuity in administration of a geographical area, whether through post offices, or the capacity to provide services and infrastructure, is one way to validate future claims under the international law principle of *Uti possidetis*. And in some cases the stakes may be high.

In a 2012 Standard Note presented to the House of Commons (UK), the question of claims on the extended continental shelf was addressed. This paper quotes from the Foreign and Commonwealth Office country profile of Antarctica that the United Kingdom was the first country to make territorial claims to a part of Antarctica, in 1908, by Letters Patent.

The Note also mentions the US Environmental Information Administration report that states *“Antarctica’s Ross and Weddell Seas are thought to have resources of up to a billion barrels of oil, an amount roughly equivalent to that of Alaska’s estimated reserves”*.

JURISDICTIONAL CREEP

Under the Treaty provisions, States have jurisdiction over their own nationals or organisations, operating out of their territory. Apparently, this has encouraged the phenomenon referred to as “forum shopping” where legal entities, wishing to operate in Antarctica, will select as a base a country that is most likely to permit the activity under consideration. Several States Party to the Treaty have attempted to find a way to limit this room for manoeuvre, left open by the Treaty provisions on national sovereignty.

In order to safeguard future claims, claimant States Party have had to resort to new measures to deal with the inability of the ATS to address question of jurisdiction over non-State parties, and to impose gradual restrictions on access to the Continent.

Annex VI to the Madrid Protocol, adopted in 2005, on Liability Arising from Environmental emergencies (also known as “the Liability Annex”), is considered as a first step towards instituting a “full liability regime”.

Under Art. 2(b) of the Liability Annex, an environmental emergency is defined as follows:

“Environmental emergency” means any accidental event that has occurred, having taken place after the entry into force of this Annex, and that results in or imminently threatens to result in, any significant and harmful impact on the Antarctic environment;”

This provision excludes any possible challenge to States coming from the obligation to remove waste from the continent. Accidental emergencies also preclude any threat of contamination from existing environmental waste on the continent being considered as an emergency, whereas if warming in certain parts of the continent continue, existing biological waste dumps are likely to create a situation, which has to be dealt with rapidly.

Additionally, a number of vague indefinable terms leave open to subjective interpretation what is intended, despite the fact that this is a strict liability offence. In this case an accidental event has to occur. By what measure is “significance judged? Also, by virtue of the strict liability clause, the operator is responsible for an accident regardless of the causation, and intent. Force majeure is not a factor that would limit liability, except in the case of a natural disaster “of an exceptional character”. What is a natural disaster of an unexceptional character?

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For those interested in the difficulty of defining environmental terms refer to the reissued Working Paper submitted by New Zealand on behalf of the CEP intercessional contact group at the ATCM XXXVII.

The UK in its 2013 “Antarctic Act” has enacted Annex VI provisions into law, and is among the first ten ATCPs to do so. But the UK but has also gone further in this respect by introducing criminal sanctions for violation of the provisions of the Act, and has extended the application of the provisions and the sanctions to non-nationals employed by “UK connected” expeditions. Obviously, civil liability for failure to respond to an environmental emergency is not extended Crown employees, but the Crown is still liable to pay for remedying the environmental damage. The armed forces will be exempt from the application of these provisions, as will any persons who commit the offences as defined under the Act, who are employed by other State actors.

Furthermore, all British led expeditions have to obtain adequate insurance cover to mitigate the costs of the clean up of an environmental emergency risk, and failure to do so is an offense. But it is stated that the Crown and its servants are exempt from this requirement, as the Crown is its own insurer. Meanwhile, private entities would be confronted with the task of ensuring against an uninsurable risk, of an undefined “environmental emergency”. As failure to insure adequately, is an offense, effectively no entity or individual, who is not on Crown business, would be able to carry out any activities in the Antarctic, as adequate levels of insurance would be hard to establish.

Explanatory Notes to the 2013 Act mention that under the 1994 Antarctica Act, where an “... individual scientist is a national of a State which is not a Party to the Protocol, it may not currently be possible for that individual to be covered by a permit at all.” The 2013 Act will remedy that by enabling the Secretary of State to permit non-UK nationals on British expeditions having a scientific or educational objective.

Other Consultative Parties have also begun to transpose the enabling legislation into national law, but by April 2015 only ten out of twenty-eight ATCPs had actually notified their approval of the measure. At the ATCM XXXVIII, a Draft Decision was proposed on the establishment of a time frame for negotiating a “comprehensive liability regime”.

