Antarctic Cities

Volume 4
Principles for Antarctic Connectivity

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The report, Antarctic Cities, comprises the following volumes

Antarctic Cities, Volume 1: From Gateway Cities to Custodial Cities

Antarctic Cities, Volume 2: Urban Sustainability Profiles

Antarctic Cities, Volume 3: Antarctic Connectivity Index

Antarctic Cities, Volume 4: Principles for Antarctic Connection

Hobart, old docks, with bill posters welcoming strangers and acknowledging the original custodians.

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Preface to the Principles

Principles for Antarctic Connectivity brings together the values associated with the Antarctic Treaty System in the context of the UN Sustainable Development Goals. It is an initiative to bring together cities together in ways that outline a common vision, narrative and priorities.

Antarctica is one of four internationally recognized global commons along with the atmosphere, the high seas and outer space. These are all areas that have historically been guided by the principle of the common heritage of humankind. However, there is no comprehensive charter of principles for Antarctic engagement. The present charter 'Principles for Antarctic Connectivity' seeks to provide such a set of guidelines.

The continent is governed by the Antarctic Treaty System, a complex set of arrangements developed to regulate relations between states with interests and territorial claims in the region. There are five main articles to the treaty that have a principle-like quality (see Appendix 1 for a summary of all the articles):

1. No military use shall be made of Antarctica, though military personnel and equipment may be used for peaceful purposes.
2. There will be complete freedom of scientific investigation.
3. Antarctic Treaty Nations will exchange plans for their scientific programmes. Scientific data will be freely available and scientists will be exchanged between expeditions where practical.
4. All territorial claims are put aside for the duration of the Treaty. No activities under the Treaty will affect claims to sovereignty of any part of Antarctica made by any nation.
5. Nuclear explosions and nuclear waste disposal are banned from Antarctica.

As of today, 29 states are 'consultative parties' to the Treaty. They demonstrate their interest in Antarctica by carrying out substantial scientific activity there. The Treaty articles are geographically directed towards activities in Antarctica. This charter, by comparison, is not geographically contained but pertains to all activities that have a bearing on the Antarctic region.

Preamble

Recognizing that Antarctica is governed internationally by the Antarctic Treaty System, and that, under this Treaty, Antarctica is recognized by the Protocol on Environmental Protection as 'a natural reserve, devoted to peace and science'.

Recognizing that Antarctica, as one of four recognized global commons under the principle of the common heritage of humankind, is a key to the future of our planet.

Recognizing that the United Nations has set 17 goals to change our world. Goal 11 concerns cities explicitly—'Make cities inclusive, safe, resilient and sustainable'—but all 17 goals pertain to cities in some way.

Recognizing that five cities—Cape Town, Christchurch, Hobart, Punta Arenas and Ushuaia—together play a vital role in humanity's engagement with the South Polar Region. Most travel to the Antarctic region is funnelled through these five formally recognized global 'gateways'. Each of these cities are in zones with intense interconnectivity to the Antarctic, and co-ordinate all significant engagement with the region. Each of these cities is formed by long and complex histories of engagement with the Antarctic going back to the nineteenth century.

Recognizing the spirit of the *Statement of Intent* signed in 2009 between the Southern Rim Gateway Cities to the Antarctic: Cape Town, Christchurch, Hobart, Punta Arenas and Ushuaia.

Now, therefore, we now proclaim these *Principles for Antarctic Cities* as providing guidance for practical action.

The Principles in Summary

Principles for Antarctic Connectivity is intended to work for cities, institutions, and even individuals, as a guide to for engaging with the Antarctic region, whether in Antarctica or anywhere else in the world. At the top level, the principles are expressed as simply as possible in terms of the four domains of ecology, economics, politics and culture. Going deeper, the second level of principles elaborates the first.

These principles are opportunities for the cities to realize greater economic, community, cultural, scientific and ecological value through custodial responsibilities as caring cities with a privileged position as global Southern Ocean Rim cities.

Ecology

Ecological engagement with the Antarctic should be directed towards developing deeper and more integrated human engagement with the natural *world.*

Economics

Economic engagement with the Antarctic should contribute to prosperity for all, organized primarily around fulfilling social needs.

Politics

Political engagement with the Antarctic should have a primary emphasis on engaged and negotiated civic involvement, supported by clear and consistent legal frameworks, working towards justice for all, including the natural denizens of Antarctica.

Culture

Political engagement with the Antarctic should actively promote vibrant cultural interchange, including supporting ongoing processes for dealing with the uncomfortable intersections of identity and difference, inclusion and exclusion.

You are standing on common ground.

Welcome to The Commons (est. 2013)

On this site (which was once a large hotel), you will find a bevy of individuals, groups, organisations and businesses with a common purpose – to engage in the city of Christchurch in its new and unusual post quake state.

Here, we have created spaces and activities for our city community to share: food music, entertainment and conversation.

This is a place for everyone: built for the community, by the community and always evolving.

This site was first activated by Gap Filler in October 2012 with the construction by volunteers of the temporary venue, the Pallet Pavilion. It was deconstructed across April/May 2014.

The organisations on this site include Gap Filler, Life in Vacant Spaces, The Arcades, MakerCrate and a whole range

of yummy food caravans and markets. We are all here to make this space welcoming and exciting, in collaboration with you.

Former collaborators on this site have included the Volunteer Army Foundation.

We welcome your enquiries. Please visit gapfiller.org.nz/the commons to find out more about The Commons, organisations, site vision and values, events and future plans.

THE COMMON

Christchurch, the Commons Project, initiated after the earthquake to set up creative spaces where buildings were destroyed

Background to the Principles

Why are Principles Important for Practical Action?

Without principles to guide practice, that practice becomes reactive and piecemeal. All too often, policy decisions and practical action become caught in webs of political immediacy. Without elemental considerations of what is good, the immediate pressures of the present and sectional interests tend to take over from longer-term thinking and planning for all.

Principles provide guidance. As the concept of 'principles' has long been used, principles are the beginning, the foundation, the enunciation of basic assumptions about good practice. This is not to suggest that principles should be absolutes or never-changing, but it is to argue that we need somewhere firm to stand. Dialogue provides the basis of that foundation.

How Can We Best Develop Principles that Work from High-Level Aspirations to Practical Guidelines?

There is an urgent need to develop tools to support the process of working with complexity and generality, but it also needs to be relatively simple and clear, pointed and meaningful at the local level. As such the present set of principles works on a three-level framework.

