The Challenge of Nissology: A Global Outlook on the World Archipelago Part I: Scene Setting the World Archipelago

Christian Depraetere
Institut de Recherche pour le Développement (IRD formerly ORSTOM)
Montpellier, France
christian.depraetere@hmg.inpg.fr

Abstract

Islands are the rule and not the exception. One major objective for nissology - defined as the study of islands and islandness - in the 21st century should be to debunk the unfair prejudice that 'island studies' continues to suffer at present time. To do so, a systematic treatment of the island phenomenon needs to be undertaken and this should be backed up by substantial theoretical underpinnings. In seeking to turn the dominant continental paradigm on its head, islands not only deserve to be "studied on their own terms"; they also become the *deus ex machina* of a holistic understanding of the world archipelago and its ongoing globalization. This vision should contribute towards bridging the gap between 'continentalists' who tend to consider islands only as epiphenomena of larger land trends, and 'island studies' practitioners. This paper (the first of two segments) concentrates on the physical geographical and historical unfolding of the importance of islands.

Keywords: nissology, island studies, world archipelago, islandscape.

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The Challenge of Nissology

"It is argued that the enhanced impact of islands on the human imagination is not a passing fad: there is rather an essential contribution of, and by, small islands and their inhabitants to the urban and globalized civilization of our time" Péron (2004: 326).

Despite ongoing globalization, we still live in a "fragmented world" (Gordon East & Prescott, 1975), where the given geographical pattern of lands and seas remains one major factor controlling global processes The bits and pieces surrounding the bulk of continental mainlands are still generally considered as epiphenomena, marginally studied in isolation by a few island studies practitioners. One objective of nissology as a science dedicated to a better understanding of the island phenomenon and related issues (Hay, 2006) is to turn upside down the "continental bias" and instead re/place the study of islands by considering them as the essential components of the "world archipelago" as suggested by Foucher (1990) (also Depraetere & Dahl, 2007). The present paper is an attempt to illustrate these assumptions and to provide a robust appeal for more in-depth nissological research and theorization.

"The continental mind is in conflict with the island mind. Two irreconcilable cognitive templates are clashing, each designed for a different person-to-world relationship" (Ritchie, 1977: 188).

Islands specialists have criticized the 'continental prejudice' that tends towards 'island studies' being judged and relegated as some kind of aberration, even by islanders (Edmond & Smith, 2003). This attitude may be partly due long-lasting traditions concerning the structure of the world with a subsequent incapacity to understand the structure of insular space in Western European culture. A general nissological envisioning of the physical setting of the world archipelago clearly shows that islands are the rule rather than the exception, with specific effects of islandness due to marginality, isolation and narrowness considered at various and embedded scales, including on continents.

This paper is the first of two segments. Together, they contain five sections that illustrate the general commitment of nissology to a holistic understanding of the world archipelago:

- A geographical section suggesting the concept of 'islandscape' throughout the archipelagos and seashores;
- A historical section presenting the phases of peopling of the world archipelago;
- A ethical section stating that islands may become bellwethers of international environmental and cultural policy;
- A didactic section promoting nissology as an educational and mnemonic tool to embrace the world diversity; and
- A scientific debate as to whether nissology is just sham or deserves some serious attention in the present context of globalization and its effects.

This first article only reviews the first two of these five sections. A second, separate article reviews the last three sections.

I: Islandscapes throughout the World Archipelago

An island as a visible and functional entity does not go without the surrounding sea surface. Therefore, an islandscape could be significant from both perceptive and systemic standpoints. We will consider now if this concept could be useful for the systematic and synthetic description of island geographical structures. The objective is to provide simple and robust indices to differentiate groups of islands along the coast and within archipelagos. In this paper, we will focus only on an index of "island density", without considering issues of elevation above sea level. The method of ID computation has been described in Depraetere & Dahl (2007) and all figures are based on the reference seashores of the GSHHS dataset (Wessel & Smith, 1996).

