FROM
VOSTOK
TO
VOSTOK

ANTARCTIC
DISCOVERIES

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IS SUCCESS CRUCIAL, SO LONG AS THE EFFORT IS
HONOURABLE, AND ANY FAILURE MEMORABLE?
# From Vostok to Vostok

**Antarctic Discoveries**

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1. Introduction

1.1 Introductory Comments

"To strive, to seek, to find and not to yield" – Alfred Lord Tennyson, Ulysses

Simple words which are found carved into the cross atop Observation Hill on Hut Point, Ross Island, to commemorate the final 1910 - 1913 Antarctic party of Scott, who all perished on their return journey from the South Pole. The last part of this inscription encompasses the final fatal moments of Scott’s expedition, whilst if one was to succinctly define discovery, the first three components of this inscription would form a solid foundation from which to begin.

Discovery is a concept that has been the driving force behind the relationship between humans and Antarctica for over 200 years. Sailing south in search of Terra Incognita Australis was followed by the race to reach the South Pole, whilst scientific study which discovered the ozone hole is now searching for ancient life beneath the ice. The events that have shaped and formed the fascinating story that is Antarctica can all be attributed to this idea of discovery.

Examining the relationship between the Antarctic and ‘discovery’ poses a number of interesting and important questions. Investigating the history of Antarctic discovery allows the opportunity to gain knowledge and draw lessons to guide the future interaction between Antarctica and discovery. ‘Is success crucial, so long as the effort honourable, and any failure memorable?’ is a question which encapsulates many aspects of the analysis of Antarctic discovery, and it is the question that provides the foundation of this paper.
1.2 Aims

The aim of this paper is to answer the question posed, and to use this answer as a foundation to manage future discoveries. Answering the question will be based on an examination of numerous case studies of Antarctic discovery spanning almost 200 years of Antarctic endeavour. Following the analysis of the case studies will be a discussion based on a future project linked with Antarctic discovery, the drilling of Lake Vostok. This discussion will draw together the key elements uncovered in the analysis of the case studies, and associate them with this future endeavour.
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2. Methodology

The primary method employed in this exploration of the question proposed is that of case study. The case study approach allows for the exploration of the integral components of the question within the constraints and context of real life discoveries. Similarly, it provides the most comprehensive methodological approach to answer the question posed.

With over 200 years history of Antarctic discovery available for discussion, it is important to be selective of which discoveries to include in the project. Care must be taken to encapsulate the full time line of Antarctic discovery, and not limit the research to the well known fables of early 20th century heroism. This has been achieved by separating Antarctic history into a series of eras which represent times of different value and focus in Antarctic discovery. Five eras have been derived from which case studies will be drawn. These eras do not represent specific periods of time, but periods with similar human focus to activities in Antarctica. They have been defined as the pre-heroic, the heroic, the scientific, the modern, and the future eras.

It is from this selection of case studies that the title of this paper has evolved. As previously noted, this research will conclude with a discussion of the key points unearthed in the evaluation of the case studies with respect to future discoveries involving Lake Vostok. However, the research will begin with the analysis of Bellingshausen’s 1819 – 1821 Imperial Russian Antarctic Expedition aboard the vessel Vostok. Thus, the research encapsulates from Vostok to Vostok.

The question proposed is multifaceted; making a dichotomous choice between the undemanding responses of ‘yes’ or ‘no’ does not take into account the nature of the question. Therefore, this research is based on answering the question from a number of perspectives, as well as the exploration of a range of different ideas associated with the question.
Examination of the question will be primarily based on a contemporary analysis of the discovery. For this paper, ‘contemporary’ is defined as the time at which the discovery is made.

Each case study will also be analysed based on a retrospective viewpoint, using the values which direct Antarctic discovery today, at the beginning of the 21st century.

Similarly, a prospective analysis will be made, analysing the discovery from a future point in time. A prospective analysis of the question proposed involves the formulation of a future scenario for Antarctica, and a prediction of Antarctic values that could be associated with that scenario. For the purposes of this research, a future situation for Antarctica has been formulated.

This future scenario is one not based on radical predictions or science fiction, but one linked with a continual evolution of the Antarctic in line with what is happening today. This future scenario still sees Antarctica as primarily the domain of science. Tourism numbers to the continent have peaked and steadied at 15,000 visitors per year. The main changes in value are: environmental concerns are of even greater importance, and political cooperation is replacing nationalism, as cooperation is seen as the best avenue for protecting and managing the future of the continent.

Each case study will also look to consider other ideas associated with the discovery. We will examine the initial motivations behind the search for discovery, how Antarctic discoveries are communicated to the world, and the marketing of Antarctic discoveries. These ideas link strongly with the question posed, and allow for a more comprehensive analysis.

Drawing all this together will be the formulation of a framework for the management of future discoveries. This framework will be based on the lessons derived from the history
of Antarctic discovery, whilst incorporating the notion of an Antarctic future, where different values will play an enormous role in the future relationship between Antarctica and discovery.
3. Antarctic Discovery Case Studies

3.1 The Pre Heroic Era

The Pre Heroic Era is one of discovery – discovery of the boundaries of the Great Southern Continent to balance out and complete the maps of the World. The Imperial Russian Antarctic Expedition of 1819-21 included a war ship named the Vostok. This is the name that leads us to our Future of the continent and discovery – From Vostok to Vostok. Will the original Vostok be totally forgotten and left in the shadow of the looming challenges of exploring Lake Vostok?

3.1.1 The Imperial Russian Antarctic Expedition (1819 – 1821)

The Imperial Russian Antarctic Expedition commanded by Thaddeus von Bellingshausen circumnavigated Antarctic continent crossing the Antarctic Circle six times in two austral summers (Heacox, K., 1998). This expedition stands out from other maritime ventures of the era because it was not a sealing venture, but primarily a scientific expedition.