At the top level, the principles are intended to be global and inter-civilizational. They are negotiated in the present as the most direct and simple statements that can be made in relation to domains of social life: ecology, economics, politics and culture. That negotiation has been done by people attempting to think beyond their own places and times—that is, in relation to all settings across the world in which humans have lived in urban settlements from metropolises to villages. At this level the principles should be relatively enduring.

At the second level of subdomains, the principles seek to maintain this global reach but to move beyond big general statements to more precise claims. In their increasing detail, the principles become increasingly attuned to *this world, now.* The second level is still global in its framing, but it is more pointedly directed towards what can be done in practice.

The third level of sub-subdomains, still framed and informed by the top two levels, moves down to on-the-ground engagement and connectivity. Here we expect—we encourage—cities or organizations to take the suggested principles, discuss them, and rewrite them for local conditions and differences. We expect this rewritten set of principles to guide action.

What are the Guidelines for Developing the Principles?

The present charter uses the *Circles of Social Life* approach to structure the set of principles. The Circles approach offers an integrated method for practically responding to complex issues of vitality, relationality, productivity and sustainability. In particular, it provides a template for structuring the principles, ensuring that they range across the various domains, perspectives and aspects that make for a flourishing world.

The broader approach, which includes *Circles of Sustainability,* takes a region, nation-state, urban area, city, community, organization or individual through the difficult process of responding to complex or seemingly intractable problems and challenges.

The approach provides a way of achieving vitality, relationality, productivity and sustainability that combines qualitative with quantitative indicators. It sets up a conceptual and technology-supported framework for investigating problems faced by communities, and is intended to be applicable across the very different contexts of a neighbourhood, city or region. It is sensitive to the need for negotiation from the local to the global.
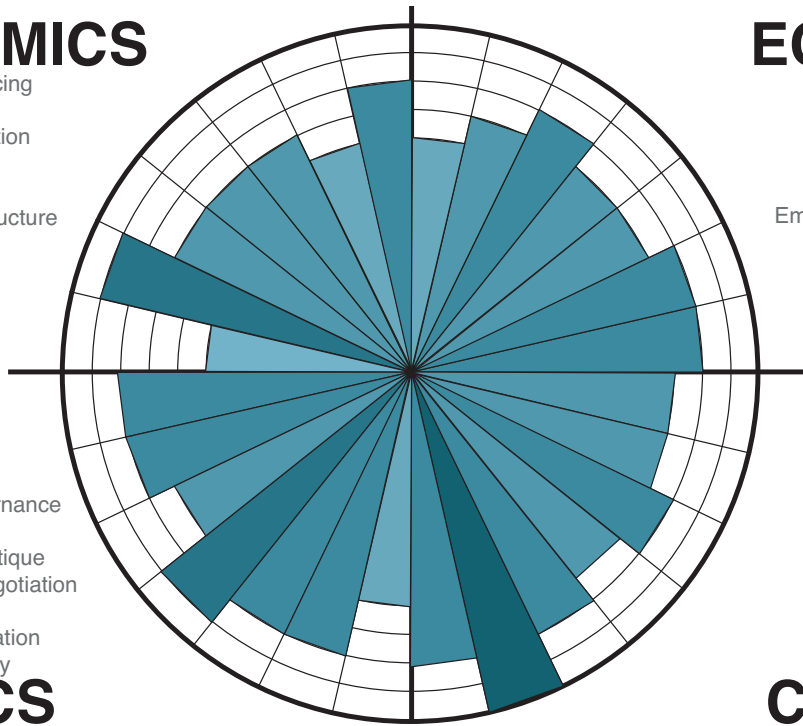
Figure 1. A Connectivity Profile of the City of Hobart, 2021.

ECONOMICS

Production & Resourcing
Exchange & Transfer
Accounting & Regulation
Consumption & Use
Labour & Welfare
Technology & Infrastructure
Wealth & Distribution

ECOLOGY

Materials & Energy
Water & Air
Flora & Fauna
Habitat & Settlements
Built-form & Mobility
Embodiment & Sustenance
Emission & Waste

POLITICS
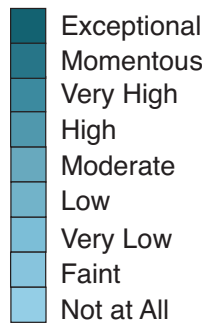
Organization & Governance
Law & Justice
Communication & Critique
Representation & Negotiation
Security & Accord
Dialogue & Reconciliation
Ethics & Accountability

CULTURE

Identity & Engagement
Creativity & Recreation
Memory & Projection
Belief & Meaning
Gender & Generations
Enquiry & Learning
Wellbeing & Health

Exceptional
Momentous
Very High
High
Moderate
Low
Very Low
Faint
Not at All

CIRCLES OF SOCIAL LIFE

This figure is presented as a rapid assessment showing the current standing of Hobart's Antarctic Connectivity based on the Antarctic Connectivity Index (See Volume 3 of this report). The ecological subdomains may appear a little too high, but it should be also noted that more generalized impacts such as through carbon-emissions are weighted much less than more direct connections.

The only dimensions that are unchanging about the *Principles for Antarctic Connectivity* is the template structure of domains and subdomains. The content to the subdomain principles can be changed through dialogue, debate and agreement. At the domain-level, change requires renegotiation at a global level. At the subdomain and sub-subdomain levels the principles can be changed locally through whichever local body or municipality is carrying through the principles. As we move to the subdomain level, the principles become increasing detailed and supportive of specific practices. At the third level, principles can be negotiated and rewritten to take account of local circumstances so long as they remain within the terms of the domain-level principles (see Tables 1 to 4 below).

Punta Arenas, la ciencia ilumina tu viaje a la Antartica; science lights your journey to Antarctica.

Principles for Antarctic Connectivity

Principles for Antarctic Connectivity is intended to work for nations, cities, institutions, and even individuals, as a guide to for engaging with the Antarctic region, whether in Antarctica or anywhere else in the world. At the top level—the domain level—the principles are expressed as simply as possible in terms of the four domains of ecology, economics, politics and culture. At this level, the principles remain stable and negotiated globally across locales rather than changed in relation to local concerns:

Ecology

Ecological connection to the Antarctic should be directed towards developing deeper and more integrated human engagement with the natural world.

Economics

Economic connection to the Antarctic should contribute to prosperity for all, organized primarily around fulfilling social needs.