Islandscapes can be compared on a ratio of island density (ID): this is a ratio determined by the relationship of the number of islands to the area of sea within the 12 nautical miles that

12 nautical miles

12 nautical miles buffer (Territorial sea) Ss = 4845 km²
The five islands with Area > 0.1 km² Si = 135.7 km²
See left opposite the islet called "Middle island" with
several rocks and ledges in its vicinity

20 km

represent the limits of a state's territorial sea. The method for computing ID can be illustrated with reference to an isolated archipelago, as is Tristan da Cunha (<u>Figure 1</u>) and to sections of continental seashore, as would be Southwest Australia (<u>Figure 2</u>).

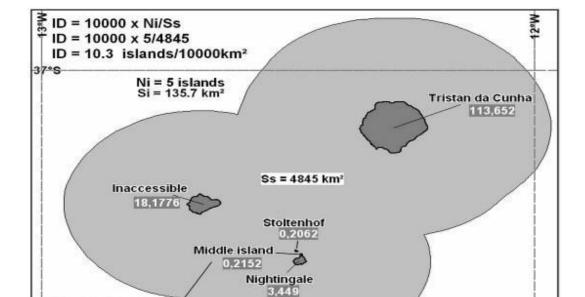
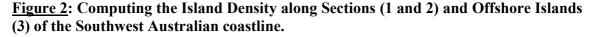
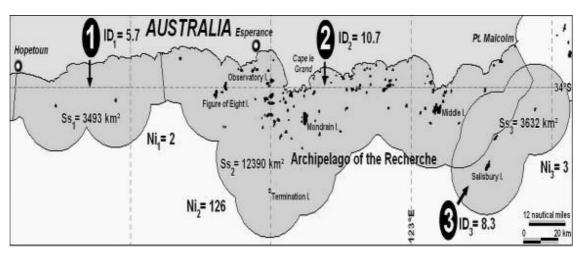


Figure 1: Computing the Island Density of the Tristan da Cunha Oceanic Archipelago





The general figures resulting from this method are given per continent in <u>Table 1</u> and commented upon in greater detail elsewhere (Depraetere & Dahl, 2007). Islandscapes cover about 22.4 million km² of the Earth's surface – which is some 6.2% of the total oceanic surface, comprising 361.1 million km². Islandscapes include some 86,732 islands greater than 0.1 km² in land area, and total some 7.7 million km² of area with an average density of 59 islands per 10,000 km².

Major contrasts are also observed in relation to major archipelagos, as suggested by <u>Figure 3</u> and <u>Table 2</u>. Thus, the bare seascapes of Madagascar seashores show an average ID value of 25, compared to the 138 for the jagged islandscapes along the indented coastlines of Baffin Island. The previous <u>Figures 1</u> & <u>Figure 2</u> give a hint as to what happens when ID is applied to the local scale. One can compare the island density on a section of SW Australia including the Granitic Archipelago of the Recherche (10.7 islands per 10,000km²) to the mean value around the Australian mainland (45 islands per 10,000km²).

Table 1: Island Densities across the World Archipelago

Type of Islands	No. Islands	12 Nautical Mile Coastal Zone	Island Surface				Island Density
according to distance	Ni	S	S_i	N_i	S	S_{i}	ID=
to mainland*		km²	km²	%	%	%	$10000.Ni/(S-S_i)$
World Archipelago**	86,732	22,415,363	7,738,683	100	100	100	59
'Pericontinental' Islands	58,913	7,580,845	647,009	67.9	33.8	8.4	85
Europe	15,422	1,000,058	102,633	17.8	4.5	1.3	172
Greenland	4,392	383,602	51,061	5.1	1.7	0.7	132
North America	16,872	1,612,737	204,968	19.5	7.2	2.6	120
South America	6,902	898,321	155,525	8.0	4.0	2.0	93
Asia	10,247	1,661,328	72,179	11.8	7.4	0.9	64
Australia	2,556	603,872	28,187	2.9	2.7	0.4	44
Africa	1,940	747,398	9,488	2.2	3.3	0.1	26
Antarctica (tentative)	544	631,733	22,518	0.6	2.8	0.3	9
'Open Ocean' Islands	27,819	14,834,518	7,091,675	32.1	66.2	91.6	36
North Canada	4,942	2,069,373	1,346,028	5.7	9.2	17.4	68
Caribbean	1,877	516,595	213,763		2.3	2.8	62
Indo., Phil., PNG, Solomons	7,387	5,134,339	2,908,367	8.5	22.9	37.6	33
Others	13,613	7,114,211	2,623,517	15.7	31.7	33.9	30

Notes: * 'Mainland' means 'big islands': Europe-Asia-Africa, America, Antarctica, Australia and Greenland.

