The London School of Economics and Political Science

The biological diversity complex: A history of environmental government

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Abstract

The thesis understands biodiversity as a complex consisting of a form of environmentalism, a mode of governance for the global South, and a set of policy prescriptions all mobilized by the guiding idea of 'genetic gold,' the belief that biodiversity possesses significant latent economic value. The thesis primarily analyses the historical origins of biodiversity and the formation of a rationality of governing centred on genetic gold, deploying tools and methods from the work of Michel Foucault. It further applies these insights into the examination of two specific regulatory mechanisms developed within this project of environmental governance: the mechanism for securing access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation, and local and indigenous community participation in biodiversity conservation and utilisation. The aim of this research is a dual critique. First, the unpacking of the complexity of the biodiversity concept and its integrative rendering of biodiversity loss as a governance problem constitutes a critique of environmental law's enthusiastic acceptance and subsequent regulation of biodiversity as genetic gold. Secondly, the conception of a broader governance complex pervaded by non-legal forms of knowledge, expertise and practices challenges an international environmental law that continues to regard itself as the instrumental centre of environmental concern and discourse.

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CONTENTS

TABLE OF ABBREVIATIONS

ABS	Access and Benefit Sharing
CBD	United Nations Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
COP	Conference of the Parties
EPA	Environment Protection Agency
FAO	Food and Agriculture Organization
GEF	Global Environmental Facility
IMF	International Monetary Fund
INBIO	*Instituto Nacional de Biodiversidad*
IUCN	International Union for the Conservation of Nature
LMMC	Group of Like-Minded Mega Diversity Countries
MDGs	Millennium Development Goals
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-governmental Organization
TEEB	The Economics of Ecosystem and Biodiversity
TRIPs	Trade-Related aspects of Intellectual Property Rights Agreement
UN	United Nations
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WCS	World Conservation Strategy
WSSD	World Summit on Sustainable Development

WTO	World Trade Organization

CHAPTER 1
THE BLACKMAIL OF ENVIRONMENTAL LAW

Whatever happened to biodiversity?[1]

I | THE SPECTRE OF FAILURE AND THE CURSE OF IRRELEVANCY

The first specialised study of international environmental treaties by Simon Lyster in 1985[2] brought the first systematisation of a previously unheard legal field that appeared on the verge of its establishment as an accepted field of public international law. Lyster's account also brought an image of the death that awaits all defective environmental treaties with his description of the *de facto* defunct Western Hemisphere Convention as 'a sleeping treaty', a fate attributed to the complete lack of institutional machinery in support of its implementation[3]. Since that early period, all environmental treaties have been outfitted with elaborate institutional and administrative structures (including conferences of the parties, secretariats, standing scientific bodies, working groups amongst others) to counteract this threat of eternal 'sleep', turning them into the complex treaty regimes of the present day.

In 2010, a series of events relating to the United Nations Convention on Biological Diversity [4] (CBD), although outwardly a manifestation of continued operational effectiveness if not outright success, have raised the spectre of a different kind of death for

[1] Title of a press communiqué released by the Secretariat of the Convention on Biological Diversity (2010)
[2] Simon Lyster, *International Wildlife Law : An Analysis of International Treaties Concerned with the Conservation of Wildlife* (Grotius Publications 1985)
[3] Ibid 111
[4] United Nations Convention on Biological Diversity, opened for signature 5 June 1992, 31 ILM 818 (1992) (entered into force 29 December 1993), (CBD)

international environmental law. First, the United Nations declared 2010 as an International Year of Biodiversity, a symbolic 'celebration of the diversity of life on Earth' and 'homage to incredible biological richness that sustains our health and wellbeing'[5]. The launch of this international year attempted to move environmental discourse on from the excessive focus on climate change culminating in the perceived failure of Copenhagen conference the year before. Secondly, the 10th Conference of the Parties (COP) of the CBD was held at Nagoya in October 2010. COP-10 produced two concrete legally recognisable outcomes as part of the well-received 'Nagoya package'[6] of negotiations: the hard law Nagoya Protocol on Access to Genetic Resources and Benefit Sharing (ABS),[7] a culmination of roughly eight years of negotiations, and a new Strategic Plan for the period 2011-2020, titled 'Living in Harmony with Nature', complete with biodiversity policy targets[8]. This represented the culmination of work undertaken within the very active CBD, a complex regime that contains a sprawling collection of mechanisms, working groups, institutions, partnerships[9], and –after Nagoya – two binding protocols[10] in support of its objectives. Yet, despite the enthusiasm and optimism of these achievements, these events cannot seem to lift the atmosphere of failure and irrelevancy that permeates.

Failure here can refer to the lack of direct impact in terms of affecting the decline of biodiversity. In 2002, nine years after its entry into force, the CBD operation had been

[5] Statement by Ahmed Djoghhlaf, The Executive Secretary of the Convention on Biological Diversity, On The Occasion of the Official Launch of the International Year of Biodiversity, 11 January 2010
[6] Earth Negotiations Bulletin, *Summary of the Tenth Conference of the Parties to the Convention on Biological Diversity: 18-29 October 2010* (IISD, 2010)
[7] The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity, see UNEP/CBD/COP/10/Decision X.1 (2010), Annex
[8] The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets '*Living in Harmony with* Nature', see UNEP/CBD/COP/10/Decision X.2 (2010), Annex
[9] These elements of the regime will be examined throughout the thesis. The pace and complexity of institutional change is such that a updated complete outline is only available at: http://www.cbd.int/
[10] Including the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, see UNEP/CBD/EXCOP 1/Decision EM-I.3 (2000), Annex

organized for the first time through a strategic plan structured around the following primary objective:

> '...to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth'[11].

This establishment of a relatively concrete target was very well-received at the ensuing World Summit of Sustainable Development (WSSD) at Johannesburg in 2002 and subsequently incorporated into the high-profile and wide-ranging Millennium Development Goals (MDGs)[12], within the subsidiary goal of improving the effectiveness of global environmental regimes.

The adoption of the strategic plan followed on from a near-decade of continuing biodiversity degradation despite the full operation of the CBD, but the plan did not alter this trajectory in any appreciable form. In 2005, the UN's report on progress towards the MDGs had stressed that 'sustainability will not be achieved with current patterns of resource consumption and use'[13]. The publication of the *Millennium Ecosystem Assessment* in the same year further confirmed the general decline of all ecosystems[14], partly masking its bleak assessment by employing a more neutral terminology of ecosystem transformation and change. Nevertheless, one of the key messages of this assessment's Synthesis Report was that 'an unprecedented effort would be needed to achieve by 2010 a significant

[11] Strategic Plan for The Convention on Biological Diversity, see UNEP/CBD/COP 6/Decision VI.26 (2002), Annex
[12] Target 7.B of the seventh, Environmental Sustainability, goal, see http://www.un.org/millenniumgoals/environ.shtml
[13] See The MDGs Report 2005, 30 available at http://www.unstats.un.org/unsd/mi/pdf/MDG%20Book.pdf
[14] See MA Synthesis Report on Biodiversity (2005), 2-5 available at http://www.maweb.org/

reduction in the loss of biodiversity at all levels'[15]. This unprecedented effort never materialised. In May 2010, the publication of the third *Global Biodiversity Outlook*[16] confirmed that the 2010 objective had simply not been met to any appreciable degree, while most indications pointed towards a continuing decline of genes, species and ecosystems diversity[17]. Acknowledging this trajectory of failure[18], the new 2010 strategic plan instead proposes a grand vision of a future 'living in harmony with nature', defined as a future 'where by 2050, biodiversity is valued, conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people'[19].

The sudden emergence of this grand vision is related to the fear of irrelevancy, the second element of the spectre haunting the CBD, as indicated above. The adoption of the Nagoya package was hailed as a great success for international environmental law, particularly coming soon after the disappointment of Copenhagen. A certain confidence, if not triumphalism, observed in the title and language of the new strategic plan, appears vacuous, not only in light of the clearly measurable failure of the first strategic plan, but also the declining status of the CBD itself within the international community. Despite being a top-level environmental summit, the Nagoya COP was attended by the heads of state from Gabon, Guinea-Bissau, Yemen, Monaco and Japan as the host, while a significant number of states did not even send ministerial-level representation[20]. Biodiversity simply does not command a place in the global agenda in the same way climate change has achieved in recent years.

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[15] Ibid.
[16] An overview of CBD efforts, published by the Secretariat of the CBD. See http://gbo3.cbd.int/
[17] See Executive summary, http://gbo3.cbd.int/the-outlook/gbo3/executive-summary.aspx
[18] See 'Living in Harmony with Nature', see note 8 above, par. 7
[19] Ibid par. 11
[20] George Monbiot, 'A Ghost Agreement' *The Guardian* (London 2 November 2010)

This is certainly worrying for environmentalism considering the established importance of biodiversity as the support system for all life on the planet, but for international environmental law it is the combination of absent interest with a streamlined production of legal output that appears to usher in a new type of 'sleeping treaty'. This is no longer a treaty abandoned due to lack of institutional machinery, but a treaty that festers because the institutional structure does not produce purpose or impact; not dead and buried in the graveyard of failed environmental initiatives, but allowed to exist as an undead zombie chained inside a cage and forgotten by everyone. Truly, whatever happened to biodiversity?

The search for an answer to this question constitutes the main task of this thesis. It is approached largely as a question of evaluation and assessment, primarily but not exclusively of the CBD itself. This in turn raises issues of the criteria and methods by which such an analysis of the CBD is to proceed. For example, the intentionally scaremongering depiction of the CBD as a 'zombie treaty' immediately above is derived from largely formalist criteria, such as evaluating the performance of the environmental regime through the decisions of its COP or measuring its influence by the number of heads of state appearing in it. These are assumptions that factor into the analysis, often resulting in simplistic dismissals or enthusiastic embraces. In order to begin the process of answering the above question at the very least without falling into the trap of abstract formalism, one needs analytical tools that can venture beyond these assumptions. Before going into further detail into these theoretical and methodological points of the analysis proposed in this thesis, a more detailed presentation of the themes and framework of the CBD, as well as the deficiencies of existing methods for evaluating its operation, is required.

II | THE UN CONVENTION ON BIOLOGICAL DIVERSITY

In this section, an outline of the basic themes and features of the Biodiversity Convention and relevant literature on biodiversity is presented. This survey helps clarify the main issues in the relation between law and biodiversity.

MAJOR THEMES AND LEGAL STRUCTURE

Biodiversity was declared dead in 1997[21]. For the conservation expert making that claim, the general definition of the concept as the variability of life, its processes and ecosystems, the 'catch-all term of everything biotic'[22], was 'so all-inclusive that it has become meaningless'[23]. While indisputable as a deontological environmental ethic calling for the protection of diversity at all levels, the lack of specific guidance and economic utility made it unsuitable as a guide to conservation practice. During the exact same period in the late 1990s, biodiversity was also described in completely opposite terms as 'a metaphorical magnate that currently galvanizes the conservation, scientific and funding communities'[24]. Within a different schema of geopolitical exchange, a North-South 'grand bargain'[25], biodiversity was defined as a genetic resource held by Southern states and sought by Northern states. The - at the time - influential negotiating Group of Like-Minded Megadiversity Countries[26] (LMMC) stressed that:

> 'The resources of biological diversity and the environmental services that depend on them have an immense strategic, economic and social value, and offer

[21] R.A. Lautenschlager, 'Biodiversity is Dead' (1997) 25 Wildlife Society Bulletin 679
[22] Ibid 683
[23] Ibid 679
[24] Charles Zerner quoted in Michael Goldman (ed) *Privatizing Nature: Political Struggles for the Global Commons* (Pluto Press 1998) 145
[25] Walter V. Reid and others, *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (World Resources Institute, USA 1993); Kerry ten Kate and Sarah A Laird, *The Commercial Use of Biodiversity* (Earthscan 1999); Kerry ten Kate, 'Biodiversity and Business: Coming to Terms with the 'Grand Bargain'' (2000) 76 International Affairs 241
[26] The core consisted of Brazil, China, Colombia, Costa Rica, India, Indonesia, Kenya, Philippines, Mexico, Peru, South Africa and Venezuela before expanding to include more Southern states. Currently disbanded.

development opportunities to our populations and to the international community'[27].

For the environmental economist, some form of transaction was the next logical step, but this commodification of biodiversity was also deplored on environmental and social justice grounds[28]. While it invested biodiversity with a specific economic utility, this reduction of biodiversity was seen as devaluing the ecological complexity of the term, redirecting conservation funds away from endangered regions towards solely profitable ventures, and ignoring the multiple social benefits derived from biodiversity as 'the biophysical context of cultures'[29]. Therefore within the same time frame, the same environmental concept was concurrently understood in different ways, as both a lofty, universal environmental ethic with little practical application, as well as a pragmatic utilitarian ethic of little value to traditional environmentalist concerns and practices.

Although a miniscule snapshot of the multiple debates and conflicts over the concept of biological diversity that have raged since its inception[30], the above juxtaposition is illustrative of the main themes, issues and questions that the CBD has had to grapple with since the first negotiating session. These dominant themes mainly revolve around binaries, such as concept and reality, environmental ethic and applied science, conservation and utilisation, global commons and private property, and of course the North-South divide. The legal framework of the CBD emerged as a proposed response, operationalization or even resolution to some of these binaries.

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[27] Cancun Declaration of Like-Minded Megadiversity Countries (signed 18 February 2002) Available at: http://www.weltvertrag.org/e375/e719/e1045/CancunDeclarationonLikeMindedMegadiversityCountries_2002_ger.pdf

[28] For some critiques see indicatively Kathleen McAfee, 'Selling Nature to Save it? Biodiversity and Green Developmentalism' (1999) 17 Environment and Planning D: Society and Space 133; Chapter 6 in Ramachandra Guha and J. Martinez-Alier, *Varieties of Environmentalism: Essays North and South* (Earthscan 1997)

[29] McAfee 144, note 28 above

[30] These debates will be further explored in Chapters 2, 3 and 4

As a correlation of these themes, the idea of a trade-off between conservation and development is often presented as the underlying rationale that dominates the CBD framework[31]. This is evident in the treaty's three objectives, which are the (linked) conservation and sustainable use of biodiversity, as well as the fair and equitable sharing of benefits arising from the utilisation of genetic resources[32]. Biological diversity is formally defined as:

> 'The variability among living organisms from all sources […] and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'[33].

The conservation of this biodiversity is divided into two categories of in situ[34] and ex situ[35] measures. Sustainable use[36] is directly linked to the practice of sustainable development[37]. It is defined as:

> 'The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations'[38].

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[31] See Alan E. Boyle, 'The Rio Convention on Biological Diversity' in Catherine Redgwell and Michael Bowman (eds), *International Law and the Conservation of Biological Diversity* (Kluwer Law International 1995) 38; Clare Shine and Palitha T.B. Kohona, 'The Convention on Biological Diversity: Bridging the Gap Between Conservation and Development' (1992) 1 Review of European Community and International Environmental Law 278; Catherine Tinker, 'A "New Breed" of Treaty: The United Nations Convention on Biological Diversity' (1995) 13 Pace Environmental Law Review 191; and Chapters 3 and 4 in this thesis
[32] CBD, Art. 1
[33] CBD, Art. 2
[34] I.e. in its natural surroundings. CBD, Art 2 and 8
[35] I.e. outside natural habitats, in botanical gardens, seed banks and other collections. CBD, Art.2 and 9
[36] CBD, Art. 6 and 10
[37] Further discussed in Chapter 4.
[38] CBD, Art. 2

The third objective of fair and equitable sharing (ABS)[39] was initially given far less attention and prominence compared to the other two[40]. Genetic resources were defined as 'genetic material of actual or potential value'[41]; genetic material 'means any material of plant, animal, microbial or other origin containing functional units of heredity'[42]. The increasing importance of ABS, which eventually led to the adoption of the Nagoya Protocol on the topic, has also widened this definition to include 'derivatives'[43], i.e. naturally occurring biochemical compounds without functional units of heredity[44]. Utilization (as opposed to use) is also defined in the protocol as 'to conduct research and development on the genetic and/or biochemical composition of genetic resources'[45].

The implementation methods set out in the treaty text, by which the three objectives are to be achieved, predominantly refer to national environmental law and policy. The CBD formally recognises the principle of national sovereignty over all natural resources[46], and by extension the majority of biodiversity is placed within national jurisdiction[47]. Thus, the objectives of the CBD are to be accomplished through 'national strategies, plans and programmes'[48]. Any form of international governance of biodiversity, including global lists of protected areas and endangered species following the existing model of other environmental treaties[49], is absent. The recognition of biodiversity conservation as a 'common concern of humankind' only in the preamble further illustrates that biodiversity

[39] CBD, Art. 1 and 15, abbreviated to ABS in the early years of the CBD's operation
[40] Note for example its envelopment within financial mechanisms/support for conservation activities in early studies such as Simone Bilderbeek (ed) *Biodiversity and International Law: The Effectiveness of International Environmental Law* (IOS Press 1992) and during treaty negotiations themselves as indicated in Fiona McConnell, *The Biodiversity Convention: A Negotiating History* (Kluwer Law International 1996)
[41] CBD, Art. 2
[42] CBD, Art. 2
[43] Nagoya Protocol, Art. 2
[44] Such as scents, colourings etc.
[45] Nagoya Protocol, Art. 2
[46] CBD, Art. 3
[47] CBD, Art. 4
[48] CBD, Art. 6
[49] These lists did make the draft treaty, but not the final text. See Boyle, note 31 above, 37

loss was not considered a transboundary or global environmental problem in the same fashion as for example climate change.

The CBD does propose a number of measures to be adopted for each objective[50], such as the establishment of a system of protected areas for in situ conservation, or the establishment of research facilities and the organisation of collections for ex situ conservation, but these constitute policy options, always pre-empted with the 'as far as possible and as appropriate' proviso. By choosing some of these measures in their 'strategies, plans or programmes', states articulate their own adaptations of biodiversity law and policy, which are known in CBD terminology as National Biodiversity Strategy and Action Plans (NBSAPs)[51].

The unique complexity and comprehensiveness of the biodiversity concept[52] has turned the accumulation of scientific knowledge into an almost Sisyphean effort and an expansive function and aspect of the CBD. States are explicitly tasked with building up their own biodiversity knowledge[53], in addition to the standard national reporting requirements[54]. The national – or more precisely non-international - focus of the whole endeavour is further evidenced by the relegation of the precautionary principle to the preamble of the convention. In similar fashion to the ejection of global lists, this choice prevents the accumulated biodiversity knowledge from being used as an instrument of international intervention upon national sovereignty.

[50] CBD, Art. 8 for in situ conservation, Art. 9 for ex situ conservation, and Art. 15 for ABS
[51] CBD, Art. 6
[52] This will be further analysed in Chapters 2 and 3
[53] CBD, Art. 7
[54] CBD, Art. 26

Despite the clear rejection of the inter-state/international aspect in such a key area, a number of transnational mechanisms and initiatives have been added as the CBD expanded, specifically in relation to these knowledge functions. Some of these initiatives began life as formal treaty mechanisms only to expand into collaborative transnational networks of cooperation without state involvement. This is the case of the Clearing House Mechanism[55] (CHM) established to collect information and reports, only to become a currently hybrid, public/private 'network of Parties and partners' facilitating 'scientific and technical cooperation, knowledge sharing, and information exchange'[56] across multiple levels.

An important consideration within the theme of a compromise or a North-South bargain was the funding for biodiversity conservation, as well as for all the subsidiary measures and the CBD operation itself. An essential guiding idea for the drafting of the CBD was that the South possessed biodiversity and the North financial resources and the willingness to pay for access. This exchange was initially projected upon the international/inter-state system, which resulted in tortuous negotiations[57] that resulted in the South obtaining the commitment to provide 'new and additional financial resources' from the North to meet the cost of the above discussed implementing measures[58]. The importance of the financial mechanism has progressively receded due to the commercialisation and commodification of biological and genetic resources and the actual lack of available public funding[59].

This section sought to flesh out some of the overarching themes and important features of the CBD. The Treaty has existed largely in a context of overlapping binaries, with the most

[55] CBD, Art. 18(3)
[56] UNEP/CBD/COP/10/Decision X.15 (2010), Annex
[57] Detailed from an insider's perspective in McConnell, see note 40 above
[58] CBD, Art. 20
[59] Michael C. Rubino, 'Biodiversity Finance' (2000) 76 International Affairs 223

prominent being the trade-off between conservation and development. It was conceived largely as a 'grand bargain' between the North and the South, but it confirmed the principle of national sovereignty and rejected all notions of common or shared natural resources. It was drafted as a framework treaty of legal and policy options, with emphasis on national implementation and no option to internationalize biodiversity conservation. The near-twenty years of operation of the treaty regime have resulted in considerable reorientations and institutional reconfigurations, which will be highlighted throughout the thesis. The crucial role of biodiversity knowledge is also a feature of the regime to be further examined. This importance is partly due to the characteristics and complexity of the biodiversity concept itself, but also accentuated by an emerging transnational character in biodiversity governance.

There are multiple perspectives through which one can presently 'enter' biodiversity discourse in general. Some helpful categorizations of existing approaches are presented below. These approaches arguably fail to grasp the unusual elements of both the concept and the legal regime, and thus are unsuited to fully engaging with the question of biodiversity's current fate.

VARIETIES OF BIODIVERSITY LITERATURE AND THE STANDARD NORMATIVE MODEL

An authoritative study of biodiversity begins with the weight of scientific fact and prediction. In order to impress upon its audience the gravity of the 'constant crisis' of multi-level biotic degradation[60], rising numbers of endangered species are compared to estimates of the total number of species on Earth[61]; rates of extinction are paired with

[60] Michael E. Soule, 'Tactics for a Constant Crisis' (1991) 253 Science 744

[61] Approximately 12 million (including insects and microorganisms) quoted in Patricia Birnie and Alan E. Boyle, *International Law and the Environment* (2nd ed edn, Oxford University Press 2002), figure taken from

dismal predictions regarding the uncontrollable growth of human population and concomitant overexploitation of resources. The linked ecological phenomena of habitat erosion and ecosystem degradation signal the entry into the complex conceptual milieu and alarming reality of biodiversity, often symbolised by the declining Amazon rainforest.

This standard opening motif contributes to a largely anthropocentric articulation of biodiversity as the planet's life support system and a repository providing a vast array of necessary natural resources and ecosystem services that humanity requires[62]. The associated populist identification of biodiversity as the 'web of life', despite actually differing significantly from legal definitions and scientific understandings of the term, is now widely used in making the concept more accessible[63]. The immediacy and accessibility of this construction has also led to its infiltration within biodiversity scholarship. Building on this perception, biodiversity studies usually take one of three different directions. These categorizations are of course brief and broad generalizations, but nevertheless they do offer an overview of existing approaches. This overview will then be used as the basis for distinguishing a different, historical approach taken by the thesis.

First, the transboundary aspect and the global concern for biodiversity leads to a type of scholarship, where environmental law is viewed strictly through the traditions, perspectives and theories of public international and treaty law[64]. In this approach, states - and not regimes - become the key agents and the fundamental units of analysis. Closer to classical

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Timothy Swanson, *Global Action for Biodiversity* (Earthscan 1997). Edward O. Wilson, *The Diversity of Life* (Penguin 2001)uses the Vernon H. Heywood and UNEP, *Global Biodiversity Assessment* (1995) estimate of 13,62 million

[62] Timothy J. Farnham, *Saving Nature's Legacy : Origins of The Idea of Biological Diversity* (Yale University Press 2007) 2-4

[63] Note for example the language surrounding the declarations regarding the International Year of Biodiversity in 2010

[64] Notable examples of this approach include Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford handbook of international environmental law* (Oxford University Press 2007); Michael Bowman and Catherine Redgwell (eds), *International Law and the Conservation of Biological Diversity* (Kluwer Law International 1996)

international law, this literature is still anchored in a doctrinal analysis of the traditional sources of public international law (custom, treaties, general principles etc.). The objective is to comparatively locate the CBD within the continuum of international environmental law and evaluate its operation by comparing it to the formal model of the ideal environmental treaty as handed down by legal doctrine and history. This approach is employed in the opening section of this chapter. As indicated above, the result of the application of this approach in the area of biodiversity is often a lament for the lack of coercion (no 'law with teeth') and an aspiration for environmental treaties or organizations to mimic the sovereign authority of the state. Subsequently, the CBD's obvious lack of strict enforcement rules at the international level is identified as the major deficiency to be remedied. The solution to CBD's problems is always located in some form of replication or transplantation from other - international or domestic - legal systems[65].

Secondly, biodiversity studies can be policy-oriented and prescriptive in the sense of seeking to improve upon the role and functions of the global regime understood to be charged with managing biodiversity as a resource system[66]. The CBD is described as a regime, as opposed to just a legal text, meaning 'a set of norms, rules and procedures that structure the behaviour and relations of international actors so as to reduce the uncertainties they face and facilitate the pursuit of a common goal'[67]. These norms, rules

[65] Daniel M. Bodansky, 'International Law and the Protection of Biological Diversity' (1995) 28 Vanderbilt Journal of Transnational Law 623; Michael D. Jr Coughlin, 'Using the Merck-INBio Agreement to Clarify the Convention on Biological Diversity' (1993) 31 Columbia Journal of Transnational Law 337; Lyle Glowka, 'Emerging Legislative Approaches to Implement Article 15 of the Convention on Biological Diversity' (1997) 6 Review of European Community and International Environmental Law 249; D. Hurlbut, 'Fixing the Biodiversity Convention: Toward a Special Protocol for Related Intellectual Property' (1994) 34 Natural Resources Journal 379; S. Johnston, 'The Convention on Biological Diversity: The Next Phase' (1997) 6 Review of European Community and International Environmental Law 219; Catherine Tinker, 'Responsibility for Biological Diversity: Conservation under International Law' (1995) 28 Vanderbilt Journal of Transnational Law 777

[66] Although this explicitly top-down perspective has receded in recent years. For some notable examples see Philippe G. Le Prestre (ed) *Governing Global Biodiversity : The Evolution and Implementation of the Convention on Biological Diversity* (Ashgate 2002); Timothy Swanson, 'Why is There a Biodiversity Convention? The International Interest in Centralized Development Planning' (1999) 75 International Affairs 307

[67] Le Prestre 5

and procedures are then examined as regulatory instruments. Under this conception, the biodiversity regime is recognised as an amalgam of ecological knowledge and economic pragmatism guided by the tenets of sustainable development. The study of biodiversity through a law and economics approach[68] also fits under this category of what can be generally termed as 'policy reform'.

The third category of biodiversity analysis is derived from the realist trend in international relations. This approach attempts to make sense of the interplay of the inter-state system as the 'international community'. The North-South divide and the national interests that drive (or derail) international agreements are the primary focus in this approach[69]. This can become a purely descriptive exercise, obsessively focusing on the mapping of the groupings, their positions and shifts in alliances during the various stages of international negotiations.

This is not meant to indicate three bodies of literature evolving in isolation from each other. In fact, there is considerable overlap between these three approaches. Most importantly, and despite their divergent influences and emphases, the common element appears to be the introduction of only a severely restricted analytical frame and interdisciplinarity as a means to 'grapple' with the complexity biodiversity. They infuse environmental law with, respectively, the traditions of public international law, the values of economics and the relations of force of international relations. They aim to cover the gaps and deficiencies of law with politics, the idealism of ecology (in the sense of both

[68] E.g. Charles R. McManis, *Biodiversity and the Law : Intellectual property, Biotechnology and Traditional Knowledge* (Earthscan 2007)

[69] Dana R. Fisher and Jessica F. Green, 'Understanding Disenfrachisement: Civil Society and Developing Countries' Influence and Participation in Global Governance for Sustainable Development' (2004) 4 Global Environmental Politics 65; Adil Najam, 'Developing Countries and Global Environmental Governance: From Contestation to Participation to Engagement' (2005) 5 International Environmental Agreements 303; Jorge Cabrera and Kathryn Garforth, 'Sustainable International Biodiversity Law' in M.C. Cordonier Segger and Ashfaq Khalfan (eds), *Sustainable Development Law : Principles, Practices, and Prospects* (Oxford University Press 2004)

environmental science and politics i.e. environmentalism) with the pragmatism of economics, and the vast scope of global governance with the firm hand of sovereignty; or to combine these fixes in varied ways.

These approaches then ultimately coalesce into what can be termed as a standard normative model, based on a restrained interdisciplinarity so widely ingrained, that it has become simply another type of orthodoxy and tradition, another kind of legal doctrine. Its pattern is already fully formed, with the international environmental lawyer cast into the role of the problem-solving expert-consultant, diagnosing and understanding the causes of an environmental problem, employing a variety of available methods in order to prescribe the 'cure' in the shape of the appropriate regulatory reform[70].

This problem-solving exercise has been distilled into a simple three-stage process: first, identify the environmental problem in question by briefly outlining its cause and adverse effects. For example, in *Governing Global Biodiversity*, the editor pre-emptively enunciates that 'we start from the premise that such a threat exists, even though the exact magnitude, the underlying causes of biodiversity loss, and the nature of its impact, may be subject to debate'[71]. Secondly, place the problem on the appropriate niche of the overall policy agenda by setting out the goals that regulation is expected to achieve. Thirdly, address the problem by locating the best choice out of all the available instruments[72]. In conditions of a total blurring of the line between law and policy, and dominance of the practitioner's perspective, legal scholarship is forced to address only these three stages with the requisite environmentalist and normative bias. Writing within this model, Daniel Bodansky has

[70] Daniel Bodansky, *The Art and Craft of International Environmental Law* (Harvard University Press 2010) 37
[71] Le Prestre 3
[72] It is worthwhile to note than in this model the complete 'policy toolkit' of instruments for addressing environmental problems includes both strictly legal and non-legal (economic) measures under the umbrella term of regulation. See Bodansky

employed the analogy of the environmental lawyer as a doctor[73]. This is perhaps too dignified for such form of environmental law; here there is only a surgeon only interested in fixing a specific problem without affording too much attention to the intricacies of diagnosis, the overall health of the patient or the dangers of surgery itself.

The interesting twist is that, despite the best efforts of the literature, biodiversity cannot be contained by this specific mixture of pragmatism and limited interdisciplinarity that characterises this simplified three-stage problem-solving exercise. The specification and compartmentalization into the mould of the environmental problem is impossible; the CBD's three formal goals of conservation, sustainable use and fair and equitable benefit sharing in effect cover the majority of environmental discourse. Given the additional multiple variations proliferating in the social and natural sciences - of biodiversity as idea, concept, ethic or practice - the erection of these boundaries is an empty gesture. The phrase 'we are now only discussing biodiversity' is not significantly different from 'we are now discussing the environment'. There is no 'here' from which to observe and analyse the 'there' of biodiversity.

Aside from this biodiversity-specific difficulty, there are wider issues with this standard normative model. It is an ingredient of the characteristically confident assessments of the evolution of international environmental law still largely based on the accumulated mass of legal agreements and texts. There is a perception of effectiveness and a sense of achievement when each neatly defined and formally recognised environmental problem is assigned its legal box in the shape of a multilateral environmental treaty. That particular environmental issue is being taken care of; now we can move on to the next struggle. Until the late 1990s, one could indeed still argue that 'the provisions in the new agreements are

[73] Ibid

generally more stringent and detailed than in the previous ones, the range of subject matter broader, and the provisions for implementation and adjustment for sophisticated'[74]. This is no longer the case. Now there is 'ossification'[75] in the regimes and 'dissonance'[76] in the international community. There are no more environmental niches and legal boxes to hide in.