Politics

Political connection to the Antarctic should have a primary emphasis on engaged and negotiated civic involvement, supported by clear and consistent legal frameworks, working towards justice for all, including the natural denizens of Antarctica.

Culture

Cultural connection to the Antarctic should actively promote vibrant interchange, including supporting ongoing processes for dealing with the uncomfortable intersections of identity and difference, inclusion and exclusion.

Detailed Principles for Antarctic Connectivity

At the next two levels—the subdomain and the sub-subdomain levels—the principles are given more specificity within the four domains of ecology, economics, politics and culture. At this level, the principles can be rewritten through local dialogue and negotiation. The next set of tables bring together the three levels together, moving from the overall social domains down to more focussed detail.

Please note that the phrase 'Antarctic-related activities' refers to activities and projects that are conducted in relation to the Antarctic region anywhere around the globe, not just in the geographical region itself.

Christchurch, looking
down from the Port Hills.

Ecology

(NB. None of the writing in black below should be redrafted locally; it is the content in green that is negotiable; not the structural form.)

Prime Principle of Ecology:
Ecological connection to the Antarctic should be directed towards developing deeper and more integrated human engagement with the natural world.

Subdomains	**Sub-subdomains**
1.1 Materials and Energy With the sustainable use of materials and resources for all Antarctic-related projects and practices, including through renewable energy, with existing infrastructure retrofitted for resource-use efficiency.	1.1.1. Availability and Abundance • By emphasizing renewable sourcing of all materials and energy for all Antarctic-related development projects.[1]
	1.1.2. Soil and Fertility • By conserving and/or enhancing soil vitality in all projects and activities, including aiming towards zero or sustainable landfill from all excavation activities in Antarctica.
	1.1.3. Metals and Basic Materials • By using energy-efficient materials for all Antarctic-related projects development projects and activities.
	1,1.4. Electricity and Gas • By orientating energy-use to renewable sources on all Antarctic-related projects, and aiming for 100 per cent renewable energy-use.
	1.1.5. Petroleum and Biofuels • By minimizing the use of petroleum or fossil-fuel-based products in all activities, projects and processes associated with engagement with Antarctica.
	1.1.6. Renewables and Recyclables • By reusing materials or using recyclable and recycled material for all Antarctic projects and related activities, where possible and appropriate.
	1.1.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the use of materials and energy.
1.2. Water and Air With all Antarctic-related activities contributing positively to maintaining or enhancing the air-and-water quality of the immediate region.	1.2.1. Vitality and Viability • By ensuring all Antarctic-related activities are conducted with sensitivity to water-related ecosystems in the region but also beyond: glaciers, mountains, forests, wetlands, rivers, aquifers, lakes and marine areas.
	1.2.2. Water Quality and Potability • By providing sustainable and continuous access to good quality potable water, managing sewerage and sullage sustainably to eliminate unprocessed drainage to natural water systems, and, where appropriate, recycling grey and black water for landscape-use.
	1.2.3 Air Quality and Respiration • By using non-toxic materials in all Antarctic projects, practices, and processes, particularly those materials that have no adverse impact on air-quality in their production or use.
	1.2.4 Climate and Temperature • By employing, where possible, passive ecological design for temperature comfort, and running active systems such as heating and air-conditioning systems (if such systems are deemed critical for wellbeing) through renewable energy sources.
	1.2.5 Greenhouse Gases and Carbon • By designing all Antarctic-related projects, including constructing buildings and infrastructure, to enhance the probability of carbon-neutrality or carbon-positive use.

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1 The phrase 'Antarctic-related development projects' and its cognates in this charter refer to both activities in the Antarctic region and activities in the city that relate to Antarctica.

	1.2.6 Adaptation and Mitigation Processes
	• By avoiding building in areas subject to water inundation, coastal erosion, land slippage, earthquakes, or other risk areas affected by climate change issues (or where such building is seen as critical, using high-level adaptive building techniques).
	1.2.7 Monitoring and Reflection
	• By using transparent mechanisms for monitoring the effects of all Antarctic-related projects on air-and-water quality.
1.3. Flora and Fauna With all Antarctic-related activities seeking to accommodate existing ecosystem complexities and/or to re-establish natural diversity.	1.3.1. Complexity and Resilience
	• By restoring, where possible, in all Antarctic-related projects, the prior complex connections of places to local flora and fauna.
	1.3.2. Biodiversity and Ecosystem Diversity
	• By taking into account the diversity of existing (especially indigenous) flora and fauna when developing a site or precinct, and restricting development in some areas to allow for connected flourishing of biodiverse species.
	1.3.3. Plants and Insects
	• By introducing measures to prevent the introduction of invasive alien species and/or to significantly reduce their impact on all Antarctic-related development sites, including through reintroducing indigenous species.
	1.3.4. Trees and Shrubs
	• Beyond Antarctica, but in all other Antarctic-related projects, planting trees and shrubs in the ground to increase the green canopy, and considering vertical or roof-gardening on buildings.
	1.3.5. Wild Animals and Birds
	• By developing all Antarctic-related projects with sensitivity to affected wild animals and birds, especially endangered species.
	1.3.6. Domestic Animals and Species Relations
	• By making provision, where possible, for appropriate companion animals to be accommodated both publicly and privately in all Antarctic-related communities.
	1.3.7. Monitoring and Reflection
	• By providing transparent mechanisms for monitoring the effect of Antarctic-related projects and practices on local flora and fauna.
1.4. Habitat and Settlements With Antarctic-related activities taking into account the natural limits of topography and climate.	1.4.1. Topography and Liveability
	• By working positively and creatively with the limits of natural topography, rather than simply changing the topography to suit the Antarctic-related developments.
	1.4.2. Original Habitat and Native Vegetation
	• By respecting ecological zoning laws and seeking to protect and/or restore original habitat where appropriate, especially along the edges of bodies of water.
	1.4.3. Parklands and Reserves
	• By providing for and/or advocating easy proximate access from all Antarctic-related projects to inclusive, safe and public natural spaces, with these places linked, where possible, through ribbons of ecological interconnectivity.
	1.4.4. Land-use and Building
	• By optimizing sustainable land-use by master planning and negotiating with relevant authorities on precinct-wide basis to minimize the spatial footprint of buildings in relation to natural spaces.
	1.4.5. Abode and Housing
	• By orienting buildings and neighbourhoods appropriately on all Antarctic-related projects in relation to the sun and prevailing weather conditions, and installing insulation to enhance passive cooling and heating design.
	1.4.6. Maintenance and Retrofitting
	• By retrofitting all existing buildings on Antarctic-related projects, where possible, for carbon-mitigation and climate adaptation.