This wide range of islandscapes corresponds to the combined long term effect of various geological, tectonic, oceanic and biological processes (Depraetere & Dahl, 2007). For the sake of nissology, we should instead consider islandscapes as a basic structure for understanding and comparing the innermost causes of islandness, with the density index appearing as one synthetic and standard description of the geographical setting of land and

^{**} Islands between 0.1 and 1 million km² are included, thus excluding the 'big islands'.

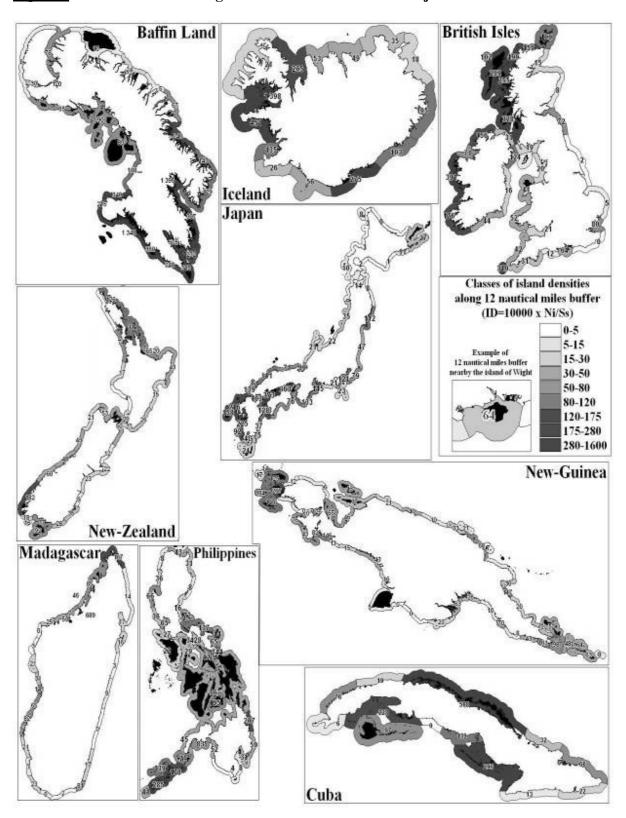


Figure 3: Island Densities along Seashore Sections around Major Islands

sea in coastal zones. This fulfils the fundamental requirement of offering a general theoretical foundation that could be shared by all 'island studies' students and researchers, irrespective of their thematic focus. The present suggestions are no more than a premise for future systematic research, leading hopefully to an acceptance of nissology also as a hard science: reliant on experimental, empirical, quantifiable data, or on the scientific method and its focus on accuracy and objectivity. This deliberately quantitative approach to insular geographical structures is also an attempt to dispel a recurrent confusion between the perceptive landscape and the physical environment.

Table 2: Ranking of Island Densities (ID) on Major Archipelagos

Group of Islands	Total Surface	Land Surface	Sea Surface	Main Island	Main Island	No. Islands	Island Density
Or	S 12	S _I	$S_S = S - S_I$	island	island	(Ni)	(ID)=
Archipelago	km²	km ²	km ²	km ²	(%)		10000xNi/S _s
Madagascar	701,500	593,381	108,119	592,495	99.9%	270	25
New Zealand	407,000	267,204	139,796	149,955	56.1%	428	31
New Guinea	1,158,000	819,717	338,283	783,408	95.6%	1188	35
Japan	632,100	370,412	261,688	227,899	61.5%	1107	42
Philippines	589,400	282,365	307,035	105,547	37.4%	1407	46
British Isles	484,200	313,693	170,507	218,600	69.7%	934	55
Iceland	158,400	102,061	56,339	101,794	99.7%	493	88
Newfoundland	191,300	111,960	79,340	109,314	97.6%	719	91
Cuba	217,700	111,426	106,274	105,796	94.9%	1374	129
Baffin	792,800	553,679	239,121	477,549	86.3%	3323	139