For a non-claimant nation to enact laws, which would create any kind of proto-sovereignty over an area of operations, would be considered against Article IV of the Antarctic Treaty, which limits any attempts at creeping extensions of sovereignty. So it will be interesting to see how they will approach this exercise.

In 2014, at the ATCM XXXVII, Belgium tabled an Information Paper entitled “The Exercise of National Jurisdiction on Assets in Antarctica”, following a dispute over the rights to the property of the Princess Elisabeth Station. In it the Belgian State appeals to the ATCPs to assist in creating a register of property, which will help to fill a legal void that has permitted the IPF to claim the ownership of the Princess Elisabeth Station.

“While the idea of private entities or persons acting in Antarctica was barely considered at the time of the

drafting of the Treaty, the status of private infrastructure or equipment in that area was simply ignored. Today, this absence of provision dealing with private properties in Antarctica may be considered as a legal void. With the globalization and the freedom of trade throughout the world, the connection between legal entities and “goods” (property) on the one hand and States on the other hand has become tenuous. ‘Ownership’ is not a key word anymore, it has been replaced by other notions, such as ‘right of use’. International cooperation has taken new legal or economic forms. ‘Partnership’ makes private actors and stakeholders the new counterparts of governments”.

This was an arrangement freely entered into by the Belgian State in 2010, but it has become inconvenient, and a remedy was sought from among other ATCPs without any attempt being made for dialogue with the private sector partner.

In response to the Belgian request, the French delegation proposed the following recommendations in the Final report of the Intercessional Contact Group (ICG) on the exercise of jurisdiction in the Antarctic Treaty area:

- to publish **on a password-secured page** of the Secretariat’s website a list of all national contact points on the question of the exercise of jurisdiction in Antarctica (and of their replacement if unavailable) and to request that the Secretariat keep the list updated;
- to **hold an informal meeting at each ATCM** so as to monitor the progress made and the trends in regard to the exercise of jurisdiction in Antarctica (for instance, to survey the number of breaches on record, the number of cases pending, the problems remaining etc.); and
- to deal with **the specific issue of infrastructure development** as a distinct and thematic question, in the context of the exercise .

It should be noted that France has expressed an interest in operating the Princess Elisabeth Station for Belgium, in place of the IPF. Also, that the PEA Station is in territory which is claimed by Norway. In the event that France and Belgium were to decide to expropriate the IPF and to run this infrastructure jointly, it would create new and interesting conundrums concerning sovereignty, and jurisdiction.

MANAGEMENT BY CONSENSUS

The soft law provisions of the Antarctic Treaty System (consisting of the Treaty, its Protocol (its Annexes) and its Conventions), allow for subjective interpretation, in what is referred to in non-legal parlance as “wiggle room”. Annex VI of the Protocol is no different, but the interpretation that States may make of the provisions will lead to an unequal application of conditions under the national implementing legislation.

This subjective interpretation possibility applies equally to the application of the provisions relating to the protection of the environment. While Contracting Parties all espouse the principles of reducing environmental impact, the practice on the ground may be some way off from the environmental

impact reduction that should be practised if modern methods of environmental management were to be adopted. Take for example the Protocol of Madrid Art. 3(1), which states that:

“The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area”.

These provisions contain several concepts (such as “wilderness value” and “intrinsic value”) which defy definition, and are thus protection of them remain hazy concepts which are unenforceable. Art. 1 paras (a) to (g), which define the terms contained in the Protocol do not even attempt to define these terms. It is left to the later creativity of committees to fashion a contorted explanation of what was initially intended.

MP1991, Annex III Article 1(2) states that:

“The amount of wastes produced or disposed of in the Antarctic Treaty Area, shall be reduced as far as practicable so as to minimise impact on the Antarctic environment and to minimise interference with the natural values of Antarctica, with scientific research, and with other uses of Antarctica which are consistent with the Antarctic Treaty”.

In this case, terms such as “natural values” are introduced. Again, these are indefinable. Does this Article imply that disposal on the continent is an acceptable practice? And what does “as far as practicable” imply in reality? What size of waste dump is permissible? Annex III, Art. 4 (2) states that sewage “shall, to the maximum extent practicable, not be disposed of on to sea ice...,” but Art 4(3) allows the practice of pumping raw sewage into the ocean. Surely, it is time to address these issues in a more coherent way. If Antarctica is to remain pristine, there exist solutions to this kind of problem and these should be applied. There is no longer any excuse to maintain 20th Century attitudes to the question of environmental management.

