

Antarctica: ‘Surround Sound’

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In this era of heroic Antarctic centennials we are likely to be inundated with an avalanche of sepia-bound literature reinventing the myths of the cold white continent. Chief amongst these myths is the portrayal of Antarctica as a colourless, sterile environment where the only sound is the howling of the wind and the predominant biological feature is the spectre of white men, their beards infested by icicles, struggling and dying heroically on the ice. There is, however, another side to Antarctica, rich in colour, sound and smell which derives from the ring of life that surrounds the continent and which is more attuned to the oceans to the north than to the great white hell of the interior. The Antarctica that a visitor perceives is dependent on their orientation but also depends on the mode of transport used to get there.

Antarctica is more accessible than ever these days but there are only two ways to get there — by ship or by airplane. Most people visit by ship because most tourism in Antarctica is ship-based, and even national and private expeditions use ships extensively to transport people because of their capacity for bulk transport across the ocean. Air transport is largely the preserve of the national operations — and these programs have been the source of much of what is written about Antarctica both in the sciences and humanities. Thus the views of those flown in to Antarctica tend to dominate the recent literature, yet much of what is perceived of the frozen continent comes from people approaching slowly from the north by ship. The rapid immersion into the Antarctic provided by air transport provides a wholly different perspective and imagery compared to the slow edging through the ocean and the ice that approaching by ship affords.

Travel by ship still retains an air of romance and adventure, even if the vessel is a vast, ice-strengthened luxury cruiser. To cross the Southern Ocean is still risky; it is the world’s stormiest oceanic region with the highest average wave height, so there is a rite of passage involved in even the shortest crossings. Travellers who have experienced the horrors of a Force 10 in the Drake Passage can boast of their exploits for the rest of their lives, although they were probably curled, quivering and nauseous, in their first-class bunks at the time. But the storms are the province of the open ocean of the forties and fifties latitudes, and the days at sea in this region accustom the visitor to the immensity of the ocean, its movements and its deep blue emptiness. Vistas of rolling seas are

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punctuated by the soaring of the albatross and very little else. Consequently, approaching the continent, or the vast fractal wonderland of the pack ice, the visitor begins to appreciate the emerging landscape more keenly. The first break to the undulating two dimensionality of the ocean surface is the looming towers of icebergs. At first the bergs are sighted individually and distantly; eroded giants fast on the path to liquid oblivion. Into the sixties icebergs become more common and being younger are more varied in size, shape and colour. Vast, flat-topped bergs the size of small countries vie for attention with the crenellated ramparts of crumbling ice castles. The immense whiteness of the freshwater ice is perforated by the cobalt blue of cavities and chasms. Still more colourful are bergs shot through with vivid stripes of translucent blue and the holy grail of the ice-enthusiast, the deep green of the jade bergs. And the bergs take on the colour of the sky, changing constantly from piercing clarity at midday to subtle mauves and pinks during the timeless sunsets that merge into equally drawn out dawns. But all of this is merely the entree, a taste of the wonders that the continent and its frozen fringe have to offer.

What changes the environment so spectacularly as you approach the first barriers of ice and rock is the presence of life. Almost every living organism in or around the Antarctic continent is dependent on the ocean for its existence. Although the open ocean is not sterile, the pack ice through its melting and freezing drives an annual cycle that is astonishing in its productivity. Behind and within the receding pack ice in spring and early summer, blooms of microscopic plants explode on a planetary scale, and these prairies of the ocean are grazed upon by the vast ochre swarms of krill. Such an abundance of marine life has led to the evolution of a suite of large animals that exploit this highly seasonal cornucopia. Great whales used to gather here in their millions, travelling from their breeding grounds in the balmy tropics to gorge for a few short months which would suffice them for the long migration north and for the rest of the year. Seals breed on the ice and exploit the food supply below and around them. Flying birds come from as far as the Arctic and many breed in huge colonies that become ice free in the summertime. Penguins utilise the scattered rocky outcrops to frantically raise their young in the few short months when the snow has melted and when food is abundant. Thus, for the last hundred or two kilometres as a ship approaches Antarctica the ocean is suddenly awash with vibrant, noisy and frenetic life making the most of the narrow chance to feed, breed and hence survive another winter.



Figure 1. The colourful fringe of the Antarctic continent.

Source: Photograph by Steve Nicol.