The Ancient Tradition of Periegesis as a Forerunner of Nissology

We must first look back and appreciate those historical traditions that are anchored in the portrayal of islands. We can certainly trace such an appreciation to ancient notions of circumnavigation, expressed as "periegesis" or "periplus" (Brodersen, 1994, 2001; Kish, 1978; Jacob, 1981). This perspective is exemplified in the works of many ancient writers, and with the global geographical survey by the Greek Dionysius as a pioneer:

"I exalt the expanse of the land, the orientation of the seas, rivers, cities and people who occupy this universe. However I must, first and forem ost, speak of the Ocean, whose massive presence and volume envelop the Earth, transforming it effectively into an island cradled in its immense waters".

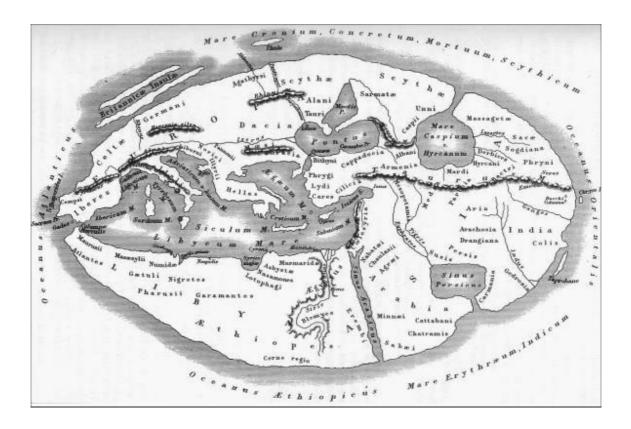
¹ A Periegesis (or periodos gês, from *periodos* [tour] and *ges* [the world]): describes the circumnavigation of the Earth or part of it with a description of places and peoples. The two most famous "periegetes" are Dionysius (Denys) of Alexandria and Pausanias: they wrote their periegesis in the 2nd Century AD.

A periplus (περίπλους, literally 'a sailing-around' in Greek, roughly corresponding to the Latin *navigatio*, a 'ship-voyage') was a manuscript document that listed ports and coastal landmarks in order.

³ Translated from French by Godfrey Baldacchino – April 13, 2008.

Up to the European Renaissance, Dionysius and his followers (such as Priscien and Pausonias) promoted the idea of the world as being a single mainland, with a limited number of much smaller, outlying islands (Figure 4). In spite of the large difference in time, what is common in these and much more modern approaches is the conceptualization of a map as a dimension of constructed space. Already in ancient times, a key question deals with how the knowledge that we have of the world-archipelago - whether in print or in digital documents - influences our way of feeling part of the ekumene. Dionysius lived in Alexandria during the second century A.D where he wrote his geographical poem called the "oikoumenes periegesis" made of 1,186 hexametre verses. As a Greek Geographer, it was a tour of seas, coasts and islands through the world of antique geography. It was indeed very much 'a world of islands'. For the sake of nissology, this work can be considered as a first unquestionable insular weltanschauung, or an island-driven world vision. This mnemonic poem was also imparting geographical knowledge to students and scholars up to the late Middle Ages. Such an archipelagic vision with actual or fictional islands (Anti-Ilia, St Brandan's Isle, HyBrazil, Ultima Thule ...) has exercised a major influence over West European culture (Jacob, 1981: 79; Gillis, 2003). It has contributed to the unfolding of a frenetic period of European exploration that sought and claimed islands around the world, initiated by the Portuguese Prince Henry the Navigator from his isolated castle at Cape St Vincent.

<u>Figure 4:</u> The European Conceptualization of the World during Classical and Medieval Periods: A Large Landmass with few surrounding and small Islands. (From a Modern Reconstitution of the 'Map of Denys' by Bunbury, 1883).



II: The Human Saga over the World Archipelago

This section reviews the various stages of dispersal from humankind's original cradle in Africa up to the ultimate discovery of remote tiny islands in the Modern era. These stages in the ability of human populations to occupy new islands reflect to a certain extent the evolution of humankind's reconceptualization of the world. The current geopolitical and cultural nature of the island puzzle also reflects this long, complex and still ongoing process in the colonization and exploitation of island margins.