Yet according to Daniel Bodansky, this last decade is simply a period of 'retrenchment and consolidation' for international environmental law[77]. He further identifies a switch in emphasis from rule creation to the issue of effectiveness as a sign of 'maturation' of the legal field[78]. Peter Sand concludes in his study of the evolution of the field that 'international law for the environment has coped rather well with the challenges of global change'[79]; and it is only due to the overwhelming success of this process that the author expresses concern that the pluralism and dynamism of sustainable development is eroding 'the more resilient foundations of environmental law as part of a formalist culture of international legal process'[80]. This is a valid observation. For example, note the following evaluation of the climate change regime by Michael Grubb, from the perspective of an economist evaluating the outcome of a recent COP:

> 'But that does not mean that we all have to be in the same legal (or not) structure. To suggest that the USA and China need to assume commitments on the same

[74] Edith Brown Weiss, 'International Environmental Law: Contemporary Issues and the Emergence of a New World Order' (1993) 81 Georgetown Law Journal 675, 684
[75] Joanna Depledge, 'The Opposite of Learning: Ossification in the Climate Change Regime' (2006) 6 Global Environmental Politics 1
[76] Lavanya Rajamani, 'From Stockholm to Johannesburg: The Anatomy of Dissonance in the International Environmental Dialogue' (2003) 12 Review of European Community and International Environmental Law 23
[77] Bodansky, *The Art and Craft of International Environmental Law* 35
[78] Ibid
[79] Peter H. Sand, 'The Evolution of International Environmental Law' in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (OUP 2007) 42
[80] Ibid 42

> legal basis as Norway, Singapore or Burkina Faso is a *fundamental fallacy* laid bare by Copenhagen"[81].

It should be noted that law is not challenged above by reference to the economic language of efficiency and effectiveness or by calling on realist or pragmatist exigencies demanding the setting aside of legal principles, but by brutally exposing the whole construct and principle as a 'fundamental fallacy'.

While Sand's observation is then valid as an observation, the negative reception attached to this observation, borne out of the inherent attribution of a privileged position afforded to 'the formalist culture of the international legal process', may not be as valid. If the privileged instrumentalism of law is removed from its perch, it becomes unclear why such views, even as blunt as those expressed by Grubb, constitute an erosion as opposed to simply a coming transformation of international environmental law.

The standard normative model of the three stages of problem-solving presented above can then be seen as part of a broader mainstream environmental legal scholarship that exhibits significant historical and legal closure. In the rush to defend the legal fortress ('the formalist culture of the international legal process') at all costs, this model for conceptualizing environmental problems and associated regimes has become static; separated from the rest of environmentalism, safe in the lulled embrace of legal doctrine. The narrow problem-solving approach that the model espouses is especially unsuited to the particularities of the concept of biodiversity.

[81] Emphasis added. Michael Grubb, 'Copenhagen: Back to the Future?' (2010) 10 Climate Policy 127, 129

International environmental law has reached the crossroads of a bizarre *hysteron proteron*. The legal discourse forges ahead unheeded, while the materiality of environmental destruction is left behind. The declensionist narrative is reserved exclusively for nature, while progress, however tiny, is always attached to law. The environment declines, but law improves through the three stages of problem-solving. It has become a discussion between inside observers, feeling secure and authoritative under the shadow of the ivory towers of international environmental law, musing on whether they are witnessing consolidation, congestion or regression, and navel-gaze over the level of the maturity of the field[82]. Outsiders can all too easily spot the fixations, deficiencies and dead ends of the field, but the wall is high enough to keep enemies and detractors out. This direction attempts to hide a certain ontological vulnerability[83] behind the formalism of international environmental law, safe in the belief that meaning can be found in the discovery and clarification of the essence and structure of environmental law.

This section presented an overview of the CBD and associated biodiversity literature as a starting point for engaging with the question of biodiversity. As stated in the first section, from the perspective of international environmental law this is a question of evaluation of the operation of the CBD. However, the survey of existing methods of evaluation in the field of biodiversity indicates significant deficiencies, particularly their ultimate fusion in a single, static model closed off to the different layers of environmental discourse and incapable of utilising the unusual, if not unique, features of both the concept and the regime of biodiversity.

[82] Elisabeth Fisher and others, 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' (2009) 21 Journal of Environmental Law 213

[83] Andreas Philippopoulos-Mihalopoulos, '"...The Sound of Breaking String": Critical Environmental Law and Ontological Vulnerability' (2011) 2 Journal of Human Rights and the Environment 5

By consequence, the next section will posit an alternative approach that critically engages with biodiversity in its entirety, without delineating and privileging the legal jurisdiction. This approach is driven by the realisation that the question of whatever happened to biodiversity is only part of a far more broad and paralysing query - especially for the very costly edifice of international environmental law - that environmental law flatly refuses to engage with: what if the amassed legal arsenal (of practice and scholarship) has not actually contributed to the goal of environmental protection? This query transposes the spectre of failure and the curse of irrelevancy that haunts the legal field to a different conceptual milieu of goals, effects, and impacts; away from the preoccupation with structure, form and institutions. Thus, it will be beneficial for any evaluation of the concept of biodiversity or assessment of the CBD to entertain the contours of this possibility, in order to avoid belonging to the standard normative model.

III │ THE BLACKMAIL OF ENVIRONMENTAL LAW

This emplacement of the question of biodiversity within a broader problematic regarding the methods and future directions of environmental law prevents a stereotypical response to that question; an analysis leading to inevitable reform proposals derived from going through the three stages of problem-solving in sequence – 'this then needs to be done'. The hypothetical question at the end of the previous section is meant to illustrate that before we can answer whether the CBD 'works', we have to be ready for the possibility that the system has failed strategically, irrespective of whether it presents as 'good' or 'bad' legal form; or more precisely in the process of investigating the operation of the CBD, we have to confront a series of questions about environmental legal method in its current state, and in particular its tendency towards compartmentalization and incrementalism. This series of questions can then be condensed into what is termed the 'blackmail of environmental law'. In the following section this blackmail is presented, along with the

proposed theoretical and methodological framework in order to overcome it in the process of engaging with the question of the fate of biodiversity.

ELEMENTS OF THE BLACKMAIL

The possibility of a decline of international environmental law is clearly a very sensitive topic[84]. Even when weaknesses are uncovered, their reach is a priori restricted and their extent narrowed in an additional round of compartmentalization. For example, Dan Tarlock returns to the 'largely neglected questions of content and legitimacy... that need to be addressed if the area is to sustain itself'[85]. He accepts that environmental law will inevitably fail the ontological test of formalism regarding what constitutes 'real law', i.e. the closed legal system of formal rules articulated by Hart, and that this system 'remains the dominant vision of what a legal system should look like'[86]. For this reason, he argues the need for a principle-based environmental jurisprudence, but all the proposed principles relate to the legislative procedure[87], such as that allowing environmental degradation should be a last resort or a rehash of the precautionary principle into an edict to 'minimize uncertainty before and as you act'[88]. Thus in effect the analysis ends up simply articulating another process-based regulatory model[89]. Elizabeth Fisher and her co-authors argue for a more inward, epistemological turn, locating the spectre of failure in the fact that the 'maturity of [environmental law] as a scholarly enterprise has been eagerly awaited and predicted but adulthood has never arrived'[90]. The authors present a map of methodological

[84] For a notable exception, albeit still from a ecocentric perspective, see David M. Driesen, 'Thirty Years of International Environmental Law: A Retrospective and Plea for Reinvigoration' (2003) 30 Syracuse Journal of International Law and Commerce 353
[85] A. Dan Tarlock, 'Is There a There in Environmental Law?' (2004) 19 Journal of Land Use and Envrironmental Law 213, 217
[86] Ibid 221
[87] Ibid
[88] For the five proposed principles see ibid 248-53
[89] Not far from the standard typologies and progression from law, to regulation and governance presented in Neil Gunningham, 'Environmental Law, Regulation, and Governance: Shifting Architectures' (2009) 21 Journal of Environmental Law 179
[90] Fisher and others, 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' 214

challenges to be faced, transferring the perspective from the outside of environmental law to an inside of the environmental lawyer. The immaturity and intellectual incoherence of environmental law 'as a scholarly enterprise' is thus used to transform the spectre of failure into a manageable set of methodological challenges for esoteric study[91]; never constituting a point of departure for questioning the content, substance or aims of environmental law as the extension of the political and social project of environmentalism. These analytical paths are not different from the similar paths followed in substantive international environmental law, where reassurance is gained through the retreat into the origins of international environmental law, when each treaty regime was assigned to one environmental problem; migratory birds not endangered species, whale stocks not fisheries, freshwater resources not protected areas, and so on.

Therefore, there is more than one type of compartmentalization at work in environmental law. The compartmentalized way that co-opts the possibility of change or failure has also led to a tendency to prefer repetition with small incremental changes as the standard method of improvement. For example, as indicated above, the CBD addressed the failed rationalization of the first strategic plan by agreeing a similar one, but with more detailed targets, for the next ten years. The dominance of this form of incrementalism stems from the ontological poverty and vulnerability of the field. They mandate that conclusions and reform proposals are always to be built on pre-existing arrangements without fundamentally bringing them into question – lest the enemies at the gate invade the legal fortress.

Both compartmentalization and incrementalism constitute atavistic responses to the present challenges posed to the environmental legal field. We either move sideways or go

[91] Ibid

back to the beginning. The analysis produces a technical proposal that says 'this has to be improved slightly' or 'this has to be partitioned off and dealt separately'; in any case always 'distinguishing between the here and there, that is, positioning oneself in such a way as to observe a chunk of it while leaving another chunk as a blind spot behind'[92]. Both regimes and scholarship itself have morphed into conveyor belts of proposals for environmental action, under the constant urgency and pressure of an environmental crisis. It almost appears as simply flicking switches in the cockpit of an aeroplane in order to avert the inevitable crash, with no presence of mind or ability to recollect which switches have already been pressed, and which combinations have worked.

For international environmental law, this particular positioning produces a significant narrowing of the horizons of enquiry. The insistent - almost Don-Quixotic - demand for more effectiveness, efficiency and legitimacy - a demand that in no way questions the meaning of these terms – coupled with the limiting of methods and options has produced a sort of blind hyper-pragmatism. The focus becomes fixed on the normative aspect and the enquiry only ever consists of two questions: Will the proposed legal instrument/reform solve the environmental problem at hand? Does it strengthen environmental law's distinctiveness as a field of legal enquiry? These two questions, despite their obviously different focus, have become irrevocably bound to the point that they have become indistinguishable, in the sense that problem-solving analysis, based on the three-stage process presented above, has become the only recognised method of contributing to international environmental law.

By inverse deduction, an approach that does not directly contribute to problem-solving through some form of compartmentalization or incremental improvement - for example a

[92] Philippopoulos-Mihalopoulos 9

critical or theoretical approach - is also a rejection of the project of international environmental law. This promulgates a simplistic division of tasks. The analysis has to either accept environmental law and remain within an already formulated tradition of legal doctrine and normativity; or if it chooses to criticize environmental law, step outside the confines of recognised scholarship. The latter choice, seen from the perspective of a refusal to contribute to the solution of environmental problems, also leads to unsavoury denunciations as a denier of ecological truths and principles, or at least the placing into the category of the proponents of an anthropocentric model of the socio-natural world. Any critique of specific measures, institutions or regimes is conflated with an ontological assault on the existence of the entirety of the field. Form has become indistinguishable from substance. Quite simply, one is forced to be either 'for' or 'against' environmental law. There are no grey areas for scholars submitting to the blackmail of environmental law.

This may be partly explained by the fact that the sub-field of international environmental law has had a long history of attempting to establish itself as a distinct area of legal practice and scholarship. This desire and drive to become a recognised part of legal discourse, to belong to the grand legal establishment, can be observed in all forms of environmental law, a field of law now proudly certified as 'embedded in the legal landscape'[93] after a short – compared to other legal fields - history of roughly four decades. However, the fight of international environmental law for recognition has been consistently harder[94]. In any case, this drive has now become an obstacle, an uncontrolled anxiety that frantically hides away all traces of ontological vulnerability and regards critique as betrayal of legal principles and environmental ethics. This anxiety is magnified in the global arena, where the field appears

[93] Tarlock 215

[94] As evidenced by the fact that the term 'international law and the environment' is still preferred in certain quarters. E.g. Birnie and Boyle

as an eager little brother constantly looking for the approval of his big brother, public international law.

Under such constraints and pressures, the blackmail of environmental law twists all analysis into a stringent, polarised and defensive form, where only tentative and caveat-strewn probing is allowed. As underlined earlier, while the growing spectre of failure demands a thorough and consistent investigation into the niches and comfort spaces of international environmental law, this is not possible under the blackmail. In particular for this field, this is supremely counter-productive; refusing to ask these questions invariably brings into question the role and the utility of the complicated, tortuous and expensive negotiations and bargaining that accompany the life of necessary state consensus building of all global environmental regimes, thus bringing into life the very ontological fear that precludes the asking of the questions in the first place.

IV │ PREPARING FOR A CONFRONTATION

The point of departure for this thesis was the examination of 'what happened to biodiversity' in light of recent developments within the global biodiversity regime of the CBD. In the process of situating the CBD within international environmental law, it has become clear that the above question has to be approached within the context of broader issues and obstacles affecting the field of environmental law. The delimiting perspective to overcome, in terms of both methods and conclusions to be drawn, has been presented under the heading of the blackmail of environmental law in the preceding section. For this reason, what began as an initial investigation into the predicament of biodiversity as environmental discourse has now assumed a dual dimension. In order for the analysis to shed light on biodiversity and the CBD without repeating the predictable conclusions already lined up within the existing scholarship (which would mean choosing between the

following: disappointing law with no teeth or encouraging legal framework based on soft law), it also has to confront this blackmail of environmental law.

Therefore, this confrontation underpins the theoretical framework and the choice of methodological instruments by which the analysis of the CBD is to proceed. The general onus will be on transcending the 'unadventurous normativity which, because of its goal-oriented attitude, rejects at the outset any theoretical links whose relevance to the existing law is not immediately evident'[95]. This task is undertaken on a platform of anti-essentialism regarding both law and biodiversity. In general terms, this anti-essentialism sets out two theoretical edicts: (i) the CBD has no legal essence to be discovered but is understood as an arrangement for governing, and (ii) biodiversity has no origin to be unearthed in order to guide interpretative efforts and has no meaning other than as a set of practices – initially for conservation, but progressively more involved in environmental governance.

This direction of study is unrelated to the discussion of the specifics or the reality of the problem of biodiversity loss, i.e. the pieces tacked on the introduction to legal analysis, but understands biodiversity as a social construction, 'simultaneously real, collective and discursive - fact, power and discourse'[96]. The theoretical framework is based on the work of Michel Foucault. Specifically, the analysis of biodiversity governance is influenced by his work on power and government, while the historical approach to biodiversity is derived from Foucault's work on the 'history of the present' and genealogy.

LOCATING POWER

[95] Andreas Philippopoulos-Mihalopoulos (ed) *Law and Ecology: New Environmental Legal Foundations* (Routledge 2011)
[96] Arturo Escobar, 'After Nature: Steps to an Antiessentialist Poltical Ecology' (1999) 40 Current Athropology 1, 2

The main goal of approaching the CBD as a Foucaultian arrangement for governing is that it enables a direct analysis of the power relations at play. The advantage of this approach is the 'privileged position of the question of "how"'[97]. Under the rubric of institutional or structural legal analyses, the question of biodiversity is automatically translated into the question of the essence and the institution of the CBD. What is happening to biodiversity is equal to what is the CBD or why is the CBD not effective. Under this different rubric, the analysis moves on the question of how is power exercised within the CBD? The object of analysis becomes power relations themselves[98].

This shift in focus is based on the Foucaultian idea of power as 'a set of actions on other actions'[99]. This different conception of power as a relation, as opposed to an entity held or lost, is useful not just for international environmental law, but for international studies in general, because it represents a move away from state sovereignty-based models and their understanding of power as a zero-sum game[100]. Power is not held by states, or institutions with the consent of states as the sources of authority. Instead, it only 'exists […] when it is put into action'[101]. This operation of power is described in relational terms and by focusing on the notion of the acting subject:

> 'It operates on the field of possibilities in which the behaviour of active subjects is able to inscribe itself. It is a set of actions on possible actions; it incites; it induces, it seduces, it makes easier or more difficult; it releases or contrives, makes more probable or less; in the extreme, it constrains or forbids absolutely, but it is always a

[97] Michel Foucault, 'The Subject and Power' in James D. Faubion (ed), *Power: Essential Works of Foucault: Vol 3* (Penguin 2000) 336
[98] Ibid 339
[99] Ibid 341
[100] Ole Jacob Sending and Iver B. Neumann, 'Governance to Governmentality: Analysing NGOs, States and Power' (2006) 50 International Studies Quarterly 651
[101] Foucault 340

way of acting upon one or more acting subjects by virtue of their acting or being capable of action'[102].

This formulation is linked to the more well-known (and more utilised in subsequent literature) formulation of 'government' as the 'conduct of conduct(s)'[103]. The term government is understood here as the process of governing in general, i.e. what may be termed today governance. The dual meaning of the word 'conduct' is used by Foucault to illustrate the multiplicity and diffusion of this activity of governing as a form of power. 'Conduct' can refer to the conduct others, i.e. the activity of managing or governing; it can also refer to the practices of conducting oneself or being conducted, i.e. how one behaves according to the outlined 'field of possibilities'[104]. This notion of 'conduct of conduct' forms the basis of the broader notion of government as a form of power defined as 'the right disposition of things arranged so as to lead to a suitable end'[105]. Foucault sets out four differences that distinguish this form of power from sovereignty, which represents the classical conception of power much favoured in international law.

First, its object is 'not related to territory, but to a short of a complex of men and things'[106]. This complex brings into the analysis of power the problem of population[107] to complement the focus on territory of sovereignty. The crucial element in this transition is that population is not simply included in the agenda of government as another passive

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[102] Ibid 341
[103] Ibid
[104] Michel Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* (Michael Senellar, Francois Ewald and Allesandro Fontana eds, Graham Burchell tr, Picador/Palgrave Mcmillan 2007) 193
[105] Ibid 96
[106] Ibid
[107] This emergence of this new problematisation of population was also linked with the Foucaultian concepts of biopower and biopolitics. See Michel Foucault, *Society Must Be Defended* (Arnold I. Davidson and David Macey trs, Penguin 2004) 242-3; Michel Foucault, *The Will to Knowledge: History of Sexuality Volume 1* (Robert Hurley tr, Penguin Books 1998) 133-159. Government and governmentality are an extension of these concepts into a wider theoretical framework. See Ben Golder and Peter Fitzpatrick, *Foucault's Law* (Routledge 2009) 32; Michel Senellart, 'Course Context' in Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978*

object to be regulated, but also considered as an active collection of rational individuals able to in turn govern themselves and others according to self-produced identities, norms and actions, i.e. it signifies a point when the society becomes distinct from the state that sovereignty 'sees'.

Secondly, it is a form of governing that makes no reference to any universal 'common or public good' usually associated with either the law or the sovereign, but to a 'suitable end', defined 'as an end suitable for each of the things to be governed'[108]. This implies a plurality of goals to be pursued through the practice of governing. According to Foucault, the end of sovereignty, through the notion of the common or public good, is ultimately nothing more than submission to the law of the sovereign, and is thus circular and self-referential: 'the good is obedience to the law, so that the good proposed by sovereignty is that people obey it'[109]. Since such an end is internal to sovereignty itself, it relies, as a form of power, on state law to achieve it[110]. In contrast, the ends of government are internal not to itself, but to the objects being governed; these ends are associated with 'the perfection, maximisation, or intensification of the processes it directs'[111].

Thirdly, governing is described as a 'disposition' or an arrangement as opposed to an imposition of law, as in the case of sovereignty[112]. This can be as simple as the realisation that since the objects and the goals are different, the means or instruments of governing are also different. 'The disposition of things' is associated by Foucault with 'employing tactics rather than laws; or as far as possible employing laws as tactics'[113]. The meaning of 'tactics' in this formulation has been much debated, particularly in the context of Foucault's

[108] Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* 99 99
[109] Ibid 98
[110] Ibid 99
[111] Ibid
[112] Ibid
[113] Ibid

presumed 'expulsion' of law[114]. For the purposes of the theoretical framework presented in this section, it suffices to state that 'employing laws as tactics' indicates 'the assimilation of law into governmental or administrative imperatives'[115]; a folding of law, along with other elements and techniques, within a 'hybrid legal complex'[116] or, more precisely, the heterogeneous governance arrangement identified by Foucault as a strategic *dispositif* or apparatus for governing[117].

Finally, this form of power is intrinsically bound with and derived from the knowledge of the objects it governs. In place of the knowledge of human and divine laws of morality and justice, the knowledge associated with government is a more technical, detailed knowledge of the object itself, the plurality of suitable ends to be achieved and the methods of disposition to be employed[118].

There may be some affinity between this process-based understanding of government as a form of power and the notion of decentring the state[119] 'as the author of norms'[120], which can also be found within international environmental law[121]. In particular the idea of 'new environmental governance'[122], which unearths hybrid modes of collaborative and multi-

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114 The long-running debate over the 'expulsion thesis' in Foucault's work cannot be addressed here. See Golder and Fitzpatrick; Alan Hunt and Gary Wickham, *Foucault and Law: Towards a Sociology of Law as Governance* (Pluto Press 1994)

115 Golder and Fitzpatrick 34

116 Nikolas Rose and Mariana Valverde, 'Governed by Law?' (1998) 7 Social & Legal Studies 541, 543

117 Michel Foucault, 'The Confession of the Flesh' in Colin Gordon (ed), *Power/Knowledge: Selected Interviews and Other Writings 1972-1977* (Pantheon 1980). The concept of the apparatus is analysed and applied in Chapter 5 below.

118 Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* 100

119 Julia Black, 'Critical Reflections on Regulation' (2002) 27 Australian Journal of Legal Philosophy 1

120 Veerle Heyvaert, 'Levelling Down, Levelling Up, and Governing Across: Three Responses to Hybridization in International Law' 20 European Journal of International Law 647

121 There is no room in this chapter to fully engage with the intersections between regulation, governance and Foucaultian ideas of power and government. For a fuller treatment see Andreas Kotsakis, 'Power and Agency in Global Environmental Governance: A Foucaultian Approach' (forthcoming 2012) 1 Transnational Environmental Law

122 Joanne Scott and Jane Holder, 'Law and Environmental Governance in the European Union' in Graig De Burca and Joanne Scott (eds), *Law and New Governance in the EU and the US* (Hart Publishing 2006); Joanne Scott and David M. Trubek, 'Mind the Gap: Law and New Approaches to Governance in the European Union' (2002) 8 European Law Journal 1

layered forms of decision-making by a combination of private and public stakeholders, is fairly close from a theoretical standpoint. Such forms of decision-making are indeed argued to be characterised by flexibility, inclusiveness, transparency, preferring devolution to localities as opposed to large-scale consensus-building.

The most obvious difference between the two descriptive terms 'government' and 'governance' employed here is that the primary goals and procedural principles of governance are still set out hierarchically before flexible mechanisms are allowed to operate, whereas the understanding of power as government outlined immediately above suggests a more self-constituted and self-reflexive process of rule and norm creation. Furthermore, specifically in international environmental law, governance approaches can perceive the widening scope of cooperation between state and non-state actors and link their coexistence to an increasing institutional and normative hybridization[123]. However, this cooperation is still largely interpreted through the binary of hard and soft law[124] and the preoccupation with positioning the state within the legal theory and practice[125]. As a privileged source of power and authority, the state becomes a behemoth that one cannot dismiss as simply another actor. Irrespective of the innovation sought, it is still 'collaboration in the shadow of hierarchy'[126]. As the state remains the foundational unit of analysis and reference point, the legal emphasis remains on institutions beyond the state and the legitimating processes by which the state grants them power, understood as the capacity to produce rules and norms[127].

[123] Heyvaert
[124] E.g. Armin Schafer, 'Resolving Deadlock: Why International Organisations Introduce Soft Law' (2006) 12 European Law Journal 194
[125] Sending and Neumann
[126] Gunningham 207
[127] Heyvaert 648-51

These Foucaultian analytics of power outlined in this section completely obviate the need for the sovereign state as the primary reference point and source of power, authority and legitimacy. Instead, an analytical grid for detecting and analysing governance as government, i.e. as the exercise of power and the effect of power relations, can be posited, with four interlinked thematic areas (as underlined above in the discussion of Foucault's government): (i) objects and targets, (ii) ends and goals, (iii) modes and forms, and (iv) knowledge. This is not meant to excise the state and erase institutions from the activity of governing, but to point towards an arrangement (the apparatus) that constitutes a collection of strategic goals, mechanisms and rationalities (legal, scientific, economic etc.), a complex 'welded to substantive, normalizing, disciplinary and biopolitical objectives having to do with the re-shaping of individual and collective conduct in relation to particular substantive conceptions of desirable ends'[128].

COLLECTING ENVIRONMENTAL HISTORY

To argue then that biodiversity does have a history of its own, as the thesis proceeds to do in the next chapters, is to argue for examining the conditions of emergence of precisely the above complex, this grid of objects, goals, modes and knowledge that constitutes an governmental arrangement. It is not a search for the origin or the essence of biodiversity to be found in the beginning of its conception. In this way, the historical method is again adapted from Foucault's influential histories[129], and in particular his genealogy or 'history of the present'. These histories provide the necessary hypotheses and tools, analysed immediately below, for writing this altered history of biodiversity.

[128] Rose and Valverde 543

[129] For a detailed discussion of the various alternative historical approaches introduced by Foucault see Jan Goldstein (ed) *Foucault and the Writing of History* (Blackwell 1994)

Genealogy starts from a value -neutral conception of the present as simply 'a set of limits and possibilities'[130]. Before elaborating on the impact of this statement specifically for biodiversity, it is worthwhile to point out that this view of the present is crucial for all environmental analyses in general. Since this form of history 'is elaborated neither as a semiology of catastrophe nor as a dialectics of salvation'[131], it rejects both prophesies of imminent collapse, as well as grand narratives of progress. In this format, genealogy is characterised by Giles Deleuze as a 'diagnostic' method[132]. This diagnosis consists of an analysis of 'what we take to be necessary and contingent in the ways in which we think and act in regard to the 'conducting' of our lives and those of others'[133]. In other words, it is an investigation into the fabrication of our present conditions and possibilities, but:

> 'With the proviso that we do not allow ourselves the facile, rather theatrical declaration that this moment in which we exist is one of total perdition, in the abyss of darkness, or a triumphant daybreak etc. It is a time like any other, or rather, a time which is never quite like any other'[134].

The above call resonates as if directed to environmental discourse itself and its singular perception of history, which of course was never Foucault's intention. Nevertheless, he appears to articulate a grounded ethico-political attitude, seemingly in direct opposition to the stringency and urgency that characterizes the blind hyper-pragmatism of the blackmail of environmental law. This attitude consists of simply having 'the modesty to say to

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130 Mitchell Dean, *Governmentality: Power and Rule in Modern Society* (2nd edn, Sage 2010); Michel Foucault, 'What is Enlightenment?' in Paul Rabinow (ed), *Ethics, Subjectity and Truth: Essential Works of Foucault 1954-1984, Vol 1* (Penguin Books 2000); Colin Gordon, 'Question, Ethos, Event: Foucault on Kant and Enlightenment' (1986) 15 Economy and Society 71

131 Dean 55

132 Gilles Deleuze, 'What is a Dispositif?' in Timothy J. Armstrong (ed), *Michel Foucault: Philosopher* (Routledge 1992)

133 Dean 56

134 Michel Foucault, 'Critical Theory/Intellectual History' in Lawrence D. Kritzman (ed), *Michel Foucault Politics, Philosophy, Culture: Interviews and Other Writings 1977-1984* (Routledge 1990)

ourselves that [...] the time we live in is not the unique or fundamental or irruptive point in history where everything is completed and begun again'[135].

The critical aspect of this history can be further elaborated by way of Foucault's reading of Kant's answer of the question of *What is Enlightenment?*[136] In this text, Foucault argues that the Kantian answer to that important question fundamentally redirected historical enquiry towards an analysis of the present and the abandonment of the Cartesian question of who am I? In its place, the Kantian question became: what are we? More specifically, 'what is this period, this period, this precise moment in which we are living?'[137] This initial form of historical enquiry thus can assume the broader form of a 'philosophical ethos consisting in a critique of what we are saying, thinking and doing, through a historical ontology of ourselves'[138]. This 'historico-critical attitude' acknowledges that:

> 'Criticism is no longer going to be practised in the search for formal structures with universal value but, rather, as a historical investigation into the events that have led us to constitute ourselves and to recognise ourselves as subjects of what we are doing, thinking and saying'[139].

Additional – perhaps more radical - aspects of this genealogical/historical approach are distinctly Nietzschean. In this guise, genealogy rejects the conception of history as linear progress towards the inevitable present condition and – following Nietzsche - challenges

[135] Ibid 36
[136] Foucault, 'What is Enlightenment?'
[137] Foucault, 'Omnes et Singulatim: Toward a Critique of Political Reason' 335
[138] Foucault, 'What is Enlightenment?' 315
[139] Ibid

the pursuit of origins as sites where the essence of things and the immovable foundations of truth can be found[140].

> '[Genealogy] is not the erecting of foundations: on the contrary, it disturbs what was previously considered immobile; it fragments what was thought unified; it shows the heterogeneity of what was consistent with itself'[141].

Genealogy replaces the metaphysical search for origin with a search for descent, for the emergence[142] of the present as merely an episode in a series of disparate events, contingent relations and discontinuous practices. 'What is found in the historical beginning of things is not the inviolable identity of their origin; it is the dissension of other things. It is disparity'[143].

This Nietzschean rejection of origin gives expression to a challenge of the idea of truth, arguing that it cannot be found in the beginning, but has a history in itself, which is the history of 'an error that cannot be refuted because it was hardened into an unalterable form in the long baking process of history [...] a history of an error we call truth'[144]. Paul Veyne generalises this further by stating that 'history has become the story of what men have called truths and their struggles over those truths'[145].

This conception of truth as something that emerges out of conflict and struggle also shines a different light on the notion of interpretation. Instead of a series of formulations and

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140 Michel Foucault, 'Nietzsche, Genealogy, History' in Paul Rabinow (ed), *The Foucault Reader* (Penguin Books 1991) 78
141 Ibid 82
142 Ibid 83-6
143 Ibid 79
144 Ibid 81-2
145 Paul Veyne, 'Foucault Revolutionizes History' in Arnold I. Davidson (ed), *Foucault and His Interlocutors* (University of Chicago Press 1997) 171

clarifications leading to the careful unveiling of historical meaning hidden in the origin, there is systematic appropriation and successful subjugation, violence and conflict. The role of genealogy then becomes to 'record' this painful and violent emergence[146]. In this latter guise, genealogy is described as 'anti-anachronistic'[147], because it seeks to reduce the tendency to read the past as a necessary step towards the establishment of the inevitable character of the present, leading to post facto rationalisations of events and decisions.