Figure 2. Life, death, colour and sound on the edge of the Antarctic continent.

Source: Photograph by Steve Nicol.

Although the pack ice, formed from frozen sea, is white on top, on the bottom it's heavily fouled by microbial communities that use the undersurface to help them stay near to the surface and hence to life-giving light. As the ice decays the green–yellow–brown of the living floes becomes exposed and life begins to tint the physical world. The seals too add daubs of colour to the floes through the startlingly blood-red piles of excrement. Seals like most of the larger animals of the pack are rather drab but their movements and the occasional flash of pink from their gaping jaws alleviate the tonal monotony. But this is not unusual — most marine mammals and birds the world over favour unexciting colour schemes; the uniforms of grey, mottled beige and contrasting black and white are common to whales, seals and seabirds from the tropics to both poles. Onshore the penguin colonies are more colourful, despite the near-monochrome nature of their inhabitants. Pink guano of digested krill seeps into every crevice to the extent that these colonies are visible from space. The nutrient-rich and pungent excrement fertilises the surrounding area, resulting in swathes of pink, yellow and green blooms of algae that colonise rocks, ice, snow and ocean. Penguin colonies are a riot of colours, smells and sounds and are a vibrant counter to

the stereotypical vision of Antarctica as a colourless sterile expanse serenaded by the white noise of the wind. To be sure, the animal life of Antarctica cannot rival the primary colours visible in the tropics; there are none of the species that bring colour to more northern ecosystems — no reptiles, no amphibians, no insects and no songbirds. But the fringe of Antarctica is far from a colourless sterile environment, at least in summer.

Moving inland from the living fringe of Antarctica, the signs of life diminish and with them go the colour, the sound and the smell. Fifty kilometres inland and life retreats in scale, with drab mosses and lichens eking out a silent existence in the ice-free valleys and on exposed mountain ridges. The animals that dare to venture into the interior lose colour and blend into their environment. Snow-white snow petrels roost in crevices in the mountains and the colouration of skuas mimics that of the brown-grey rocks on which they breed. Two hundred kilometres into the continent and life is essentially extinct.



Figure 3. Riches from the sea — the brick-red guano of a penguin colony.

Source: Photograph by Steve Nicol.



Figure 4. The drab colours of life away from the coast — a skua among the rocks.

Source: Photograph by Steve Nicol.

As most visitors to the Antarctic arrive by ship in summer, the chaotic, noisy and nasally challenging spectacle of life on the fringe is what greets them. This is a marked contrast to the introduction to Antarctica experienced by those who arrive by airplane. Planes usually land near the coast, deep within the pack ice zone or on ice runways groomed on the high Antarctic plateau, far away from the ocean. Disembarking from an airplane, one is greeted by a harsh white landscape largely devoid of life except for the evidence of human activities. The sounds are those of the wind and of the mechanical appliances that permit human life in a hostile environment. The smells are largely those associated with industrialised life — kerosene, exhaust fumes and sunblock.

During the autumn, human and animal life deserts Antarctica, leaving a virtually uninhabited continent. It is during this rarely observed period that Antarctica most resembles its stereotype — cold, dark, monochrome and windy with the only sounds being those of the elements. It is paradoxical that during the long dark and largely colourless winter the sole native resident of the continent is the most colourful of the Antarctic animals, the emperor penguin.

Human activities follow the seasons. Biologists look to the ocean and the margins in summer, the region where life thrives and where the factors that encourage life and induce death can be studied in a restricted environment. The Antarctic of most biologists is a colourful, noisy, smelly and hectic environment. In contrast, the physicists and astronomers look inwards and upwards, seeing a blindingly white continent where contrast is only added though the ephemeral auroras or the artificial hues of distant stars and galaxies abstracted through complex instruments. The only life and colour that scientists at the South Pole experience is human life and introduced colour. At the Pole, the most inhospitable place on earth, only humans and microbes can survive.

Antarctica, more than most destinations, is thus defined by the perspective of the visitor. Early explorers would have found the coast a distraction as they set their sights inland to the colourless, lifeless interior. But to define this continent on the basis of its interior is as unrealistic as ignoring the diverse rainforests and reefs of Australia in favour of its remote red centre. The challenge for those who seek to describe this vast and important area of the planet is to incorporate its diversity and huge seasonality into the narratives that help to define its place in popular culture.

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