The Making of the World Archipelago

As we now know, plate tectonics have been largely responsible for the evolution of land patterns before the arrival of the human race; this process remains underway (<u>Figure 5</u>). The progressive breakup of the original 'Big Island' or supercontinent of Pangaea has led to the present day world archipelago, and with many other islands resulting from such other geological and biological processes as volcanism, sea bed uplift, and coral formation.

It is worth noting that the fragmentation and subsequent islanding of mainlands has had a direct influence on biological evolution by creating the conditions for enhanced biological diversity. A single super continent would support around 2,000 species of mammals, instead of the actual 4,200 species that we find today (Figure 6). This development is an outcome of the isolation of distinct mammalian pools on different continents. Thus fragmentation of the world archipelago is favourable to biodiversity and finally supports that biospheric resilience that can overcome such a major crisis as the meteoric blast that occurred at the end of the Cretaceous, circa 64 million years ago:

"The number of species on a continent is tightly correlated with the size of that continent, but extrapolating that relationship to the land area of earth corresponding to reuniting [Pangaea] yield less than half the total number of species that actually occur on these continents. Much of the diversity of mammalian species globally is due to the isolation of separate biotic regions." (Vitousek *et al*, 1997: 10).

The Four Stages of Island Faring

The four stages of discovery and settlement of the World Archipelago have been exposed in Depraetere & Dahl (2007: 84-94) and a summary is given here with few additions related to the 20th Century. According to paleo-anthropology, *homo sapiens* and other contemporary *homo* species remained trapped on the mainland of the world archipelago until around 50,000 BP. They went as far as Western Europe and the Sunda Shelf in South East Asia, but get stopped when they reached large straits of water, even when other lands were visible on the horizon. At this stage, we may assume that several factors that could have been technical, conceptual or cultural in their nature were liable for the inability of human groups to wander in the direction of new lands across the sea. This was the <u>sea</u> fearing stage of humankind.

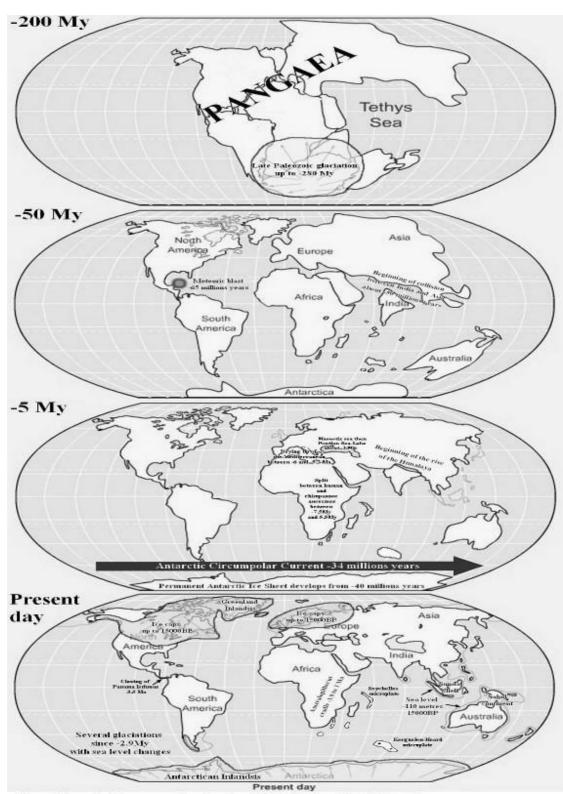
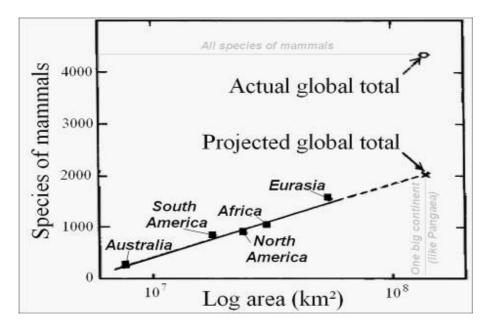


Figure 5: From the Original 'Big Island' of Pangaea to the current World Archipelago

Adapted from the Plate tectonic animation of the Southern Utah University http://www.suu.edu.faculty/colberg/Hazards/PlateTectonics/PlateTectonics.html

<u>Figure 6</u>: A Species/Area Curve for Mammals at Continental Scale. (From an analysis by A. Launer, Centre for Conservation Biology, Stanford University, USA; *also* Figure 4 in Vitousek *et al.*, 1997).