	1.4.7. Monitoring and Reflection
	• By using transparent mechanisms for monitoring the sustainability of Antarctic-related developments in relation to natural habitat.
1.5. Built-Form and Transport With all Antarctic-related activities enhancing sustainable living, with good access and mobility facilitated by ecologically sensitive transport systems.	1.5.1. Orientation and Spread • By maintaining a sustainable built-environment characterized by well-designed density, accessible green spaces, and adaptive re-use of under-used and misused buildings and estates.
	1.5.2. Proximity and Access • By treating accessibility as relevant to all, including the vulnerable and disabled, by developing precincts with a close-at-hand mix of basic facilities where residential building is brought into close spatial relation to workplaces, while considering dangers and noise hazards through sustainable and appropriate building standards.
	1.5.3. Mass Transit and Public Transport • By applying transit-oriented development, focusing zones of dense urban development around mass-transit nodes.
	1.5.4. Motorized Transport and Roads • By promoting multimodal transits systems and taking the emphasis off motorized transport though giving spatial priority to interconnected corridors for sustainable public mass-transit over roads-for-cars.
	1.5.5. Non-motorized Transport and Walking Paths • By providing safe, porous-paved paths for walking and separate lanes for non-motorized vehicles such as bicycles.
	1.5.6. Seaports and Airports • By seeking accessible sustainable means of connecting all Antarctic-related projects to seaports and airports, particularly for the transport of goods, with an emphasis on sustainable transport management.
	1.5.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the impact of different modes of transport on the sustainability of Antarctic-related projects.
1.6. Embodiment and Sustenance With all Antarctic-related activities working to sustain or enhance the means of physical health, including through food production.	1.6.1. Physical Health and Vitality • By making sure that all Antarctic-related projects are supported by health facilities and places for active leisure.
	1.6.2. Reproduction and Mortality • By ensuring that all Antarctic-related development supports the health of both the very young and the very old.
	1.6.3. Exercise and Fitness • By using good building and precinct design on all Antarctic-related projects to encourage exercise and fitness, as well as providing public sporting facilities to increase healthy participation.
	1.6.4. Hygiene and Diet • By setting aside designated spaces in spatially expansive Antarctic-related projects for food gardens.
	1.6.5. Nutrition and Nourishment • By encouraging the establishment of healthy food outlets available to those working on Antarctic-related projects.
	1.6.6. Agriculture and Husbandry • By considering local means of food production for Antarctic-related projects rather than relying on importing.
	1.6.7. Monitoring and Evaluation • By using transparent mechanisms for monitoring the impact of Antarctic-related activities on personal physical health.

| 1.7. Emission and Waste

With all Antarctic-related activities directed towards zero carbon-emissions, including through an emphasis on a systematic reduction of resource-use, recycling, re-use of basic materials and hard-waste mining.	1.7.1. Pollution and Contamination • By managing all contaminants and wastes produced by various production and construction processes both in the Antarctic region, and elsewhere on Antarctic-related projects, across the full life-cycle of those contaminants and wastes.
	1.7.2. Hard-waste and Rubbish • By seeking to reduce to zero all personal, commercial, production and construction waste on Antarctic-related projects.
	1.7.3. Sewerage and Sanitation • By handling sewerage locally, where possible, ideally through precinct-based black-water recycling.
	1.7.4. Drainage and Effluence • By recycling waste and storm water for use within the immediate Antarctic-related development site or precinct.
	1.7.5. Processing and Composting • By providing the means for composting food-waste and green-waste locally, with the resulting humus being returned to the ground where appropriate.
	1.7.6. Recycling and Re-use • By using recycled materials, where possible and appropriate, for all development processes.
	1.7.7. Monitoring and Evaluation • By using transparent mechanisms for monitoring the effects of emissions and waste on the local environment and personal health.

Cape Town, workers doing maintenance work on council property.

Economics

Table 2. *Principles for Antarctic Connectivity in the Domain of Economics*

The prime principle of economics:
Economic connection to the Antarctic should contribute to prosperity for all, organized primarily around fulfilling social needs.

Subdomains	**Sub-subdomains**
2.1 Production and Resourcing With all Antarctic-related activities shifted from an emphasis on production for global consumption to an economics for living.	**2.1.1. Prosperity and Resilience** • By ensuring that all Antarctic-related development contributes in a positive way to economic prosperity for all, and to the economic resilience of the local and regional area engaged with Antarctica.
	2.1.2. Manufacture and Fabrication • By using fair, efficient and appropriate production processes for the manufacture and fabrication of all goods that are produced in Antarctica or for Antarctic-related projects, including though active engagement with those producers regionally and globally.
	2.1.3. Extraction and Harvesting • By sourcing all materials used for Antarctic-related projects from producers attested to be fair employers and fair traders.
	2.1.4. Art and Craft • By giving priority to engaging local craftspeople on Antarctic-related projects.
	2.1.5. Design and Innovation • By applying life-cycle-based good design principles in all production and resourcing processes for Antarctic-related projects.
	2.1.6. Human and Physical Resources • By employing all workers on Antarctic-related projects through merit-based and transparent processes.
	2.1.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the consequences of resourcing of materials for Antarctic-related projects.
2.2. Exchange and Transfer With investment in all Antarctic-related activities promoted through fair exchange partnerships, and financing, including through participatory budgeting where appropriate.	**2.2.1. Reciprocity and Mutuality** • By bringing together public and private partners into co-operative schemes and collective regimes on Antarctic-related projects for both mutual benefit and for the greater social good.
	2.2.2. Goods and Services • By either facilitating or advocating for financial services that support vulnerable sectors of the population.
	2.2.3. Finance and Taxes • By documenting all relevant financial procedures affecting Antarctic development in a systematic and thorough way, while using tax incentives for sustainable development that promotes restoration, conservation, sustainability measures and adaptive re-use.
	2.2.4. Trade and Tourism • By ensuring that neither Antarctic-related economic trade nor intense tourism distort local markets or contribute to unaffordability for local citizens.
	2.2.5. Aid and Remittances • By materially supporting chosen partnerships, both locally and globally, that encourage Antarctic projects for the greater good.
	2.2.6. Debt and Liability • By assuring, on the one hand, that financial, investment and liability process in all Antarctic-related projects are afforded legal certainty and predictability, and, on the other hand, that this does not become so rigid as to distort fair dealing.
	2.2.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the exchange processes related to all Antarctic-related development.