Two ships made the voyage, the Vostok (a 600 ton man of war with copper plating down her pinewood hull and 28 cannons) and the Mirnyi (with a hull fortified with tar and canvas from gunwale to keel). A crew of 189 officers and able-bodied seaman was selected, with each having to have two skills of use to the expedition. The expedition lasted 751 days and sailed 57,073 miles, with no man lost to scurvy, an exceptional achievement for the time. The circumnavigation narrowed the boundaries of the continent. The crew sighted distant mountains but did not know whether they were the mainland or islands, because there was heavy sea ice preventing Bellingshausen from sailing for verification. It has been recorded that he landed on and named Alexander Island on the west side of the Antarctic Peninsula. (Gurney, A., 1977)
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The Imperial Russian Antarctic Expedition ordered by the Russian emperor, Alexander I, was a two-pronged investigation of both the Arctic and Antarctic. After the defeat of Napoleon, and with Russian troops entering Paris in 1814, Alexander’s sense of manifest destiny, both for himself and Russia, intensified. He saw himself as the God-ordained leader of the Christian monarchies. More practical reasons for the expeditions as opposed to the mystical sense of destiny were to train a cadre of seamen for the Imperial Navy and to discover lands for "establishing future permanent sea communications or places for repair of ships." The Imperial Academy of Science, owing to lack of time, "has not prepared instructions for the scientific staff...". Bellingshausen had only six weeks to prepare for the voyage. The Minister of Naval Affairs gave the guidelines for some experiments to be completed, with emphasis given to astronomy, pendulum experiments for gravity readings, navigation, lunar distances and compass variation. (Gurney, A., 1977)

Bellingshausen’s voyage was described as a masterly continuation of that of Cook, supplementing it in every particular, competing with it in none (Gurney, A., 1977). The expedition was one without major catastrophic incident. The voyage rivalled Cook’s, but the results were different. The reports of Bellingshausen’s voyage dropped into the bureaucratic black hole of Russian administration. Nothing was published of the voyage until 1831 when only six hundred copies were produced, consisting of two volumes and an atlas relating to the expedition.

Bellingshausen was ill served by posterity. St Petersburg digested his journals and saw little to gain in Antarctica. Central Asia was a more pressing concern. The narrative remained in Russian until 1902, when it was translated into German. The first English translation did not appear until 1945. Only a few geographers and fewer seamen knew of his voyage. Nathaniel Palmer who met Bellingshausen at the South Shetlands in 1821 could not even remember his name. He recorded 55 years later the meeting with the Frigate “Rostok” (sic) (Gurney, A., 1977). Hence a voyage 50 years after Cook’s voyage, pushing the knowledge of the outer limits of Terra Incognita, was not to be recognized.
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Today there is still very little information on the voyage. Bellingshausen is credited with zooming in on the limits of the Antarctic continent. The voyage was for science but most of the science that was done was not published in time to make it of any use. The few legacies that remain are geographical names: Bellingshausen Sea, located to the west of the Antarctic Peninsula, and Lake Vostok, site of the now controversial proposal to continue a multi-national drilling project.

In the future, Bellingshausen may well be totally forgotten. His voyage missed the window for idolising his accomplishments. There were no stories of tragedy or heroics to make his story into a legend. Sadly the accomplishment of continuing in James Cook's wake will not be memorable. His voyage needed the momentum of early recognition of his achievements to place his name in the pages of un-erasable history.

Perhaps his voyage will become known when the media delve into the story of the ice drilling and sampling project into the ancient water of Lake Vostok. While the media is reporting and "immortalising" the great discoveries, advancements, and contributions to the people of the World, someone may do a little research into the history of the name of the lake, and do a human interest production of the Imperial Russian Antarctic Expedition of 1819.

3.12 British Antarctic Expedition Led by Sir James Clark Ross (1839 – 1843)

The British Antarctic Expedition led by Sir James Clark Ross was organised for the sole purpose of making studies in the high southern latitudes and locating the south magnetic pole (Gurney, A., 1977). The two ships that made the voyage, Erebus and Terror, were bomb-vessels of 371 and 326 tons respectively. Bomb-vessels were designed to carry and fire mortars for bombardment from the sea, hence both vessels were very stoutly built and further strengthened by strong frameworks. They were very roomy and suitable for voyages of exploration into unknown and stormy seas (Ross, M.J., 1982).
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They made for Tasmania to set up a magnetic observatory and the next season headed south along the 180th meridian (Gurney, A., 1977). Ross had reinterpreted his orders from the British Admiralty and decided to follow this more easterly course than had previously been taken, in order to locate the South Magnetic Pole.

As it turned out, Ross' attempt to sail to the South Magnetic Pole was an impossible feat because the pole was at that time located on the Antarctic continent (Cossley, L., 1999). He reached 78 deg 10" south latitude, the southernmost point reached by any person until 1900 (World Book Encyclopedia, 1990). He was the first person to go beyond the pack ice surrounding Antarctica. He sailed into a gulf that is now known as the Ross Sea. He was the first to see the towering ice shelf now known as the Ross Ice Shelf (he named it the Victoria Barrier). This was his most surprising discovery. The Barrier was more unexpected than any mountain range or volcanoes and one of the most dramatic geographical discoveries ever made. At the end of the first voyage Ross said, "This extraordinary barrier of ice, of probably more than a thousand feet thickness, is a mighty and wonderful object, far beyond anything we could have thought of or conceived." (Heacox, K. 1998) Another discovery was Ross Island, which contained two volcanoes he named after his two ships, Erebus and Terror. He headed back again to Tasmania for the winter to make ready for another foray south.

The expedition was not successful in finding the geomagnetic pole. However, a little known experiment did have a huge impact on the world. The Erebus and Terror were loaded with twenty-six tons of canned provisions, which included beef, mutton, veal, ox-cheek, vegetable soup, carrots, parsnips, beetroots, onions and turnips. Upon completion of the voyage Ross recommended canned provisions be issued to all ships in the Royal Navy. Queen Victoria knighted Ross for his contributions to science. He had also blazed a trailhead to the South Pole - the Ross Sea and Ross Ice Shelf. (Gurney, A., 1977)

Today, the geographical place names are the most visible legacy of the expedition. The Ross Sea, Ross Island and the Ross Ice Shelf are reminders of a time before Scott and
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Shackleton. Similarly, Second in Command Francis Crozier, 3rd Lieutenant of Terror, Archibald McMurdo, and the purser of Erebus, Thomas Hallett, can be linked with prominent place names in the Ross Sea region. (Ross, M.J., 1992)

3.2 The Heroic Era

British society in the early 1900s had fixed ideas about the nature of heroism. There was confidence in the idea that man could do anything, given the will, and the motivation for geographic exploration and physical accomplishment was ostensibly for the glory of the British Empire. However, in the case studies discussed here, the leaders of British Antarctic expeditions had more personal goals, which affected their assessment of how crucial it was to obtain success in the Antarctic.