For the purposes of this thesis, both variations of genealogy can be deployed in interesting ways. The Kantian aspect induces a shift in the questions being asked. In this thesis, it promotes an analysis that is not initiated by a fixed conception of the nature of biodiversity or environmental law fabricated by way of discovering their origins. The question is no longer what is biodiversity/environmental law? Instead, one is able to ask how environmental law and biodiversity are operating today; what are the conditions that have led to their present forms? In this way, the analysis at the very least avoids being bogged down in the repetitive debates about the distinctiveness and character of environmental law as 'real' law[148] or the distinctiveness and character of biodiversity in service to the environmentalist project[149].

Furthermore, the Nietzschean aspect warns against the sanctification of treaties as the grand texts of international environmental law as holders of the essence or truth of the environmental problem at hand. Disputes over the truth of environmental arguments, such as in the case of climate change, are often played out at the level of a distinction between facts and values, i.e. between choosing scientific truth or moral bias as guide for environmental policy. In the context of these conflicts, law is only ever afforded the two

[146] Foucault, 'Nietzsche, Genealogy, History' 86
[147] Dean 56
[148] Sand
[149] Lautenschlager

remotest spots in the discursive continuum, either at the very beginning or at the very end. It can either be the origin of truth, found for example in a definition of the environmental problem cemented in the text of the treaty, or the final arbiter, the procurer of legitimacy and the lender of authority through a tired consensus after the fact, once all the political conflicts have been played out and worked through. In this way, law represents either a glorious past lost (the grand Rio Earth Summit) or the glorious future to be had; never a messy present of faults and failures. These constitute limits that can be overcome by the historico-critical approach outlined in this section.

In line with these initial insights on power and history, to approach environmental problems as being formulated out of 'substitutions, displacements, disguised conquests, and systematic reversals'[150], infers that any primacy afforded to ecological-scientific truth over ethics, morals and politics is simply obscuring the tactical conflict over the interpretation of the disparate points that have coalesced for the particular environmental problem to emerge. This should not be read as a radical or nihilist attack on science stemming from some form of 'postmodern' pluralism of knowledge. It is instead an effort, following Escobar, 'to read history back onto the seemingly natural text of nature'[151]. It is a modified environmental history of the succession of tactical battles over environmental truth, within which the treaty is simply another episode in the process of constant (re)invention of the environmental problem through substitutions, displacements and reversals. The authority of international environmental law is provisional; not the final universal step in a rational and inevitable process. Environmental history becomes what is termed an 'effective history'[152], dealing with 'events in terms of their most unique

[150] Foucault, 'Nietzsche, Genealogy, History' 86
[151] Escobar, 1
[152] Mitchell Dean, *Critical and Effective Histories: Foucault's Methods and Historical Sociology* (Routledge 1994)

characteristics, their most acute manifestations'[153]. In this formulation, an 'event' is 'the reversal of a relationship of forces, the usurpation of power, the appropriation of a vocabulary turned against those who had once used it, a feeble domination that poisons itself as it grows lax, the entry of a masked "other"'[154].

This historicization of biodiversity is not an end in itself, but the second (after the analytical grid of government as power) critical manoeuvre required to confront the blackmail of environmental law. It is precisely the act of not starting the analysis with a token rundown of facts regarding the environmental problem of biodiversity loss[155] that separates the thesis from existing biodiversity literature. This Foucaultian-inspired history of biodiversity focuses on the conditions of possibility that have enabled a present complex or apparatus to be constructed around biodiversity. The meaning of biodiversity can only be located by stitching together the discourses, knowledges and rationalities that have at times to co-opt, alter and manipulate biodiversity towards different strategic goals and regulatory targets.

THESIS OUTLINE

The thesis examines biodiversity without falling in the trap of having to choose between a muted apologia for strangeness of the CBD or an demoralizing introspective into the irrelevance of the CBD as an non-essential part of environmental law. Biodiversity has been a concept with no discernible centre or core; an idea that constantly intimates a project of global significance while rarely delivering on it, at least not in the manner envisaged by its proponents. Most importantly, it has been a site of multi-level conflict across borders and decades, with no sign of abatement on the horizon. The governance arrangements associated with it are bound to reflect this multiplicity, futility and conflict.

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153 Foucault, 'Nietzsche, Genealogy, History' 88
154 Ibid 88
155 As did the survey of biodiversity literature in this chapter, in order to further accentuate the banality of the standard normative model

Emulating the dual focus of the theoretical and methodological framework outlined in the preceding section, the thesis is divided into two parts: (i) a history of the invention of biodiversity, and (ii) an analysis of the practices of governing and power relations at work within a broader biodiversity complex that has arisen out of this invention. Thus, Part I of the thesis consists of a detailed history of the struggles over the meaning of biodiversity in the early years of the concept's life, roughly up to the mid-1990s. In this initial period, emphasis is placed on the role of natural sciences, and in particular strands of biology, in constructing biodiversity as an object to be governed. Starting from conservation biology's search for a new conservation practice, biodiversity is further traced through a series of encounters; sociobiology brought biodiversity to the social sphere and employed it in the articulation of social models; demography took biodiversity on a global tour, and discovered the unstoppable pathogen that threatens it, human population in the South. Just before the adoption of the CBD, biodiversity became thoroughly entangled with sustainable development, and the objects and goals of biodiversity governance were altered again. Part II of the thesis moves to the present, highlighting the governance arrangements of a biodiversity complex enveloping the CBD, still driven by the vacuous idea and strategy of genetic gold. Irrespective of the economic failure of the model of biodiversity as a valuable genetic resource, the biocomplex continues to operate along the lines of government as the 'conduct of conduct'. The four aspects of the analytics of power outlined above are traced by recourse to the idea of genetic gold and its role in the establishment of biodiversity as this arrangement or apparatus for governing termed the biocomplex. Two case studies of this form of power within the biocomplex are presented, from the areas of ABS and community participation. The thesis concludes by offering a full reassessment of the CBD based on criteria derived from the thesis' historical findings and analysis of the operation of this biodiversity complex.

PART I: INVENTION

CHAPTER 2
THE INVENTION OF BIODIVERSITY: BIOLOGICAL PROGRAMMES FOR RATIONALIZING NATURE AND SOCIETY

The toxic event had released a spirit of imagination. People spun tales, others listened spellbound. There was a growing respect for the vivid rumour, the most chilling tale. We were no closer to believing or disbelieving a given story than we had been earlier. But there was a greater appreciation. We began to marvel at our own ability to manufacture awe.[1]

As a relatively recent addition to the environmental vocabulary, the term 'biological diversity' and its widely used contraction into 'biodiversity' experienced a meteoric rise onto the forefront of environmental discourse in the short span of ten years, between the mid-1980s and the mid-1990s. David Takacs highlighted in 1996 that:

> 'It has been transformed from a bit of scientific esoterica into a buzzword of popular culture. In 1988, biodiversity did not appear as a keyword in Biological Abstracts, and biological diversity appeared once. In 1993, biodiversity appeared seventy-two times, and biological diversity nineteen times'[2].

The continuing rise during the 1990s is further chartered by Timothy Farnham in a more detailed measurement of the geometric growth in the use of biodiversity as a keyword on journal article abstracts and citation indexes[3]. Both authors agree that biodiversity has become much more than simply a temporary buzzword, a populist contraction of a

[1] Don DeLillo, *White Noise*
[2] David Takacs, *The Idea of Biodiversity: Philosophies of Paradise* (The John Hopkins University Press 1996) 39
[3] From 400 titles in 1994, to 4030 titles in 2004. For detailed metrics see Farnham 1-3

scientific term or a hip alternative name for 'old' nature. However, it is still difficult for them to agree on what it has actually become; the current status of biodiversity. Despite its short history, it has become a leading issue and a ubiquitous concern of the environmental movement, although its complete set of trajectories has remained elusive.

Even if it remains unclear what constitutes biodiversity, it appears self-evident that it should at the very least be constantly measured and protected as the general collection of natural resources and services humanity receives from a healthy environment. Indeed it is near-impossible to articulate an environmental argument without referring to biodiversity to some extent. The shift from nature conservation to biodiversity conservation is not a necessary change in terminology as environmental knowledge increased, nor a convenient adoption of a more 'media-friendly' buzzword, although there was an element of public relations-driven popularisation in early efforts at articulating biodiversity. The shift instead signified a broader transformation in conservation practices, eventually leading to the articulation of new, integrative, but multi-threaded environmental discourses that globalised and connected previously separate ecological problems. This chapter examines a first group of historical processes and events from the biological field that have contributed to the present understanding of biodiversity.

Starting from biodiversity's descend within biological science, one first notices the emergence of a new science-based programme, i.e. 'a set of calculated, reasoned prescriptions in terms of which institutions are meant to be recognised, spaces arranged, and behaviours regulated'[4]. In general terms, under the sign of a new way of understanding nature, new sets of practices were being constructed. The use of the terms 'invention' and 'inventors' points towards a historical analysis of biodiversity as scientific thought being put

[4] See Michel Foucault, 'Questions of Method' in Michel Foucault and James D. Faubion (eds), *Power: Essential works of Foucault, 1954-1984 ; v 3* (New Press 2000) 231-233

to 'work' in the service of environmentalism. It is not meant as a relativist slight on the reality of biodiversity or the problem of its continuing and alarming decline, but as a targeting of the essentialism of biodiversity, of this process of addition of another 'independent domain of intrinsic value, truth or authenticity' [5] to the corpus of environmentalism.

The following section presents the beginnings of biodiversity as a specific conservation mentality driven by biological thought, before the second section proceeds to underline the crucial contribution of sociobiological thought in particular, through one of its more prestigious proponents, Edward O. Wilson. The last part of the chapter investigates this novel kaleidoscopic lens through which biodiversity advanced a biological view of the socionatural world.

I | BIODIVERSITY AS CONSERVATION MENTALITY

Before its current diffusion across the environmental domain, the concept of an inherent natural or biological diversity in need of protection was first discussed in the work of certain by American biologists and conservationists. As precursor to its invention, the first use of the term approximating the present meanings of biodiversity can be found in the British journal *Biological Conservation*. In a 1969 article, N.W. Moore argued for a conservation practice centred on a general principle of protecting diversity, as opposed to the more traditional focus on specific species. The article's author also argued for widening the types of habitats protected within natural reserves as a method for achieving this goal of protecting the widest possible diversity[6].

[5] Kate Soper, *What is Nature? Culture, Politics and the non-Human* (Blackwell 1995)
[6] N.W. Moore, 'Experience with Pesticides and the Theory of Conservation' (1969) 1 Biological Conservation 201

However, it was American conservation biology that first appeared to apprehend the full strategic potential of gathering all the disparate strands of ecological thought and conservation practice under the umbrella of a single programme seeking to re-formulate the reality of life and nature. Thus, the invention of biodiversity manifested itself initially as a rallying environmentalist cry by a specific group of biologists that had accepted their ecological bias and their belonging to a 'mission-oriented discipline comprising both pure and applied science'[7].

EARLY PROPOSITIONS OF CONSERVATION BIOLOGY

This activist and tactical school of thought was consolidated and named for the first time in 1980 by Michael Soule and Bruce Wilcox in their *Conservation Biology*. In the foreword, they present themselves as 'alert and concerned citizens and scientists', who exercise their 'finely honed scientific abilities in a large societal context'. The aim is to 'promote biological literacy' by revealing and highlighting 'Man's place in nature' so that the 'populace and politicians are aware that all decisions have a biological component, and that biology is intrinsically interwoven with sociology and economics'[8]. It is easily noticeable that references to ecology or environmentalism are noticeably absent from these programmatic statements. At the time, the concept of biological diversity was not yet articulated, but the objective of this emerging field was to focus the 'tools of all biological disciplines to nature conservation'[9] by creating a 'new community of interest and concern'. As a result of this initiative, biodiversity would in a very short time assume the role of conceptual framework and of a set of novel conservation principles guiding practice; its early descent lies within this politically active, conservation-minded sub-field of biology.

[7] Michael E. Soule and Bruce A. Wilcox (eds), *Conservation Biology: An Evolutionary- Ecological Perspective* (Sinauer 1980)
[8] Ibid Foreword
[9] Ibid Chap. 1

In the setting out of such strategic objectives for this proposed new domain of applied science, and perhaps perversely for scientists claiming a heightened awareness and strong ethical attachment to nature, conservation biologists aspired to influence practice, 'the real worlds of institutions, government, and management'[10]. It was flatly stated that 'the ultimate test of conservation biology is the application of its theories in actual management situations'[11]. Thus, this emergent 'community of interest and concern' had put itself under immediate pressure to address the faults in the articulation of both ecological concern and conservation policy, to restate its self-admitted environmentalist bias in a clearer and more targeted way in order for it to be better embraced by the environmentally uneducated 'populace and politicians.'

Two types of obstacles to what the nascent field of conservation biology considered effective conservation were targeted in the early 1980s. First, conservation practices until that point in time proceeded in a piecemeal fashion and with a scattered focus, guided by the existing conservation concepts of wilderness (especially in North America), the natural reserve and endangered species. Fragments of natural landscapes were designated as protected areas based on their aesthetic valued as landmarks, political expediency (i.e. to be 'seen' as taking environmental action) or for economic reasons (i.e. it was land that could not be put to other productive use). Only certain animals, mostly mammals possessing a certain aesthetic or spiritual value for Western urban populations, were stringently protected from indiscriminate hunting and general exploitation, while plants and other organisms of crucial importance to ecosystems were largely ignored. In addition, there was an increasing disparity between the above long-established practical conservation traditions and the more recent ecological concepts, most importantly that of the ecosystem, which were absent from conservation thinking at the time of the emergence of conservation

[10] Michael E. Soule (ed) *Conservation Biology : the Science of Scarcity and Diversity* (Sinauer 1986) 6
[11] Ibid 2

biology. To overcome this first obstacle, conservation biology was thus seeking to synthesise the previously fragmented character of conservation traditions and practices, based on the 'holistic assumption' that 'the proper objective of conservation is the protection and continuity of entire communities and ecosystems'[12]. In the process of reducing the gap between applied conservation traditions and theoretical ecology as the science of studying natural systems, conservation biology was proposing 'a new stage in the application of science to conservation problems'[13].

Secondly, the prevailing environmentalist sentiment of the decade, as expressed in the passing of the first 'modern' domestic environmental legislation - such as the US Endangered Species Act of 1973 or the UK Control of Pollution Act 1974 - was protectionist. Furthermore, the influence of the 'limits to growth' school of thought disseminated the idea that economic growth was fundamentally incompatible with environmental protection, casting environmentalism in oppositional and adversarial terms, with the rapprochement of sustainable development still more than a decade away. In that light, conservation was liable to be easily depicted as a profoundly negative activity, 'stopping everything cold'[14], and challenged as an ethical choice that prioritized the value of obscure organisms and 'invisible' ecosystems over human welfare. This adversarial stance of conservation and the whole environmental movement was becoming particularly disadvantageous in a period of profound changes in socioeconomic realities initiated by the rise of neoliberalism[15].

In terms of addressing the two obstacles of fragmentation and negativity, the general solution espoused by conservation biology was the integrative directive of general

[12] Michael E. Soule, 'What is Conservation Biology?' (1985) 35 Bioscience 727, 728
[13] Ibid 727
[14] Soule and Wilcox, *Conservation Biology: An Evolutionary- Ecological Perspective*
[15] This encounter with economic thought is further analysed in Chapters 3 and 4.

synthesis, both in terms of the scientific study of natural processes and ecosystems, as well as in the application of these scientific theories and principles to conservation practice. In the 1980 study titled *Conservation Biology*, considered a landmark in the field, this integrative directive is distilled into some key propositions:

(i) The tropical forests are essential loci of environmental protection. The book's first part is generally titled *Ecological Principles of Conservation*, but these principles are all derived from research of Latin American tropical forests, laying the groundwork for the concept of 'biodiversity hotspots'[16].

(ii) The fragmented environmental protection of dispersed, small nature enclaves or reserves has no measurable effect on preserving the habitats of key species, especially if the designation of these areas relies on aesthetic or political reasons and is not supported by what would subsequently become known as the ecosystem approach.

(iii) Nature reserves and protected areas should not be left in a state of 'benign neglect'; active monitoring and management are essential.

(iv) *Ex situ* conservation (zoos, botanical gardens, seed banks, gene collections etc.) will never be able to hold a significant amount of the world's biodiversity. Emphasis must be placed on *in situ* conservation, especially since knowledge of the precise number of species and the interaction between species, organisms and ecosystems is constantly evolving and uncertain.

(v) Finally, 'Man is an integral variable'[17] affecting biodiversity nature as a 'user' and a 'steward'. Any discussion of conservation is incomplete without consideration of issues of exploitation/utilisation (which forms the last part of the study).

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[16] Remaining areas of high biological diversity mainly due to lack of or low-level human encroachment on local ecosystems. At present, there are 25 identified 'hotspots', only one of which is located in the developed world (California). For more information on all biodiversity hotspots see: http://www.biodiversityhotspots.org/

[17] Soule and Wilcox, *Conservation Biology: An Evolutionary- Ecological Perspective*

These propositions predate the invention of biodiversity, but the basics of what would eventually become the concept can already be detected in them. They were the basics of the manual of conservation practices eventually introduced into the core of environmentalism by conservation biology through the medium of biodiversity.

Armed with these new ideas and with demonstrably defective environmental action in their sights, conservation biologists believed themselves forging ahead at the forefront of forward-thinking (if not radical) environmentalism: '[conservation biology's] relation to biology, particularly ecology, is analogous to that of surgery to physiology and war to political science'[18]. They had indeed begun to marvel at their ability to manufacture awe.

However, while the key propositions made sense from an ecological/environmental perspective, the stated aim of conservation biology was to turn them into environmental law and policy. Therefore to cement this mission, the programme of conservation biology found a symbol condensing this form of thought in the concept of biological diversity, which 'is a revolutionary term: its makers and promoters aim to foment radical changes on several fronts'[19]. David Takacs, in his qualitative, interview-based study of different perceptions of biodiversity in the natural sciences, phrased the strategic objectives of the new experts and advocates of biodiversity experts in the following way:

> 'Conservation biologists have generated and disseminated the term biodiversity specifically to change the terrain of your mental map, reasoning that if you were to conceive of nature differently, you would view and value it differently'[20].

[18] Soule, 'What is Conservation Biology?' 727
[19] Takacs 309
[20] Ibid 1

The next section traces the subsequent emergence of biodiversity, focusing on the establishment of a generally accepted three-tiered definition (genes-species-ecosystems), intermixed with the concept's first steps in the labyrinth of the national and global policy agenda.

PATHS TO ACCEPTANCE

It is important to underline again that biodiversity did not emerge in a neutral vacuum or fully-fledged within the academic mind. It was a tactical offshoot of this particular activist school of thought known as conservation biology, repeatedly characterised as an avowedly mission-oriented endeavour. Conservation biology continues to invoke a sense of ethical duty to promote the merits of a scientific and holistic approach to conservation, of studying and protecting the whole biosphere and the 'continuity of entire ecosystems'[21], but also of acknowledging and improving upon the deficiencies of existing conservation thinking. This mission was not limited to educating and raising public awareness over these issues, but aimed to actually affect the formulation of conservation policy and practice.

Biodiversity contributed to this overall programmatic goal of applying scientific tools to environmental problems primarily by fleshing out the integrative directive. It concisely confronted and unified the disparity of existing conservation thinking, in addition to highlighting its negative and adversarial standpoint. This was achieved when the acceptance of biodiversity as a valid conservation concept was initially anchored by the gradual introduction of its definition as a synthesis of three levels: genetic diversity, species diversity and ecosystem diversity[22]. Such a composition clearly served the programmatic goals and tactical needs of conservation biology. The three levels corresponded with

[21] Soule, 'What is Conservation Biology?' 728
[22] First suggested in Elliott A. Norse, America Ecological Society of and Society Wilderness, *Conserving biological diversity in our national forests* (Wilderness Society 1986), also see Farnham 12

existing environmental concerns and conservation practices, embedding the new concept within a familiar field of environmental traditions. However, the stitching of these practices and traditions together also manifested the additional intent to 'produce a shared vision of protecting nature and its resources'[23]. In this way, biodiversity was at the same time something radically new, but also comfortably recognisable; a loud synthetic fabric made from traditional lamb's wool.

The first firmly policy-oriented suggestion of biological diversity as consisting of distinct components deserving combined protection can be found in the US Council on Environmental Quality's *Eleventh Annual Report*, and more specifically in the second chapter compiled by biologists Elliot Norse and Roger McManus[24]. Norse later explained that they were writing on what they had barely understood as the 'unprecedented subject of the status of life on Earth'[25]. Biological diversity was simply the invented shorthand to convey an argument of widespread and alarming decline; a 'term that encompassed all that was being lost'[26]. This diversity is described as 'fundamental in the functioning of ecological systems' and:

> '[…] Includes two related concepts, genetic diversity and ecological diversity. Genetic diversity is the amount of genetic variability among individuals in a single species... Ecological diversity (species richness) is the number of species in a community of organisms'[27].

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[23] Farnham 13
[24] Elliot A. Norse and Roger E. McManus, 'Ecology and Living Resources: Biological Diversity' in *Environmental Quality 1980: The Eleventh Annual Report of the Council on Environmental Quality* (Council on Environmental Quality 1980). For more detail on the discussions and concerns that underpinned the writing of this chapter see Farnham 16-19
[25] Elliot A. Norse, 'A River that Flows to the Sea: The Marine Biological Diversity Movement' 9 Oceanography 5, 6
[26] Ibid
[27] Norse and McManus, 'Ecology and Living Resources: Biological Diversity' 32

While the third level of ecosystems is omitted from this first enunciation, it is not disregarded altogether, as it was already a significant area of study within ecology. In such early stages in the advocacy cycle, a preference for easily measured and understood categorisations was expected. Additionally, the publication of this report coincided with a period when North American conservation thinking was heavily centred on species-centric conservation, under the influence of stark warnings of coming extinction disasters expertly coupled with detailed analysis of the many economic benefits to be derived if these extinction events were to be averted[28].

In the same year as Norse and McManus' first definition of biological diversity (1980), the first edition of the World Conservation Strategy (WCS) was adopted at the international level[29], as an 'intellectual framework and practical guide' for conservation practice around the globe. While both mainstream[30] and critical[31] histories of biodiversity seem to imply that holistic or synthetic environmental thought began with American conservation biology, this policy document indicates that parallel paths to acceptance for this form of environmental thought also existed at the international stage. The WCS was influenced by different ecological emphases on ecosystems and the biosphere, as well as the biogeography school, but ended up articulating what can be perceived as a form of antecedent to biodiversity conservation, termed 'living-resource conservation'. This WCS conservation method had three objectives: '(i) to maintain essential ecological processes

[28] For the more influential examples see Paul R. Ehrlich and Anne H. Ehrlich, *Extinction: The Causes and Consequences of The Disappearance of Species* (Gollancz 1981); Norman Myers, *The Sinking Ark : A New Look at the Problem of Disappearing Species* (Pergamon 1979)
[29] IUCN, UNEP and WWF, *World Conservation Strategy: Living Resource Conservation for Sustainable Development* (1980)
[30] Farnham
[31] Takacs

and life-support systems, (ii) to preserve genetic diversity and (iii) to ensure the sustainable utilisation of species and ecosystems'[32].

Despite divergent influences, the most interesting common element connecting the North American and the international trajectories of biodiversity invention is the inescapable trend towards prioritizing the notion of the natural resource. To create novel or reform existing institutions, to arrange spaces and alter behaviours as regards the environment, as the programme of conservation biology was aiming to do - in short to have a say in the formulation of law and policy – it was accepted that the starting point was resource management. They can be called a different name, such as 'living' resources in the case of these two reports, to avoid the association with the deeply utilitarian and economicist history of fisheries or forestry management. Emphasis can be placed on the human benefits to be lost if environmental degradation continues or the correct conservation practices are not adopted; alternatively the reform proposal can focus on sustainable utilisation, on the enhancement of the economic potential of these resources. Irrespective of nuances and variations, and in the words of Michael Soule, 'the emphasis is on *our* natural *resources*'[33].

These two (American-international) early articulations of notions approaching, but not yet identified with, biodiversity illustrate precisely the tactical rationale and strategic necessity for a new concept to organize the emerging synthetic framework. Comparing the aspirational and mission-oriented language of *Conservation Biology* with the more streamlined policy language of the WCS would have invariably left a sense of disappointment for the environmentalist of the time, as the narrative very quickly reverted to the standard tropes

[32] IUCN, UNEP and WWF. This set of objectives is closer to the CBD than the subsequent work of American biologists.
[33] Soule, 'What is Conservation Biology?' 728

of natural resource management, ignoring the impact of conservation biology's key propositions. These documents give further indication that conservation biology could not hope to achieve its stated aims by itself as another form of science-based environmental advocacy. It absolutely required the carefully calibrated tool of biological diversity to take the next step into the mainstream.

This next step was first taken in the American context. Conversation biology's stated aim of becoming applied theory guiding environmental decisions came closer to realisation with the International Environmental Protection Act of 1983[34]. Although this Act did not apply or refer to domestic environmental policy, it nevertheless included the conservation of biological diversity as a target and potentially a condition for US foreign aid. Farnham notes that the Act actually mandated that a number of government agencies, including USAID and EPA, draft a 'comprehensive government strategy for conserving biological diversity in developing countries'[35] as part of their overall foreign assistance policies. Of note to legal analysis is the fact that this Act contains the first mention of biological diversity in a formal legal context.

In these first steps towards the establishment of the concept of biodiversity, the thread of the concerns and interests set out by conservation biology was not always clear. A 'more expansive conservation paradigm'[36] was definitely in the process of being formulated, but old concerns and ways of understanding maintained their hold. The integration of resource management within this new conservation paradigm would eventually produce the primary

[34] 22 U.S.C 2151q.; 97 Stat. 1045
[35] Farnham 21
[36] Ibid 14

leitmotif that would forever accompany biodiversity: the constant interplay between biology and economics[37].

BECOMING AN INTEGRAL PART OF ENVIRONMENTALISM

The defining point for the popularisation of the invention of biological diversity was the 'National Forum on BioDiversity', co-organized by the US National Research Council and the Smithsonian Institute. Held in Washington, D.C., on September 21-24, 1986, this large and triumphantly multidisciplinary event, attended by 'more than sixty leading biologists, economists, agricultural experts, philosophers, representatives of assistance and lending agencies, and other professionals' [38], articulated and disseminated the media-friendly contraction of 'biodiversity' for the first time, with the aim of raising public awareness regarding a generalised environmental crisis linked to a disturbing phenomenon identified as the loss of biodiversity.

In terms of conservation practice, a significant number of papers presented at the forum focused on species diversity and the particular habitat of the rainforest[39], but the overall discussion nevertheless cemented the overall framing of biodiversity within a grander context of an 'extinction crisis'[40] of 'unprecedented urgency'[41]. This overall urgent tone of the arguments implicitly linked biodiversity with a veritable global environmental crisis[42], further and above existing concerns over human exploitation and natural resource management. In this way, this forum did eventually succeed in fulfilling conservation biology's original objective of forming a 'community of interest and concern' by

[37] As examined further in Chapter 3
[38] Editor's Foreword in Edward O. Wilson (ed) *BioDiversity* (National Academy Press 1988).
[39] E.g. 'I concentrate on the tropical moist forests, because of all the major habitats, they are richest in species and because they are in greater danger' in ibid 3
[40] E.g. see Paul Ehrlich, 'The Loss of Diversity: Causes and Consequences ' in Edward O. Wilson (ed), *Biodiversity* (National Academy Press 1988)
[41] Wilson, *BioDiversity* 3
[42] Farnham 2

transforming conservation biology from a mission-oriented to a crisis-oriented school of thought.

Although opinion regarding the actual inventor of the –then- neologism of 'biodiversity' varies [43], the previous standing of Edward O. Wilson enabled him to assume a 'spokesperson' status for the concept, integrating it within his broader work that sought to alter not only the objectives of conservation, but also the very role of biology and science within society[44]. The Wilson-edited conference proceedings, titled simply *BioDiversity*, have been so influential that they have been subsequently referred to as the 'Bible of Biodiversity'[45]. By capturing and presenting a mosaic of different environmental concerns, ecological traditions, conservation practices and resource management systems - in a sense merging theory and application - interacting under the single umbrella of biodiversity, Wilson was able to confirm and popularise the unification of existing strands of environmental thought under the new synthesis and organizational schema of biodiversity. Chapters ranged from different methods for measuring and preserving elements and processes to be included under biodiversity[46], to identifying the different values that may be attached to nature once conceived of as biodiversity[47], to necessary policies that have to be adopted and solutions for the restoration of endangered biodiversity [48]. *BioDiversity* represented a strong indication that the programme of conservation biology was coming to fruition, precisely due to the invention of the concept of biodiversity as a holistic symbol.

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[43] See Daniel P. Faith, 'Biodiversity' (2007) <http://plato.stanford.edu/archives/win2007/entries/biodiversity/> . Walter G. Rosen had the main responsibility for organising of the event from his post within the National Academy and proposed the contraction initially, but Edward O. Wilson being the keynote speaker and subsequent editor of the conference volume, has been primarily associated with it, despite initially rejecting the concept as too 'glitzy'

[44] Edward O. Wilson, 'The Biological Diversity Crisis: A Challenge to Science' 2 Issues in Science and Technology 20

[45] Michael Flitner, 'Biodiversity: Of Local Commons and Global Commodities' in Michael Goldman (ed), *Privatizing Nature: Political Struggles for the Global Commons* (Pluto Press 1998)

[46] Wilson, *BioDiversity* Part 6.

[47] Ibid Parts 5 and 12.

[48] Ibid Parts 8 and10.

With the three-tiered definition (genes-species-ecosystems) not yet set in stone, the range of different approaches and understandings in the conference proceedings clearly illustrated the advantage of familiarity that the concept possessed in addition to its 'revolutionary' aspect. As indicated in Norse and McManus' early attempts at defining it[49], while biodiversity itself was presented as a novel term, the components and levels of its proposed reorganisation of the natural world were familiar objects of research for ecologists and domains of activism for environmentalists.

For example, a conservationist could focus on the extinction of species, reading biodiversity as a complex, but endangered, diagram of the 'production line' of evolution. An ecologist might focus on ecosystems, identifying diversity as an intrinsic property of all natural communities. An agricultural expert would read biodiversity in the context of plant diversity required for maintaining and strengthening the world's food supply and security. An environmental economist would focus on the economic benefits that can be derived from the utilisation of biodiversity, viewing biodiversity in an even more applied sense, as a global system of natural resources and services, whose maintenance has to be priced correctly. An activist could concentrate on more localised campaigns for the protection of specific habitats or species. Within the all-inclusive framework of biodiversity, all these ideas, emphases and activities can be understood both separately, as well as together as a whole, exemplifying biodiversity's holistic 'character'[50] or 'sensibility'[51]. They may be referring to different issues, but they are all, in their own way, talking of biodiversity.

[49] See note 24 above
[50]Marjorie L. Reaka-Kudla, Don E. Wilson and Edward O. Wilson (eds), *Biodiversity II: Understanding and Protecting Our Biological Resources* (Joseph Henry Press 1996)
[51] Farnham 15

'Biodiversity has to be thought of in a number of different ways,'[52] i.e. be 'a paradigm of nature conservation that *all* can rally behind'[53].