The grey areas in soft law provisions are designed to be vague enough to allow for many practices to go unchallenged. States Parties set the rules and frequently exempt themselves and their servants from the effects of the rules. Treaty institutions, like the CEP, expected to be regulating these aspects, will be hampered by wording such as that cited above.

In 2004, two researchers from the British Antarctic Survey and the Plymouth Hospitals NHS Trust published a paper which noted that spore forming bacteria (Bacillus and clostridium spp) were viable in the Antarctic, as global warming was exposing previously dumped waste matter, and that “Previous faecal waste disposal on land may now start to produce detectable environmental pollution, as well as potential health and scientific problems”.

In January 2012, a group of scientists from Universities in Sweden and in Chile published a paper on an investigation on the presence of antibiotic resistant E. Coli near research stations on the Peninsula. The human origin of these bacteria was clearly indicated. They stated that:

“The Antarctic Continent is the last comparative pristine ecosystem with a small human population restricted to research bases, primarily located on the Antarctic Peninsula. Human activities are regulated by the Antarctic Treaty to reduce interference with the unique wildlife and the impact of human associated microorganisms should be minimal. However, contrary to this intention, human-associated pathogens have been identified in Antarctic wildlife.”

The presence of Escherichia Coli in the local wildlife should surely be considered an environmental emergency? Especially as the wildlife in question are the penguin colonies in the proximity of stations. While the Antarctic Treaty Parties have made much of the “Aliens in Antarctica” restrictions, the concept has not been extended to the micro-organisms that we carry in our gut.

DELIVERING CHANGE

The Antarctic Treaty permits non-State actors to be present in Antarctica, and through the unique characteristics of civil society, being at once neither commercially oriented, nor subject to the crippling restrictions applicable to State operators, the IPF was able to deliver a strategy for environmental management that points the way towards necessary and overdue modernisation of the Antarctic Treaty.

In 2004, when the International Polar Foundation began the project to construct the first Zero Emissions Research Station in Antarctica, the IPF fundamentally believed that they were depositing an action for the common good, that this act would be a demonstration of the Common Heritage Principle, where ordinary people of many nations and races would contribute to the fight against the despoliation of our unique little blue green Planet. The station would be a gift, not only to the people of Belgium, but to the whole of humanity. With time it has become apparent that there are many issues related to the governance of the Antarctic, which are not apparent to the neophyte approaching the issues of Treaty legal regimes for the first time.

Today, it is clear that there are national prerogatives that will be activated when any Party feels that its interests are being challenged by a non-State operator, no matter how well intentioned.

From the beginning, relations with the competent authorities of the State of operation, and other States Party were not easy. The institutions of State do not take kindly to usurpation of prerogatives. Attempts to be allowed to sit in on Antarctic Treaty Meetings, or even meetings relating to environmental management, or logistics were rebuffed. The fact that the IPF was building an advanced station prototype for the advancement of science was considered with suspicion. It was made clear that the legal responsibility for the venture was to be borne in its entirety by the IPF.

From 2006 to 2010, the IPF turned to friendly State operators in the area of operations in order to acquire the logistical and operational know-how. The culture of international collaboration in Antarctica stood the IPF in good stead and allowed the project to avoid costly errors that normally accompany the first tentative efforts at managing complex operations in the extreme. Reinforced by the intimate in-house expertise of the geographical area of operations, it was also easier for the IPF to carry out the field logistics than would have been the case for any other operator.

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The IPF managed to accomplish something truly game changing in the Antarctic. The delivery of a high tech, prototype station that was more respectful of the provisions of the Madrid Protocol than any station on Antarctica. The Treaty inspections began even before the station had officially begun to operate. It must have been due to curiosity, but in the first five years there had already been six inspections.

The presence of the Princess Elisabeth Station with its low operational cost, and low environmental impact has raised the question of modernising Antarctic operations. This applies not only to the introduction of “smart” energy systems, but also to the treatment of wastewater.

The modernisation should not stop there. It is time to reject the Cold War mentality and the management tools of a by-gone age, and to radically alter the coordination between countries. Without an injection of much needed energy into the System, it risks collapsing under the weight of its own inertia.