3.21 Scott’s Discovery Expedition

The Discovery expedition, commanded by Captain Robert F. Scott, sailed from London at the end of July 1901. It made numerous stops on the way to Christchurch, the officers entertaining dignitaries, giving lectures and attending dinners. The expedition spent three weeks in Christchurch before leaving for the Antarctic. During the farewell festivities Seaman Charles Bonner was killed in a fall from the rigging. The ship made a brief stop in Port Chalmers where they buried him, and he was replaced with Thomas Crean. The expedition continued on its way south. (Wilson, E. 1966).

In January 1902 Cape Adare was sighted. A shore party left flags and messages at Borchgrevink’s hut. The ship then continued to McMurdo Sound and landed at Cape Crozier. The expedition sailed east and sighted King Edward VII Land, before returning to Hut Point to establish winter quarters. Scott allowed the Discovery to be frozen in to
McMurdo Sound and the expedition used this as their quarters. The hut they built at Hut Point was used for scientific work and as a theatre. (Rubin, J. 1996).

Scott experimented with balloons, using them to make two ascents from which it was possible to see over twenty miles. The flights were made dangerous by polar winds and the unpredictability of the equipment. It was also necessary for the members of the expedition to learn to ski, man haul sledges and use dog teams. Many had never skied before, and injuries occurred. Steward Charles Ford broke his leg and Scott injured a knee. This meant that he could not take part in the first major sledging journey undertaken by the expedition in February 1902. (Thompson, D. 1977)

This expedition was a failure in several respects and led to the death of Seaman Vince, in a search for another seaman, Hare, who had returned to their tent to get his ski boots. Vince was improperly shod and slipped and fell to his death in McMurdo Sound. Several men were frostbitten. Scott took many lessons from this journey. Mistakes had been made through the sailors’ lack of experience in Antarctic conditions. Subsequent sledging journeys were better trained and the equipment better prepared.

In November 1902 Scott, Edward Wilson and Ernest Shackleton then made a journey south to survey the terrain. They reached 82°16'S, and sighted the land plateau, thus discovering a possible route to the Pole. Shackleton fell ill on the return journey, suffering from scurvy.

The expedition's relief ship, the *Morning*, arrived in January 1903. The ship supplied the expedition and returned to New Zealand with eight men, including Shackleton. The *Discovery* was still frozen in. During the next year several more sledging journeys were made, including a journey to southern Victoria Land. In January 1904 two relief ships arrived, the *Morning* and the *Terra Nova*, in case the *Discovery* was still frozen in. However, all three ships were able to leave McMurdo Sound in early March.
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The expedition was conceived, organised and promoted by Sir Clements Markham. In 1850 he was a midshipman on an Arctic expedition involved in the search for Sir John Franklin. This fuelled Markham’s enthusiasm and obsession with polar exploration. It also fixed his ideas on how a polar expedition should be conducted. For the next 50 years he and other Arctic veterans were organising naval polar expeditions, although their fixed ideas and practices led to little advancement in organisation of expeditions and the development of equipment over this time.

Markham had a strong control over the Discovery expedition. Opponents in the Royal Society wanted control of land expeditions to be scientific. Markham overrode them and Scientific Director of the expedition, Dr. Gregory, resigned. There was then a “shift from research to adventure” in the goals of the expedition. Temporary Director of Scientific Staff George Murray left the expedition at Cape Town after a disagreement with Scott, leaving him with undisputed authority over the personnel. (Holland, C. 1986).

The climate in the British Navy at the time meant that promotion was difficult. The British Empire looked towards a time of peace and prosperity with little scope for naval growth. Social values towards the end of the Victorian era favoured bravery, fortitude, patriotism, and physical achievements. The social structure was very stratified and class distinctions were evident in the organisation of the expedition.

Markham stated that the main object of the expedition was “the encouragement of maritime enterprise, and to afford opportunities for young naval officers to acquire valuable experiences and to perform deeds of derring doe”. He was adamant that the main focus of the expedition should be naval. There was also to be an emphasis on geographical discovery and magnetic research, a “naval” science. The “Instructions to the Commander of the Antarctic Expedition” state that “The main objects of the Expedition are to determine as far as possible the nature and extent of that portion of the South Polar lands which your ship is able to reach; and to make a magnetic survey in the southern regions to the south of the 40th parallel” and that “Neither of these objects is to be
sacrificed to the other”. The instructions further state that “The councils of the two
Societies [Royal Society and Royal Geographic Society] also attach importance to
meteorological, oceanographic, geological, biological and physical investigations and
researches.”

Scott’s personal goals were to further his career and to gain financial security. He was
motivated by a desire to better provide for his mother and sister, and was anxious that he
would miss promotion.

On its return the expedition was viewed as a great success. Scott had pioneered Antarctic
cruise, and learnt much about the Antarctic environment and survival in harsh conditions.
The expedition was celebrated for the abundance of scientific data it returned with.
There was some controversy over funding because it was thought that the Discovery
would be frozen in over the 1903-04 austral summer, meaning a second relief voyage by
the Morning was necessary, also accompanied by the Terra Nova. The British
Government agreed to finance the relief voyage but the Morning was forfeit. This caused
great embarrassment to Markham who had raised the funds for the Morning and
considered it his ship.

Scott was promoted to Commander for the expedition, a higher rank with better pay. This
was a personal success. On his return, he expected a knighthood which he did not receive.
The success of this expedition was crucial, but it was only given vague guidelines as to
its goals, as it was unknown whether the ship would even be able to land. The efforts of
the expedition were certainly honourable as it was seen at the time. Some of the failures
were memorable, and lessons were gained from them; but it must be noted that Scott
repeated many of his mistakes in his second expedition.