The combined impact of the forum and the 'bible' represented an astute tactical achievement not only for the specific programme of conservation biology, but predominantly for biology in general. The conceptual interdependence of biodiversity's components paralleled the functional interdependence of the planet's ecological processes and living things, thus mutually reinforcing the conceptual synthesis of the whole. Highly incontestable universal goods of diversity and interdependence became entrenched. More importantly however, the notion of biodiversity as the 'web of life' generated a form of environmental thought intrinsically based on an understanding of the environment as biological life. Subsequently, 'any interest in geologic, chemical and physical attributes of the natural world is placed in the context in the context of their impact upon or connection to biological life'[54]. This continued centrality of biology enabled the entry of other strands of biological thought, such as the sociobiology discussed later in this chapter.

RECOGNITION IN INTERNATIONAL LAW

From the mid-1980s onwards, the scientific formation of biodiversity was steadily expanding from its origins as novel conservation mentality. A new 'community of interest and concern' was gaining ground towards the mainstream of environmentalism. Legal recognition of these realignments was just around the corner. A formal mandate by the UN General Council was handed to UNEP in 1987 to form an ad-hoc working group of experts 'to investigate the desirability and possible form of an umbrella convention to

[52] Reaka-Kudla, Wilson and Wilson 7
[53] Emphasis added. Farnham 15
[54] Ibid 2

rationalise current activities' in the field of biological diversity[55]. This mandate was agreed at the same UNEP Governing Council where the official unveiling of sustainable development took place through the publication of the Report of the World Commission on Environment and Development[56]. This 'debut' of biodiversity in international law, albeit overshadowed by the Brundtland Report, confirmed the concept's continuing ascendancy towards the mainstream of environmentalism. It is also highly symbolic of its eventual intrication with the concept of sustainable development itself[57].

Once the working group was set up, the inescapably winding negotiations for drafting an international treaty on biodiversity took more than four years. The various twists and turns can be followed in Fiona McConnell's first-hand account of the negotiations, in which she participated as a member of the UK delegation[58]. Despite the small steps towards acceptance and the converging trajectories outlined in the preceding pages of this chapter, it was clear that during the treaty negotiations biodiversity was not yet a concept sufficiently 'internalised' by the existing international network of diplomats, administrators, lawyers and economists that participate in such meetings. McConnell refers to these unusual circumstances in the following incident:

> 'Because the phrase "conservation of biological diversity" was so cumbersome a proposal to revert to the shorter, traditional concept of "nature conservation" appealed to many delegates who had no deep knowledge of the subject. But this was fiercely attacked by the few scientific experts present who had a hard but eventually successful task in convincing the ignorant majority that biological

[55] UNEP/GC/Dec 14/26 (1987)
[56] Gro Harlem Brundtland, *Our Common Future* (World Commission on Environment and Development 1987) (Brundtland Report)
[57] The co-evolution of the two concepts is analysed in further detail in Chapter 4
[58] McConnell

> diversity was the correct term**.** Very soon everyone was using the shortened form– biodiversity--but with as yet little clear understanding of its meaning'[59].

By recounting this first encounter between biodiversity and international law and the 'rejection' of nature conservation, McConnell unconsciously summarises the ascent of biodiversity from alternative conservation mentality to holistic environmental concept and separate strand of environmental thought. The 'fierce attack' of the resident 'scientific experts' further illustrates the centrality of biological thought within this particular environmental project. This enforcement of biodiversity as the 'correct term' can be regarded as the first of many battles over the control of the concept. This biodiversity 'war', within a context of an urgent and pressing narrative of environmental crisis, constitutes another important running theme throughout the history of biodiversity. This first battle's objective was to ensure that the formal legitimation of this new way of seeing life and nature proceed along the 'correct' trajectory, i.e. that of biological thought and conservation biology's programme.

The first part of this chapter chartered an initial period of biodiversity's existence from the late 1970s to roughly 1987. In this period, the early propositions of the programme of conservation biology to reorient nature conservation are condensed and enhanced by the new composite term of biodiversity. Biodiversity's initial trajectory as a conservation mentality that synthesised traditions and practices and behind which all could rally is traced through certain early legal instruments and policy manuals. The 1986 National Forum is identified as a crucial event that established the notion of a global biodiversity crisis and of a new synthetic crisis-discipline that would mimic biodiversity's holistic sensibility and set out to combat this global crisis from different perspectives and levels. The first battle over

[59] Ibid 5

the control of the idea of biodiversity was fought during the start of the CBD negotiations, in what would become a running theme in the history of biodiversity.

II | CONSERVATION BIOLOGY AS SOCIOBIOLOGY *REDUX*[60]

The steady stream of realignments, already apparent in this early period, may explain how biodiversity became a sort of rainbow banner that everyone within environmentalism could take up, but it is important at this point to step away from linear history. The trajectory of biodiversity, largely from mission to global crisis, mapped in this first period does not adequately underpin the legal and the political decisions that resulted in 192 national governments signing and ratifying an international environmental treaty on the issue within four years of its emergence. Even if an argument could be made in relation to the synthesis of a global biodiversity crisis presented at the 1986 forum, the rapid emergence of the legal regime is incongruent with the odd phenomenon of the state (US) with the more active 'community of interest and concern' for biodiversity - in terms of both applied and theoretical research, environmental activism etc. – only having an observer status in the regime due to fundamental disagreements with its content[61]. If we were to plot the history of biodiversity so far in a linear presentation, a chart of the evolution of the term, then the last point would be drastically off.

Therefore, there are still pages missing in this journey from idea to law, from advocacy to public policy. To complete the picture through the historico-critical attitude outlined in the first chapter, biodiversity has to be approached not simply as a new conservation mentality

[60] I will examine the sociobiology debate only in relation to its overlap with the analysis of the conditions of emergence of the biodiversity concept presented in this thesis, as the many twists and turns of this expansive debate over the last three decades cannot be covered here. For a detailed chronological mapping and extended bibliography on the sociobiology debate see Ullica Christina Olofsdotter Segerstråle, *Defenders of the truth : the battle for science in the sociobiology debate and beyond* (Oxford University Press 2000)For a collection of the major texts of the first years of the controversy see Arthur L. Caplan (ed) *The Sociobiology Debate: Readings on Ethical and Scientific Studies* (Harper & Row 1978)

[61] The case of the US rejection of the CBD is further examined in Chapter 4.

or paradigm, but as a wider problematization, as a form of thought that poses new questions for environmental law and politics. The origins of the concept within conservation biology do not hold some form of original truth regarding the essence biodiversity that has been lost along the way. The fact that conservation biology was the first school of thought to apprehend the strategic potential of a new synthetic environmental concept does not mean that it has been the only field to define biodiversity. The idea of biodiversity as problematization implies a genealogical task; an emphasis placed on the breaks and discursive realignments in the history of biodiversity, on the conflicts over the meaning and use of the concept that transferred it away from conservation biology's initial programme. The first such break - the first discontinuity in the chart of biodiversity – was created by the entry of sociobiological thought. It was sociobiology, and in particular Wilsonian sociobiology, that set the course of biodiversity away from conservation concerns, and towards questions of political economy.

In 1975 an acrimonious debate erupted with the publication of a controversial glossy coffee-table book by Edward O. Wilson[62], which proposed a new holistic discipline called 'sociobiology', defined as 'the systematic study of the biological basis of all social behaviour'[63], i.e. both in nature and in human society. Already a renowned entomologist and biologist, Wilson extended a very detailed collection of methods and formulas from the field of population genetics - through which changes in animal social behaviour were identified with changes in gene frequencies of traits brought about by evolution by natural selection - to the study of *Homo sapiens* in the last part of the book[64], articulating a 'hyper-

[62] This is the same scientist who in later years would oversee the 1986 Biodiversity Forum and edit the 'Bible of Biodiversity'
[63] Edward O. Wilson, *Sociobiology : The New Synthesis* (Belknap Press of Harvard University Press 1975). 'Wilsonian' sociobiology was further elaborated (and defended in response to harsh criticisms) in Edward O. Wilson, *On Human Nature* (Harvard University Press 1978), as well as in Charles J. Lumsden and Edward O. Wilson, *Genes, mind and culture: the coevolutionary process* (Harvard University Press 1981)
[64] Chapter 27 in Wilson, *Sociobiology : The New Synthesis*

Enlightenment' quest for the ultimate coupling of scientific truth and moral values[65]. Very briefly, he argued that in 'identify[ing] the behaviours and rules by which individual human beings increase their Darwinian fitness through the manipulation of society'[66], society and culture become group behaviours, collections of traits linked to specific genes evolved through a process of natural selection. In other – and bolder - words, 'genes hold culture on a leash'[67]. Using this hypothesis, in that last and most controversial chapter Wilson attempted to explain the existence of aggressiveness, morality, religion, economy, and many other human traits or social functions by reference to humanity's genetic code and evolutionary heritage. This 'new synthesis' of sociobiology thus referred to a view that 'humanities and social sciences shrink to specialized branches of biology'[68].

This ambitious programme came under sustained attack almost immediately, starting with a rhetoric that placed Wilson along a historical continuum of social Darwinism and biological determinism, including the 'eugenics policies of Nazi Germany'[69]. In a period when the link between genetics, the theory of evolution and human behaviour still prompted strong feelings of aversion and outright rejection[70], sociobiology came under sustained attack from both within biology[71] and from the other sciences that it aimed to subsume[72]. This was perhaps unsurprising in a climate where American critics of sociobiology dramatically stated that 'not since Hobbes' *Leviathan* has there been such an ambitious programme to

[65] Segerstråle 358-64
[66] Wilson, *Sociobiology : The New Synthesis* 548
[67] Wilson, *On Human Nature* 76
[68] Wilson, *Sociobiology : The New Synthesis* 547
[69] The first example of this tactic is the strongly-worded 'Against Sociobiology' letter-response to a positive book review of Wilson in *The New York Review of Books*, re-published in Caplan
[70] Segerstråle 307
[71] Stephen Jay Gould and Richard C. Lewontin, 'The Sprandels of San Marco and the Panglosssian Paradigm: A Critique of the Adaptionist Programme' (1979) 205 Proceedings of the Royal Society of London Series B, Biological Sciences 581
[72] E.g. for anthropology see Marshall David Sahlins, *The Use and Abuse of Biology : An Anthropological Critique of Sociobiology* (Tavistock Publications 1977)

explain and prescribe the entire human condition beginning with a few basic principles'[73]. This was a debate that exceeded a mere dispute over scientific facts, methodology or theory; Wilson's forceful introduction of a new paradigm in biology met with fierce opposition on many levels.

The criticisms did not restrict themselves solely to disputing the sociobiological methodologies for establishing the natural selection and genetic coding of certain human traits, but extended to questioning the sociobiologically-instituted metaphysics of human nature and free will that were deemed to hide behind the mask of scientific method. Finally, they also focused more intensely on the political implications of this depoliticised biological explanation of all human culture and behaviour. Especially in reference to this last point, the epistemological debate coalesced into a generally negative reception for this proposed new synthetic discipline, with a rough consensus being that if 'social arrangements are the inevitable manifestations of the specific action of the genes'[74], and if these particular genes 'have been selected in evolution because the traits they determine result in higher reproductive fitness of the individuals that carry them'[75], then sociobiology is to be denounced as presenting a politically and ethically dangerous 'claim that human society as we know it is both inevitable and the result of an adaptive process'[76]. In effect, Wilson and sociobiology were criticised for providing a thoroughly conservative justification of the political and social status quo as the genetically optimal system of social organization.

WILSON MARK II

[73] Steven P. R. Rose, Leon J. Kamin and Richard C. Lewontin, *Not in Our Genes : Biology, Ideology and Human Nature* (Penguin 1984) 225
[74] Ibid 226
[75] Ibid
[76] Ibid

It is perhaps difficult to see the direct relevance of the above rudimentary sketch of the sociobiology debate to environmentalism and more specifically the historical analysis of biodiversity undertaken in this thesis. The dangers of genetics and biology are associated today –if at all - with the future risks of biotechnology and genetic engineering and the slick, all-consuming effectiveness of information technology, and not with the past nightmares of the 'racial hygiene' of Lorenz and the brutal experiments of Mengele at Auschwitz. Hence the substantive acerbic exchanges of the original sociobiology debate in the mid to late 1970s possess largely historical value. Moreover, the very constructivist approach to biodiversity as a social construct employed here will appear bewilderingly unproductive and dangerous to both sides of the sociobiology debate, each considering themselves – in Segerstrale's title – as 'defenders of the truth'[77]. But the link is Wilson himself; or more precisely his notion of scientific and biological truth mixed with ethics producing a political-economic prescriptive agenda that is of crucial importance to a historical examination of biodiversity.

It has been observed that 'by the end of the 1980s, Wilson had seemingly transformed himself from Wilson I, the politically incorrect sociobiologist, to Wilson II, the politically correct environmentalist'[78]. In escaping the controversy of sociobiology and becoming the eloquent and influential spokesperson for protecting all life on Earth, he certainly seemed to escape the controversy of the sociobiological synthesis and its critiques[79]. On the other hand however, the genetic reductionism in his thought is so ingrained as to actually include the very holistic ethic and ecological awareness advocated by Wilson after his defection to

[77] And in fact cooperated with each other against the 'enemies' of postmodernism and relativism during the 'science wars' of the 1990s, see Segerstråle 233-48
[78] Takacs 309
[79] Segerstråle 310

environmentalism. His proposed 'biophilia'[80], an environmental ethic that drives ecological awareness, was to be found in our genes: we have an inherent, genetic need to gain 'spiritual reward', 'spiritual enrichment' and a 'deep sense of fulfilment' from 'contemplating and living closer to our environment'[81]. Thus, according to Wilson, even humanity's love of nature is genetically embedded within human nature itself. As far as ecocentric turns go, this inward shift towards the gene was perhaps the exact opposite of the grand shift in the Gaia hypothesis of deep ecology.

This convenient escape into holistic ecological conscience did not mean either that Wilson had abandoned his broader synthetic goal of subordinating the social sciences and humanities or that he had renounced his particular 'philosophical style; the coupling of scientific and moral notions' and 'fondness for holistic explanations'[82]. In his conceptual schema, the positivist science and rationality serves to eradicate the possibility of arbitrary or irrational codes of conduct, aiming to guide towards achieving a 'genetically accurate and hence completely fair code of ethics'[83].

This combination of a positivist framework (biology and genetics) with a holistic ethic parallels the similar characteristics of biodiversity as originally envisaged within conservation biology. In this way, it can be argued that the transformation of Wilson into the 'good' environmentalist fitted very well within his broader research agenda and did not significantly alter its overall aims. In 1985, J. Krebs had commented on Wilson's *Sociobiology* that:

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[80] Another term introduced by Wilson in Edward O. Wilson, 'Biophilia' (1979) 14 New York Times Book Review 43

[81] Takacs quoting from his interview of Edward O. Wilson

[82] Segerstråle 37

[83] Wilson, *Sociobiology : The New Synthesis* 575

> It was published at just the right moment, coinciding with, and acting as a focus for, the surge of interest in the subject; it defined in a thorough way the range of possible contents of the discipline and it gave a name to a field of study that has not before seen itself as a single, unified enterprise'[84].

This comment is almost interchangeable between the two versions of Wilson (sociobiologist and environmentalist). It can equally and perfectly describe the unification of conservation traditions through the biodiversity concept consolidated by Wilson in the late 80s. The function and aims are almost identical. We are witnessing exactly the same discursive process. After establishing the concept of biodiversity within environmentalism, Wilson enunciated his updated synthesis, complete with an environmental focus that sidestepped the controversial specificities of his sociobiological past:

> My truths, then, three in number, are the following: first, humanity is ultimately the product of biological evolution; second the diversity of life is the cradle and greatest natural heritage of the human species; and third, philosophy and religion make no sense without taking into account of these first two images'[85].

It is obvious that such a programmatic declaration went far beyond the confines of introducing a novel conservation mentality or proposing specific reforms, such as larger and more actively managed natural reserves. It transcended the environmental limits of conservation biology's programme, becoming an unbounded holistic project. The entirety of the socionatural world was supposed to be inscribed and prescribed by biology. After the involvement of sociobiology through the influence and work of Wilson, the

[84] J. Krebs, 'Sociobiology Ten Years On' (1985) 108 New Scientist 40
[85] Edward O. Wilson, excerpt from the 1991-92 Dudleian Lecture to the Harvard Divinity School, quoted in Takacs

transformation of biodiversity from a conservation issue to a wider political problematization was cemented. Initially at least, the direction of this problematization was firmly under the control of biology.

III | THROUGH THE LENS OF BIOLOGY

After the involvement of sociobiology, biodiversity was no longer an invention for organising conservation traditions and practices into a more elaborate and ornate archive of environmental thought. The programme was also no longer simply driven by conservation biologists seeking to test their theories in the 'real world of institutions, governments and management'. Instead, this early history of biodiversity can yield a more ambitious project for the construction of a complex 'lens' through which previous environmental practices and ethics are refracted, in order to holistically fabricate a new nature and a new society. The core element of this lens is the centrality afforded to biological knowledge in the edifice of biodiversity. This centrality attracted a wider range of biology strands seeking advisory and prescriptive roles in all public policy and politics, in the very fabric of social organisation. As will be analysed in the subsequent chapters, while this lens of biology indeed formed the basis for a more expansive role for biodiversity knowledge in spite of the uncertainty and complexity of the concept, the genetic reductionism hidden within has created further crossroads in the history of biodiversity and opened pathways unforeseen by the original inventors of biodiversity. In a way, it was no longer conservation biology's programme to administer. To close this analysis of the intrinsic link between biodiversity and biology, the elements of this subtly altered biological programme of biodiversity are documented below.

THE CENTRALITY OF BIOLOGICAL KNOWLEDGE

Today, thinking of nature under the rubric of biodiversity necessitates an acceptance that environmental problems are all 'biological in the first place'[86]. This proposition, once accepted, is swiftly followed by the self-evident conclusion that any environmental intervention should be prescribed primarily by the relevant expert biologists able to comprehend precisely this biological character of the environmental crisis. Biodiversity is meaningless, as either a collection of conservation practices, environmental standards and indicators or a holistic ethic, without the central figure of the biologist objectively measuring, classifying, studying its components and processes, revealing their place in nature and their connection to human history and society.

In this sense, this essentialist mode of environmental thought is closely aligned to what Haraway calls the 'ultimate message' of the determinism of sociobiology, which is 'the identification of the proper expert who has the authority to exercise effective power over nature through knowledge of the word, [...] cracking of the code of nature's secret voice'[87]. When the expert insists on biodiversity being the 'correct term', he also indirectly insists that he is the 'proper expert'.

Therefore, this privileging of biological knowledge aims to first establish a mode of thought and a set of practices in relation to biodiversity based on the 'legitimate perspective of the agent of knowledge'[88], i.e. the scientist possessing biological expertise. The scientific tools for understanding biodiversity are derived from the stable of biology: biochemistry, molecular biology and population genetics. Contrary to conservation biology, which sought to unify the environmental sphere in the 'struggle' to convince the 'populace and politicians' of the merit of environmental concerns, the struggle here is first directed against

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[86] Wilson, *BioDiversity* 2
[87] Donna J. Haraway, *Simians, cyborgs, and women : the re-invention of nature* (Free Association 1990) 73
[88] Michel Foucault, 'The Order of Discourse' in Robert Young (ed), *Untying the Text: A Post-Structuralist Reader* (Routledge & Kegan Paul 1981) 52-3

other strands of environmental thought. To adopt a different perspective, to think outside the epistemological rules framing biological knowledge of the environment would entail assuming a viewpoint and a language that is beyond comprehension, to go against the particular environmental truths of biodiversity, to fall into falsehood and absurdity.

Under this programme, biodiversity thus further entrenches biology as the central rationality of environmentalism. Harking back to the mission of conservation biology, it is underlined that 'a scientist should not just study nature but should take care of humanity, life and our planet'[89]. However, that same statement also infers that environmentalism itself is not the endgame for this biological programme. In the context of a broader horizon, as Haraway noted, a 'biological enterprise'[90] had assigned itself the task of defining humanity's place in nature and in history. Wilson's research agenda benefited from its association with biodiversity, but also transplanted the concept firmly within what Haraway has called this biological enterprise, this programme for science-based prescription. In this way, while biodiversity was initially constructed as a lens through which society would regard and value nature, its construction was eventually modified for additional use as an instrument that biology would use to regulate society.

A REDUCTIONIST VIEW WITHIN THE SYNTHESIS

In 1990, Haraway lamented that biology had become 'a science studying automated technological devices' [91] . Since then, with developments in biotechnology, genetic engineering and information technology, this can be phrased in even starker terms: life is genetic code, to be mapped, broken up in pieces, recombined; code extracted, code added.

[89] G. Wald quoted in Haraway 76
[90] Ibid 45
[91] Ibid 45

The world is a giant genetic database consisting of units of information – or a global genetic stock exchange - to be read, invested in, utilised and optimised.

Following down the same reductionist path, biodiversity is infused with a very specific techno-scientific understanding of both nature and society, an 'atomistic machine view of the world'[92] which Lewontin terms the 'forgotten metaphor' bequeathed by Descartes: 'we no longer think that the world is *like* a clock. We think it *is* a clock'[93]. According to this logic, only if we can break down and reduce the whole into separate smaller and smaller components, up to the genetic level and further deeper, we will be able to understand the whole and reduce uncertainty.

Furthermore, by extending this perspective to the socionatural world, the whole is consistently deprived of any properties of its own, except those derived from its parts; the whole is nothing more than a collection of individual parts, or individual subjects in the case of society. Such complete denigration in turns postulates a clear line of division between the individual and the group, the inside and the outside, and the organism determined internally by its genes and the external factor of its surrounding environment[94].

There is a certain contrast between this level of genetic reductionism derived from the single gene model, whereby 'evolution by natural selection could be expressed as a change in the gene frequencies of traits'[95], and the attributed holistic or synthetic character of biodiversity. It is difficult to reconcile such a programme, more reminiscent of Dawkins' *Selfish Gene* than Wilson's holistic philosophy regarding the diversity of life, with biodiversity. The latter synthesises life into a web, while the former breaks it down into

[92] Richard C. Lewontin, *The Doctrine of DNA: Biology as Ideology* (Penguin Books 1993) 14
[93] Ibid 14
[94] Ibid 11-2
[95] Segerstråle 36

smaller and smaller pieces. Yet these opposite poles do co-exist today within the discourse of biodiversity, and the reductionist view is gaining influence. This can be observed in the consistently more pronounced[96] genetic 'panel' on biodiversity's 'triptych' of genes, species and ecosystems, despite the various vitalist pronouncements about life on Earth and the web of life. Indeed, both major protocols appended to the CBD in the last ten years concern genetic resources.

This reductionist view is also bound to become progressively more prominent as biotechnology –in the traditional sense of sampling and re-combining genes – becomes obsolete and the age of synthetic biology becomes a reality. A good example of the notion of life as code employed in practice is Craig Venter's 2003 marine bio-prospecting expedition. Alain Pottage writes of the technology-driven, brutal efficiency of this special venture:

> 'The yacht stops every 200 miles or so to take samples of seawater from a depth of 5 feet. Each batch of water is sieved through a set of progressively finer meshes to produce paper-bound samples of marine micro-organisms, which are then frozen and airlifted back to Venter's Institute for Biological Energy Alternatives. In the laboratories […], DNA from the genomes entangled in each sample is extracted, fragmented, amplified and then recomposed into a set of plausible genomes by means of the bioinformatic technologies'[97].

While initial forays of biotechnology theorised genes as units of information, synthetic biology dispenses with the metaphor and simply transforms them into units of information

[96] As noted by the dominance of the narrative of genetic gold, see Chapter 5
[97] For more information of this project of synthetic biology see Alain Pottage, 'Too Much Ownership: Bio-prospecting in the Age of Synthetic Biology' (2006) 1 Biosocieties 137, 138

devoid of any interrelation with surrounding habitats and ecosystems. Descartes' metaphor is no longer forgotten, but simply obviated. Standard methods of sample collection, taxonomy and classification – the very origins of biology as natural history- are abandoned completely. The characteristics and the identity of the organism are irrelevant; it only matters as a genetic assemblage, a device holding genetic information, decoded and utilised in various technological applications.

One may wonder whether this integration of additional forms of biological thought over and beyond what conservation biology represent - or from a different perspective the usurpation of conservation biology's practical programme by a more ambitious political and social agenda – carries the seeds of the eventual derailment of the whole project of biodiversity. Yet while it seemed improbable that this new edifice would be able to hold, unify and synthesise all these conflicting ideas according to its holistic ethos, an international treaty was agreed only five years after the publication of *BioDiversity*. Additionally, the exponential growth in interest and research in biodiversity[98] followed precisely on from this widening of the scope in the late 1980s.

Therefore, the centrality of biology and in particular the reductionist view has perhaps counter-intuitively increased the importance of biodiversity. Considering the broader political and social context – namely the dual and plausibly linked[99] rise of neoliberalism and the 'life sciences' industry in the US - of the emergence of biodiversity in 1980s, the introduction of genetic reductionism into the biodiversity mix actually marks an important turning point in its history. This turning point will be further examined in Chapter 3.

[98] As outlined in the beginning of Chapter 1.
[99] As outlined in Melinda Cooper, *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era* (Phllipe Thurtle and Robert Mitchell eds, University of Washington Press 2008). The connection between these events and biodiversity will be further analysed in Chapter 3.

IV | LEAVING CONSERVATION BEHIND

While ecologically-minded biologists envisaged a strategy by which a newly legitimised and authorised expert would be able to actively intervene on political, economic and legal debates armed solely with environmental truth as derived from knowledge of biodiversity, the door was also opened to other technical experts and engineers of nature and society, such the resource economists, the biotechnology industry, and others to be discussed throughout the thesis. Biodiversity had become part of established environmental law and policy, but a price was paid: the aesthetic and ethical holism receded, in favour of the practical and the technical; and - as many other types of experts before and alongside him- the environmental expert was 'no longer the rhapsodist of the eternal, but the strategist of life and death'[100].

By using the tactical weapon of biodiversity, conservation biology aimed to 'offer a new, emotive term for some older ideas and programmes'[101] and change the 'terrain of our mental map', but its imagination was extended to the integration of existing conservation concerns and interests under a single archive, in the hope of creating a new synthetic environmental guide to conservation policy and practice. In a retrospective essay on biodiversity, Norse - as one of the direct 'inventors' of the term - uses the analogy of a river forming out of tributaries and eventually flowing to the sea to describe the many beginnings of what he describes as the biological diversity movement[102]. In order to evaluate the movement based on this analogy, it is necessary to 'tell whether the River will flow to the sea strongly enough to affect it significantly, or drain into an arid, land-locked basin and evaporate without a trace'[103].

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[100] Foucault, 'Truth and Power' 129
[101] Faith
[102] Norse, 'A River that Flows to the Sea: The Marine Biological Diversity Movement'
[103] Ibid 5

As Norse readily admits however, from a historical perspective these different rivers are not easy to discern, map or figure out where they meet. Two such distinct, but interweaving 'rivers' or trajectories have been identified in this chapter: the initial mission of conservation biology and its usurpation by sociobiology. The first one was concerned with a reworking of practices in the field of conservation, while the second one was concerned with reworking much more abstract questions regarding nature and life. As the following chapters of the thesis will illustrate, these are not the only rivers that joined the flowing river of biodiversity. Nevertheless, their early interweaving and conflicts produced a number of effects, such as the shift from mission to crisis or the paradoxical integration of holism and reductionism.

Ultimately, the conclusion to be drawn from this first period of biodiversity's history is that biology was 'stitching together nothing less than a new "natural" religion, with biodiversity as the icon of worship'[104], a lens through which the entirety of the socionatural world would be refracted. With sociobiology's 'total synthesis' as the core engine, the aim was bound to be set high. After the involvement of Wilson, biodiversity became a much more political problematization than its original inventors had ever envisaged.

[104] Takacs 310

CHAPTER 3
THE ENTRY OF ECONOMIC THOUGHT: BIODIVERSITY AS ENVIRONMENTAL MOVEMENT AND THE PATHOLOGY OF THE SOUTH

As if they've been kept safe in some time-
free zone all these years but now, at the unreadable
whim of something in power, must re-enter the
clockwork of cause and effect[1]

In the early years of the tentative 'biological diversity', before the 1986 Forum and the populist contraction into biodiversity, it was understood that 'conservation biology, strictly speaking, does not include the subject of economics'[2]. While the initial paths of acceptance for the concept did traverse questions of resource management, those were still considered ancillary to the main argument. Biological science, not economics, was primarily responsible for articulating environmental truth and the argument regarding the value of biodiversity.

Jumping forward to 2010, one can observe that the most recent Nagoya COP has endorsed a report on the economics of ecosystems and biodiversity[3] that offers for the first time a detailed economic valuation of the total sum of nature, including all components of biodiversity. In the preface of this TEEB report, the authors stress:

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[1] Thomas Pynchon, *Vineland*
[2] See Soule, *Conservation Biology : the Science of Scarcity and Diversity 2-5*
[3] TEEB, *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and reccomendations of TEEB* (2010) (TEEB)

> 'Ideally, TEEB will act as a catalyst to help accelerate the development of a new economy: one in which the values of natural capital, and the ecosystem services which this capital supplies, are fully reflected in the mainstream of public and private decision-making'[4].

In the intervening years, there has obviously been a significant swing from the periphery to the centre in terms of the presumed role of economics within biodiversity. In the second part of the thesis, the centrality of economic thought and this 'new economy' in present-day biodiversity governance will be further illustrated in the various techniques and arrangements designed within the biodiversity complex. For the purposes of the history of biodiversity presented in this first part, it is important to highlight the first steps of this crucial shift.

This shift was initially driven by two factors, one external and one internal to biodiversity discourse. The former relates to the particular historical conditions at the time when biodiversity was becoming an established environmental sub-movement within environmentalism, which occurred during the widely acknowledged 'neoliberal decade' of the 1980s. The exigencies of that political economic situation necessitated a fuller consideration of particular strands of economic thought; that biodiversity re-entered the clockwork of cause and effect. The internal factor was the association of biodiversity with neo-Malthusian demography, which brought to the fore the problematization of the human population, with special reference to the South. There are interesting effects to be compared and parallels to be drawn between this connection and the already discussed theoretical links with sociobiology.

[4] Ibid 3

In terms of the analytical grid proposed in Chapter 1 based on the Foucaultian notion of government[5], this connection produced a major shift in the objects or targets of governing; in very broad terms from nature reserves to human population in the South. In this way, this shift precipitated further discontinuities in the history of biodiversity, such as the confirmed abandonment of the plan to alter conservation practices and the dominance of genetic gold within biodiversity.

I | BIODIVERSITY AS A FAILED LIBERAL MOVEMENT

To understand how this shift in the standing of economics came about, some of the events, breaks and conflicts presented in the previous chapter have to be revisited from the perspective of political economy. Takacs summarised the combined strategic mission of the proponents of biodiversity thus:

> 'They wage battle in the contested realm of how we view, and thus value, and thus treat the Earth. Biologists seek revolutions not only in our environmental ethic but also in who should be the spokespersons for that ethic, the shapers of our ideas about the natural world, and the policies that stem from these ideas'[6].

The theoretical preoccupations of these advocates were located within the realms of pure science. Their primary goals were related to improving understanding and reducing uncertainty through the identification, clarification and description of the various components and processes of life, such as species and ecosystems; i.e. 'how we view and thus value the Earth'. Their tactical choices as spokespersons were centred on which of these processes and components to include under the biodiversity umbrella, and how to

[5] Consisting of (i) objects/targets (ii) goals/ends (iii) forms/modes, and (iv) knowledge. See pages 35-41 above
[6] Takacs 309

make its definition evocative and sufficiently instructive of the environmental crisis at hand and the urgency of action required. Lastly, these advocates, after being shown the 'way' by Wilson, were also invariably seeking the privileges as experts that would stem from the acceptance of the concept as a novel lens of viewing nature and presenting the case of environmental problems.