The exchange of information is required and encouraged, but the delivery is outdated. The development of joint tools for management of diverse aspects (such as harmonised training systems, and adoption of safety procedures, or air strip information, or telemedicine protocols between stations) are hampered by lack of investment not only in the actual tools and technologies, but in any credible joint coordination. Even web sites containing joint operational information are not encouraged.

Any action that might erode the possibility of a claimant state to be able to demonstrate the validity of its claim under international law, at some ulterior date, is viewed with suspicion.

Who is best placed to deliver the change that has to take place in the Antarctic in a time of shrinking budgets and burgeoning regulatory injunctions? Is it the States Party to the Treaty? Is it the States of the United Nations, under the Common Heritage Principles? Is it commercial operators, with inflexible bottom lines, or is it civil society and non-governmental bodies driven neither by the administrative fervour of public sector operatives, nor by the profit mind-set?

FINANCING RESEARCH ACTIVITY IN ANTARCTICA

In delivering such a high performance piece of infrastructure, the IPF was confronted with a major dilemma. How would the operations for such a facility be financed? Belgium lacked and still lacks many of the fundamental “polar” competences which a long standing polar operator would have, such as e.g. a research institute dedicated to the specifically Polar (Arctic and Antarctic) research. The pre-2009 Belgian model also lacked other elements such as a single funding body dedicated to research. The Federal State has one funding agency for research referred to as the Science Policy Office. In the absence of any other element of a unified Polar research strategy, the Policy Office was responsible for the funding and coordination of the broad research that was carried out within several institutes and university departments. Research was, and is, also funded by other regional bodies, by the European Union, and a few private foundations. But the guaranteed funding of national infrastructure and research posts dedicated to creating a body of competences in polar

related research has been significantly absent. The strategy has, in general, consisted of an ad hoc approach in support of research for “sustainable development”. Consequently, a number of researchers have sought to pursue their polar careers elsewhere.

Due to the difficulty in reaching the continent, and putting in place life-support systems, all research being carried out in the Antarctic is likely to be a higher cost endeavour than research carried out in inhabited countries. It proved difficult to establish the benchmarks for real costs of science support operations in any one country.

The bigger and more invested States possess their own ice-breakers, aircraft and research institutes, and costs are opaque, frequently falling under several ministerial budgets, including military budgets. It becomes virtually impossible to establish what is the real cost of operations in support of research. If costs were to be divided per each individual researcher what would be the actual real World cost of research projects?

IPF was again confronted by this question when an audit of its operations was carried out by Ernst & Young in 2011. It became apparent that the amount of funding available for a non-State operator who is only interested in science, is going to be miniscule compared with what is available for States that have vast means, and numbers of personnel at their disposal. Despite delivering a modern station infrastructure at 20% of the price of other constructions currently in build on Antarctica, and running operations that are exemplary for their low cost and avoidance of environmental impact, the IPF found itself increasingly under attack from a public administration that wished to acquire the know-how of the IPF in order to rid themselves of a troublesome non-State actor.

The generalised management models for Antarctic operations in support of science fall into a few overlapping categories:

- Funding by a State party to the Treaty, for Antarctic operations, research institutes, logistics, personnel etc., and expedition personnel all employed by the centralised State operator e.g. the military or air force (Chile & Argentina);
- Funding by State institutions or State owned Funds, for Antarctic operations, research institutes, logistics, expedition personnel, supplies, logistics and services, with centralised control of operations by one of the participating institutes (e.g. AWI and the Helmholtz Foundation), (AARI , and RAE), (NIPR , JARE);
- Funding by State entity for several research institutes, and not-for-profit non-governmental bodies carry out the centralised function of managing operations on behalf of the State, where some of the personnel can also be volunteers (e.g. IPEV).
- Funding by a centralised State body for research, and operations, distinctly. The State entity contracts out management of operations to a third party private contractor (e.g. US NSF OPP and the companies Raytheon and/or Lockheed).

The recurring theme is that operations are usually financed by States. The Belgian public-private model could financially undercut all these models, and the auditors stated as much. The Belgian model was evidently not much used by other parties active in the Antarctic.

Belgium also lacked the historical continuity of operations, the experience of managing such infrastructure and any significant investment in Antarctic research activities, (which was one of the conditions highlighted by Dudeney & Walton in support of their contentious premise that Consultative status ought to be lifted from Treaty Parties that did not have any proof of supporting significant activities in Antarctic field research).