The expedition is still viewed as a success today, but the values of society have changed.
Scott is now criticised for the distinctions he made between officers and seamen, and the
inefficiencies that he either tolerated or did not identify. It can be argued that he took risks with his men, particularly in the case of the southern journey. Scott made no considerations for the impact the expedition had on the Antarctic environment; any similar expedition today would consider this. The shooting of seals for food and fuel would be frowned on today, although common practice at the time.

Today we view the expedition as a success for lessons learned in travel and survival on the continent. However, these "lessons" could have been gained from Arctic peoples. The scientific results are now considered modest when compared to the size of the expedition; it was one of the last large, cumbersome naval polar expeditions. The *Discovery* expedition is still a source of national pride for Britain. The success of this expedition is no longer viewed as crucial; the discoveries that are still valued (polar survival) could have been made in the Arctic.

In the future, the values of society will have changed from the present. Britain may find the geographical "claims" staked by the expedition useful, if it wishes to pursue territorial claims in the Ross Sea region at some time in the future. In this case the expedition once again becomes a success in terms of territorial rights and geographical discovery.

The expedition, and indeed all subsequent encroachments of the continent, may have had environmental consequences about which we yet know nothing. In this case, the "success" of the discovery is dependent on future discoveries. Scientific data gathered on the event may have significance that is not yet understood; again, the "success" of the discovery is dependent on future discoveries.

3.22 The Imperial Trans-Antarctic Expedition

The aim of Shackleton's Imperial Trans-Antarctic Expedition was to cross the continent from the Weddell Sea to the Ross Sea. On August 4, 1914, war broke out in Europe.
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Shackleton offered the ship and crew of the expedition for war service, but was told to proceed with the expedition. The *Endurance* sailed south on August 8, and stopped at South Georgia Island as the final port of call, before heading into the Weddell Sea.

The ship never landed, becoming caught in the pack ice in January 1915, sixty miles from land. The crew was forced to spend the winter on the ship instead of on a land base as had been planned. During the winter the *Endurance* drifted north, slowly being crushed by the pack ice. In October the ship was finally abandoned and it sank at the end of November. The crew was forced to camp on the pack ice as it drifted north and broke up. Finally three boats were launched and the entire party made it to Elephant Island. In April 1916 Shackleton then sailed with five others to South Georgia Island to effect a rescue of the rest of the crew, where three men crossed the island overland to reach a whaling station, which they did on the 20th of May. (Hussey, L. 1949)

The Trans-Antarctic party was to be met at the Beardmore Glacier by the Ross Sea Party; a separate part of the expedition which would lay depots from Ross Island. Their ship *Aurora* had been blown from her moorings in a blizzard, and ten men were stranded at Cape Evans for the winter. They had little supplies and were unable to lay the depots necessary for the survival of the Trans-Antarctic party. *Aurora* was beset and finally freed in March 1916 and the Cape Evans party was rescued in January 1917.

The attitudes and values of society at the time of the expedition were similar to those of Scott’s. Patriotism was fuelled by the tension in Europe, and the possibility of a German expedition with the same goals enabled Shackleton to raise funds for the expedition. Shackleton’s motivations were similar to those of Scott: needing financial security, and having a desire for fame. He saw the commercial value in an Antarctic expedition as well; the expedition was partly funded by selling lecture tours and book rights, all of which depended on him returning alive.
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The goal of travelling across the continent was ambitious. There were geographical discoveries to be made, and after Scott’s Terra Nova expedition, heroic deeds had huge public appeal. Shackleton stated that the main purpose of the journey was to “keep the spirit of adventure alive”. He chose men for their optimism. The expedition also had scientific goals, although they were secondary to the Trans-Antarctic journey. Scientific observations were to be made along the coastline of the Weddell Sea, and the Endurance was to find the coastline of Graham Land. The Ross Sea party also included scientists. Lansing, A. 1959).

The expedition was considered a complete failure. There was heroism of course, and some scientific data was gathered, but the expedition failed in its primary objective. Shackleton may have considered it a success; the crew certainly had adventures. The success of the expedition may not have been crucial to a Britain going to war, but it must be remembered that Shackleton was told to proceed anyway. It was not a publicly funded expedition. To Shackleton, the success of the journey was not crucial; his lecture tours and books were still produced. However, the rescue of the crew without loss of life was crucial to all involved. The effort was honourable by 1914 standards and the failure was certainly memorable.

In 1957 Fuchs and Hillary repeated Shackleton’s expedition, obviously viewing the actual feat of crossing the continent overland as crucial. There was slightly more scientific emphasis to this later Trans-Antarctic expedition, but the core goal was still to complete the journey. There is a possibility that the journey may be repeated in 2007, this time by robotic technology, under the auspices of the ‘Tech Trek’. It is clear that at present, there is even more emphasis placed on scientific knowledge than physical achievement. Environmental concerns are also greater, as is evidenced by the consideration of robots for this possible crossing, meaning a lesser environmental impact than humans making the same journey.
Shackleton's expedition is still considered a success story in leadership, inspiration, “keeping the spirit of adventure alive” and courage of the human spirit. It is not viewed as an environmental failure because the crossing did not take place, and is still a source of national pride for the British. The geographic data gained is now obsolete; more accurate data can be gathered from satellites. The successes gained are no longer crucial.

In the future, the scientific data that was gathered may all be obsolete. It may be possible to gather better data by remote sensing than could be gathered by hand. Like the Discovery expedition, environmental impacts or scientific data may have significance that is not yet understood.