The crucial elements of this school of thought were the assumption of an almost automatic translation of biodiversity knowledge and environmental ethics into environmental value and this inherent belief that better understanding of environmental complexity is the driving factor of environmental law and policy. Under this perception, this self-appointment of biologists as the 'shapers of policies' appears self-evident. Gathering the knowledgeable experts constitutes the expected rational response to any crisis, such as the alarming degradation in the environment widely observed from the 1970s onwards in such respected studies as Myers' *Shrinking Ark*[7]. These activist scientists were witnessing species disappear and habitats degrade at an alarming rate, as the evocative, but stark, warnings about pollution and overconsumption, repeatedly phrased since the 1960s and 1970s during the process of founding modern environmentalism were ignored. Surely the scientists more capable of understanding this unfolding disaster would be called upon to arrest its damaging course? However, this simplistic causal connection, derived from a simple understanding of the role of science, was uniquely unsuited for the changing political economy that biodiversity was seeking to influence. The call never came; at least not until this simplistic assumption was altered. From Takacs' summary of the biological programme of biodiversity above, the seeds of its political naivety as a movement seeking a place at the policy table can be carefully extracted. This political naivety is presented below.

[7] Myers

First, the assumption regarding the automatic connection between knowledge and value could not hide a serious conceptual flaw or perhaps an overconfident perception of the capacities of biological science. Namely, it could not evade the paradoxical trait that exists to a certain extent within all natural sciences, but is crucial in ecology: any increase in knowledge will result in an increase of complexity and uncertainty[8]. If the formation of a privileged biological perspective of biodiversity relies foundationally on the accumulation of knowledge, then this process is only 'able to develop only insofar as the problem of the specificity of life and the threshold it marks among all natural beings was continually thrown back as a challenge'[9]. In other words, any conception of nature or life as an infinitely complex web of interdependent components and processes means that complete knowledge of this intricate structure of the natural world is by default a moving target, always moving just out of reach.

An increase in understanding within a specific segment of the vast complex of life will always trigger new vistas of unexplored domains, both physical and discursive; biology's chances of reaching a final understanding of nature through biodiversity are, in effect, constantly reduced by its successes, as the complexity of this composite object of analysis effectively increases with each separate discovery. Thus, the persistence of uncertainty continually undermines this assumed automatic connection between knowledge and value for the purposes of law and policy. If value is understood as intrinsically linked with this view of nature that is always provisional, then this makes its value also provisional. Or rather, the values recognised by pure science may not be automatically translatable as values

[8] Michel Foucault, 'Introduction ' in Georges Canguilhem (ed), *The Normal and the Pathological* (Zone Books 1991) 18
[9] Ibid

recognised by applied science [10] in 'the real world of institutions, governments and management'.

In addition to falling into this subtle epistemological trap, the programme also relied strongly on the conviction that if all 'ecologically-inclined' sciences could present a 'united front' of sorts, enhancing the wider public's scientific 'literacy' of environmental issues, this would raise environmental concern sufficiently to take concerted action to avert the impending catastrophe. By sharing the knowledge and pure marvel at the complexity of life on Earth as the natural output of the 4-billion year evolutionary process and alarm over its human-induced degradation, they would get people and administrations on board. Therefore, notwithstanding the perhaps inadvertent elitism of the spokesperson-biologists - this dream of scientist-kings and their ruling crisis discipline – it is clear that they nevertheless regarded themselves as representatives of an emerging social/environmental movement (the 'community of interest and concern' heralded by conservation biology), whose rhetoric was directed towards both the general 'populace' as well as the 'politicians'[11].

If biodiversity is to be seen as an environmental movement, then its leaders, by deriving their discursive tactics from science and ethics, were simply copying the rhetoric of other environmental movements of the time of the late 1970s; and in the process perhaps downgrading the novelty and complexity of the biodiversity concept. However, the reinforced scientific uncertainty that stemmed from the irreducible complexity of biodiversity, ensured that such tactics backfired, as concrete and conclusive scientific

[10] This overlooked difference resurfaces in the failure of the recent Nagoya protocol to distinguish between academic and applied research in ABS mechanisms, despite their widely different objectives. See Chapter 6
[11] Foreword in Soule and Wilcox, *Conservation Biology: An Evolutionary- Ecological Perspective* See also explicit reference to the notion of a biodiversity movement in Norse, 'A River that Flows to the Sea: The Marine Biological Diversity Movement'

evidence in support of this movement failed to materialise in a format that was easily accessible to either the 'populace' or the 'politicians'. By consequence, the predicted increase in awareness and media/public pressure did not materialise as well, despite the pronounced rise of biodiversity as a key environmental term in academic research. This lack of impact should not be attributed completely to the naivety of its proponents. This is a problem germane to all environmental politics, but was particularly accentuated by the ever-increasing complexity of biodiversity as a catch-all term for the web of life.

As an environmental movement seeking to make inroads, in addition to its grounding in a primary role reserved for science, this programme of biodiversity also contained certain assumptions regarding the role of law and the state. In articulating their plan for the formation and intervention on a new biological and ecological reality, in targeting the 'populace and politicians', biodiversity experts were seeking the logical companion to the authority of science, the legitimizing and enforcement mechanisms of state law; the power of science was seeking to join up the power of the state, identified as the primary law and policy-making institution.

Following David Harvey in this argument[12], this particular understanding of the law and the state illustrate that the concept of biodiversity emerged out of an era of liberal and state-led capitalism in the 1970s, associated with the advent and predominance of command-and-control legislation in the environmental field. Despite being acknowledged as a period of crisis for liberalism, since various manifestations of the 'left' political spectrum still yielded considerable power in Europe and in the Democrat-controlled US Congress, strong regulatory reform (such as the Endangered Species Act 1973) that deepened state control

[12] As developed in David Harvey, *Justice, Nature and the Geography of Difference* (Blackwell Publishers 1996); David Harvey, *A Brief History of Neoliberalism* (Oxford University Press 2005)

over the economy remained the preferred path[13]. This 'embedded liberalism'[14] was the political economic system that sought the right balance between State and market to guarantee peace and stability, economic growth, and citizen welfare. Its two more well-known versions were the American Keynesian state and the European welfare state, precisely the two loci of biodiversity's emergence. It has been argued that, in the latter part of the 20th century, environmental protection had become an essential element of the definition of the state itself[15] and more specifically of this liberal rationality of rule, precipitating 'a proliferation of environmental laws, regulations, constituencies and norms'[16].

DISDAIN OR DISMISSAL: THE EARLY LINK BETWEEN BIODIVERSITY AND ECONOMICS

In this wider context of the predominance of the state as the source of authority for environmental action and of a hierarchical willingness to take authoritative environmental action, the politics of the emerging social movement of biodiversity by consequence prioritised a set of certain values (scientific, aesthetic and ethical) deemed essential for increasing public support for reform and for influencing the always elusive policy agenda formed at the level of the state. There was no demonstrable need to forge a closer relationship to economics as anything other than a subsidiary consideration once the ecological, ethical and political arguments were played out. As such, the biodiversity movement's relation to economics veered from a somewhat curt treatment by academic scientists too immersed into the specifics of biological theory, to outright negativity, by the same scientists in their indignant guise as activists damning the environmental impacts of

[13] Harvey, *A Brief History of Neoliberalism* 12
[14] Ibid 9
[15] David John Frank, Ann Hironaka and Evan Schofer, 'The Nation-State and the Natural Environment over the Twentieth Century' (2000) 65 American Sociological Review 96
[16] James McCarthy and Scott Prudham, 'Neoliberal Nature and the Nature of Neoliberalism' (2004) 35 Geoforum 275, 278

the specific economic system of Western liberal capitalism and lobbying for significant changes to prevent the coming catastrophe.

When Soule and Wilcox succinctly dismissed economics in *Conservation Biology*[17], they also neatly summarised the first approach to the role of economics as not 'strictly included'. In the same study, when discussing the advantages of maintaining fewer and larger natural reserves as opposed to numerous small ones, the authors argued that 'a serious and thorough analysis of management costs *probably would demonstrate* the long term advantages of large reserves'[18], but no economic analysis was undertaken or findings presented. As already indicated in Chapter 2, the argument for increasing the size of nature reserves was based on ecological findings. This type of economic justification appeared simply outside, if not beneath, the remit of the mission to avert environmental disaster.

There are also examples, predominantly from the pre-1986 Forum period, of a second approach to the potential link between the biological programme and economics, where outright negativity towards the whole economic system of Western liberal capitalism is expressed in quite strong terms. For example, Paul Ehrlich begins the last chapter[19] of *Conservation Biology* with a moderately phrased call for change in the 'economic systems', but progressively builds up towards adapting Kenneth Boulding's rather more radical critique of the 'cowboy economic system'[20] of the US and its 'reckless, exploitative, romantic and violent behaviour' in terms of energy use, but also from the demographic perspective of

[17] See the first paragraph of this chapter and note 2 above
[18] Emphasis added. Soule and Wilcox, *Conservation Biology: An Evolutionary- Ecological Perspective* 23
[19] Paul Ehrlich, 'The Strategy of Conservation 1980-2000' in Michael E. Soule and Bruce A. Wilcox (eds), *Conservation Biology: An Evolutionary - Ecological Perspective* (Sinauer Associates 1980) 329-44
[20] Kenneth E. Boulding, 'The Economics of the Coming Spaceship Earth' in Henry Jarrety (ed), *Environmental Quality in a Growing Economy* (The John Hopkins Press 1966) 9

population growth. In the same text, Ehrlich also does not hesitate at using terms, such as 'overdeveloped countries'[21] that later vanished completely from his work.

Another example of outright negativity towards the economic sphere as a whole can be found in David Ehrenfeld's proto-biological conservation, where he identified the 'economics of perpetual expansion' as a source of the problem of the 'irreversible loss of diversity' in nature[22]. Soule has criticised the 'profane grail of sustainable development' as the 'odd delusion of having your cake and eating it too'[23], even as late as 1995, after the link between conservation and sustainable utilisation of biodiversity had achieved the status of self-evident truth under the auspices of the CBD.

In expressing such views, the proponents of biodiversity did not vary significantly from other environmental movements of the late 1970s and early 1980s. The anti-economic growth statements simply echo the concerns of the authors responsible for inspiring and establishing the modern environmental movement in the US, such as Leopold, Vogt, Commoner, Carson and others. In this way, biodiversity was also interpreted as an idea for political mobilization, lifted from the tactical handbook of the radical politics of the previous decade. When placed within the context of embedded liberalism outlined above, these statements verify not only the epistemological, but also the political and cultural lineage of biodiversity in the liberal democracies of the developed, capitalist states of the Western world. The impact of this descend, i.e. of biodiversity as a Western liberal project, is a theme that the thesis will return to when examining the globalization of the biodiversity concept.

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[21] Ehrlich, 'The Strategy of Conservation 1980-2000' 335
[22] David Ehrenfeld, *Biological Conservation* (Holt, Rinehart and Winston, Inc. 1970) 207
[23] Michael E. Soule, 'The Social Seige of Nature' in Michael E. Soule and Gary Lease (eds), *Reinventing Nature? Responses to Postmodern Deconstruction* (Island Press 1995) 159

Under such conditions and lineage, the early positioning of biodiversity in relation to policy-making and the political and economic spheres more generally was sufficiently appropriate. The belief in state intervention directed the burgeoning movement towards the administrative mechanisms of the state. The market and commercial activity in general was 'surrounded by a web of social and political constraints'[24], so any emerging crisis-discipline with aspirational and prescriptive agenda did not expect to engage with them constructively or adopt their rationalities. At most, it was expected to contest and refute the market's presumed anti-environmentalist bias and arguments. At this early stage then, the biological programme of biodiversity appeared to adopt a fairly standard critique of economic systems based on ecological facts and environmentalist values. The very notion of the economic still remained outside, a form of 'enemy at the gates', to be tentatively allowed in once it proved that it was no longer dangerous for the environmentalist agenda.

It can be concluded that these early politics of biodiversity overestimated the role of science and underestimated the role of economics in law and policy design. As a result, the biodiversity movement became naive in short order as the 1980s wore on. Conservation biologists were perfecting weapons (scientific truth, biological awareness, holistic ethic) for a righteous offensive on the state. Biodiversity, the lens through which biology viewed nature, was expected to yield substantive change not only in terms of the public perception of environmental problems, but also effective legal reform. A place in the policy agenda would be a legitimation of this novel programme, an entry into the rule of law of the liberal state. However, at the same time the very method for putting items on the policy agenda was changing. The movement was seeking to make inroads into an area already being abandoned; it was fighting a war using what amounted to obsolete weapons.

[24] Harvey, *A Brief History of Neoliberalism* 10

ENCOUNTERING NEOLIBERALISM[25]

By the time of the 1986 Biodiversity Forum, conditions had changed. By the early 80s, the 'embedded liberalism' that the biological programme and biodiversity movement referred to had disappeared. A different and far-reaching strategic programme - neoliberalism - was successfully testing and imposing its own objectives by attacking the state through the rationality of the free market. Neoliberalism views the market as a 'constitutive component of the human condition'[26]; no longer 'an institution which must be regulated by social forces, but on the contrary which should be used to regulate society as a whole'[27]. It proposes that 'economic rationality then can be used to analyse all, or nearly all, aspects of human behaviour and provide guidelines for policy'[28]. Foucault notes that:

> The generalisation of the economic form of the market beyond monetary exchanges functions in American neoliberalism as a principle of intelligibility and a principle of decipherment of social relationships and individual behaviour. This means that analysis in terms of the market economy or, in other words, of supply and demand, can function as a schema which is applicable to non-economic domains.[29]

[25] The following section represents a short overview of certain themes within neoliberalism as they pertain to the history of biodiversity. For a detailed history see Taylor C. Boas and Jordan Gans-Morse, 'Neoliberalism: From New Liberal Philosophy to Anti-Liberal Slogan' (2009) 44 Studies in Comparative International Development 137

[26] Gertrand Berthoud, 'Market' in Wolfgang Sachs (ed), *The Development Dictionary: A Guide to Knowledge as Power* (Zed books 1991) 74

[27] Ibid 70

[28] Dean, *Governmentality: Power and Rule in Modern Society* 72

[29] Michel Foucault, *The Birth of Biopolitics: Lectures at the College de France 1978-1979* (Michel Senellar and others eds, Graham Burchell tr, Palgrave MacMillan 2008) 243

This mode of analysis in terms of the market economy is further supported by an emotive appeal to freedom[30] and the belief that human welfare can be best advanced through securing individual freedom, perceived and guaranteed largely in the form of an entrepreneurial freedom for an individual to better him or herself within the market[31]. As Karl Polanyi had already warned decades before, when freedom is equated with nothing more than free enterprise and private property, 'planning and control are attacked as a denial of freedom'[32]. This omnipresent 'use of neoliberal analyses' is described more clearly again by Foucault:

> 'The economic grid will or should make it possible to test governmental action, gauge its validity and to object to activities of the public authorities on the grounds of their abuses, excesses, futility, and wasteful expenditure [...] It involves scrutinizing every action of the authorities in terms of the game of supply and demand, in terms of efficiency with regard to the particular elements of this game, and in terms of the cost of intervention by the public authorities in the field of the market'[33].

Therefore, neoliberalism did not simply constitute a different policy framework, but a complete new iteration of the liberal 'art of government'. Mitchell Dean stresses that it should be approached, as with all forms of liberalism, 'as a principle and method for the rationalization of the exercise of government – a rationalization which obeys, and this is its specificity, the internal rule of the maximal economy'[34], i.e. efficiency.

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[30] Andrew Barry, Thomas Osborne and Nikolas S. Rose, *Foucault and Political Reason : Liberalism, Neo-Liberalism and Rationalities of Government* (Routledge 1996); Nikolas Rose, *Powers of Freedom: Reframing Political Thought* (Cambridge University Press 1999)
[31] Harvey, *A Brief History of Neoliberalism*
[32] Karl Polanyi, *The Great Transformation* (GowerBeacon Press 1954)
[33] Foucault, *The Birth of Biopolitics: Lectures at the College de France 1978-1979* 246
[34] Dean, *Governmentality: Power and Rule in Modern Society 73-4*

The advent of the economic grid of neoliberalism precipitated a wide-ranging transformation of state and society in the West, initially as a direct response to the crisis of embedded liberalism and Keynesian welfare state in the late 60s and early 70s. The new market economy and rationality mandated that the 'social good can be maximised by maximising the frequency and reach of market transactions'[35]. The ensuing deregulation, privatisation and liberalisation, especially of financial markets, produced a 'burst in activity' recognised as the beginning of globalisation[36]. The objective of creating markets for the expanding production of capital was fuelled by the increase in global links facilitated by new technologies.

Expanding rapidly on a global scale, this intensification of economic and market rationalities began to posit a utopian future global society consisting solely of a self-regulating matrix of markets and a collection of free entrepreneurs – nothing more than individual expressions of competitive conduct - with the state in a limited role as the guarantor of property, certain rights and the unimpeded operation of these markets. This extension of neoliberalism into a political project for reforming the global economic system – known as the Washington consensus[37] - had to confront the concerns, targets and goals of the on-going project of international development. Harvey argues that all Keynesian influences were 'purged' from international institutions, such as the IMF and the World Bank, responsible for guiding the global economy by 1982; thus the roadmap for the adoption of neoliberal policies, for both the North and the South, was set. This roadmap included the forced and -often violent in the South- institution of privatisation and

[35] Harvey, *A Brief History of Neoliberalism* 3
[36] Ibid 32-3
[37] The Washington Consensus and in particular the role of the World Bank is further discussed in Chapter 4

deregulation was legitimised by the neoliberal ethic of personal freedom, as phrased by members of the Mont Pelerin society[38].

This completed the transformation of the market from a restricted space (marketplace) on the edge of society, to a separate sphere of social activity, and eventually to a self-evident and core aspect of human society and the human condition[39]; in Foucault's words, a principle of both intelligibility and decipherment. The elevation of the market as the singular locus of human activity brings about an increase in the importance of the contract as the primary method for human interaction and welfare creation. The legal contract between two free-thinking and profit-maximising individuals, two economic subjects, becomes an ideal symbol of the centrality of the economic grid in every aspect of human life.

Turning back to biodiversity as an environment/social movement in light of this short overview of some key shifts of neoliberalism, one can deduce that the initial biological programme was geared towards affecting the 'social and moral economy that was fostered through the activities of the interventionist state'[40], but, during the attempt to achieve that goal, that very economy was being replaced. The extension of the market rationality and the scrutiny of the economic grid to all aspects of government and daily social life, 'the financialisation of everything',[41] established economic efficiency, profit maximisation, cost minimization and the protection of private property as central considerations of policy design.

[38]Group responsible for developing the doctrine of neoliberalism as response to problems in international capitalism, see Harvey, *A Brief History of Neoliberalism 19-26*
[39] Karin Knorr Cetina, 'The Market' (2006) 23 Theory, Culture & Society 551
[40] Harvey, *A Brief History of Neoliberalism* 11
[41] Ibid 33

This was not a unique obstacle for biodiversity. All forms of environmentalism had to adjust to changing political economic landscape and the new conditions in the way law and policy reform was proposed, evaluated and instituted. The statist tendencies of mainstream liberal environmental politics of the time would be hard pressed to adjust to the harsh realities of a new 'financialised', individualist and managerialist world of global deregulated markets. The perception of the economic as a largely separate sphere of action, to be engaged with but essential maintained at distance from environmental research and action was at odds with this 'financialisation of everything'. The target of influencing public opinion on environmental issues as a mechanism for exerting more pressure on the state was missing the mark. While regarded from within the environmentalist ranks as the primary institution for environmental protection through the adoption of coercive laws, the role of the state had become increasingly secondary, in conjunction with an across the board reduction in its capacity to intervene in the economy.

In this changing political economic climate, the advocates of biodiversity had to fully contend with the market, an institution that they had slightly pushed aside in those early efforts. In order for biodiversity to remain relevant as a movement and continue to influence environmental law and policy, the market and not the state would have to be the locus of a new battle. Unrealised by its early advocates within conservation biology, biodiversity in particular, compared to other environmental problematisations, was however uniquely placed to adjust and benefit from this shift in economic thought. The reductionist view instituted by sociobiology[42] contained a number of elements that would ease the transition. For example, the techno-scientific 'atomistic-machine view' of the world consisting only of genetically-determined individuals with no properties assigned to the whole is compatible with the competitive individualism required for the utopia of the

[42] See Chapter 2

free profit-maximising individuals. In order to fully explore the connection between biodiversity and economics however, the history of biodiversity will have to venture into the Darwinian, evolutionary origins of the biological theories that spawned biodiversity in the first place.

THE CONNECTION BETWEEN DARWIN AND MALTHUS: NATURE'S ECONOMY

In this section, it is argued that the same Darwinian schema that underpins sociobiological thought also provided solutions to the difficult encounter of biodiversity with neoliberalism. This argument is based on Donald Worster's historical hypothesis that Darwin's reading of Malthus *Essay on the Principle of Population*[43] was crucial for both the development of Darwin's theory of evolution, as well as for the general idea of an 'economy of nature' within ecological thought[44]. By positing the existence of an economy of nature, a certain economic understanding would be able to complement the original biological programme.

Malthus' well-recited predictions regarding the imbalance between the pace of human population growth and the availability of natural resources, and in particular food supply, added a rudimentary pre-ecological twist to political economy. Complete with alarming predictions of catastrophe, this concern articulated a form of pre-modern, inverse social ecology that combined social and resource problematisations from an obviously anthropocentric perspective. It was a sort of inverse proto-social ecology because Malthus' political economy did not represent a critique of the Industrial Revolution or its associated economic liberalism and *laissez-faire* attitudes, despite the 'dismal ratio' of population and

[43] Thomas R. Malthus, *An Essay on the Principle of Population or A view of its Past and Present Effects on Human Happiness: With an Inquiry into Our Prospects Respecting the Future Removal or Mitigation of the Evils which it Occasions* (Cambridge University Press 1992)
[44] Donald Worster, *Nature's Economy: A History of Ecological Ideas* (2nd edn, Cambridge University Press 1994) 149

food supply. In line with Adam Smith and others, Malthus still spread the 'gospel of progress'[45], naturalising the modes of a social organisation of that era, but urging caution regarding certain specific resource issues of the inevitable march towards progress. This march itself was a necessary and self-evident eventuality, with only minor adjustments to its direction being considered.

Malthusian arguments are inflexible due to being based on abstract constants, such as fertility as a fixed 'mechanical' function of organisms unaffected by the surrounding environment or the scarcity as a fixed characteristic of natural resources. When all other variables remain fixed with the exception of the human population then conflict over scarce resources is inevitable. According to Worster, it is in this Malthusian conflict-determined image of 19th century British, laissez-faire, industrial society that Darwin found an economic-ecological analogy to assist his own emerging understanding of his theory of evolution. This proposed connection between Darwinian biology and Malthusian political economy presents them as mutually reinforcing forms of thought addressing the complex relationship between nature and society. They both recognise competition between individuals (whether persons or genes) as the truth to be found and verified in nature[46]. This competition is fostered by the scarcity of resources, the 'currency' of the natural economy.

Donald Worster outlines four propositions of this Darwinian natural economy[47]: (i) nature is a complex web of relations, which means that the survival of individual organisms is determined by its interactions within that web (ecological interdependence), (ii) based on the idea of constantly scarce natural resources, nature is also a closed system of

[45] Ibid 150
[46] Ibid 291-3
[47] Ibid 156-61

'places'/niches (conceived abstractly by the biologist observing) occupied by organisms that have evolved to adapt to the conditions of these places, (iii) there is a constant struggle to seize these limited places in the economy of nature and with this competition the overall natural system achieves better overall efficiency, and finally (iv) evolution proceeds essentially by ecological replacement, when a new genetic variation in an organism enables it to conquer a new niche for itself within the economy. After the fact, this can be seen as representing one of the first bioeconomic models of nature, and which has at times been employed to justify the essential competitive individualism of all organisms.

This natural economy mirrors ideas of struggle, competition and conquest that dominated the Victorian society of Darwin's and Malthus' time[48]. Darwin observed in nature behaviours and functions very similar to what Malthus observed in a human society. However, Malthus' societal view concerned only a specific type of Anglo-American, $18^{th}/19^{th}$ century, laissez faire society. It was based on what he was witnessing around him in the British Isles. The mutual reinforcing of the two views, highlighted and heightened to extremes by sociobiology, by default justified the specific rationality of governing present in that specific period; a naturalization of society through the 'socialization' of nature. When neoliberalism brought these competitive and individualist ideals back to the surface, the discourse of biodiversity could adapt by resurrecting this circular self-validating regime of truth while adding a more updated and modern ecological twist. This twist was provided by way of the overpopulation thesis.

II| NEO-MALTHUSIAN DEMOGRAPHY: INVENTING THE POPULATION PATHOGEN

[48] Ibid 167

This interconnected theoretical descent enabled the field of neo-Malthusian demography to become the second (after sociobiology) controversial school of thought to be attached to the invention of biodiversity, through one of its most prominent members, Paul Ehrlich. In cooperation with sociobiology, this form of demography completed the strategic realignment of biodiversity for its encounter with neoliberalism. This was achieved by building on the commonalities between biological theory and political economic theory indicated in the previous section and in particular the idea of a natural economy. In general terms, due to the Malthusian influences, the issues of resource scarcity and 'runaway' population growth came to dominate the type of economic thought that was infused into the biological programme of biodiversity. This form of economic thought brought significant shifts in focus, towards the South and the pathology of its expanding human population.

Malthus' predictions of impending social, political and economic catastrophe due to escalating conflicts over food resources of course never came to pass, at least to their predicted extent, and certainly not in the rich states of the North as originally envisaged in his predictions. The failure of these predictions was attributed to a 'variety of unforeseen circumstances'[49], such as the full exploitation of North American and other colonial natural resources and the rate of technological innovation, not factored in by Malthus. Especially in the field of food production, constantly improving industrial agricultural techniques kept the spectre of famine away in the states of the North. An example of the former argument can be found in Vogt's *Road to Survival*[50], where the author argued that the full exploitation of the natural resources of the 'New World' delayed the materialisation of the Malthusian predictions. Frank Furedi graphically argues that Vogt's claim was that these predictions

[49] For an overview of the 'various unforeseen circumstances' used to rationalise the persistence of Malthusian theories see Frank Furedi, *Population and Development : A Critical Introduction* (Polity Press 1997) 147
[50] William Vogt, *Road to survival* (Gollancz 1949)

were in fact 'buried beneath the bounty from the New World cornucopia'[51]. Vogt's early, but influential, text urged 'mankind' to come 'face to face with a serious depletion of resource capital'[52]. It expanded the Malthusian focus on food supply towards a more general notion of linking human population growth with the limits of the fixed and scarce natural resource base required to support it. Vogt cautioned against the pursuit of economic growth at all costs, reminding the reader that 'our real wealth is drawn from earth, in always limited quantities'[53].

As precursor to modern environmentalism, Vogt thus maintained the Malthusian line of thinking, but updated its population problematisation through an environmental critique of certain aspects of the capitalist economy and mode of social organisation, such as the overexploitation of natural resources. *Road to Survival* is an important blueprint because initial traces of the conception of population as a pathogen can be observed, most vividly in Vogt's criticism of America's becoming a 'self-cannibal'[54] that overexploits the natural resources of its lands.

THE OVERPOPULATION DEBATE: EMULATING SOCIOBIOLOGY'S TACTICAL ATTACHMENT

Vogt's work is reviewed here as the crucial early step towards the direction of problematising the link between human population and natural resources, subsequently picked up, reworked and given centre stage by Paul Ehrlich as the 'too many people' thesis in the 60s[55]. While nominally on the same path, Ehrlich's Malthusian logic would come to diverge greatly from Vogt's work. By 1972, Ehrlich had laid claim to capturing the 'essence of the predicament' in terms of the coming environmental crisis, by once more stretching

[51] Furedi 63
[52] Vogt
[53] Preface in ibid
[54] Ibid 112
[55] Paul R. Ehrlich, *The Population Bomb* (Pan Books 1971)

the Darwinian/Malthusian struggle of all against all into a narrative of global conflict driven by overwhelming necessities and pressures from an ever-expanding human population threatening to engulf the whole planet. On one side of this global arena, in the South:

> 'hundreds of millions have lived constantly, often consciously, almost always helplessly on the brink of famine and epidemic disease, awaiting only some modest quirk of an environment already stretched taut –an earthquake, a flood, a drought – to push them over that edge'[56].

On the other side, in the North

> 'the prosperity of the developed countries -awesome by comparison with the poverty of the less developed countries- has been built on the exploitation of the richest soils, the most accessible fossil fuels, and the most concentrated mineral deposits of the entire globe – a one-time windfall'[57].

The implied argument here was that if those in the South attempt to follow down the same route as the North, they 'will find the bridges burned ahead of them'[58]. While Vogt had taken Malthusian logic away from the limited focus on food supply, Ehrlich made further alterations by taking Malthus squarely into the 20th century's global arena of development politics[59].

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[56] Paul R. Ehrlich, Anne H. Ehrlich and John P. Holdren, *Ecoscience: Population, Resources, Environment* (W.H. Freeman and Co 1972)
[57] Ibid 2
[58] Ibid
[59] Later examples of this school of thought include Lester Russell Brown, Brian Halweil and Gary Gardner, *Beyond Malthus : The Nineteen Dimensions of the Population Problem* (Earthscan 1999); Lester Russell Brown and Hal Kane, *Full House : Reassessing the Earth's Population Carrying Capacity* (Earthscan 1995)

In similar fashion to the sociobiology agenda however, the political and social prescriptions derived from this scientific formation, such as the 'limits to growth' argument of the 1970s[60] or policies of population control, were to prove highly controversial[61]. Despite their environmental credentials, these proposals were outlining a grim future for Southern states, creating factions within a previously more homogenised environmental movement. For example, Barry Commoner accused one of the main proponents of population control, Garrett Hardin, of barbarism[62]. Ehrlich's support of Hardin inevitably led to further disagreements[63]. Commoner went on to predict and pre-emptively criticise, already in 1972, the coming reductionism of a staunchly Darwinian and Malthusian biological environmentalism: '[the environmental crisis] is not the product of man's biological capabilities, which could not change in time to save us, but of his social actions-which are subject to much more rapid change'[64]. It can be plausibly argued that a whole different form of environmental thought known as social ecology was introduced for the purpose of counteracting to these population problematisations and economic rationalisations.

Faced with this difficulty, Ehrlich and the field of demography emulated Wilson and sociobiology in the attempt to gain added legitimacy through biodiversity[65]. Once more the discourse of biodiversity became the node of connection between two contrasting trends: the rising popularity of environmental concerns and the declining relevance of Malthusian predictions. In similar fashion to sociobiology, the involvement with biodiversity allowed the field of neo-Malthusian population studies to maintain its relevancy in a new global

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[60] Garrett James Hardin, *Living Within Limits : Ecology, Economics, and Population Taboos* (Oxford University Press 1993) Donella H. Meadows, Club of Rome. and Unesco. Regional Office for Education in Latin America and the Caribbean., *The Limits to Growth : a Report for the Club of Rome's project on the Predicament of mankind* (New American Library 1972)

[61] Furedi 151

[62] Barry Commoner, *The Closing Circle : Confronting the Environmental Crisis* (Cape 1972)

[63] The early conflict between Ehrlich and Commoner is presented in Furedi 154

[64] Commoner 299

[65] Although the population debate was from the outset more directly environmental and political than the theoretical and ethical sociobiology of Wilson

arena of environmental crisis. In exchange, this particular school of demography contrived to imprint on biodiversity a fear of a global arena where the phenomenon of 'runaway human population growth'[66] brings into being ballooning human populations threatening to unravel and overwhelm the balanced system and the harmony of nature.