“For over 50 years the Antarctic has been governed through the Antarctic Treaty, an international agreement now between 49 nations of whom 28 Consultative Parties (CPs) undertake the management role. Ostensibly, these Parties have qualified for their position on scientific grounds, though diplomacy also plays a major role. This paper uses counts of policy papers and science publications to assess the political and scientific outputs of all CPs over the last 18 years. We show that a subset of the original 12 Treaty signatories, consisting of the seven claimant nations, the USA and Russia, not only set the political agenda for the continent but also provide most of the science, with those CPs producing the most science generally having the greatest political influence. None of the later signatories to the Treaty appear to play a major role in managing Antarctica compared with this group, with half of all CPs collectively producing only 7% of the policy papers. Although acceptance as a CP requires demonstration of a substantial scientific programme, the Treaty has no formal mechanism to review whether a CP continues to meet this criterion. As a first step to addressing this deficiency, we encourage the CPs collectively to resolve to hold regular international peer reviews of their individual science programmes and to make the results available to the other CPs.

The focus on international collaborative research that is a central tenet of the Antarctic Treaty philosophy has, therefore, been extremely helpful to the research communities of small countries, seeking to keep alive key polar competences. Frequently, a small country will not have the size of population or the research budget necessary to reach the threshold for obtaining the critical mass necessary for a self-perpetuating community.

While it is a key obligation incumbent on the administration, the public service mandate of research can only be effectively executed where there are the financial means to realise the necessary actions, whereas, the effective threshold for Antarctic research is much higher than for other fields, due to the high logistics costs. This means that any small country wishing to be active in this field will have two options: firstly, to ally itself with a larger country, or at least one that has greater means, and secondly, to attempt to deliver solutions that will work to reduce costs for all parties.

The first solution is of course going to be precarious. Relying on the goodwill of a partner country will work only where there is a unity of purpose, (i.e. shared research project) or where there are significant means allied with a public service objective extending to the international community (such as the funding of researchers by AWI and the Helmholtz Foundation).

Optimisation of research budgets through shared logistics has now become a standard feature of platforms such as the Dronning Maud Land Air Network (DROMLAN) which has successfully reduced costs via the use of shared logistics. A further reduction became possible by the subsidising of the air link by the carriage of private visitors, whether mountaineers or other private expeditions.

This was not a development that was welcomed by the scientific community, but with budget cuts putting the question of optimal use of financial means into sharp focus, the presence of a few dozen non-scientific visitors was considered to be a minor problem.

The Antarctic Treaty, in 1959, did not overtly address the question of the status of “visitors” as much activity in the past could have been considered as non-governmental, and in an area of terra nullius, or even res nullius, it would have been difficult to justify such an approach. The question has, however, been repeatedly addressed in recent years in the Annual Meetings of Consultative Parties (ATCMs), and shall continue to be examined in the future.

EFFECTIVENESS OF THE MANAGEMENT AND IMPLEMENTATION OF THE ATS

In any event, after more than fifty years of operation, the Antarctic Treaty regime or system has had a mixed press with some claiming it to be extremely effective in its management strategies, and others wishing to open it up to the international community for management by the UN.

“From the perspective of international law and politics, Antarctica has provided an arena for one of the most ambitious (and some would suggest successful) experiments in regional governance.”

The same writer goes on to describe some of the challenges facing the ATS:

“There is also renewed debate about living and non-living resources in Antarctica. A ‘cold rush’ for oil, gas and minerals has not yet eventuated, despite the proliferation of extended continental shelf submissions by the Antarctic claimant states. But there are certainly risks of mineral exploitation disguised as scientific research, and growing interest in bio-prospecting for commercial purposes”. But “So far there is no serious evidence that tensions arising from these issues threaten to unravel the half-century consensus on the Antarctic regime.

Other writers share this view:

“...Antarctica’s legal and regulatory arrangements have constantly and effectively adapted to meet new challenges, evolving into an increasingly sophisticated, inclusive, dynamic and responsive governance regime”.

The regulatory arrangements may function, but does this apply equally to the more technical management aspects? With the speed of technological advances delivering new methods and means for environmental impact reductions, is there not a need to examine whether or not the environmental management arrangements could be improved and modernised?

It could be maintained, that the Antarctic, the last truly wild place on this planet, is a place unsuited to management by non-specialists. If low impact operations are required, then States have to allow people who can actually deliver on this aspect to continue to function.

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