### 3.3 The Scientific Era

The scientific era of Antarctica was initiated by the efforts undertaken as part of the global International Geophysical Year (IGY). This was a multi-national scientific effort to examine and analyse several geophysical phenomena from observation stations around the globe. Several stations were set up around the Antarctic region, and many of these went on to become permanent, long-term facilities that still operate today. These Antarctic stations made contributions to many of the areas of interest during the IGY, including auroras, sunspots and glaciers. The IGY ran from July 1957 to December 1958, encompassing two Antarctic winter seasons. The environment was ripe for significant discoveries in great numbers, but the potential for failure was ever present. (Sullivan, W., 1961)

#### 3.3.1 Japan's Antarctic Efforts during the International Geophysical Year

Japan was late to join in the preparations for the Antarctic component of the IGY. They sent a ship (M/S Soya) down in November 1956 to the Prince Harold Coast to reconnoitre
and establish a station. This station was set up on East Ongul Island (69°00'22" S, 39°35'24" E) and called Showa Base (sometimes called Syowa Base, depending on translation). This base was home to eleven winter over staff during the first IGY winter period of 1957. (JARE, 1958; NIPR, 1993)

This winter team was scheduled to be replaced in January 1958 for completion of Japan’s IGY commitments, but this was unable to happen due to the M/S Soya becoming trapped in ice on its approach to the base. The current members were ferried out one at a time on the small Beaver aircraft, but the station’s fifteen Karafuto dogs (huskies) were left behind in the hope that the next wintering team would be able to make it in. (JIGCY, 1958)

The ship was forced to turn back, and the dogs were left stranded, tied up with only one month’s food supply and an Antarctic winter ahead of them. Effectively, it was a cruel death sentence. An attempt to make one flight back to the base to poison the dogs humanely was thwarted by the continuing bad weather. The base remained unmanned for the entire 1958 winter season, meaning that the observations that the Japanese base was to obtain for the IGY effort did not happen. (K. Kurahara Productions, 1976)

On return to Japan, the expedition was met with a flurry of protest and outrage. The Japanese public wanted the scientists to return to Antarctica and send the dogs home in their place. Debate raged as to whether the dogs would be able to survive, and lobbyists tried to get legislation to prevent another such tragedy taking place. The party that was due to return to reopen the base in January 1959 decided not to take working dogs, as their hearts were not in it and the public opinion was still very much against it. However, they did take three puppies for company.

The story has an amazing ending. On returning to the station in January 1959, the party saw two black blotches moving amongst the base buildings. Two of the dogs, Taro and
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Jiro, had survived the twelve months of isolation in Antarctica. They had existed not by eating the other dogs, but by a hunting system whereby they harassed a seal until it defecated, and then ate the excrement. They were only three pounds lighter than their eighty pounds when abandoned the year before. (K. Kurahara Productions, 1976)

The nation rejoiced at the survival of the dogs, and the dogs became heroes. Jiro died eighteen months later while still in Antarctica, at which point his body was returned to Japan to be stuffed and displayed for the world to admire. Taro accompanied his brother’s body home, where he lived out his life to the good age of fourteen years seven months.

An interesting footnote to this is that in the first Japanese expedition to Antarctica (1912), the party was forced to abandon twenty-six dogs on the ice near the Bay of Whales. All of these dogs perished on the ice, a fact that was covered up in the media at the time. The 1957 - 1958 expedition accounted above was Japan’s next Antarctic effort, with a strangely similar outcome. (K. Kurahara Productions, 1976)

At the time, the expedition was viewed as a mixture of success and failure. From a scientific point of view, the Japanese were unable to fulfil their obligations to the IGY effort by pulling out of Antarctica, a fact that must have been very difficult for the Japanese to accept. Who knows what significant discoveries they may have made, should they have been able to spend the further months on the ice? It is worth remembering that honour is a very important value to the Japanese, and the country was still recovering from defeat in World War II. From a humanitarian point of view, the mission was also a failure in that the public denounced the abandonment of the dogs.

However, the mission was considered successful in that they did achieve half of their IGY observations and the men got out alive. They also laid the roots for a successful Antarctic presence that is maintained to this day, with active participation in many
significant activities. But was this success honourable? Certainly not to the Japanese public at the time. The tragedy of the dogs overshadowed any successes.

Today, the events surrounding Japan’s involvement in the International Geophysical Year are barely remembered. The tale of the abandoned dogs is merely a footnote in Japan’s Antarctic history, only made notable by the incredible survival of Taro and Jiro. However, Japan has enjoyed a rich involvement in the years since the IGY, coming out from the shadow of World War II to emerge as a significant, albeit relatively minor, player in the international Antarctic environment.

3.32 The Commonwealth Trans-Antarctic Expedition

This was an expedition headed by Dr (later Sir) Vivian Fuchs, assisted by Sir Edmund Hillary. It was to be the first crossing of Antarctica by vehicles and dogs. Hillary started out from the Ross Sea and Fuchs from the Weddell Sea; they met at the Pole and continued to the Ross Sea to complete the crossing using depots laid by Hillary in his first leg.

Initially, the expedition was due to take place in 1955 – 1956. This would have made them the first people to go to the Pole since Scott and his men. Financial and organisational difficulties forced a delay until the season of 1957 – 1958, coinciding with the International Geophysical Year. The honour of being the first Pole visitor since Scott went to an advance party setting up the US IGY Pole Station. They dropped off some materials and then flew straight out again, as it was too cold to start working. The expedition succeeded in its goal of crossing Antarctic via the Pole, and completed scientific observations along the way (notably, seismic soundings of ice sheet depth). (Lewis, R., 1965)
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At the time, the expedition suffered a mis-identity in two ways. Firstly, its postponement to the IGY year meant that it was caught up in the scientific focus of the time and judged far to strongly based on its scientific achievements (or lack thereof) instead of its adventure aspect. Secondly, the media portrayed the first leg as a ‘race to the Pole’ which Hillary ‘won’, much to the bemusement of all involved. It was not a race – Hillary’s main objective was to lay depots along what was to be the second leg of Fuch’s journey. Much publicity surrounded Fuch’s reaction to being overshadowed by Hillary in ‘losing’ the race they did not really intend to be engaged in. (Hillary, 1975)

Indeed, the postponement to the IGY year was of benefit to the scientific endeavours of the IGY, as the TAE bases were able to be used as IGY observation stations as well. (Sullivan, 1961) In addition, the TAE was able to perform seismic surveys, which added to the knowledge base gained during the IGY. However, the scientific community panned the expedition as an adventurous joy-ride, best exemplified by Ronald Fraser:

“The Commonwealth Expedition...is quite definitely not a part of the IGY programme, nor can it be expected to contribute greatly to it. It is an independent enterprise, guided by a zeal for geographical exploration, not by any properly oriented scientific compass. It has been fun to watch; it has even been glorious; but it is only very incidentally geophysics.” (Fraser, 1959:130)

A fairly harsh evaluation, contrasted by G. C. L. Bertram’s assessment:

“[The British Commonwealth Trans-Antarctic Expedition’s] advance party had set up its Shackleton Base at the southern fringe of the Weddell Sea...[which will] take part in certain IGY observations...The main object of The British Commonwealth Trans-Antarctic Expedition...is the first crossing of the continent by vehicles and dogs. The motivation here is
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primarily adventurous; and it may be truly said that of all the many expeditions in Antarctica today this is the only one so motivated and the only one largely supported by non-government funds.” (Bertram, 1957:18)

Perhaps a more reasoned and fair assessment.