2.3. Accounting and Regulation With accounting procedures and regulation processes in relation to Antarctic-related activities promoting fair, transparent, and well-monitored systems of development.	**2.3.1. Transparency and Fairness** • By ensuring that transparent accounting and regulative processes frame all Antarctic-related projects, including to restrict speculative or inflated investment for super economic gain.
	2.3.2. Finance and Money • By making financial data, statistics and impartial analyses available in relation to all Antarctic project.
	2.3.3. Goods and Services • By developing an efficient integrated system of identification and classification of different goods and services used in Antarctic-related projects to enable the tracking of waste.
	2.3.4. Land and Property • By supporting an efficient system for registering, cataloguing, classifying and updating real property data—including different forms of land sovereignty from leasing to customary custodianship.
	2.3.5. Labour and Employment • By supporting the development of a skilled workforce in the field of accounting and regulation relevant to all Antarctic-related activities.
	2.3.6. Taxes and Levies • By treating all Antarctic-related activities in accordance with relevant national taxation and levy regimes.
	2.3.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the accounting and regulation systems relevant to Antarctic-related projects.
2.4. Consumption and Use With the consumption of goods minimized in relation to all Antarctic-related activities.	**2.4.1. Appropriate Use and Re-use** • By ensuring that planning, design and acquisition practices are developed for all Antarctic-related activities that emphasize the use of sustainable materials.
	2.4.2. Food and Drink • By sourcing the food for staff involved in Antarctic-related projects from local suppliers and producers.
	2.4.3. Goods and Services • By developing efficient procurement processes for goods and services used in Antarctic-related projects to reduce waste.
	2.4.4. Water and Electricity • By minimizing the consumption and use of resources such as water and electricity.
	2.4.5. Petroleum and Metals • By reducing the unsustainable use of resources such as fossil fuels, concrete and metals.
	2.4.6. Promotion and Dissemination • By promoting an integral philosophy of reduced consumption, including publicly encouraging others to use locally sourced or locally manufactured materials.
	2.4.7. Monitoring and Reflection • By using transparent mechanisms for monitoring the consumption of materials and goods in relation to all Antarctic-related activities.
2.5. Labour and Welfare With an emphasis on employment opportunities for all in Antarctic-related activities, recognizing that the informal sector and sharing economy provides indispensable income opportunities.	**2.5.1. Livelihoods and Work** • By generating positive livelihoods and productive work for all on Antarctic-related projects, including for those with difference capacities.
	2.5.2. Connection and Vocation • By recognizing that work should be treated as a fulfilling vocation, connected to the work of others, and supported by skills training.
	2.5.3. Participation and Equity • By drawing the workforce on all Antarctic-related projects into participatory consequential involvement in the unfolding development of the project and its outcomes.
	2.5.4. Capacity and Productivity • By working creatively and collaboratively to strengthen the capacities of the workforce at all levels, rather than just driving productivity from above.
	2.5.5. Health and Safety • By treating the health and safety of all working persons as issues of primary concern, overriding secondary demands such as on-time completion rates or pre-assigned profit levels.

	2.5.6. Care and Support
	• By taking care to properly support workers through mutually agreed frameworks of obligation and responsibility, going significantly beyond basic provision of wages.
	2.5.7. Monitoring and Reflection
	• By providing transparent mechanisms for monitoring the effects of Antarctic-related activities on considerations of labour and welfare.
2.6. Technology and Infrastructure With technology used for Antarctic-related activities, directed primarily as a tool for good living, rather than a means of transcending the limits of nature and embodiment.	**2.6.1. Appropriateness and Robustness**
	• By testing the appropriateness and robustness of different technology systems used for Antarctic-related projects through review by project experts and relevant constituents, taking particular care to consider local technologies already in use before automatically applying or importing new technologies.
	2.6.2. Communications and Information
	• By using technologies that appropriately enhance communications connectivity and information exchange in a way that benefits all.
	2.6.3. Transport and Movement
	• By considering technologies that connect all Antarctic development to appropriate and sustainable means of transport and mobility.
	2.6.4. Construction and Building
	• By ensuring that appropriate preliminary scoping is conducted to match both current and anticipated future usage of new developments with appropriate and innovative technologies and systems.
	2.6.5. Education and Training
	• By providing or supporting training in technology installation, deployment, and use, directed particularly towards enhancing local control of technologies and generating local technological innovation.
	2.6.6. Medicine and Health Treatment
	• By treating issues of *social* return, and in particular enhanced levels of social health and wellbeing, as primary performance indicators for deciding on the use of technologies in all Antarctic-related activities.
	2.6.7. Monitoring and Reflection
	• By using transparent mechanisms for monitoring the contribution that the technological and infrastructure dimensions of Antarctic development make to social prosperity for all.
2.7. Wealth and Distribution With a minimizing of wealth inequities that could develop in unregulated Antarctic-related activities.	**2.7.1. Accumulation and Mobilization**
	• By treating private wealth accumulation as secondary to mobilizing the means of generating social wealth.
	2.7.2. Social Wealth and Heritage
	• By aiming to diminish regional and inherited inequities.
	2.7.3. Wages and Income
	• By supporting equal wages across gender and ethnic differences for all Antarctic-related projects.
	2.7.4. Housing and Subsistence
	• By using land-value capture mechanisms where appropriate, channelled through municipalities, to subsidize low-cost housing in new zones of development, particularly around public transport nodes.
	2.7.5. Equity and Inclusion
	• By treating equality of opportunity and negotiated inclusion as fundamental principles that underpin all Antarctic-related activities.
	2.7.6. Re-distribution and Apportionment
	• By working to redistribute the economic benefits that flow from all Antarctic-related activities.
	2.7.7. Monitoring and Reflection
	• By using transparent mechanisms for monitoring the impact of Antarctic-related activities, projects, and practices on wealth and distribution patterns.

Christchurch, graffiti for a pollution awareness tour.

Politics

Table 3. Principles for Antarctic Connectivity in the Domain of Politics

Prime principle of politics:
Political connection to the Antarctic should have a primary emphasis on engaged and negotiated civic involvement, supported by clear and consistent legal frameworks, working towards justice for all, including the natural denizens of Antarctica.