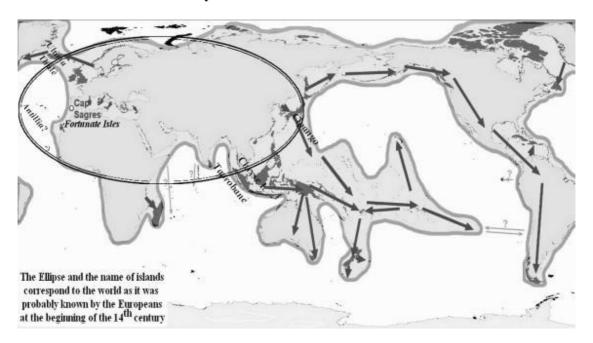
Once *Homo sapiens* had developed the basic technology to cross the water, <u>island hopping</u> stage began at around 50,000 BP and continued through to 15,000 BP, covering all the South and East lands of Wallacea, Sahul and as far east as the Solomon Islands (Depraetere & Dahl, 2007: 86). Beyond the Solomons, there was a major "island gap" before the Santa Cruz Archipelago: there was no more land visible on the horizon to encourage another step. (Island hopping depends on inter-visibility: islands being visible from one another or on both being visible when half way between).

The third stage in the island quest is the giant advance that led to the Polynesian migrations across the Pacific, from 4000 BC to 1200 AD. Similar but more limited examples of this phenomenon took place in other part of the WA such as Japan (30,000 BP), Caribbean (6,000 BP), the Mediterranean islands (from 6,000 to 3,500 BP), the Canary Islands (2,500 BP), Madagascar (2,000 BP) and Iceland (800 AD). Such events came about because the seafarers involved had the technology, courage and cultural disposition to master long sea voyages with everything necessary to colonize a new island, and the confidence that they could sail back home if they did not find land in time. This is the <u>island hoping</u> stage. The last island hoping wanderings occurred during the middle-age as typified by the Viking saga in the North Atlantic (1000 AD in Newfoundland) or by the ancestor of Maori in the "Land of the Long White Cloud", also called Aotearoa or New-Zealand, at around 1250 AD; and even later for the surrounding islands of Chatham and Auckland. (In contrast to island hopping, island hoping depends on the technology, bravery (or foolishness?) to wander over the horizon, even if there is no sign of land.)

Which islands were not discovered prior to 1300 AD, when the Europeans started their systematic marine expansion with efficient navigation techniques and the stubborn will to explore and exploit the entire world? Apart from the Polynesian and Viking regions, most mid-oceanic islands had yet to be discovered in the true sense of the word, because there is

no trace of a pre-European population (<u>Figure 7</u>). Some of them may have been sighted, but this is still hypothetical. Using the Atlantic Ocean as an example, the <u>island claiming</u> stage starts as early as 1312, with Spain claiming the Canary Islands; Portugal followed soon after with Madeira (1339) and the Azores (1380). The tempo of island claiming reached its peak with the vast Caribbean island chain (1492-1510) and outlying islands – Bermuda (1515) - claimed by Spain; and Tierra del Fuego (1520) claimed by Portugal. The last Atlantic Islands to be discovered were in the sub-Antarctic, with Britain doing most of the claiming: starting with the Falklands (1592) and up to South Orkney (1821)⁴.

<u>Figure 7</u>: The Ecumene over the World Archipelago just before the European Outbreak of the 14th Century.