Presently, the TAE of 1957/1958 is remembered as one of the more memorable and successful events of the IGY in Antarctica, despite not officially being part of the international effort. Indeed, as mentioned earlier, the crossing of Antarctica is due to be recreated in 2007 by remote robots, which will no doubt capture the imagination of the scientific community and public alike, and ensure the rekindling of the story behind the discovery.

3.4 The Modern Era

As these case studies show, success is a relative term, which changes as the values of the era change. What is judged a success today, may well be judged differently tomorrow. Also, a period of time is usually needed after the event before even its contemporaries are prepared to judge it a success or a failure. This makes it hard to identify any landmark “discoveries” of the present era that will go down in history as “successes”. However, in terms of present values, there are three aspects of the life of the Antarctic which could be judged successful, and which have both Antarctica itself and the world beyond. These three aspects – aspects which will provide the case studies for this section of the paper, are the Antarctic Treaty System, the discovery of the ozone hole and the start of tourism to Antarctica.

A common theme of “successful” discoveries in any era is that they expand the horizons of the people of that era; they challenge the status quo; they offer a different way of
viewing the world. In all these respects these "discoveries" could be judged successful in their own time.

3.41 The Antarctic Treaty System

The Antarctic Treaty System (ATS) arose in 1959, directly from the International Geophysical Year (IGY), a landmark event when scientists effectively over-ruled international politics and ended the Cold War in Antarctica. It was so successful in establishing a climate of international co-operation for peaceful, scientific purposes that it was decided to continue this value system by means of a Treaty, or, as it transpired, a system of treaties (Davor, 1994).

This discovery was a success in scientific and geopolitical terms. From a scientific point of view it both gave science a broader and less cluttered platform to work from than previously, and also established a certain independence from political processes. In terms of geopolitics, the ATS provided a new, albeit tentative, paradigm for international relations which transcended the accepted sovereign state model (Stokke & Vidas, 1996).

It represented a significant shift in macro values, from colonialism to global co-operation. It expanded the horizons of the age, by demonstrating a new way of nations doing business together, whereby they set aside purely selfish interests for the greater good of the world (or the Continent) as a whole (van der Lught, 1997). The main motivation behind the ATS was the furthering of science. Less altruistically, the huge costs and uncertain outcomes of pursuing national interests and territorial claims were undoubtedly also a large factor.

From the point of view of maintaining Antarctica in as unblemished a state as possible, it was essential that this discovery was successful – the Treaty had to work. From a global perspective though, the Treaty could have failed, Antarctica become a free-for-all, and
still the failure could have been honourable and profitable by offering another
geopolitical model, with learning experiences of how to improve it next time.

The ATS provides the following lessons and questions which future generations may
consider when evaluating the success of the treaty system. International co-operation in
Antarctica has continued for four decades (Joyner, 1998). There has always been, and
needs to continue to be, an over-riding goal all parties are working towards, if this is to
continue. It started with the IGY and scientific studies, and has evolved into conservation
interests (e.g. Lake Vostok) and global warming studies. However, if this larger common
goal ever became too small with respect to the national interests that compete with it,
nationalism could soon re-emerge. As Stan Robinson put it, "The Treaty only works
because the stakes are so small" (Pers. Comm. KSR, 2001). If the stakes change, so
could the effectiveness of the Treaty.

Leading on from this, multi-cultural over-wintering experiences in Antarctica have been
less than successful. What does this say about how far the model can be pushed?
Similarly, the Treaty was a precursor of the "Global Village" concept that was just
emerging. Is this idea still developing, or does the plethora of present sectarian
skirmishes, border battles, and break-up of super-states suggest that globally we are
returning to a smaller framework to work within?

3.42 Ozone Depletion

Routine measurements of the amount of ozone in the stratosphere had been performed in
Antarctica since the IGY. In the late 1970s the British Antarctic Survey (BAS) was
considering stopping this process, seeing little immediate use for the data. It was then
that scientists analysing the data found what was to them unbelievably low amounts of
ozone over Antarctica in spring. They assumed it must be measurement error of some
sort – the amount of ozone could never be this low – and kept the new-found low to themselves. So the true situation remained masked for a year or two, until independent measurements also started suggesting serious changes.

The BAS data were checked and the problem identified. Antarctica did and does suffer a severe loss of ozone each spring (Farman et al, 1985). This is not a peculiarly Antarctic problem though, for once the Antarctic atmosphere becomes “unlocked” in early summer, it mixes with the rest of the global atmosphere, spreading the ozone depletion around the globe. Antarctica’s problem is the world’s problem. There is an element of poetic justice here, since the ozone depletion over Antarctica is almost certainly caused by chemicals released in lower latitudes finding their way to the polar vortex and wreaking havoc there (Shanklin & Gardiner, 1989).

This discovery was a success for routine, unglamorous science, and for life on earth. Honourable failure would not have been helpful. It demonstrated the importance, indeed the imperative, of monitoring our global environment as comprehensively as we can. It was part of a global change in values, from consumerism to conservation, and came as the world was waking up to the fact that we live in a finitely-resourced, permanently destroyable system. Global warming and other environmental issues were emerging at this time.

The reality of ozone depletion marked the “end of innocence” in scientific and technological advances. The “hole” the “discoverers” found but could not accept as possible, was indeed there. There are always costs in what we do. “Progress” is not unilateral, and may threaten future generations or species if the environment is irretrievably scarred.