A NEW PATHOLOGY: THE STRATEGIC PROBLEMATISATION OF THE SOUTH

The neo-Malthusian reformulation of the population problem on a global scale placed at the core of the wider biodiversity problematisation initiated by sociobiology a global pathology consisting of helpless Southerners and gluttonous Northerners fighting over dwindling resources, in similar fashion to individuals competing over niches in the economy of nature. The ecological crisis of the planet was thought to be aggravated by the presence of the alarming phenomenon of 'overpopulation', defined by the two fixed constants of economic scarcity and ecological finite 'carrying capacity'[67] of natural resources.

This perception of the environment being endangered and unbalanced by the spreading pathogen of overpopulation was crucial for the full entry of economic thought in the biological programme of biodiversity. Ehrlich's contribution to *BioDiversity* was a major chapter on the causes and consequences of biodiversity loss[68]. In that chapter, he proceeded to call for a focus on 'more obscure and (to most people) unpleasant truths'[69]. The most important of those truths was that:

[66] Ehrlich, 'The Loss of Diversity: Causes and Consequences '
[67] Hardin 204 Also Brown and Kane, *Full House : Reassessing the Earth's Population Carrying Capacity*
[68] Ehrlich, 'The Loss of Diversity: Causes and Consequences '.The arguments were first articulated in Ehrlich and Ehrlich, *Extinction: The Causes and Consequences of The Disappearance of Species* , then subsequently extended to the broader context of biodiversity.
[69] Ehrlich, 'The Loss of Diversity: Causes and Consequences '

> 'The primary cause of the decay of organic diversity is not direct human exploitation or malevolence, but the expansion of human populations and human activities'[70].

This statement turned the population-as-pathogen argument into a foundational perspective for understanding the global aspect of biodiversity. Ehrlich confirmed his theoretical endorsement of biodiversity by decrying the excessive focus on single environmental issues - such as pollution, waste and the protection of endangered species - and by adopting the holistic/integrative approach initially put forward by conservation biology and seconded by sociobiology. He then absolved overexploitation from any role in the phenomenon of biodiversity loss he was urging action against.

Fifteen years earlier, the conclusion from the same author, derived from employing similar neo-Malthusian arguments, had been remarkably different and more controversial:

> 'The cornerstone of a rational programme should be a great reduction in the growth of throughput of energy and materials in the rich countries'[71].

It is easy to observe that the second time around (i.e. in his *BioDiversity* chapter) the prescribed reduction is aimed more abstractly towards human 'population and activities', rather than resource consumption in the North. The loss of biodiversity is thus attributed by Ehrlich to the loss of natural habitat, which is in turn an inevitable consequence of the expanding human population, ostensibly without focus on either the North or South. However, 'uncontrolled' human encroachment on the environment through population growth conjures images of the sprawling metropolises of the South, complete with images

[70] Ibid
[71] Ehrlich, Ehrlich and Holdren, *Ecoscience: Population, Resources, Environment* 956

of *favelas*, illegal logging, rising pollution and waste. In line with the rainforest and tropics focus of the rest of volume, this retreat of natural habitats due to the encroaching pressure of human population in practice is understood to occur predominantly in the poorer parts of the South, where the majority of 'unspoiled' and 'undeveloped' land, including the last areas of high biodiversity, still remain. By further universalising claims regarding the impact of population on the environment, the focus of biological lens of biodiversity turned firmly towards the South. In short, after Ehrlich biodiversity loss was now thought to be caused by the over-population of the South, not over-consumption of the North.

The obvious tactical manoeuvring of the author is of far less importance than the impact of these arguments in terms of the widening of biodiversity as a global problematization. They clearly constituted an attempt to arrest the exclusion of the economic sphere by incorporating a neo-Malthusian strand of political economy into the biological programme. As a new path for interacting with the economic grid, it introduced a form of economic analysis that uncovered a significant pathology of the South, caused by the pathogen of overpopulation ruining the delicate ecological balance of ecosystems.

By putting forward the overpopulated South as the primary locus of biodiversity loss, Ehrlich's demography became politically relevant again through its association with biodiversity. The overpopulation thesis no longer remained a controversial sub-field of demography, but assumed the status of a constituent element of the pertinent and urgent problematisation of biodiversity. Aside from these obvious academic benefits for the particular sub-field of demography, this problematisation of the South had a number of strategic advantages for the discourse of biodiversity struggling to be heard during the neoliberal decade of the 1980s. In exchange for this 'act of salvage', the discourse of biodiversity 'received' a solution for engaging with both globalization and neoliberalism,

which was to recalibrate the object to be governed under the programme of biodiversity towards a greater emphasis on the problems of the South - rather than the conservation practices or consumption options of the North.

III | AT THE CROSSROADS OF DARWINIAN BIOLOGY AND MALTHUSIAN ECONOMICS

By obscuring questions of exploitation and distribution, as evidenced in clear terms by the difference in the two Ehrlich quotes above, the historical conditions for the concentration of both environmental degradation and widespread poverty in the South are consistently underplayed. Going forward, 'everyone becomes equally responsible for the degradation of the environment'[72]. What had started out with Darwin's alienation with the competitive atmosphere of Victorian London [73] was now a truly global pathology, a new grave environment threat in its own right. In a brutal, morally and politically abhorrent re-envisioning of the *Night of the Living Dead,* when the poverty-stricken masses of the South expand and progressively use up the surrounding ecosystems simply to sustain their existence, they will not simply be harming their own local environment, but their behaviour will actually threaten the entirety of human existence[74]; a shuffling sea of humanity draining the last reserves of biodiversity, destroying everything in its wake.

Secondly, the biodiversity problematisation arguably became part of an environmentalism that invokes scarcity without regard to equity[75]. By eradicating environmentalism's strongly-worded criticisms of fundamental tenets of liberal capitalism, by absolving terms such as production, use, exploitation or utilisation of their 'dirty past', by focusing on the problems

[72] Furedi
[73] Worster
[74] Christa Wichterich, 'From the Struggle Against "Overpopulation" to the Industrialization of Human Production' (1988) 1 Reproductive and Genetic Engineering 21
[75] Harvey, *Justice, Nature and the Geography of Difference*

of the South, and by finally exiting the confines of North American-centric conservation concerns, the concept of biodiversity would be able to test its authority not only within the environmental policy agenda, but would also become part of the emerging of the time Washington consensus and the global realignment towards neoliberalism. The South was identified with the pathological state, while the North assumed the status of normality. The stage was appropriately set for another trajectory to join the 'river' of biodiversity. In order to survive the neoliberal decade, the discourse of biodiversity became an amalgam of sociobiology, neo-Malthusian demography and development economics, the companion piece to sustainable development[76].

It is doubtful whether the CBD, or any other multilateral, North-South agreement on biodiversity, would have materialized without this subtle refocusing of the biological lens towards the South. The understanding of non-American environmental issues and concerns in the early years of the biological programme was at the very least incomplete, if not downright offensive. For example, *Conservation Biology* includes a chapter on 'African wildlife resources' that consists of a patronising and near-colonial portrait of the continent's interaction with its environment complete with a pastoralist view of its inhabitants. In place of this early naivety, the South was identified as the flashpoint of a global biodiversity crisis, while the differentiated historical responsibilities of the North and the South were condensed into a thick haze of abstract, de-politicised and collective responsibility[77].

Following the same line of reasoning, it was accepted at the other end, i.e. in the South, that the keys to both environmental destruction and salvation were no longer held by Northern states. Even if this acceptance glossed over issues of historical responsibility, it

[76] The role of sustainable development is examined further in Chapter 4
[77] In legal terms, the 'common concern' of the CBD's preamble. See Chapter 1

nevertheless created an opportunity for negotiation, always a positive outcome in a neoliberal political economic climate. Ehrlich's contribution therefore provided the basis for an international negotiation divided across North-South lines, as well as leverage for both sides at the negotiating table. In line with the neoliberal paradigm, the CBD itself would ultimately be conceived as a market transaction: 'the Convention can be interpreted broadly as an instrument to promote the equitable exchange, on mutually agreed terms, of access to genetic resources and associated knowledge for finance, technology and participation in research'[78].

The chapter has suggested that, once the naivety and deficiencies of the initial biological programme were exposed and addressed, the interplay of biology and economics within the concept of biodiversity could be described in fairly simple terms: the underlying biology is distinctly Darwinian, while its economics are distinctly Malthusian. The consequences of this division of labour remain present throughout the conceptual edifice of biodiversity, as well as its governance arrangements, and will be examined throughout the rest of the thesis. Some introductory observations are outlined below in order to conclude the chapter.

In relation to biology, Foucault notes that 'it proved impossible to make up a science of the living being without having taken into account, as essential to its object, the possibility of disease, death, monstrosity, anomaly, error'[79]. The early argument for studying, measuring, analysing and protecting biodiversity was precisely motivated by an observed pathology of environmental loss, i.e. the concept of biodiversity was organised around what was being extinct, lost, degraded and destroyed. After neo-Malthusian demography and neoliberal economics, the resultant adjustments altered the base pathology of the concept. It was no longer linked narrowly to the decline of biodiversity or environmental degradation in

[78] UNEP/CBD/COP/3/Inf. 53 (1996). See chapter on access and benefit sharing.
[79] Foucault, 'Introduction ' 17

general, but for the first time directly to human conduct, not necessarily linked to the environment (e.g. resource exploitation), but in the general shape of the political economy of Southern states, their problematic individual and collective subjectivities as members of the emerging globalised socionatural world. The question of conservation practices and nature reserves had become a question of human conduct and the development problems of the South. This alteration in base pathology has created a subtle obfuscation; a binaural recording masquerading as stereo. Action is urged and proposals are being formed, while it remains unclear to which pathology they refer to. Are they arguments in respect to nature backed by the authority of ecological science, or actually prescriptive arguments about society, backed by the authority of economics? The line between the two has become so inveigled as to be impossible to discern.

More specifically in terms of economics, the shift in biodiversity towards a positive view of economics was inevitable for a programme wanting to test itself in the area of law and policy during the rise of neoliberalism. This can be easily observed even in the simple change of subtitle between the first and second editions of *Conservation Biology*. The 1980 edition attaches 'an evolutionary-ecological perspective' to its title, stressing the emerging field's origins in Darwinian evolutionary biology and its novel extension into more directly environmental issues. The subsequent 1986 edition instead chooses 'the science of scarcity and diversity', signalling the shifts outlined in this chapter were already underway. The well-publicised 1986 Forum on BioDiversity thus appears as an event that played the role of a stepladder, allowing old and –at that time nearly discredited- disciplines of sociobiology and neo-Malthusian demography, along with their often dismissed controversial tools, hypotheses and objects of analysis, as well as the resultant political and ethical pronouncements, to reinvent themselves as crucial elements of environmentalism.

CHAPTER 4
THE POLITICAL QUESTION OF BIODIVERSITY: UNPACKING THE RESPONSES FROM NORTH AND SOUTH

'You see these buildings breaking apart and coming down? He looked at me. You don't think this is what we're supposed to see when we look at these buildings? He wanted nothing to do with this idea. You don't think it's a new way of seeing?'[1]

The widening of the problematization of biodiversity was in full flow once the concept was recognized as presenting the pathology of the South to be governed in the name of biodiversity. This new problematization involved primarily an engagement with the full effects of biodiversity as a political question, i.e. as a question of power and global governance and not strictly an environmental or conservation issue. The thesis understands this wider problematization of biodiversity as consisting of two interlinked parts. The first part refers to identifying the new multiple goals to be sought in governing this pathology. The second part concerns instituting (and choosing between) laws, processes, mechanisms and techniques for realizing these goals. The rest of the thesis is focused on these interlinked parts of the problematization of biodiversity.

These strategic formulations of goals and processes took place within the broader framework of sustainable development, understood here as a grand rhetoric of the future that constituted the environmentalist response to the challenge of neoliberalism[2]. Under sustainable development's guidance, the globalisation of biodiversity confirmed the

[1] Don DeDillo, *Underworld*

[2] For an excellent examination of sustainable development see Alexander Gillespie, *The Illusion of Progress: Unsustainable Development in International Law and Policy* (Earthscan 2001)

permanent retreat from the notion of biodiversity representing a novel conservation mentality, and towards the multi-faceted integration of forms of thought, conducts and rationalities into a broader complex for governing specifically tailored for conditions in the South.

The initial formulation of this biodiversity-based rationality of government proceeded down the hierarchical, 'top-down' paths of the CBD negotiations. For this reason, it is important to first address in more detail the process of biodiversity's formal entry into international environmental law. However, more detours and breaks, in the shape of alternative Southern imaginings of biodiversity, have also contributed to the biodiversity problematization, mostly by resisting the dominant conceptions of biodiversity discussed in the previous chapters. So far, the preceding historical survey has placed the invention of biodiversity amongst the practical concerns of conservation biology, the ethical holism and genetic reductionism of sociobiology and the abstracted global prescriptions of neo-Malthusian demography. In order to complete the historical picture of this concept's becoming, this chapter argues that an additional series of struggles and transformations occurred with the migration of the concept to the global level, at the crossroads of sustainable development and international law.

I | CBD NEGOTIATIONS: NEW ACTORS AND TRAJECTORIES

The details of the CBD negotiations represent important points in charting the link between biodiversity and sustainable development. Most analyses have described the negotiations through the analytical unit of the state[3], poring over the reports, opinions, submissions and exchanges of this abstracted game of international *quid pro quo*, compartmentalized according to the simplistic rubric of a North-South divide. This

[3] As examined in Chapter 1

prolonged preoccupation with the rhetorical flourishes, the personal posturing and the variously coloured rooms of international meetings where deals are concluded actually serves to completely depoliticise the issues and disputes at hand, distancing policy from practice. Drawing a sovereign veil of state-derived legitimacy over abstract hierarchical bargains, in order to place them within a linear historical continuum of the 'law of biodiversity,' serves the purpose of comfortable legal closure, but ignores the history, complexity and malleability of the concept of biodiversity. The following analysis focuses on exceptions and incongruities, seeking to add a 'micro level' by unpacking the North and South 'camps' that supposedly fought over the wording of the text and the bargain of the CBD. In addition to states, the addition of new nonstate actors, vocabularies and discourses produced further conflicts regarding the meaning and use of the concept, as well as the resources themselves.

Therefore, this chapter argues that the global politics of biodiversity are not solely a politics of state compromise and quid pro quo bargaining. The signing of the CBD is not only a testament to the achievement of a balanced consensus bridging a North-South divide on the environmental issue of biodiversity. Under an international relations perspective, this divide would consist of a host of assumptions regarding the two blocs of the North and the South that have achieved almost mythical status, especially within UN discourse. As already discussed, the rampant homogenisation required for the operation of this binary systematisation leads to analyses of the CBD that concentrate exclusively at the macro level of states and/or groups of states[4]. This choice in analytical targets can yield obsessively detailed mappings – by way of official declarations, statements and opinions - of an

[4] This is characteristic of the doctrinal approach to international law, for example in Boyle; Bodansky, 'International Law and the Protection of Biological Diversity'; Tinker, 'Responsibility for Biological Diversity: Conservation under International Law'but is also prevalent in regulation approaches such as in Timothy Swanson, 'The Reliance of Northern Economies on Southern Biodiversity: Biodiversity as Information' (1996) 17 Ecological Economics 1; Timothy Swanson, 'Conserving Global Biological Diversity by Encouraging Alternative Development Paths: Can Development Co-exist with Diversity?' (1999) Biodiversity and Conservation 29

elaborately great game played by states. Like the *Dogs Playing Poker* series of paintings, a series of poker rounds are depicted with states - in the place of dogs - as anthropomorphized persons exhibiting certain behaviours condensed in the image of their leaders.

Specifically on biodiversity, Jayakumar Nayar and David Ong note that this macro-level explanation becomes a simplistic presentation of a 'politically and economically motivated tug-of-war between developed and developing countries' over biological resources [5], explained at the geopolitical level. The main question of control over resources is always tracked to the 'political and economic jockeying of states per se'[6]. The following history aims to deface the detailed map and destabilize the existing accounts of the legal origins of the CBD. The movement towards the CBD was not a rational progress towards a common goal by state actors, but a series of stabs in the dark, attempts by various state and nonstate actors at defining the form and content of a biodiversity treaty; sudden lunges towards establishing goals and ends that suited this new pathology of the South.

DISJOINTED BEGINNINGS: BIODIVERSITY AND SUSTAINABLE DEVELOPMENT AT UNEP 1987-1989

The event that formally initiated the transition of biodiversity from a North-centric problematisation to an issue for global governance was the 14th Session of UNEP's Governing Council, held in Nairobi in June 1987. Among the stream of decisions that constitute the regular output of any similar session in a UN agency, there was the brief, one-page Decision 14/26 on 'the rationalization of international conventions on biological diversity', which mandated the investigation, by an expert working group, of 'the

[5] R. Jayakumar Nayar and David Mohan Ong, 'Developing Countries, 'Development' and the Conservation of Biological Diversity' in Catherine Redgwell and Michael Bowman (eds), *International Law and the Conservation of Biological Diversity* (Kluwer Law International 1995) 244
[6] Ibid

desirability and possible form of an umbrella convention to rationalise current activities in this field; and to address other areas which might fall under such a convention'[7]. The practice to be rationalised was still nature conservation in general; the goal of the mandate appeared to refer to the rationalization of all existing environmental treaties under a single roof, following from the original aim of the unification of ecological concerns and conservation traditions by conservation biology. The initial proposal for negotiating what is known as an umbrella or framework treaty was formulated mainly by the US delegation[8]. It's clear from the preceding chapters that this was the state where the biological programme of biodiversity had made the most significant inroads. Most self-appointed biodiversity experts were American or worked at US universities. This UNEP decision represents concrete evidence that this community of interest and concern had been successful to some degree in seeking a legal and institutional structure to cement existing progress and propel the movement forward.

This low-key entry into the world of international treaties and global environmental politics is notable for being further overshadowed by another call for action for which most delegates had predominantly gathered at Nairobi[9]. This call was the Report of the World Commission on Environment and Development[10], which systematised and ushered in the idea of sustainable development. This report was endorsed by UNEP at the same session with some changes in language, but the main argument kept intact[11]. The Brundtland Report did indirectly address many of the concerns recognised within biodiversity discourse (conservation as negative activity, the rise of neoliberalism, the pathology of the South etc.), but accomplished this by building on the pre-existing WCS idea of 'living

[7] UNEP/GC Decision 14/26, (June 1987)
[8] Although the draft proposal for decision 14/26 was formally submitted by the representatives of Australia, Canada, the Netherlands, and the United States, in consultation with the IUCN
[9] This follows the account of the negotiations as set out in McConnell
[10] UNEP/GC Decision 14/4, (June 1987), UN Doc A/42/427 (Brundtland Report)
[11] Through the more moderately phrased *Environmental Perspective for the Year 2000 and Beyond*, see UNEP/GC Decision 14/13, (June 1987).

resource conservation'[12]. In the chapter titled 'Species and Ecosystems: Resources for Development', the Report proposed alterations in the focus and aims of the development project by establishing a material link between environment and development. In a death-knell to the centrality of conservation biology, environmental intervention was to distance itself 'from scientific and conservationist terms' and towards the notion of the global environmental problems as 'a leading economic and resource concern'[13]. This reform was driven by the need to present a 'powerful economic rationale... to bolster the ethical, aesthetic and scientific cases for preserving them'[14] ('them' refers to species and their genetic code in the chapter). This economic rationale underpinning changes in environmental policy was specifically linked to the possibility of two new environmental markets, for 'genetic material' and for ecosystem services.

More specifically, the Brudtland report included a 'priority proposal' to 'investigate the prospect of agreeing to a "Species Convention", similar in spirit and scope to the Law of the Sea Treaty'[15]. In light of such a proposal for adhering to the procedure for deriving a unified 'law of the sea', Decision 14/26 could be read as initiating the process of negotiation of a 'mega-treaty' to rationalise and unify disparate existing bilateral, regional and international arrangements and customary law. By that time, this idea of a 'Species Convention' seems almost like an anachronism, compared to the rest of the report, but most crucially placed next to the rising dominance of the neoliberal paradigm of deregulation, privatisation and liberalisation discussed in the previous chapter. It was an argument in favour of additional regulation and centralisation; that instead of having separate treaties for different species (e.g. whales, migratory birds) or specific harmful

[12] This was further elaborated in Chapter 2 above, see pages 50-54
[13] UN Doc A/42/427, 162
[14] UN Doc A/42/427, 149
[15] UN Doc A/42/427, 163

practices or endangered habitats (e.g. trade in wild animals, freshwater resources) those instruments should all be centralised under a new unified 'law of nature'.

Given the neoliberal character of the US administration in the late 1980s and the already clear US objection and non-ratification of the Law of the Sea Convention, this prospective image of the CBD as a centralising mechanism and a further extension of state regulation and binding public international law seemed particularly incongruous with official US policy. Yet the US-led proposal for a biodiversity treaty was completely congruous with this line of reasoning and endorsed by the Brundtland Report. This disparity is an example of the dangers of depicting whole states as atomised actors exhibiting a single behaviour. In effect, the US in the case of biodiversity, if viewed as a single actor, adopted a schizophrenic stance by actually initiating (and not simply acquiescing or contributing) a law-making process that contradicted its stated domestic and international policy in other fora. This 'behaviour' is further explored in a separate section below.

This somewhat disjointed notion of pursuing a conservation mega-treaty within a paradigm of sustainable development - that actually called for precisely the setting-aside of such lofty conservationist goals - resulted in large parts of CBD negotiations being consumed by discussions regarding the substantial funding arrangements required for the vast conservation undertakings implied by this purported unifying mega-treaty[16]. This mandate was relatively quickly clarified and divided - in the next UNEP governing council of 1989 – between the operational coordination of existing agreements and the adoption of further

[16]. See McConnell. This appears as perhaps a waste of time considering the rapid transformation of biodiversity into biocapital through the idea of genetic gold examined in the next chapter. As the idea of biocapital is progressively seen to fail due to underwhelming revenues and technological advances (synthetic biology), these arrangements for the transfer of technology, funds and other benefits have returned to prominence in the context of a quid pro quo, North-South bargaining.

framework convention specifically on the issue of biodiversity[17], removing some of the confusion. The subsequent distinction however did not remove from the negotiating agenda the contentious debate over the transfer of additional, publicly-administered funds from the North to the South, despite the fact that the idea of sustainable development did not call for increasing state spending on environmental protection.

Aside from the emphasis on funding, the disjointed echo of this mega-treaty that would never come to pass has also endured in environmental legal analyses even after the entry into force of a very different CBD. Boyle noted that the CBD 'represents an attempt... to internationalise, in a more comprehensive and inclusive way, the conservation and sustainable use of nature'[18], lamenting how previous agreements 'fall short of establishing a comprehensive global regime for the protection of nature, and largely leave untouched resources located wholly within a state's own national boundaries'[19]. These statements rather aptly described the never-realised mega-treaty of the original mandate, but fell rather short of understanding the role and functions of the actual CBD in force. In similar vein, Swanson argued that the CBD was supposed to achieve 'the centralised management of global land use planning'[20], and that it exists 'as a monument along the pathway of increasingly active intervention in the process of national development planning and decision-making'[21]. Again, such comments reflected the illusory treaty that never happened. The CBD was never agreed as or never morphed into such a centralised, comprehensive global regime, either for environmental protection or environmental management.

[17] UNEP/GC Decision 15/34 (1989)
[18] Boyle 33
[19] Ibid
[20] Swanson, 'Why is There a Biodiversity Convention? The International Interest in Centralized Development Planning' 308
[21] Ibid 207

Instead, various free-floating and pre-existing UN terms (genetic variability, living natural resources etc.) were finally compacted - along with academic and policy-oriented research on biodiversity - into a single hybrid and composite negotiation framework in the next UNEP Governing Council of 1989. This new framework now firmly linked biodiversity with sustainable development:

> 'For environmental, ethical, social, economic and technical reasons, the conservation and utilisation of biological diversity is more than ever essential for [...] sustainable development and [...] human survival'[22].

Also in 1989, the UN general assembly formally placed biological diversity under the mandate of the planned Rio Conference on Environment and Development of 1992[23]. Biodiversity had truly arrived at the international stage. In a highly symbolic manner, the life of biodiversity in the texts of international environmental law was intertwined and overshadowed by sustainable development from the outset, which seemed to address the concerns raised by biodiversity more coherently and more in tune with the neoliberal climate. Biodiversity was constructed as the lens through which nature and – with the assistance of neo-Malthusian demography – society could be viewed and valued differently. However, at the moment of its globalization, it was almost instantly superseded and beaten to the punch by sustainable development, the new grand rhetoric of the Earth's future.

TRANSFERING THE ECOLOGICAL DEBT AROUND: DEPOLITICISING BIODIVERSITY FOR THE PURPOSES OF TREATY NEGOTIATION

Even with the clarified post-1989 negotiating mandate, the abandonment of the conservationist perspective and the clear link-up with sustainable development, the

[22] UNEP/GC Decision 15/34, Nairobi, 1989, Preamble.
[23] A/RES/44/228

provisions and overall direction of the new treaty remained unclear heading into the 1990s. The 'official stance' and negotiating tactic of the South, astutely summarised by Nayar and Ong[24], construed any international interest in protecting biodiversity as another form of interventionist imperialism to be resisted. Concurrently however, biodiversity was also construed as an economic opportunity for Southern states:

> '[...] Their possession of the mainly untapped resource potential of species biodiversity within their territories presents them with an unrivalled opportunity to finally to gain what may euphemistically be called lost development ground [...] Access to these resources should therefore be jealously guarded, especially from would be competitors who lack such species biodiversity within their own jurisdictions'[25].

This stance can be directly linked to the input of neo-Malthusian demography into the formulation of biodiversity, as presented in Chapter 3. The location of both biodiversity and the human population causing its decline within Southern territory created leverage during the CBD negotiations. Although uncertainty over the precise economic contours of this potential never disappeared, securing jurisdiction over this 'untapped resource potential' became a primary objective. This negotiating stance transplanted biodiversity into yet another completely different context of Southern empowerment and self-determination through the principle of 'permanent sovereignty of all states over their natural resources and the establishment of the New International Economic Order'[26]. In effect, the South was seeking to:

[24] Nayar and Ong 236-41
[25] Ibid 237
[26] Ibid

> 'Receive the maximum possible returns for the use of the plant and animal species extracts that are initially found within their territory... which would entail a complete restructuring of the present world market system for pricing raw materials used in industrial production'[27].

Phrased in this format, the opportunity that the South recognised in biodiversity bears little connection to environmental concerns or the holistic integration of conservation traditions. It was simply a repayment plan for the 'ecological debt' owed by the North. The rarefied discussion of biodiversity in academic circles, as exemplified by the 1986 Forum, had nothing concrete to offer in this area of political economy, which required different forms of knowledge.

The socio-ecological notion of ecological debt is a long-standing problematisation of past environmental practice that guides alternative varieties of environmentalism seeking environmental justice, i.e. to emphasize the conditions of unjust and unequal exchange that underpin the global polity[28]. It argues that the hypothetical 'loan' of natural resources utilised to drive unprecedented economic growth in the North has never been - and was never meant - to be paid back. In the narrative of ecological debt, overexploitation replaces overpopulation on the pedestal as the primary cause of environmental degradation, thus having the effect of 'turning overpopulation on its head'[29]. In this way, the official stance of the South, while initially enabled by it, ultimately appeared to be rejecting the neo-Malthusian element of biodiversity, which characterised the South as both the source and the solution to the biodiversity crisis. While the South accepted that it held the key to biodiversity, it refused bear the manufactured responsibility for its degradation or loss.

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[27] Ibid
[28] Juan Martínez Alier, *The Environmentalism of the Poor : A Study of Ecological Conflicts and Valuation* (Edward Elgar Publishing 2002)
[29] John Barry, *Environment and Social Theory* (2nd edn, Routledge 2007) 233

In a more interesting fashion than this abstract game of assigning blame for biodiversity loss and degradation, the notion ecological debt is also employed by grassroots environmental movements located in the South against the irresponsible and exploitative practices of central governments of the South[30], and especially directed against the repression of local and indigenous communities. When these same states employ the rhetoric to claim additional funding in international fora, this internal, sub-national aspect is obviously missing, as can be observed in the quotes above. This disparity in the use of ecological debt again brings up the limits of the personification of state actors, as in the case, discussed above, of the US tabling the initial CBD proposal. In effect, the use of ecological debt and similar radical environmental critiques by Southern states serves to belittle them as negotiating tactics and neutralize their local political potential.

The CBD negotiations were exceptional in terms of depoliticisation. The continuous fight to secure jurisdiction and funding, while compatible with established practices of treaty law and international relations, ensured that any contentious issues raised by biodiversity as a pathology of the South, and the setting of the goals to be pursued in the process of governing this pathology, remain within a hierarchical and depoliticised (in terms of domestic perspectives) negotiation at state-level. This neutralisation of sensitive political questions leaves nothing other than the deployment of inflammatory rhetoric that turns negotiations into quasi-tort cases for attributing responsibility for environmental damage and sorting out financial compensation at the macro level of the state. Towards this misdirection, the addition to the 'law of biodiversity' of legal principles of good

[30] This crucial aspect is underlined for example in Ramachandra Guha, 'Radical American Environmentalism and Wilderness Preservation: A Third World Critique' (1989) 11 Environmental Ethics 71

neighbourliness and state responsibility for biodiversity loss[31] stemming from customary law would also subsequently play a significant role.

For a time during the late 1980s negotiation of the CBD then, treaty negotiation became a refuse for avoiding the political question of biodiversity. In effect, with the tacit acceptance of both the North[32] and the South,[33] the multiple critique of ecological debt is degraded into a negotiating game of dare; a gauge of the seriousness, commitment and intentions of the North regarding environmental issues[34]. In addition, these early negotiating tactics, by confirming that conservation had been left behind, emphasized the (political) economic potential of biodiversity to a degree unforeseen by proponents of biodiversity as an environmental movement.

THE IUCN PROPOSAL: EXPOSING THE NAIVETY OF ENVIRONMENTAL LAW

From the above, it is clear that the idea of the biodiversity treaty that became the CBD did not originate fully formed in the text of UNEP Decision 14/26 and was continuously altered during the negotiations. That does not mean that preparatory work on the issue only occurred in North American academic circles prior to 1987. Already in 1981, the Secretariat of the International Union for the Conservation of Nature (IUCN) was tasked with analysing the 'technical, legal, economic and financial matters relating to the conservation, accessibility and use of (genetic) resources, with a view to providing the basis

[31] Tinker, 'Responsibility for Biological Diversity: Conservation under International Law'
[32] Through neo-Malthusian demography, the North officially declared: the South is responsible for biodiversity loss due to overpopulation, but everyone's responsible going forward, as long as the South adopts proper environmental conservation and management methods.
[33] By twisting environmental justice, the official stance of the South declared: the North is responsible for biodiversity loss due to overexploitation, but everyone's responsible going forward, as long as the North adopts proper restitution methods.
[34] Although the South is argued to have engaged with international environmental fora in more constructive terms in recent years. See Najam

for an international arrangement'[35]. The result of this process was the first draft treaty on the topic conceived at the international level.