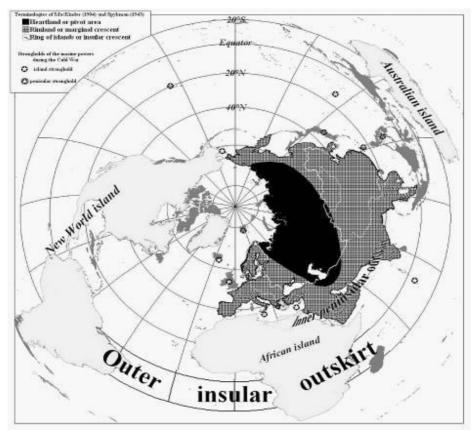
This island claiming process, led by Spain and Portugal, appears as a key by-product of a global strategy to control oceanic space. To move around the world archipelago in their wind driven vessels, major sea powers needed to control the sea routes that benefitted from the trade winds. Controlling islands became a key geo-strategic matter, whether these were close to the mainland (such as Zanzibar and Pemba) or in open ocean (such as Hawai'i, St Helena or Mauritius). By the start of the 20th Century, most islands were part of colonial empires, with Britain "ruling the waves" through its truly global islands network. The 20th Century would indeed witness the most intense historical expression of global strategy, with the structure of the world archipelago playing a major role in the confrontation between major powers. As early as 1904, British geo-politician Mackinder theorized global geographical determinism when he argued in terms of the emergence of a "continental" power or heartland (Germany? Soviet Union?), located nearby the pivot area; and a "maritime" power or rimland (Britain? USA?), controlling the fringing crescents of

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⁴ One may plausibly argue that America itself is a large island that became known to voyagers from the Old World serendipitously in this age of European exploration. (Of course, the true discoverers of the New World were most likely the ancestors of present-day Amerindians.)

peninsulas and islands around it (<u>Figure 8</u>). From this position, Australia, Africa and America are just major islands forming "the insular crescent" envisioned by Mackinder (1904) and "the ring of islands" postulated by Spykman (1943). This global geopolitical standpoint dovetails with the nissological visioning of the world archipelago, driven by a global outlook of the constraints and opportunities that geography makes possible, thanks to isolation and remoteness.

<u>Figure 8</u>: Geographical Rendition of the Partition of the World Archipelago between a Continental and Maritime Power (Mackinder, 1904; Spykman, 1943).



The island claiming phase may linger on for many years. Various sub-national island jurisdictions still cling resolutely to their colonial masters in various constitutional arrangements (Depraetere & Dahl, 2007: 97). These allow Australia, Britain, Denmark, France, the Netherlands, New Zealand and the USA to maintain hegemony over large tracts of ocean – and prized exclusive economic zones (Baldacchino & Milne, 2006). <u>Table 3</u> is an attempt to summarize the position of islands at the level of the world archipelago.

<u>Table 3</u>: Stages of Peopling and Discovery of the World Archipelago, with Equivalent Notations in French and German.

Phases of the Islands Saga	Periods	Peoples and Nations			
Les îles ignorées	Before	Pre-Homo Sapiens(HS)			
Island Oversighting / Island Fearing	50 000 BP	and			
Meerabgewandtheit		HS prior to 50,000BP			
D'une île à une autre	From	Ancestors of Aborigines,			
Island Hopping	50 000 BP	Papuans, Melanesians,			
Inselspringen		Guanches, Aïnous,			
Inseispringen		Arawaks			
Les îles par delà l'horizon	From	Polynesians, Vikings,			
Island Hoping	6 000 BP	Ancestors of Malgaches,			
Inselhoffnung	to 14 th Century	Arawaks, Caribs			
Les îles revendiquées	From	Portuguese, Spanish,			
Island Claiming	$14^{th} - 19^{th}$	French,			
Inselbesitzergreifung	Centuries	English, Dutch			
Les îles en tant modèle d'avenir	Challenge of				
Islands as Environmental Bellwethers	$21^{s\bar{t}}$	Island Communities			
Die Insel als Zukunftsmodell	Century?				

Conclusion

This paper – the first of two segments - has elaborated upon the conceptual power released by the envisaging of the Planet Earth as a world archipelago. It does so by espousing the geographical value of both the islandscape and the conceptualisation of the role that islands have played in history, from the early forays of *homo* beyond continental lands, to the recent scramble for island colonies, now strategic jurisdictional enclaves of larger powers.

Acknowledgements

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