Subdomains	Sub-subdomains
3.1. Organization and Governance With Antarctic-related policies developed through deep deliberative and democratic processes based on expert knowledge, extensive data collection, transparent reporting of statistical patterns, and extended public debate.	1. Legitimacy and Respect • By giving legitimacy to processes through which public stakeholders and civic organisations can influence or appeal against government decisions on Antarctic de4velopement through carefully adjudicated 'immediate requirement' protocols rather than only through delayed fixed-term reviews or deferred revisions.
	2. Leadership and Agency • By working locally, nationally and globally to ensure that all interested constituencies are properly informed about the way in which all Antarctic-related projects are carried out.
	3. Planning and Vision • By creating or supporting precinct-wide, municipal and regional visions of positive development in relation to Antarctica through public debate that includes participation from governments, municipalities, business and civil society.
	4. Administration and Bureaucracy • By co-ordinating Antarctic-related activities across government agencies, non-government organizations and businesses to ensure that all relevant policies and schemes are properly explored before works on a particular project are commenced.
	5. Authority and Sovereignty • By developing or supporting an authoritative and integrated administration system—harmonized from the local to the national level—that contributes to good governance in relation to Antarctic-related activities.
	6. Transparency and Clarity • By clarifying and making public all relevant and accurate data about Antarctic development patterns and projects, particularly those patterns or projects which will potentially have long-term impact on key aspects of Antarctic futures.
	7. Monitoring and Reflection • By using appropriately transparent mechanisms for monitoring the organization and governance of all Antarctic development.
3.2. Law and Justice With integrated legal systems established for all Antarctic-related activities, articulated across various levels, and harmonized with the existing positive regional and global norms for all development processes and projects.	1. Rights and Rules • By instituting or supporting clear and transparent rights, rules and procedures in relation to Antarctic development, including a comprehensive and harmonized set of national civil codes, and laws.
	2. Order and Civility • By maintaining order and civility in all transactions relating to Antarctic development through such support measures such as third-party arbitration courts—global, national and city-based—with a well-trained, independent judiciary, and legal aid officers.
	3. Obligations and Responsibilities • By appointing or working with a complaints resolution officer or ombudsperson and well-trained legal aid officers with special responsibility for understanding Antarctic-related developments.
	4. Impartiality and Equality • By applying all laws affecting Antarctic development equally and impartially in relation to all people and developments—except under conditions of transparent positive discrimination.
	5. Fairness and Prudence • By paying fair compensation to affected residents in the case of adverse impact locally from larger Antarctic developments.

	6. Judgement and Penalty	
	• By conducting or advocating for all legal proceedings in relation to Antarctic development to be processed within reasonable time-frames while enforcing all adverse court rulings with appropriate penalties.	
	7. Monitoring and Reflection	
	• By using transparent mechanisms for monitoring whether or not laws relating to Antarctic development processes and projects are consistently and justly upheld.	
3.3. Communication and Critique With public debate on Antarctic-related activities encouraged and supported through various media on questions concerning policy, planning and design.	**1. Interchange and Expression**	
	• By supporting public communication and discussion throughout the life-cycle of all Antarctic-related practices and projects, seeking to promote a sense of long-term social 'ownership' and mutual responsibility for the success of the development activities.	
	2. News and Information	
	• By ensuring or advocating for accessible news and information dissemination concerning all Antarctic-related development-plans, policies, legal frameworks and data sets, with information being laid out in plain simple language and accessible through multiple forms of media, including through web-based systems with good data visualization.	
	3. Accessibility and Openness	
	• By working with local communities, institutions and constituents to ensure that the possibilities for and limits of their non-discriminatory participation in debating Antarctic-related development planning are clearly explained (including for the hearing and sight impaired).	
	4. Opinion and Analysis	
	• By providing independent and well-researched analyses of trends and patterns in Antarctic-related development processes and practices to help constituents, including citizens, consumers, and investors, to make informed choices.	
	5. Dissent and Protest	
	• By welcoming and appropriately responding to all constructive criticism and peaceful dissent in relation to Antarctic-related development projects.	
	6. Privacy and Respect	
	• By guaranteeing privacy of personal data and maintaining robust general data protection.	
	7. Monitoring and Reflection	
	• By using transparent mechanisms for monitoring the levels of open accurate public communication on matters concerning all Antarctic-related development practices, processes and projects.	
3.4. Representation and Negotiation With non-discriminatory participation and inclusion in Antarctic-related activities ensured through appropriate policy and legislation.	**1. Agency and Advocacy**	
	• By prefacing all Antarctic-related development planning with an open public consultation process, ensuring that analyses of the outcomes of that consultation are presented back to public in a constructive feedback environment.	
	2. Participation and Inclusion	
	• By implementing negotiated policies on inclusion and non-discriminatory participation from planning to project management on all Antarctic-related projects.	
	3. Democracy and Liberty	
	• By avoiding the use of illegitimate or non-representational (even if legal) processes to override the needs of local communities.	
	4. Access and Consultation	
	• By making adequate provision for the needs of physically challenged and disabled people, based on consultation with local and peak international bodies in relation to agreed principles and policies of inclusion on all Antarctic-related projects.	
	5. Civility and Comity	
	• By maintaining respectful civil relations in all encounters involving negotiation over Antarctic-related development directions.	
	6. Contestation and Standing	
	• By acknowledging and negotiating with civil society groups over contested claims on Antarctic-related projects within a clearly laid out process that has clear stages and processes for equitably finalizing the dispute.	