This discovery poses a number of questions for future consideration. How well do we monitor our environment – what other “ozone holes” are lurking out there that we don’t
even know to look for? How do we balance “blue skies” projects with short-term-gain ones? How can scientists be better trained to see what they find, instead of just what they expect to find?

3.4.3 Antarctic Tourism

Even with some of the earliest explorers such as Ross and Scott, science had played a major role in the human endeavours in Antarctica. With the passing of the heroic age, science became the sole overt justification for an Antarctic presence, and became enshrined in the Treaty. This changed in 1972 with the first luxury cruises to the Peninsula. In 1977, Qantas started day excursion flights over the continent, and tourism has grown from there so that today, more tourists visit Antarctica each year than scientists.

This “opening up” of Antarctica was obviously a success for tourists and the non-scientific populace (Smith and Spletstosser, 1994). In terms of preserving Antarctica, the advent of tourism may yet prove to be a crucial development in its history (Riffenburgh, 1998). If, as Stan Robinson believes, the only way to get people aware of and concerned about Antarctic issues is to get them there, (Pers. Comm.) then controlled tourism is clearly an essential tool in this strategy.

The advent of tourists in Antarctica represented a change in values and world views of who could go there, from an exclusive view to more inclusiveness. This was part of an overall widening of the types of people able to be part of Antarctica. It had started with women being slowly accepted as scientists, but now poets, artists, and writers would soon be part of the matrix. This change showed that it was becoming accepted that tourists and others had rights and responsibilities in the Antarctic too. It was no longer exclusively the “continent for science”. The eclectic nature and narrow focus of Antarctic sojourners gave way to a larger vision.
Lessons and questions that arise are from this case study include considering whether Antarctica is the preserve of the few? If tourism is an important part of Antarctica now and in the future, how can this be done with minimum impact? What “impact” is acceptable and how will this change over time? How relevant is the Treaty entry requirement of a “significant scientific presence”?
4. Discussion – The Future

4.1 The Potential for New Discovery

The history of Antarctica can be characterised as one of discovery. This history is set to continue into the future, and much attention is being drawn to possible future scenarios for the continent. It is likely that the Antarctic future will see further evolution of the values associated with it, while attempting to predict and characterise these future values is fraught with uncertainty.

Antarctica’s near future includes the formulation and completion of a number of initiatives aimed at Antarctic discovery. Discovering scientific knowledge of lake ecology from the past is the core goal of a project to drill and recover samples from Lake Vostok. Another project provisionally entitled the Latitudinal Gradients Project will look to make discoveries pertaining to climate change through the use of ecology as a proxy for climate change. Meanwhile, the ANDRILL McMurdo drilling project will look to make discoveries pertaining to the geologic history of the Ross Sea region.

The proposed Tech Trek will look to complete a 50 year data set by retracing the steps of Fuch’s and Hillary’s Commonwealth Trans-Antarctic Expedition of 1957-58, and also make discoveries relating to the abilities of robotics to complete future Antarctic investigation. Similarly, the nature of the Antarctic environment may allow for discoveries pertaining to future missions to Mars. Beyond this, only time will tell what other discoveries Antarctica will allow.

In this section, the drilling of Lake Vostok, an Antarctic project where discovery is imminent, will be discussed. The analysis of this case study will be in relation to the methodology outlined earlier in the project, and points highlighted in the case studies..
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4.2 Lake Vostok

The evolution of remote sensing technologies in recent times has allowed the opportunity for discovery pertaining to the planet as a whole. One such discovery that can be linked with the development of remote sensing technology has been the detection of liquid water lakes below the Antarctic ice sheets (Ellis-Evans and Wynn-Williams, 1996). These lakes exist beneath up to thousands of metres of ice, insulated from the extreme Antarctic environment, and untouched for many years.

The biggest of these lakes detected to date, and the site of a Russian scientific outpost, Vostok Station, is Lake Vostok (Voloshina, 2000). This sub-glacial lake is some 10,000 square metres in area, and lies beneath 3710 metres of ice near the pole of relative inaccessibility (Siegert, 1999). The opportunity that Lake Vostok provides for discovery is the possibility that microbes unknown to science, and possibly millions of years of age, reside in the liquid waters beneath the ice (Vincent, 2000).

It is also inferred that the sub-glacial environment may resemble the environment found on Europa, one of Jupiter's moons, as recent images have inferred the existence of an ocean beneath the ice that covers the moon (Renouf, 2000). If life is discovered within the liquid water of Vostok, then there is the indication that life may exist beneath the ice that encrusts Europa.

The lake also offers other opportunities for Antarctic discovery. The water that forms the lake has been cut off from the outside world for hundreds of thousands of years and may have a unique chemical signature. Also, there is the possibility of active tectonic drift below the lake, which keeps the water warm, but offers an abundance of opportunities for discovery to geologists. Similarly, sediments at the bottom of the lake may contain a record of ancient climate.
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The Russian Antarctic program, in collaboration with the United States and French Antarctic programs, have drilled to within one hundred and twenty metres of where the ice and liquid water meet. Currently, strategies are being formulated to develop the technology to drill into the lake without contaminating the water (Nadis, 1999), and to manage the project to best ensure the potential for discovery is met.

Measuring the potential success of the Lake Vostok project involves an examination of the goals on which the project is based. These goals are strongly linked to contemporary Antarctic values. Measuring the success of the Lake Vostok project following completion will be based on assessing how these objectives were met in the final analysis of the project.

Scientific and environmental objectives form the foundation of the project to drill into Lake Vostok. Successful science is a key goal associated with the project. Activity around Lake Vostok is not limited to the future intentions to drill the lake, but directed to further quantifying the scientific merit associated with an attempt to drill into the lake. Many scientific projects are in full swing looking to increase the scientific knowledge pertaining to the lake, such as airborne geophysical investigations of the lake conducted by the University of Texas. Stemming from this scientific knowledge is the potential for many discoveries, and knowledge from which to devise an accurate and ideal drilling plan. This ideal drilling plan links with the need to complete successful science.

From the environmental standpoint, safeguarding the integrity of the lake is a paramount concern and the drilling and sample retrieval techniques are being designed to mitigate contamination. This is the primary reason that drilling has been halted within one hundred and twenty metres of the lake surface.