Put together in 1989 by IUCN, this set of draft articles was included in the CBD negotiations and formed the textual, if not conceptual, basis of the eventual treaty. Presenting yet another approach to the biodiversity problematization, it proposed for the first time at international level a legal framework with the primary aim of securing a balanced exchange between conservation and access/use of biological and genetic resources. While the notion that the North would be asked to fund conservation efforts in the South was only challenged in relation to the level of funding required, the underlying idea of this IUCN draft text was to sidestep that debate in its entirety. Instead, it suggested that by placing restrictions on free access to these resources a market would be created for them, where Northern states would pay for access, and not conservation. Conservation of these resources would be funded only by extension, by the economic value of the resources to be protected[36].

This draft text was formally brought to the CBD negotiating table in 1990[37], and promptly and roundly dismissed as 'naive'[38]. The draft treaty, deemed 'idealistic and mandatory in its approach' by the negotiators[39], failed to include any precise mechanisms for realising the economic potential of these resources and conceived the proposed biodiversity market as centrally regulated by the global regime instituted by the proposed treaty[40]. This should not have been surprising as, for example, the Netherlands Committee of the IUCN was still conceiving, in 1991, the whole Rio UNCED as 'a major step towards a global regime of the

[35] IUCN General Assembly resolution 15/10 (1981)
[36] John H. Barton, 'Biodiversity at Rio' (1992) 42 Bioscience 773, 773. On the general idea of 'selling nature' see McAfee
[37] In the First Meeting of the ad hoc Group of Legal and Technical Experts, Nairobi, November 1990.
[38] McConnell 26-7
[39] Ibid 26
[40] I.e. it was essentially another global environmental fund for biodiversity.

biosphere, which is both effective and fair'[41]. This conception was based on a firm belief in environmental protection as a common good that remained staunchly anti-neoliberal, going as far as positioning law against the market:

> 'The new system of world governance should be firmly rooted in law. The free market, successful as it may be in providing consumers with a certain range of goods and services, can never manage a collective good by its own'[42].

This spirit of promoting the rule of law as opposed to the rule of the market identified law with the law of the sovereign state. At its heart, it was an argument for more state regulation, promoting in situ conservation backed by international publicly-administered funding. It even attributed to biodiversity the legal status of common heritage of humankind, removing it from national jurisdiction. The few concessions given to market rationality, such as the idea of states paying for access instead of conservation, were not enough to divert that draft text from proceeding down the same path of a largely 'command-and-control' approach. Since biodiversity was legally considered common heritage under this draft treaty, states would have to pay into a global fund for managing biodiversity.

In the end, the draft treaty jarred with both the prevailing political economic climate and the stated official stances of the North and the South on biodiversity. Most articles appeared as a nostalgic anachronism and a nod to 1970s liberalism; an obsolete blueprint for environmental protection. As such, this preparatory work by IUCN was not warmly received by either negotiating bloc. The notion of legally defining biodiversity as common heritage contradicted with the principle of permanent sovereignty of natural resources that

[41] Bilderbeek
[42] Ibid

the South was seeking, while the constitution of an additional global environmental fund for a new conservation mega-treaty was rejected by Northern states already obliged to contribute to a sprawl of development and international aid funds, organisations and efforts.

This first consolidated treaty proposal simply failed to sufficiently incorporate the most updated version of the interplay between biology, economics and politics that had begun to characterise biodiversity as a political problematization. As the first concerted response of classical international environmental law, the IUCN proposal appeared slow in its uptake of the realignments and the multiple trajectories of the concept of biodiversity. Nevertheless, IUCN, despite being a nongovernmental organization and thus a nonstate actor, did contribute the basic legal structure for the treaty, built on twin pillars; while the IUCN draft understood them as conservation and access, the CBD would eventually interpret them as sustainable utilisation and access.

After the rejection of the IUCN text in 1990, the CBD ceased to be perceived as a unifying, rationalising instrument. It would not follow its language, mechanisms and objectives. As indeed the rest of the agreements signed at Rio in 1992, the CBD would constitute a break in the historical evolution of international environmental law and the setting off on a new trajectory of sustainable development, environmental managerialism and neoliberal subjectivity. Before that could occur however, more nonstate actors would become involved in the task of engaging with the political question of biodiversity, and in particular the setting of goals for governing the pathology of the South.

THE ENTRY OF THE WORLD BANK

The draft IUCN articles attempted to construct an international regime as a continuation or culmination of existing legal forms and mechanisms, envisaging the role of the CBD as a copy of existing treaties on a grander scale. Coming from the perspective of the outsider, the involvement of the Washington institutions, the World Bank and the International Monetary Fund (IMF), in biodiversity was much more aggressive and specific in terms of focusing on the governance of the South.

As noted in Chapter 3, these major global economic institutions had been 'purged' of all 'Keynesian' influences by 1982[43] and strictly adhered to the neoliberal rationalities of market liberalisation, deregulation and privatization in all development projects and loans administered. The World Bank had been one of the first global institutions to enthusiastically embrace sustainable development at least in terms of procedural standards and rhetoric[44]. The IMF, through the establishment of the Global Environmental Facility (GEF) in 1991, would also play a crucial role in early funding arrangements for the CBD. The engagement of the World Bank and the IMF ensured that the particular strand of neoliberal economics would be the language by which all problematisations of environment and development, including biodiversity, would be framed.

The first example of this engagement in the biodiversity field was the collaboration between the World Bank and leading environmental NGOs, which produced a jointly prepared policy report entitled *Conserving the World's Biological Diversity*[45]. Michael Flitner commented in 1995 that 'if Wilson's book is the founding document of the biodiversity discourse, this is the basic policy paper of the global resource managers'[46]. The report's starting position is that 'the problems of conserving biological diversity [...] cannot be

[43] Harvey, *A Brief History of Neoliberalism* 26
[44] Gillespie 12
[45] Jeffrey A. McNeely and others, *Conserving the World's Biological Diversity* (1990)
[46] Flitner 148

separated from the larger issues of social and economic development'[47]. The targets were no longer the biologists' old formulation of the 'populace and politicians'; for this endeavour to succeed biodiversity would have 'to compete for the attention of government and commercial decision-makers'[48] and 'to demonstrate in economic terms the contribution biological resources make to the countries' social and economic development[49]. Compared to previous iterations during the CBD negotiating period, this conception of biodiversity as resource was tightly bound to the economic grid of neoliberalism, as well as being much closer to the notion of biodiversity as a developmental opportunity contained within the official negotiating stance of Southern states.

The report represented a call to construct an additional form of combined biological, economic and managerial knowledge to be associated with the new goal of managing biodiversity as a resource. It was keen to point out the positive and enabling aspects of the new mentality being created. 'Enacting laws, closing access to resources and declaring additional protected areas' are characterised as 'defensive and often confrontational actions'[50]. Avoiding the polarisation inherent in traditional command-and-control ideas about how environmental law is to be implemented, the report argued for 'cooperative efforts to address the social and economic foundations of resource depletion'[51]. For the first time, it was explicitly recognised that the 'partners' in this new cooperative project are manifold: the national governments, development and environmental agencies, the non-governmental sector, but also the 'marketplace'[52], the private sector, as well as local and indigenous communities. Without excessive clarification or distributional/justice allusions,

[47] McNeely and others 11
[48] Ibid
[49] Ibid
[50] Ibid 12
[51] Ibid
[52] 'Conservation should be supported to the maximum extent possible through the marketplace, but the marketplace needs to be established through appropriate policies from the central government'. Ibid 15

it was declared that 'people form the foundation for the sustainable use of biological resources'[53].

The World Bank's hybrid model of market environmentalism was more acceptable than the IUCN's version of what essentially amounted to a continuation of a traditional 1970s liberal environmentalism. The political question was addressed directly for the first time and thus biodiversity was thus fully problematised as a governance issue; biological and economic rationalities put in the service of achieving the goal of sustainable development. Irrespective of whether 'this document is traditional World Bank policy trimmed up with some remarks on the value of traditional knowledge'[54], it did accurately set the direction that the globalisation of the biodiversity in the ensuing years; the general move away from state regulation and towards the market.

The explosion of interest in the concept of biodiversity in the late 80s and early 90s[55] brought about the involvement of new actors and new programmatic discourses that sought to specifically remake biodiversity as both a global environmental problematisation and a Southern opportunity. No longer the exclusive domain of conservation biologists, mission or crisis-oriented science or the environmental movement, it was now a field being populated by economists, lawyers and managers. Almost as haphazardly as an avalanche, biodiversity became an indispensable, common and self-evident term of environmental discourse, as think-tanks, international agencies and multinational corporations sought to take advantage and ownership of an emerging new regime of practices; to shape a new form of environmentalism.

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[53] Ibid 13
[54] Goldman 148
[55] Faith

When Wilson was declaring that 'biological diversity must be treated more seriously as a global resource, to be indexed, used and above all, preserved'[56], he did not envision that, once this call was answered, he would be the one left in the jungle to catalogue and measure, while others would dictate the policy terms of the use and conservation of this resource.

AN AMERICAN PROJECT DERAILED

As mentioned above, the first treaty proposal brought to the Nairobi Governing Council of 1987 was organized around the objective of the rationalization of the fragmented mosaic of existing conservation treaties. A number of alterations and reconfigurations of this objective occurred between 1987 and the signing of the treaty in 1992. Sustainable development became more prominent, the South adopted a negotiating stance that focused exclusively on funding arrangements and sidestepped internal conflict, IUCN came up with a twin-pillared legal structure for the treaty, and the World Bank presented a technical manual that regarded the management of biological and genetic resources as the economically rational and self-evident method for protecting against further loss of biodiversity. The apparent final straw for the US, as the initiator of the original treaty proposal came with the inclusion of biotechnology[57] into a legal instrument that had started out as a conversation treaty. In 1989 the negotiation working group was declaring that:

> 'The full implications of the new biotechnologies should be taken into account in any international legal instrument on the conservation of the biological diversity of the planet'[58].

[56] Wilson, *BioDiversity* 3
[57] The link between biotechnology and biodiversity is further examined in Chapter 5.
[58] UNEP/GC Decision 15/34, Nairobi, 1989, Preamble.

The explicit inclusion of biotechnology would open the door for a debate of intellectual property rights over this biotechnology. Such an extension plainly contradicted the concurrent effort of the US administration to achieve a World Trade Organisation (WTO) and to push for expansive and strictly enforced intellectual property regimes. This effort was concluded in 1995; by that time, the CBD had already been rejected by the US[59]. One of the reasons for this rejection was that the eventual text of the CBD[60] was interpreted as 'code for forced transfer of technology and which relieves developing countries of the burden of protecting the intellectual property rights of US biotechnology companies'[61]. The biotechnology industry was additionally worried that the treaty's lax treatment of intellectual property rights (i.e. lack of sui generis patent system) would allow the copying of inventions either through compulsory licensing systems or plain piracy. Other measures were also not warmly received. The proposed joint ventures in the South constituted 'anathema to some members of that industry who fear that those countries would expropriate the fruits of such research, just as some Middle East oil states expropriated American oil wells'[62]. Additional concerns over the control (voting rights) of the proposed financial mechanism were also expressed in the official US declaration made at UNCED[63]. This declaration outlined these multiple reasons for rejecting the CBD and lamented text that does not 'reflect well on the international treaty-making process in the environmental field', presaging the lament for the lost formalist culture of the international legal process[64].

This unpredicted turn in the CBD negotiations suggests that the primary proponent, at state level, of the concept of biodiversity had no control over it and was caught completely unaware of the directions others were taking the concept towards. Whatever the influence

[59] See the US declaration made at the UNEP Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, 22 May 1992, (1992) 31 ILM 848.
[60] And in particular Art. 16
[61] Coughlin 346
[62] Ibid
[63] See note 61 above
[64] See Chapter 1

of biodiversity's established community of interest and concern within the state, in its withdrawal from the process of formulating a global biodiversity regime, the US administration clearly regarded biotechnology and intellectual property rights as something that should not be considered part of biodiversity or indeed environmental law. However, that is not the whole story. If one pays close attention to the dates, it is evident that the US proposal, made in 1987, was based on an understanding of biodiversity as part of a mission-oriented biological programme and conservation mentality, which was already receding within biodiversity discourse, as evidenced by the reworking of the concept in *BioDiversity*.

As this short case illustrates, the consideration of the US as single, rational subject with a fixed view on biodiversity might constitute convenient shorthand for modelling state behaviour, but after a certain threshold it simply obfuscates any analysis that goes beyond the level of the state. This section as a whole sought to present more details regarding the involvement of various actors, predominantly from the North, in the final negotiation of the CBD, but also - through this presentation - expose some of the limitations of an exclusively macro, state-level analysis of the negotiating process.

II | SOUTHERN DETOURS AND BREAKS

The conception of a rational dialogue leading to state consensus on a common goal falls away when the CBD negotiations are examined in more detail. Both within the abstracted categories of the North and the South, there are many alternative and conflicting views on biodiversity, which clearly 'do not sit easily with the largely accepted paradigm governing the biodiversity debate between the developed and developing countries, which focuses on the economic benefits to be reaped when plant and animal extracts are utilised for the

manufacture of new products'[65]. From the above presentation of the CBD negotiations interspersed with various contributions from outside the formal UN negotiation process, it is clear that there actually existed multiple versions of a biodiversity treaty and regime, simply because there existed different responses to the political question of biodiversity. In fact, arguably the most influential contribution to the form and content of the CBD and the present biodiversity complex came from a small Southern state, and not from any of the major institutions and states involved in the official negotiations. This section analyses this unique contribution.

INBIO – A SOUTHERN INITIATIVE FOR ADAPTING THE BIODIVERSITY CONCEPT

Costa Rica established the *Instituto Nacional de Biodiversidad* (INBio) in 1989 to support research and sustainable utilisation of the country's considerable biodiversity. Costa Rica's favourable central America location and unique topography makes it a prominent biodiversity 'hotspot', where 'perhaps 5 per cent of the Earth's species' can be found[66]. In his critique of this initiative, David Takacs argues that this image of Costa Rica as an ecological paradise, a 'Canaan for biodiversity', was perpetuated by biologists for decades, ultimately raising both the media profile and the funding levels for research and conservation in the country. This image of a well-funded and well-managed eco-paradise was instrumental in the choice of location for this experiment or 'pilot project' in environmental management[67]. INBio was instituted on the 24th October 1989 as a private, not-for-profit institute and placed in charge of managing the country's considerable biodiversity reserves; this novel initiative was designed to both boost the country's existing environmental credentials and attract foreign (primarily US) investment in biodiversity. The

[65] Nayar and Ong 241
[66] Takacs 289
[67] Ibid

mantra of INBio became the oft-used catchphrase 'save it, know it, use it' - alternatively 'study it, value it, utilise it'[68].

The founders of INBio were searching for alternative ways to best manage the large parts of Costa Rica's territory that remained 'undeveloped', while sustaining the image of a unique eco-paradise. Since the linked problems of deforestation and industrial monoculture for export constituted the twin threats to the country's rich biodiversity, an effective alternative policy would have to begin by introducing an alternative form of land use, complete with a commodity and a production line that would compete and outperform existing intensive uses. With this objective in mind, the president of INBio, Rodrigo Gamez Lobo, elevated bioprospecting[69] to the level of 'another type of... very sophisticated agriculture'[70] producing a valuable - and commercially viable - genetic crop, and capable of competing effectively with any other agricultural or forestry product.

In order to put into practice the hypothesis that bioprospecting can become an industry to rival agriculture, INBio secured one of the first benefit sharing arrangements[71], signed with Merck & Co Inc. in October 1991. The agreed bioprospecting contract provided the pharmaceutical corporation with access to Costa Rica's biological and genetic resources (specifically samples from plants, insects and microorganisms collected from Costa Rica's protected forests) and the right to use those samples in the development of new patented pharmaceutical products, in exchange for an initial lump sum of approximately US$ 1

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[68] http://www.inbio.ac.cr/en/inbio/inb_queinbio.htm

[69] I.e. the search for commercially viable plants, genes and biochemicals. Bioprospecting is analysed from multiple perspectives in Chapters 5, 6 and 7.

[70] Quoted in Takacs 292

[71] Certainly more discussed and analysed, if not the first. For example, the US National Cancer Institute (NCI) concluded a 'source country agreement', called a Letter of Collection (LOC) with Madagascar in 1990, one year before the Merck-INBio contract. The agreement contained many of the terms now employed in access and benefit sharing agreements. For more information see James S. Miller, 'Impact of the Convention on Biological Diversity: The Lessons from Ten Years of Experience with Models of Equitable Sharing of Benefits' in Charles R. McManis (ed), *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (Earthscan 2007).

million (to cover start-up costs for the sample collection to be conducted by INBio and not Merck), as well as for future royalties from any commercial products that may arise from samples collected under this two year programme[72]. In this way, this contract was set up to provide funds and technology for the long term cataloguing of all Costa Rica's biodiversity, the operation of INBio itself, as well as more traditional conservation activities[73]. A significant number of technical aspects and terms from that bioprospecting contract would eventually carry over into the subsequent emergence of the ABS mechanisms within the CBD[74].

Aside from realising the economic potential of genetic resources, there was a second objective to the INBio programme, which was initially encapsulated in the term 'biocultural restoration'[75]. In its early formulations, this restorative axis of the project was somewhat unclear and plagued by the patronising narrative of 'tropical people [...] experiencing [...] intellectual deprivation represented by the upcoming obliteration of tropical wildlands'[76]. INBio clarified this aspect of the programme by additionally setting out to affect more generally the way Costa Ricans view nature in line with the norms and values expressed through the concept of biodiversity itself. It argued that 'biodiversity must again be a grand intellectual resource for rural tropical people, who otherwise lack intellectual challenges and cultural opportunities'[77].

The second strategic aim concerned more broadly the construction of an alternate form of development by adapting the general bioeconomic understanding of biodiversity of the

[72] Exact percentage initially kept secret as part of the confidential agreement, but later verified as 5%
[73] 10% of the initial start-up fee and 50% of all royalties would go into conservation and protection. See Thomas Eisner and Elizabeth A Beiring, 'Biotic Exploration Fund: Protecting Biodiversity through Chemical Prospecting' (1994) 44 Bioscience 95, 97
[74] More detailed analysis of ABS to follow in Chapter 6.
[75] Daniel H. Janzen, 'Tropical Ecological and Biocultural Restoration' (1988) 239 Science 243
[76] Ibid 244
[77] Takacs

World Bank to a Southern context, without deviating from the orthodoxy of neoliberal capitalism. This new form would be associated with the particular resource of biodiversity, much like what certain states accomplished with oil[78]; a self-produced rationality of governing and code of conduct tailored for Costa Rican society. It is worthwhile to note that although it was linked to the environmentalist concerns, the two main objectives of the INBio programme focused on the political economy of Costa Rican society and on altering the relation between people and resources; in short, on the production of a Costa Rican subjectivity.

Costa Rica chose a unique path of establishing INBio over the imposition of environmental laws regarding the conservation and sustainable use of biodiversity. INBio did privatise in part biodiversity as genetic resources by 'packaging' them as genetic information and selling them off, but it had no authority to sell off the public land where the biodiversity reserves were located. It also sought to educate as to the full potential of biodiversity, to work through the capacity of individuals to question and problematise their own conduct by reference to nature. Deforestation or industrial agriculture were not agent-less conducts simply denounced as inimical to lofty environmentalist ideals or amorphous objects of regulation needing to be reined in. Costa Rican society and individuals engaging in those practices were to problematise them as directly detrimental to their livelihood and developmental aspirations, but even more crucially to their aspirations of a modern mode of living in line with the West[79].

[78] Michael Watts, 'Development and Governmentality' 24 Singapore Journal of Tropical Geography 6The details of this formulation will be further analysed in chapter 5 on genetic gold

[79] On similar processes of subjectivity self-formation in different regions see Arun Agrawal, *Environmentality: Technologies of Government and the Making of Subjects* (Duke University Press 2005); Tania Murray Li, *The Will to Improve: Governmentality, Development and the Practice of Politics* (Duke University Press 2007)

This approach, which relies less on legal measures and more on training and incentivisation, is nowhere more apparent than in the practice of training so-called 'parataxonomists – former bartenders, housewives, preachers, poachers, park guards'[80] to collect and sort the plant and organic samples required, initially for fulfilling the Merck contract. Takacs, through first-hand interviews, describes new ways of living that have emerged around the role and knowledge of the parataxonomist[81]. By this training of hundreds of taxonomists, the institute's vision was further disseminated to ever more distant and rural localities and communities.

The politics of biodiversity represented in INBio's strategy and projects swiftly became a source of increased attention from many different quarters and remain relevant to the present day. The contract with Merck 'was widely hailed as the example of what the Convention would do'[82]; as a 'watershed' in the history of bioprospecting[83]. A note on the Merck-INBio published shortly after the entry into force of the CBD underlines how 'the cooperative spirit that encompasses [...] the transaction stands in stark contrast to the divisiveness between North and South which has characterized the negotiations on the Convention'[84].

As a prototype institution, INBio also fitted very well within the perceived wisdom of neoliberal doctrine regarding the roles of the state and the market. The institution of INBio signified the deregulation of biodiversity conservation and the privatisation of certain genetic resources, further enabling their sale in global markets and recognising the business contract concluded between two private parties as a legitimate instrument of environmental

[80] Takacs 293
[81] Ibid 296-300
[82] Coughlin 356
[83] See Reid and others 1
[84] Coughlin 357

law and policy. In the pursuit of a Western modernity dictated by ideals of sustainable development and the neoliberal agenda, Costa Rica had located a willing business partner, in the shape of a large multinational corporation, willing to actually pay for access to a resource that was previously considered a worthless, vague mixture of common heritage and common property. This success created expectations that others would follow, thus solidifying the creation of new global markets for genetic resources.

The novelty of the INBio programme rested on the fact that it was being constructed and run in a Southern country, away from what had been the centres of environmental law and policy up to that point (academia, international treaty system, the large environmental Northern NGOs). It was advertised as a Southern state taking control of its natural resources, participating in global markets, and improving both its welfare and environment – achieving sustainable development by following down its own particular path. In direct contrast to the CBD, the endorsement by the biotechnology industry of the US[85] further distinguished it as a pragmatic, practical, business oriented and biotech industry-friendly approach.

INBio was particularly different from previous idealist models revolving around the image of the activist, ecologically-minded scientist trying his hand at lobbying for stricter environmental laws, or the top-down bargaining between Northern and Southern blocs at international fora. It should be noted however that the private emphasis of INBio also represented a challenge to the official negotiating stance of the South and its stressing of the long-standing state-centric principle of permanent sovereignty over natural resources and demands for a new regulation of the global economy[86]. In short, the constitution of INBio created fissures and gaps, both in the North - where the US administration

[85] Ibid
[86] As developed in the New International Economic Order framework in the 70s, see Nayar and Ong

enthusiastically embraced and supported the initiative while the same time rejecting the CBD - and the South, where the market and neoliberal credentials of the institute jarred with more radical varieties of environmentalism that defined cultural diversity and restoration in terms of justice and political, rather than market, participation.

THE IMPACT OF INBIO

However, the somewhat rosy image of a Southern-led initiative 'outperforming' an international environmental treaty has evaporated on closer inspection and over the years. For a start, INBio has been thoroughly influenced by the ideas and work of American biologist Daniel H. Janzen, who was personally involved in its inception and is still very influential in its operation. Critics, such as Takacs, have been wary of this 'American influence', as well as its conspirational concealment:

> '[...] His stamp is ineradicable. His language and ideas infiltrate the recesses of INBio. He designs and teaches the parataxonomists courses. He confesses to being INBio's chief cheerleader and fundraiser – its link to the outside world, upon which INBio depends in its inchoate form for its operating budget [...] He has also kept himself somewhat under wraps in Costa Rica... most Costa Ricans, including newspaper reporters covering INBio, have never heard of Dan Janzen'[87].

The connections with the early, biological 'community of interest and concern' built around biodiversity do not stop here. The idea of prospecting for bioactive chemicals as a funding mechanism for conservation was central to the pioneering work of Thomas Eisner in the field of chemical ecology[88]. It was Eisner that organised the meeting, at Cornell

[87] Takacs 291

[88] Thomas Eisner, 'Chemical Prospecting: A Proposal for Action' in F.H. Bormann and S.R. Kellert (eds), *Ecology, Economics, Ethics: The Broken Circle* (Yale University Press 1991); Thomas Eisner, 'Prospecting for

University in October 1990, which brought Janzen and Gamez from INBio at the same table with a Merck representative, resulting in the well-known agreement[89]. To this day, the international advisory board of INBio contains such luminaries of biodiversity discourse as Edward Wilson and Thomas Lovejoy.

Such an amount of influence and guidance from specific strands of biological and environmentalist thought originating within American academia raise the question of the extent to which INBio represents a South-driven adaptation that can potentially obviate the need for the multilateral CBD, as hinted at by commentators at the time[90]. Additionally, the utilitarian and managerial rationality at play in this social experiment indicate a close relation to the biodiversity policies and measures proposed by the World Bank. Therefore, INBio is a hybrid institution from multiple perspectives. The specific proposition that a commercial contract can constitute an effective and sufficient tool for achieving environmental ends was undoubtedly a neoliberal challenge to the established forms, practices and principles of environmental law. Despite these caveats, that Merck-INBio contract did represent a tangible example of the shift from command-and-control environmental legislation to the more flexible era of sustainable development. A small Costa Rican institution opened up new fields and paths for legal discourse and undoubtedly influenced ideas of participatory development with its implementation of a hybrid public/private partnership for the environment.

In the early years of the CBD's operation in the mid to late 1990s, with the juggernaut of globalisation at its apex before Seattle and Doha, it seemed that the Merck-INBio contract

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Nature's Chemical Riches' [1990] 6 Issues in Science and Technology 31; Thomas Eisner, 'Chemical Prospecting: A Global Imperative' [1994] 138 Proceedings of the American Philosophical Society 385; Eisner and Beiring, 'Biotic Exploration Fund: Protecting Biodiversity through Chemical Prospecting'

[89] Eisner, 'Chemical Prospecting: A Global Imperative' 387

[90] Or at least by the US biotechnology industry, as stated in Coughlin 341

would dominate as a blueprint for achieving sustainable development in biodiversity-rich states. This agreement legitimised and condensed existing bioprospecting practices into a single formula of market exchange[91], which was further endorsed by the World Bank[92]. Major components of the bioprospecting contract (e.g. informed consent, benefit sharing) are subsequently present in the legal framework of the CBD. But differences remained: INBio was a mechanism created by market rationalities, while the CBD was a state-centric initiative attempting to adjust to the rule of the market.

CULTURAL DIVERSITY AND BIOPIRACY: A CHALLENGE AGAINST BOTH THE STATE AND THE MARKET

The derailment of the initial US treaty proposal and the creation of INBio already suggest that neither the North nor the South were the homogeneous entities and coherent negotiating groups depicted in environmental law literature. They continued to be abstractions crisscrossed by a number of dominant and resistant discourses seeking control of biodiversity. The South, containing the majority of population and states, is an especially heterogeneous group. Despite its unforeseen innovation and impact, INBio was rather close to the official negotiating stances and understandings of biodiversity. More radical resistance was organised by two different forms of civil society organisations forming a collaborative, but still fairly heterogeneous biopiracy movement[93]. This movement did coalesce into yet another on-going project for constructing alternatives to state-led development, but in this case the alternatives were challenging rather than embracing neoliberal orthodoxy.

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[91] This formula will be further analysed in ABS chapter.
[92] McNeely and others
[93] Hanne Svarstad, 'Analysing Conservation-Development Discourses: The Story of a Biopiracy Narrative' (2002) 1 Forum for Development Studies 63 72-5

First, various grassroots movements, farmers' associations and indigenous groups were organised into networks, such as the very active Third World Network[94], directed by Martin Khor and located in Penang. Their narrative was further popularised and disseminated widely by the work of Indian activist, social ecologist and feminist Vandana Shiva. The starting point has been the highlighting of the 'bio-imperialism'[95] and 'green orientalism'[96] inherent in biodiversity and Western-produced environmentalism in general. Building on Said's ground-breaking work[97], this alternative perspective considered the polarising binary between North, as the source of knowledge, money and innovative environmental solutions, and South, as the source of raw material and the locus of poverty and environmental problems, and the resultant great game played by states based on these perceptions of each other as products of Western environmentalism's construction of the 'Other', i.e. a Northern understanding of the South's role:

> 'For green orientalists, as for their colonial forebears, all real knowledge, consciousness and power rest with the North. In environmental matters, as in others, they assume it is up to the North not only to explain, inspire and lead the South, but also to power it and teach it about itself'[98].

The objective then becomes to resist and recast this imagining of the South constructed by Western environmentalism, implicitly accepted even by Southern states and their drive to profit from biodiversity.

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[94] http://www.twnside.org.sg/
[95] Vandana Shiva, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology* (Zed Books 1993) and Vandana Shiva, 'Biodiversity, Biotechnology and Profit: The Need for a Peoples' Plan to Protect Biological Diversity' (1990) 20 The Ecologist 44
[96] Larry Lohmann, 'Green Orientalism' (1993) 23 The Ecologist 202
[97] Edward W. Said, *Orientalism* (Penguin 1985)
[98] Lohmann 203

In this field, the work of Vandana Shiva, representative and constitutive of the narrative of these Southern networks, is central for an active refusal the pathology of the South constructed within the confines of the biodiversity discourse, and for proposing alternative environmental problematisations. The major element in this reversal is a switch in focus from the modalities and terms by which the South is to 'supply raw materials for the North's next industrial revolution'[99], to the importance of biodiversity for both the basic livelihood and general mode of living of local and indigenous communities[100].

This duality in the argument stresses the link between biological and cultural diversity. It goes beyond the issues of subsistence and direct dependency on surrounding plants and animals, which inevitably cast local societies in the role of the rural poor. It articulates an environmental subjectivity that encapsulates and fosters varied understandings and uses of biodiversity, which will contribute in a mutually reinforcing way[101] to the overall strategic aim of preserving it:

> 'Most communities that depend on intact nature are well aware of the importance of conserving natural diversity. In fact, such communities are far superior to modern industrial societies in terms of their relationship with nature, which is based on respect and a sense of community, instead of just viewing it as resources'[102].

It is important to observe that such calls resist the neoliberal notion of individual empowerment and economic growth, in favour of what is argued as a more stable, collective mentality symbolised by the idea of community; or more precisely the idea that

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[99] Vandana Shiva quoted in Tinker, 'Responsibility for Biological Diversity: Conservation under International Law'
[100] Vandana Shiva and others, *Biodiversity: Social and Ecological Perspectives* (Zed Books 1991)
[101] Nayar and Ong 342
[102] Shiva and others, *Biodiversity: Social and Ecological Perspectives* 31

there should be multiple communities and biodiversities (cultural diversity), not the endless replication of the same form. Therefore, there is a rejection of the post-war, state-centric drive to 'spread' development, but in the case of these transnational movements this is coupled with an additional rejection of the neoliberal, INBio-style models of market participation and individual empowerment that were put forward as improvements upon the failure of the old development project.