	7. Monitoring and Reflection	
	• By using transparent mechanisms for monitoring the levels of representation from different constituencies in all decisions made in relation to Antarctic-related development.	
3.5. Security and Accord With resilience to natural and human-generated risks and hazards enhanced in all Antarctic-related activities through risk-conscious planning, and good design.	**1. Human Security and Defence**	
	• By supporting the right of all people working on Antarctic-related projects to the basic affordances of human security, including through the Antarctic Treaty ban on militarization and nuclear use on the Antarctic continent.	
	2. Safety and Support	
	• By legislating for or supporting basic health-and-safety codes in all areas of Antarctic-related development, and using these codes appropriately and carefully.	
	3. Personal and Domestic Security	
	• By ensuring or advocating that adequate insurance coverage against risks and disasters is available at affordable rates for all (and, ideally, with subsidized rates for the poor and vulnerable) for all Antarctic-related projects.	
	4. Protection and Shelter	
	• By working to enhance resilience in relation to natural and human-generated hazards and risks that might be experiences in Antarctic-related projects.	
	5. Refuge and Sanctuary	
	• By treating Antarctica itself as a place of agreed sanctuary from all existing military contestations and conflicts.	
	6. Insurance and Assurance	
	• By ensuring and/or advocating an adequate national regulatory regime that covers all insurance processes in relation to Antarctic projects.	
	7. Monitoring and Reflection	
	• By using transparent mechanisms for monitoring the effects of Antarctic-related development projects on issues of security and accord.	
3.6. Dialogue and Reconciliation With reconciliation actively negotiated between groups experiencing relations of contestation and tension over Antarctic-related activities, including over historical questions of sovereignty and political identity.	**1. Process and Recognition**	
	• By recognizing the variable rights of all to have an ongoing relation to Antarctica, including through the layers of historical rights and public rights to commons.	
	2. Truth and Verity	
	• By keeping and/contributing to a public and accessible historical record of prior contestations over Antarctic development projects, practices and processes.	
	3. Mediation and Intercession	
	• By supporting mediation processes (not just legal mediation) in reconciling conflict in relation to Antarctic activities.	
	4. Trust and Faith	
	• By engendering public trust through an openness to public dialogue on Antarctic futures.	
	5. Remembrance and Redemption	
	• By actively negotiating with relevant constituencies to maintain historical memories in relation to Antarctic engagement, including by offering redemptive support to those who forebears have acted adversely to these principles of good engagement with Antarctica.	
	6. Reception and Hospitality	
	• By supporting or providing transitional places of reception and hospitality to persons who arrive in Antarctica from any nation.	
	7. Monitoring and Evaluation	
	• By using transparent mechanisms for monitoring the levels of dialogue and sensitivity to issues of reconciliation in relation to all Antarctic-related development projects and processes.	

3.7. Ethics and Accountability With a strengthening and promotion of ethical standards in relation to all Antarctic-related activities, with the adoption of specific codes of conduct, drawn up in consultation with relevant stakeholders and constituents.	1. Principles and Protocols • By strengthening and promotion of ethical standards and the adoption of specific codes of conduct (negotiated in consultation with all relevant constituents and stakeholders) for all Antarctic-related activities.
	2. Obligation and Responsibility • By supporting regular reporting activities, aligned to agreed ethical codes in all Antarctic-related development projects and processes.
	3. Integrity and Virtue • By upholding the highest standards of integrity as normal practice in relation to Antarctica.
	4. Observance and Visibility • By basing Antarctic-related projects and practices on publicly visible performance standards and liability rules.
	5. Prescription and Contention • By providing guidance around contentious Antarctic issues through prescriptive codes of conduct.
	6. Acquittal and Consequence • By supporting the institutionalization of effective, clear, and transparent procedures for responding to unethical practices in Antarctic-related practices and projects.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring questions of ethics and accountability in relation to *place and precinct* development.

Hobart, Joel Trigg playing keyboards at a jazz and folk festival.

Culture

Table 4. Principles of Antarctic Connectivity in the Domain of Culture

The prime principle of culture: Cultural connection to the Antarctic should actively promote vibrant interchange, including supporting ongoing processes for dealing with the uncomfortable intersections of identity and difference, inclusion and exclusion.	
Subdomains	**Sub-subdomains**
4.1. Identity and Engagement With active, publicly enunciated recognition throughout all Antarctic-related projects and practices of the complex layers of community-based identity and difference.	1. Diversity and Difference • By respecting cultural diversity, heritage, and difference through all aspects of Antarctic engagement. 2. Belonging and Community • By creating precincts for living and working in the Antarctic region that promote a rich sense of place and community belonging. 3. Ethnicity and Language • By being aware of and/or acting practically upon the need in all Antarctic engagement for diverse language use, from education practises to signage and announcements. 4. Religion and Faith • By negotiating openly and positively in all Antarctic engagement to include the diverse architectures, spatial configurations, and aural ecologies associated with different kinds of religious and ritual observance, from places of worship and pilgrimage sites to multi-faith spaces. 5. Friendship and Affinity • By designing Antarctic-related projects to promote comfortable hospitality and intimate conviviality, including across the boundaries of cultural difference. 6. Home and Place • By supporting processes through which Antarctic-related projects work to enhance recognizable 'senses of place', including a strong cultural relation to the local environment. 7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of Antarctic-related projects on cultural identity, diversity and expression.
4.2. Creativity and Recreation With the active development of cultural themes in all Antarctic-related activities, emphasizing festivals and public events.	1. Aesthetics and Design • By treating cultural design for creative living as an integral part of all Antarctic development projects, practices and processes. 2. Performance and Representation • By ensuring that all Antarctic-related projects are open to different performative representations from different cultural groupings—professional and otherwise. 3. Innovation and Adaptation • By designing Antarctic-related projects to allow for the changing needs of local communities, and negotiated innovative use. 4. Celebrations and Festivals • By inclusively planning for and celebrating the different cultural orientations held by people in Antarctic-related projects. 5. Sport and Play • By making sure that culturally appropriate facilities for sport and recreation are readily accessible for all involved in Antarctic-related projects. 6. Leisure and Relaxation • By making spaces for leisure and recreation are readily accessible for all involved in Antarctic-related projects. 7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of Antarctic-related projects and practices on the creativity and recreation of involved communities.