To a lesser extent, political goals are also an important consideration. Lake Vostok provides the opportunity for a co-operative effort of discovery. The success of the project
will, to a degree, rely on the success of co-operation between the different countries involved. It will also provide a foundation for future partnerships that may increase the potential for future discovery.

In terms of the question considered in this paper, success is crucial, and the effort must be honourable, hence the need to develop environmentally friendly technology. Small failures will be memorable, and used to guide future discovery programs, but major failure – although memorable – will have an immense impact on the future of Antarctic discovery.

Assessing the success of the potential discovery will be primarily based on an analysis of how the project performs with respect to these goals and values. Looking back from a future point in time, the evaluation of success may place greater weighting on how the project performed in environmental terms. It may even be that the project is viewed as a total failure, as the decision to drill into the pristine environment that is Lake Vostok may be in disregard to possibly dominant future intrinsic and environmental values.

Evolving political scenarios may also play a role in how this imminent discovery is viewed. Should the future see a time of political co-operation, the origins of this may be found in the precedent that is the Lake Vostok drilling project. However, should our future scenario dictate a time of fragility in the Antarctic treaty system, then the co-operation envisaged at this stage of the planning process for the Lake Vostok drilling project could be viewed as a failure.

Science is an undeniable motivation behind the effort to drill into the liquid waters of Lake Vostok. As previously indicated, the secrets that lie beneath the ice hold significant importance to contemporary scientific thinking. However, one could argue that science is not the only motivation behind the project, highlighting both environmental and political motivations.
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Environmentally, Lake Vostok provides the opportunity to illustrate a new era in Antarctic discovery, an era where the environmental impacts of discovery can be mitigated. Similarly, the project provides an opportunity to illustrate how in future, national Antarctic programs can co-operate to make discovery. These two ideas can also be seen as motivations behind the Lake Vostok drilling project.

The marketing of this discovery is likely to focus heavily on the environmental and political success of the project, should the drilling operation turn out to be a complete success. By marketing the discovery in this way, tensions relating to the future of Antarctica may be eased, tensions which are linked with the historical environmental impact of human activity on Antarctica, and the fragility of the political and legal Antarctic environment. The discovery could be marketed as providing an example of how we can further explore Antarctica in the name of discovery, while paying respect to important issues that form the future of Antarctica.

It is in the marketing of the discovery that lessons can be learnt that can be utilised in the future management of Antarctic discoveries. Common themes in many of the predictions for Antarctica’s future are an increasing environmental awareness and greater cross-political boundary co-operation. Whether the Lake Vostok drilling program is an overwhelming success or an unprecedented disaster, important lessons will be drawn from the retrospective analysis of the project which can then influence the future of Antarctic discovery.
5. Conclusion

The key aim of this paper is to answer the question posed, being 'Is success crucial, so long as the effort honourable, and any failure memorable?' Through the analysis of the case studies examined, it is evident that there is no straightforward answer. Certainly success seems to be crucial at the time of the event. However, what has been highlighted is that the ideas of success and honour are evolving ones. Evaluating the success and honour of Antarctic discoveries is therefore dependent upon the societal values of the time of the evaluation, and as the values evolve through time, so do perceptions of the relative honour and success of Antarctic discoveries. Different cultures may also refer to their own values and histories when reflecting on discoveries.

Evaluating the success of particular Antarctic activities should be based primarily on the goals that were associated with that particular Antarctic endeavour. These goals are a reflection of the societal values that dominated the setting in which the discoveries were based.

What is also evident is an evolving value of success itself. As the stakes involved increase, so does the value of success. Scott’s failure to return from the South Pole would have far more of an impact today than it did in 1912, a reflection of how contemporary societies place far more emphasis on total success.

A consideration in the management of future efforts towards Antarctic discovery is the idea of how much emphasis do we place on success. Failure is now recognised negatively. Instead of constructive focus on what can be learnt by the failure, the focus is a negative one, where considerations are more aimed a why it was even attempted. Placing so much emphasis on success means that the focus of Antarctic discovery is now sure fire science at the expense of blue skies research that may uncover potentially significant discovery.
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Is success crucial? Yes, success is crucial. However, the value we place on success has evolved over time. The emphasis on success in early Antarctic endeavours was far less than the importance of success today. This is a result of evolving societal values that have seen far more emphasis placed on being successful, as apposed to attempting discovery in Antarctica.

Defining honour with relation to the Antarctic can be paralleled with the values that are attached to the region. The early emphasis that was placed on the exploration of the continent gave way to the scientific value of the region. This scientific value still characterises Antarctica, but now we see more value being given to environmental awareness, political cooperation and inclusiveness. With this evolution of honour in respect to Antarctica, we see an evolution of how we view past discovery.

The efforts involved in Antarctic discovery are based on the prevailing notions of honour at the time. As honour evolves, and analysis is made of the honour involved in the effort, the analysis is biased by the concept of honour that exists. Retrospective and prospective analysis of the case studies has highlighted that in some cases, the efforts involved in the discovery would no longer be classified as honourable. However, to say that discoveries made by the Scott’s discovery expedition are dishonourable due to the lack of environmental honour involved in the efforts does not pay attention to the prevailing idea of honour that existed during the time of discovery.

Looking to the future, it is key to draw lessons from all areas of past Antarctic discovery. These lessons can be drawn from both the success’ and failures in discovery, and provide a framework from which to manage future discovery. How Antarctica exists today is a result of the lessons that have been learnt in the past 200 years of Antarctic discovery. Now is the time to look towards the future, and utilise these lessons in the future management of discovery.
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The future of Antarctica is being considered with greater attention now than it ever has been in the past. Discovery will continue to play a pivotal role in the relationship between humans and Antarctica. However, the realisation that Antarctica will be faced with numerous threats in the future has led to the need to consider these threats now, and make plans to mitigate these potential pressures.

The planning of future Antarctic endeavours is embracing this need to consider carefully how Antarctic discovery is made, drawing from the lessons of the past and welcoming future predictions. Our evolving values pertaining to Antarctica can be seen in how discovery is achieved, and the future evolution of these values will continue to effect Antarctic discovery.
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