4.3. Memory and Projection With significant public and common spaces dedicated to the cross-cutting cultural histories of Antarctic-related engagement — public spaces which at the same time actively seek to represent visually alternative trajectories from the present into the future.	1. Tradition and Authenticity • By selectively conserving the material expressions of older traditions, with all conservation plans integrated into the core development plans of all Antarctic-related projects.
	2. Heritage and Inheritance • By treating Antarctic heritage conservation as a living process (not just as static heritage protection), integrating the past into the present and producing simultaneously a window onto the past and an active zone for present and future constituents to engage with those places across multiple social uses.
	3. History and Records • By supporting the presence of places and signs of historical memory, including museums, monuments, heritage sites, landmarks and information boards.
	4. Indigeneity and Custom • By recognizing that development often takes place on land that was once, or still is, the custodial property of indigenous peoples, and actively seeking to engage such peoples.
	5. Imagination and Hope • By engaging in development in a way that engenders imagination and hope.
	6. Inspiration and Vision • By working with local people to develop a visually useful and compelling set of images that anticipate the future possibilities of development.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of place and precinct development on both past heritage and agreed visions of the future.
4.4. Beliefs and Ideas With locally relevant cultural beliefs from across the globe (except those that vilify and degrade) woven into the physical fabric of Antarctic-related activities: symbolically, artistically and practically.	1. Knowledge and Interpretation • By treating all the fields of development as informed by different forms of knowledge from analytical enquiry that is subject to knowledge-testing and critical interpretation to customary knowledge that respects the wisdom of the elders.
	2. Ideologies and Imaginaries • By seeking to make apparent both the overt fashions and underlying ideologies that inform decisions about present and future development.
	3. Reason and Rationalization • By promoting a culture of professional service based on carefully considered principles and rationally ordered protocols.
	4. Religiosity and Spirituality • By providing or supporting culturally appropriate spaces for religious and spiritual observance.
	5. Rituals and Symbols • By enabling the incorporation of symbols of cultural difference into the physical fabric of properties and places.
	6. Emotions and Passions • By engendering emotions—both negative and positive—in all development planning, seeking to negotiate for negative concerns while maintaining the positive emotional consequence of development outcomes.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of development on the strongly held beliefs and ideas of communities and persons.
4.5. Gender and Generations With active recognition of different needs across the various divides of gender and age (against a background of prioritizing conditions of	1. Equality and Respect • By always ensuring and promoting gender equality in all Antarctic practices.
	2. Sexuality and Desire • By affording spaces and conditions for different expressions of sexuality and sexual difference in all Antarctic practices.
	3. Family and Kinship • By providing supportive conditions for different kinds of family groupings in all Antarctic practices.
	4. Birth and Babyhood • By ensuring that all relevant Antarctic-related practices are conducive to infant welfare and vitality.

gender equality) in all Antarctic-related activities.	**5. Childhood and Youth** • By developing precincts, neighbourhoods, and places that are child-friendly and attuned to the needs of youths.
	6. Mortality and Care • By paying structural attention to the needs of aged people in all relevant Antarctic-related projects and practices, including by ensuring possible accessible presence.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of Antarctic development on the lives of women, children, and the aged.
4.6. Enquiry and Learning With research, teaching, learning-exchange, and training in relation to all Antarctic-related activities given priority through substantial and targeted social investment.	**1. Curiosity and Discovery** • By promoting a spirit of curiosity and discovery in relation to Antarctic development projects and practices that goes beyond training for technical skills.
	2. Deliberation and Debate • By seeking to ensure that all learners acquire the knowledge and skills needed to deliberate upon and promote the principles and practices of sustainable Antarctic connectivity.
	3. Research and Application • By moderating Antarctic engagement through deep enquiry and engaged research connected to applied testing, and therefore actively supported scientific and social research.
	4. Teaching and Training • By actively supporting the ready availability of training and work-integrated learning across all the roles and functions in Antarctic-related projects and practices—including general and technical training, continuous professional development, and expert and analytical learning—while continuing to recognize the importance of creative engagement.
	5. Writing and Codification • By working with codified and standardized methodologies and technical languages for describing and negotiating Antarctic-related projects, while recognizing the limits of such codification.
	6. Meditation and Reflexivity • By allowing time for practitioners and analysts across the various disciplines of Antarctic engagement to reflect on both patterns of practice and the assumptions that underlay those patterns.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of Antarctic-related projects on enquiry and learning.
4.7. Wellbeing and Health With all Antarctic-related activities actively curated to enhance the emotional wellbeing of people, including, where possible, by involving local people in that design and development.	**1. Integrity and Autonomy** • By designing and/or acting in Antarctic-related projects in such a way as to maximize the sense of personal security that all people might feel.
	2. Bodies and Corporeal Knowledge • By supporting the development of Antarctic-related projects as physically invigorating and culturally meaningful.
	3. Mental Health and Pleasure • By encouraging design practices for Antarctic-related projects that enhance mental wellbeing and pleasure.
	4. Care and Comfort • By supporting the provision of public and private built-spaces for people engaged in Antarctic-related projects that are perceived to be physically comfortable, without seeking to shut out completely the changing effects of weather, seasons and topography.
	5. Inclusion and Participation • By developing Antarctic-related projects in such a way as to support positive inclusion and participation.
	6. Cuisine and Emotional Nourishment • By ensuring or advocating for places of public eating and conviviality being built into Antarctic-related projects in a way that is accessible for all.
	7. Monitoring and Reflection • By using transparent mechanisms for monitoring the effects of Antarctic-related projects on the emotional wellbeing and mental health of those affected by those projects.

Appendix 1. Summary of the Articles of the Antarctic Treaty

1. No military use shall be made of Antarctica, though military personnel and equipment may be used for peaceful purposes.

2. There will be complete freedom of scientific investigation.

3. Antarctic Treaty Nations will exchange plans for their scientific programmes. Scientific data will be freely available and scientists will be exchanged between expeditions where practical.

4. All territorial claims are put aside for the duration of the Treaty. No activities under the Treaty will affect claims to s overeignty of any part of Antarctica made by any nation.

5. Nuclear explosions and nuclear waste disposal are banned from Antarctica.

6. The Treaty applies to all land and ice shelves south of 60° South, but not to the seas.

7. All Antarctic stations and all ships and aircraft supplying Antarctica shall be open to inspectors from any Treaty nation.

8. Observers and exchange scientists will be under the jurisdiction of their own country regardless of which national station they may visit. National laws do not apply to stations or areas, but only to the citizens of those countries.

9. Treaty nations will meet to consider ways of furthering the principles and objectives of the Treaty. Attendance at these meetings shall be limited to those countries that are engaged in substantial scientific research activity in Antarctica. Unanimous approval will be necessary for any new measures to become effective (i.e. everyone has to agree).

10. All Treaty Nations will try to ensure that no one carries out any activity in Antarctica that is against the Treaty.

11. Any dispute by Treaty Nations, if not settled by agreement, shall be determined by the International Court of Justice.

12. The Treaty may be modified at any time by unanimous agreement. After 30 years any consultative Party may call for a conference to review the operation of the Treaty. The Treaty may be modified at this conference by a majority decision.

13. The Treaty must be legally ratified (agreed to) by any nation wishing to join. Any member of the United Nations may join as well as any other country invited to do so by the Treaty Nations. All notices and records are deposited with the Archives of the United States of America.

14. The Treaty translated into English, French, Russian and Spanish was signed on 1st December 1959 by 12 states and entered into force on 23rd of June 1961.

Hobart, Museum of New and Old Art exhibition,
detail of 'Astrostar' by Gilbert and George.

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