Leaving aside from the obvious romantic and pastoral themes of these critiques, the emphasis on the role of cultural diversity, which has been acknowledged in international environmental law[103], nevertheless introduces the concrete human element of the local community into a discourse that had been fixated with the image of the rainforests, a reductionist view of the famed biodiversity hotspots as essentially virgin forests devoid of human presence; the last remaining theatres where the great play of the evolution of nature still takes place. It is hard to counteract such a deep-rooted orientalism, since the obsession with this particular image of the tropics can be detected in all the texts that have influenced the evolution of the biodiversity concept from the very first beginnings within conservation biology[104]. Under the formulation of these transnational networks however, the biodiversity reserves are not a terra incognita explored by experts and parataxonomists for financial gain, but lived-in, everyday spaces supporting a different mode of living – often at odds with the very Western lifestyle that spawned environmentalism in the first place.

Following on from this critique, Shiva and similarly-minded critics also directed the debate to the what constituted for them the core issue of agricultural practices, and namely the increasing contribution to biodiversity loss of export-led, industrial agricultural practices, such as the Green Revolution that have spread across the continents of the South since the

[103] Bilderbeek 9-11
[104] See Chapter 2

1960s[105]. Shiva maintains that, by prioritising the achievement of ever higher yields at all costs, without attention to the relation of agriculture to surrounding ecosystems and communities, such projects essentially replace traditional multi-crop agro-forestry systems with a limited number of select and genetically uniform crops. It is a type of agriculture actually promotes uniformity instead of diversity[106], thus standing firmly against the environmental concerns collected under the umbrella of biodiversity.

Instead of the vague and global problematisation of human encroachment or overpopulation, this discourse prioritises attention to the actual and real localities of the South where the loss of biodiversity is taking place. According to this critique, such loss is increasing not because a mindless mob of poverty-stricken people don't know any better than to eat, burn and consume their way through the landscape like zombies in a film, but because the pressure to produce for export entails the clearing of forests and the spread of fields of industrially produced monocultures.

These arguments are linked with the long-standing critique of the Green Revolution, of the general impact of industrial agriculture on the South and the privatisation of nature. This is articulated by a different set of Europe and US-based organisations, such as RAFI[107] (now the Etc group) and GRAIN[108], not considered a core part of mainstream environmentalism. The emphasis here is on the process by which seed exchange and crop development have become commercial activities with the abandonment of centuries-old

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[105] Shiva, 'Biodiversity, Biotechnology and Profit: The Need for a Peoples' Plan to Protect Biological Diversity' 44, 44.
[106] Shiva and others, *Biodiversity: Social and Ecological Perspectives* 10 and Shiva, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*
[107] Established in 1979 and based in the US and, the Rural Advancement Foundation International changed its name to Action Group on Erosion, Technology and Concentration (the ETC group) in 2001. It has recognised consultative status by the CBD, FAO and other international organisations [http://www.etcgroup.org/]
[108] Established in 1990 and based in Europe, Genetic Resources Action International, focuses on issues of plant genetic diversity. [http://www.grain.org/about/?org]

common property regimes[109]. While predating the invention of biodiversity, it is within this critique that the theft of predominantly plant genetic resources through intellectual property regimes was given the name biopiracy, as a counterpoint to the positive image attributed to bioprospecting[110]. This was later adapted within the context of the movement against the WTO enforcement of strong intellectual property regimes[111].

If we were to condense these two strands of critique into a single proposal for an alternative developmental model, a number of interesting rejections of previous developmental wisdom materialise: (i) it is a model anchored on the collective welfare of the local community, as opposed to state-led development linked to economic growth, (ii) it opposes the notion of biodiversity as raw material to which only financial investment and techno-scientific application can add value. To apprehend biodiversity one has to examine the traditional production methods, interactions and uses of nature developed by these communities in balance with the local environment, and (iii) participation in global markets does not matter as much as maintaining the small innovations introduced in the context of small-scale localised, subsistence economies[112]. Shiva even argues against the differentiation between the economic sectors of consumption and production and the environmental concern for conservation, because this differentiation is borrowed from the social organisation of Northern states[113]. The lack of such separation of sectors in certain rural societies is precisely what contributes to the external image of these rural societies as poor, lacking in knowledge, money and overall capacity to manage biodiversity appropriately, in need of 'care' and assistance.

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[109] Jack R. Kloppenburg (ed) *Seeds and Sovereignty: The Use and Control of Plant Genetic Resources* (Duke University Press 1988)
[110] Pat Mooney, 'Why We Call it Biopiracy' in Hanne Svarstad and Shivcharn S. Dhillion (eds), *Responding to Bioprospecting: From Biodiversity in the South to Medicines in the North* (Spartacus 2000)
[111] For example Vandana Shiva, *Biopiracy: the Plunder of Nature and Knowledge* (Green Books 1998)
[112] Shiva and others, *Biodiversity: Social and Ecological Perspectives 21-24*; Shiva, 'Biodiversity, Biotechnology and Profit: The Need for a Peoples' Plan to Protect Biological Diversity'
[113] Shiva and others, *Biodiversity: Social and Ecological Perspectives*

If considered as constitutive of a rationality of government, this cultural diversity/biopiracy critique stands apart from everything else. It opposes the centralising tendencies of state development, the globalising tendencies of the neoliberal orthodoxy, as well as the managerial rationalities propagated by the altered market environmentalism of the World Bank after its encounter with both development and neoliberalism. In terms of biodiversity, the critique does not shy away from exposing that industrial agricultural production destroys both biological and cultural diversity[114], which is often ignored in a discourse focusing on wild biodiversity. Or in other words, it exposes the paradox of a regime seeking diversity in nature, but requiring uniformity in society.

In terms of methods and techniques of governing however, this model of government is strikingly similar to the INBio model. They are both concerned with devising the optimum ways to govern through the capacities and actions of the governed themselves, i.e. for environmental subjects to conduct themselves. However, only in the cultural diversity model are 'counter-conducts' constructed[115] - in farmers' associations, women's rights, and indigenous movements - 'whose objective is a different form of conduct, that is to say: wanting to be conducted differently, by other leaders [...], towards other objectives and forms of salvation, and through other procedures and methods'[116]. In their articulations, the biopiracy and related transnational networks do not revolt against the notion that biodiversity is either valuable or endangered per se, but they commence with a different valuation and problematisation of biodiversity; and they seek to be able to formulate their own methods of being conducted, of being governed, apropos or in the name of biodiversity. These movements were able to contend in earnest with the political question

[114] Ibid 9-12
[115] Rose, *Powers of Freedom: Reframing Political Thought*
[116] Golder and Fitzpatrick 194-195

of biodiversity, thus managing to feed its problematisation into a broader narrative that emphasises the problems and injustices perpetuated on local and indigenous communities by both national administrations and international agencies and organisations.

Subsequent changes in the legal text and the operation of the CBD (emphasis on local communities, the role of agricultural biodiversity, the protection of traditional knowledge etc.) can be attributed at least in part to these challenges posed by the cultural diversity/biopiracy critique. For example, the legal provision regarding the protection of traditional communities and knowledge was buried within what was initially considered a crucial treaty article regarding in situ conservation of biodiversity[117], but the subsequent attention to that paragraph eclipsed the rest of the article[118].

III | CONSTRUCTING THE POLITICS OF BIODIVERSITY

This chapter illustrates that during the negotiation and early operation of the CBD, multiple ideas of biodiversity and responses to its political question were being advanced at a variety of levels. When it came to the integration of this question of the governance of the South into existing development theories mechanisms, biodiversity became further entangled within the construction of actual alternatives to state-led development. Not all participants, either in the North or in the South, were satisfied with the results of this entanglement. Fissures materialised in both standard negotiating blocks of the North and the South. These fissures were created by the different methods of adapting biodiversity to the highly contested rise of neoliberalism and the internal conflict within Southern states.
Of particular interest is the widening gap between the central authorities seeking to fence biodiversity off as the successor resource of oil in order to steal some steps up the

[117] CBD, Art. 8(j).
[118] E.g. a separate working group for the implementation of article 8(j) has been set up. For more information see communities chapter.

developmental ladder and the transnational networks working against both state and market. Despite this, the chapter illustrates that the whole endeavour to negotiate the CBD was not simply a fight over the control of another set of valuable natural resources, but a debate over the new object of governing (the South) and the goals to be pursued for this new object; essentially part of the development debate regarding the future of Southern societies within a globalised world.

The last three chapters presented a history of biodiversity as a conceptual invention, novel conservation mentality, biological programme for social reform, environmental movement, political problematization and emerging development model. The purpose of this first part of the thesis was to locate and examine the history of biodiversity during the period leading to the adoption of the CBD. This history manifests as a series of instances where state and nonstate actors attempt to wrest control, to redefine biodiversity in their own image, perspective and objectives. The imprint of each instance can be found within biodiversity, but no single event exerts total control on the complex.

By rereading the same chronological period, i.e. roughly between 1980 (publication of *Conservation Biology*) and 1992 (entry into force of the CBD), but from a different perspective in each chapter, the hybrid and heterogeneous character of biodiversity is established; an almost haphazard formulation always borne of different forms of thought with their own histories, analytical tools and problematising foci. The common element is the insistent political questioning that can be induced through biodiversity. Through its sociobiological descent, the essentialism of biodiversity as a natural category is used to shape social practice through the cyclical contingency between the natural and the normal. From the neo-Malthusian perspective, there is insistent call to focus on the inherent pathology of human population itself as an environmental problem, transforming the

South as the primary cause of the problem of biodiversity loss. To counter this bleak assessment, the South is offered a developmental promise, consigning ecological debt to the discursive margins, an inconvenient past for only radicals to bring up. Finally, the dominance of the neoliberal economic grid is observed in the immanence of the economic rationalities of managerialism, market exchange and financialisation that have been disseminated across every facet of biodiversity law and policy.

Yet, in opposition to these dominant conceptions of biodiversity, paths of resistance and sites for the construction of Southern alternatives to imposed orthodoxies consistently remain an important part of biodiversity practices. In Part II of the thesis, it is argued that all these contributions amount to a mode or rationality of governance or governing in a wide sense, which is termed the biodiversity complex.

PART II: COMPLEX

CHAPTER 5
VECTORS OF BIODIVERSITY: ASSEMBLING THE BIODIVERSITY COMPLEX

You think you are seeing one of these enormous contraptions, full of impossible cog wheels, of conveyor belts that don't convey anything and of grimacing gears: all these things that "don't work" end up making "it" work.[1]

If the examination of its formative years teaches us anything, it is the inherent heterogeneity of the concept of biodiversity. Floating between strands of scientific enquiry and environmental politics, biodiversity has no essential truth to be grasped at the beginning, to be rediscovered in a single locus of origin. Its history consists of breaks and discontinuity, claims and counter-claims. In the preceding chapters, biodiversity has made appearances as a conservation standard, an organizing principle of ecology or environmental law, a popularization of the theory on the interdependence of life, a master narrative for rationalizing all existing ecological traditions, a sociobiological 'total' ethic of genetic determinism and reductionism, an aesthetic of rainforest wilderness, a human population control programme, a suitably neoliberal framework for managing a new kind of natural resource, or a Southern-led development model.

At this crucial juncture in the analysis, the facile resolution of these multiple vectors by resort to legal closure and certainty must be resisted. Presenting the CBD as the complete collection and rationalization of the above heterogeneity into a single, coherent and unified whole underpinned by the authority of law would turn the history of biodiversity

[1] Michel Foucault, 'Lemon and Milk' in James D. Faubion (ed), *Power: Essential Worls of M Foucault 1954-1984, Vol 3* (Penguin 2002)

undertaken so far into 'more of the same'; a linear progress justifying the present inevitability. The CBD is not the context that codified all discourses into a uniform legal language, thus methodically preparing the conceptual and institutional ground for a centralised global regulatory regime. Any such regime implies closure, a coherent and homogeneous effort to combat a pre-defined environmental problem. By extension, any such definition of biodiversity is a static concept to be added to the existing compartmentalized typology, a narrowing, a reduction, and an illustration of one aspect of the whole leaving numerous blind spots behind. These vectors constitute the multiple knowledge, forms, objects, and ends associated with biodiversity. Imprints, traces and hints of these lines can be found to the present day.

In order to proceed with the analysis of the present situation for biodiversity, the key point then becomes to apprehend the current heterogeneous functions of these vectors, without homogenizing them under the sign of the legal definition of biodiversity. Therefore, what is required for this task is a concept that would enable the transition between the historical to the functional analysis, or more precisely incorporate all the discursive and non-discursive elements of biodiversity - without eliminating them - into the analytical grid of power as set out in the first chapter of the thesis.

I | THE BIODIVERSITY COMPLEX

For this purpose, the wider term biodiversity complex (or biocomplex) is introduced. Relying on Foucault's rather loosely defined concept of the *dispositif* or apparatus[2], the biodiversity complex is similarly understood primarily as a 'thoroughly heterogeneous ensemble'[3] or as 'a tangle, a multi-linear ensemble'[4]. It consists of the discourses,

[2] Giorgio Agamben, *What is an Apparatus and Other Essays* (Stanford University Press 2009); Deleuze; Foucault, 'The Confession of the Flesh'
[3] Foucault, 'The Confession of the Flesh' 194

institutions, legal measures, policy reports, scientific propositions, ethical claims associated with biodiversity. In this sense, the social construction or invention of biodiversity outlined previously is a history of its construction as an apparatus. Deleuze's attribution of a multi-linear character to the apparatus is phrased thus:

> 'It is composed of lines, each having a different nature. And the lines in the apparatus do not outline or surround systems which are each homogeneous in their own right […] but follow directions, trace balances which area always off balance, now drawing together then distancing themselves from one another. Each line is broken and subject to changes in direction, bifurcating and forked, and subject to drifting'[5].

The complex is thus the network[6] or system of relations between these heterogeneous lines or elements. To assist in identifying and mapping the connections, the basic grouping into objects, ends, knowledge and modes is employed. Crucially, this complex or apparatus is not an aimless ensemble of disparate elements, but 'has as its major function at a given historical moment that of responding to an urgent need'[7]. It is thus driven by a 'strategic imperative'[8], which indicates 'a rational and concrete intervention in the relations of forces, either so as to develop them in a particular direction, or to block them, to stabilize them, and to utilize them'[9]. Through the notion of the apparatus, it is thus possible to elaborate 'a set of practices and mechanisms […] that aim to face an urgent need and to obtain an effect that is more or less immediate'[10]. In this broad sense, an apparatus is a device for

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[4] Deleuze 159
[5] Ibid
[6] Agamben 3
[7] Foucault, 'The Confession of the Flesh' 195
[8] Ibid
[9] Foucault, 'The Confession of the Flesh' 196
[10] Agamben 8

governing, existing within relations of productive power. That is to say, the subject to be governed is produced by the apparatus itself.

Paraphrasing Foucault, the biodiversity complex 'is neither a ghetto not a fortress; it is fragile, permeable, and transparent, in spite of its fogs'[11]. It is neither an *a priori* ecocentric nor an anthropocentric regime according to the well-rehearsed binary of environmental ethics. It is characterised precisely by a lack of the coherence and homogeneity inherently valued by and in law. Its strategic imperative is not to conserve, preserve or protect biodiversity; nor to further impose its utilisation, exploitation or degradation. Instead, the biocomplex produces environmental subjects, i.e. subjects capable of evaluating which of the above conducts to engage in and promote. This occurs, in Rose and Valverde's colourful phrase, under the watchful eye of a 'whole variety of petty judges'[12], in the shape of managers, techno-scientific experts and administrators (e.g. World Bank), but that should not be taken as an inference solely to effects of normalization and imposition. Alternative modes of governing or resisting government can be articulated non-hierarchically and from within the various lines of the complex[13]. As Giorgio Agamben interprets it:

> 'The "term" apparatus designates […] a pure activity of governing devoid of any foundation in being. This is the reason why apparatuses must always imply a process of subjectification, that is to say, they must produce their subject'[14].

Based on the Foucaultian conception of productive power adapted for this thesis[15], the emergence of this biodiversity complex is witnessed by general transformations in the

[11] Foucault, 'Lemon and Milk' 436
[12] Rose and Valverde, 'Governed by Law?'
[13] Such as INBio, cultural diversity models and biopiracy narratives examined in Chapter 4
[14] Agamben 11

object or target of governance, the ends and goals sought by governing, the requisite knowledge to perceive these objects and articulate these goals, and finally in the forms and modes of governing employed to achieve these goals. The chapter establishes the basic elements of these transformations to lay the groundwork for the more specialized case studies in Chapters 6 and 7.

II | TRANSFORMATIONS IN OBJECTS AND GOALS

The 20002 Cancun Declaration of the LMMC[16], despite the short-lived and transient nature of that particular group of states, represents an instructive starting point for understanding these transformations. By the time of that declaration, the CBD had been in force for approximately ten years, ostensibly pursuing the triple goal of conservation, sustainable use, and equitable benefit sharing. Yet these Latin American, African and Asian states, holders – their own term - of nearly 70% of the planet's biological diversity, offered through their declaration a different focus and approach to the problematization of biodiversity. In this approach, conservation and sustainable use were by-products of the pursuit of other primary goals, and equitable benefit sharing is turned into a new general ethic of equity[17].

This new ethic is not presented as a new principle of international law, but as a diffuse guide for action for both state and nonstate actors. Under this new ethic, conservation and sustainable use are ensured by 'responsible attitudes', with no reference to states in particular. The new ethic is paired with a new economy 'associated with the use of biological diversity, genetic resources and biotechnology'. The 'urgent need' outlined is not related in any way to any perceived environmental or biodiversity crisis, but is a need 'to develop human resources, institutional capabilities, as well as an appropriate legal

[15] See Chapter 1
[16] See Chapter 1
[17] See Chapter 1, note 27 above. All subsequent references are from this text of the Cancun Declaration

framework and public policies to enable our countries to take an *active part* in the new economy'[18]. In another subtle twist of the standard expectations of international environmental law, concern is further expressed over the limitations of international instruments in terms of protecting - not biodiversity itself - but the 'legitimate interests of the countries of origin of biodiversity'.

While sustainable development appears now as self-evident truth, the above statements constitute a significant reconfiguration of the notion of 'development opportunity', at least in reference to biodiversity. It is a forceful statement of belief in the idea of biodiversity as valuable resource and of intent to utilize this realization in the pursuit of their self-defined socioeconomic trajectories, their articulation of development models. It appeared that, at least at the macro level of the state, the political question of biodiversity, along with its problematisations and pathologies was being enthusiastically embraced.

In this enthusiastic embrace of biodiversity, post-colonial critics of the idea of development may observe a repeat of history. In 1949, the North asserted that the South was underdeveloped, an invention that, once accepted, spawned a series of strategies, projects and programmes to overcome this deficiency at great cost and with decidedly adverse results[19]. Forty years later, it was again convincingly explained to the South how it was underutilising its biological and genetic resources, and once more this was accepted, under a neoliberal equation of development with integration within global markets[20] and this posited new economy of biodiversity. While not as charismatic as Truman's well-recited declaration of 'underdevelopment' in 1949, there is a certain commonality in the similar themes that resurface and resonate: losing out due to not tapping into the full economic

[18] Emphasis added. Ibid
[19] Gustavo Esteva, 'Development' in Wolfgang Sachs (ed), *The Development Dictionary: A Guide to Knowledge as Power* (Zed books 1991)
[20] Berthoud

potential of resources, a call to embrace different modes of thinking and living, the promise of a better future together in a world society.

On the other hand, the Cancun Declaration viewed as an expression of the biodiversity complex outline above, is also a more 'intimate' proposition than the development project. Far from ushering in some new strategy understood as a 'third way' of state-led development leading to the formation of new 'eco-states' in the South under the control of the World Bank[21], the biodiversity complex instead focuses on the production of individual and collective subjectivity. Such an operation can be gleaned from the references to ethics, responsible attitudes and training to participate in the new economy. The new perspective of the biocomplex is evidenced in the decisions of the declaration, which again conceive of biodiversity conservation and use as means to achieve other ends. For example, the Group decided to:

> 'Ensure that the goods, services and benefits arising from the conservation and sustainable use […] are utilized for the development of *our peoples*, seeking among other objectives to improve upon food safety, overcome health problems that affects us, and preserve our cultural integrity'[22].

THE IDEA OF GENETIC GOLD

The manifestation of such specific goals, and progressively of an additional, nonstate 'micro' level of analysis was part of a broader process by which biodiversity became intrinsically associated with the idea of genetic[23] or green[24] 'gold' during the first decade of

[21] This argument in relation to the World Bank is made in Michael Goldman, 'Eco-governmentality and Other Transnational Practices of a "Green" World Bank' in Richard Peet and Michael Watts (eds), *Liberation Ecologies: Environment, Development, Social Movements* (2nd edn, Routledge 2004)
[22] Emphasis added. See note 17 above
[23] McAfee 146-8

the operation of the CBD. The 'new economy' alluded to in the Cancun Declaration was the market economy of genetic gold. This notion produced the greatest transformation in all aspects of biodiversity governance at all scales, from the global to the local.

Already by the time of the 1986 Forum, the potential of advances in biotechnology that enabled the identification of genetic information, as well as the extraction and re-combination of this code in an increasing variety of genetic modifications, was becoming clear[25]. The synergy between this technology, bioprospecting activities[26] and biodiversity conservation envisaged a positive 'feedback loop' between successful drug or crop research and development based on genetic sample collection financing the further conservation of biodiversity reserves that would in turn yield new valuable genetic raw material and more profitable products[27]. Pilot schemes for the additional transfer of benefits directly to those local communities in the South closer to these reserves yielding the profitable raw material were already enacted in the late 80s and early 90s by botanical institutions in the UK[28] and various research institutions in the US[29], before and outside the remit of the CBD.

The economic potential of these resources is the 'hidden' element that transformed the remaining areas of high biodiversity, into reservoirs of untapped natural resources, i.e. biodiversity 'hot spots'. Tapping these resources requires realising their inherent 'biovalue' – to be 'generated wherever the generative and transformative productivity of living entities

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[24] Ulrich Brand and Christoph Gorg, 'The State and the Regulation of Biodiversity: International Politics and the Case of Mexico' (2003) 34 Geoforum 221

[25] 'Science is discovering new uses for biological diversity in ways that can relieve both human suffering and environmental destruction'. See Wilson, *BioDiversity* 3

[26] For extended history and information on the concept see Asebey, Edgar J. and Kempenaar, Jill D., 'Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention' (1995) 28 *Vandenbilt Journal of International Law* 703. Also Reid, Walter V., et al., *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (World Resources Institute, USA, 1993).

[27] Eisner, 'Chemical Prospecting: A Proposal for Action'; Eisner, 'Prospecting for Nature's Chemical Riches'; Eisner, 'Chemical Prospecting: A Global Imperative'

[28] Specifically the National History Museum, Kew Gardens and the London Zoo. See McConnell:39

[29] The earlier National Cancer Institute programme for drug discovery began in 1986, while the International Cooperative Biodiversity Groups programme, sponsored by the National Institutes of Health, National Science Foundation, began in 1993. For more information see Miller

can be instrumentalised along lines which make them useful for human projects'[30]. Hence, a significant part of biodiversity became conceived as 'tradable commodities which are subject to market exchange and the assumptions of neoclassical economics'[31].

This assumed feedback loop hinged upon a ubiquitous use of bioprospecting contracts or similar access arrangements to capture biovalue and return the benefits to the South. Despite the fact that these contracts were still relatively straightforward business transactions based on supply and demand[32], basic agreements to 'produce' and sell biodiversity as genetic resources to the highest bidder, they were elevated to the status of primary instruments for allocating investment in environment and development, i.e. in both natural capital and human capital, with benefits envisaged across the local, national and global levels. They would be able to:

> 'Contribute greatly to environmentally sound development and return benefits to the custodians of genetic resources – the national public at large, the staff of conservation units, the farmers, the forest dwellers, and the indigenous people who maintain or tolerate the resources involved'[33].

The same arrangements would provide the raw material for a host of new medicines, crops, and other biochemicals benefiting the whole world, while delivering substantial profit for

[30] Stefan Helmreich, 'Blue-green Capital, Biotechnological Circulation and an Oceanic Imaginary: A Critique of Biopolitical Economy' (2007) Biosocieties 287 295-8
[31] Kathleen McAfee, 'Neoliberalism on the Molecular Scale: Economic and Genetic Reductionism in Biotechnology Battles ' (2003) 34 Geoforum 203
[32] E.g. No company or research institution would conclude a bioprospecting agreement with a locale that did not contain significant reserves of undocumented biodiversity, irrespective of how environmentally endangered it was, as the sample collection would not discover new and potentially useful or valuable organisms and genes.
[33] Reid and others 2

Northern companies and economies[34]. No other mode of environmental intervention could offer comparable social and economic benefits in the pursuit of sustainable development. With such promise, it is little wonder that the INBio model was broadly touted as a 'newly established paradigm' and 'development model'[35] for Costa Rican society.

Under the conception of this positive feedback loop, the first ten years of the CBD's were thus marked by the proliferation of policy and technical manuals on the topic of realising the full economic potential of this genetic resource aspect of biodiversity, but also of traditional knowledge[36] of uses of biodiversity (e.g. for medicinal purposes)[37]. These manuals were directed exclusively to the South and proposed blueprints for the 'new kinds of organizations, contracts and laws needed to ensure that both human communities and their natural surroundings benefit from the bioprospecting boom'[38].

Biodiversity Prospecting[39], the first such manual, drew directly from the INBio model and partnership with Merck. Its subtitle announced the newly desirable emphasis: 'using genetic resources for sustainable development'. The manual provided the first comprehensive set of guidelines specifically for managing biodiversity as genetic gold. The core of this new rationality is encapsulated in the clever heading of the first chapter, *A New Lease on Life*. A subtle play on words, the triple meaning of 'life' in the phrase - i.e. as genetic resources, the environment in general as well as the welfare of Southern society - implies that a new lease

[34] Swanson, 'The Reliance of Northern Economies on Southern Biodiversity: Biodiversity as Information', ten Kate, 'Biodiversity and Business: Coming to Terms with the 'Grand Bargain''
[35] Rodrigo Gamez, 'The Link Between Biodiversity and Sustainable Development: Lessons From INBio's Bioprospecting Programme in Costa Rica' in Charles R. McManis (ed), *Biodiversity and the Law : Intellectual Property, Biotechnology & Traditional Knowledge* (Earthscan 2007)
[36] This aspect is further explored in Chapter 7
[37] An indicative list includes Reid and others; ten Kate and Laird, *The Commercial Use of Biodiversity*; Sarah A Laird (ed) *Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice* (Earthscan 2002)
[38] Foreword in Reid and others
[39] Ibid

on life (i.e. according to the manual, market-oriented reforms for attracting investment opportunities in bioprospecting) would be a new lease *of* life for both nature and society in the South. This promising rhetoric of the future was grounded in the 'flurry of interest and enthusiasm in biodiversity prospecting'[40], partly due to the perceived success of the INBio experiment. An overwhelming sense of a historic shift occurring was prevalent in the instructions; a promise that the 'true economic potential'[41] of biodiversity was on the verge of being realised.

The core condition for this promise was that this genetic gold would generally be a worthwhile investment opportunity for the North and an important development opportunity for the South. This was based on the prediction that bioprospecting would consistently yield profitable commercial products, in the form of highly prized pharmaceuticals, modified crops or other chemicals. However, the categories North and South, in terms of inferring action at state level, were at the same time conceptually bypassed by genetic gold, which refers to predominantly private partnerships between companies, research institutions and local communities. Coupled with the additional prioritization of *in situ* conservation, any commercial value and benefits would have to also accrue to the people in close proximity to the resource to have any meaningful impact on the conservation of biodiversity as raw material and the sustainable development of the South, viewed from the perspective of welfare improvement.

With its emergence in the 1990s, the idea of genetic gold can be viewed as the concrete response to the political question of biodiversity that took shape after the entry into force of the CBD. Encapsulating the genetic reductionism of sociobiology, a Southern focus, and the economic grid of neoliberalism, it proposed a mechanism of exchange that recognised

[40] Ibid 2
[41] Ibid 1

the South as the poverty-stricken holder of biodiversity and sought to mobilize this pathology to achieve the goals of sustainable development. Other vectors of biodiversity can also be discerned within this idea of genetic gold as presented above, such as the effort to present environmental intervention as a positive activity ('a new lease on life'), the promotion of competitive individualism (competition for bioprospecting contracts) as a core technique of governing, the requirement to test and justify governmental action in economic terms (genetic gold as a development opportunity), or the cooperative public/private resource management espoused by the World Bank. In combining these vectors, genetic gold succeeded in altering the direction of the legal framework of the CBD, turning into an instrument considerably removed from the actual legal text of the treaty.

THE ALTERED ROLE OF THE CBD

To turn this promise of genetic gold into reality, an identified 'policy vacuum'[42] had to be filled in order to ensure that 'the commercial value obtained from genetic and biochemical resources is a positive force for development and conservation'[43]. In the bioprospecting manuals cited above, this vacuum was filled with reform in the areas of contract and intellectual property law, and not environmental law. After all, the whole edifice was based on securing sufficient investment in genetic resources through bioprospecting contracts.

Inherent in this strategy was the notion that the CBD is the one regime that has to adjust to the market reality of bioprospecting and genetic gold and not the other way around. The CBD is thus assigned a governance or regulatory role in overseeing the operation of this market for genetic resources. This was expected to be achieved not through direct regulation, but through the enforcement of the terms of the bioprospecting contracts and

[42] Ibid 2
[43] Ibid

other commercial transactions, as well as the institution of an effective intellectual property regime that would secure the realisation of biovalue and protect investment[44].

The most foundational act of the CBD from the perspective of genetic gold was already completed at the moment of its entry into force; the removal of biodiversity from the commons and the confirmation of national sovereignty over it[45]. The legal basis for genetic gold, and by extension all the mechanisms and measures adopted based on that idea, is property rights, which have to be guaranteed by state law. The operation of the CBD was then tasked to devise and progressively guarantee these forms of property rights over biodiversity stemming from national sovereignty, a task partially achieved through the recent Nagoya Protocol. In view of the market rationality of genetic gold, it may seem paradoxical that its foundation was the enforcement the sovereign right of the state over its natural resources; that genetic gold would be grounded on national sovereignty, the most classical of the statist tropes of international law.

This paradox fed into the general confusion over the altered role reserved for the CBD within the idea of genetic gold. For example, there was criticism of the CBD as 'an initiative of the North to globalise the control, management and ownership of biological diversity so as to ensure free access to the biological resources which are needed as raw material for the biotechnology industry'[46]. This criticism both overestimated the capacities of the legal framework in its 1990s infancy and underestimated other public and private entities (e.g. research institutions, companies, communities, transnational movements, individuals) imbricated in the idea of genetic gold.

[44] More analysis on these aspects in Chapter 6
[45] CBD, Art. 3
[46] Shiva, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology* 151

In fact, the dissemination of the idea of genetic gold brought the opposite result. It produced a proliferation of regional, national and sub-national biodiversity laws, regulations and practices that did not always follow the market economy of genetic gold. Within a seven-year span from 1995 to 2002, over 100 states, possessing the majority of the world's remaining biodiversity, introduced various regulations regulating and de facto restricting access to genetic resources[47], often in explicit and direct contrast to the CBD provision requiring them to facilitate access[48]. These largely protectionist laws –in economic terms- produced an additional heterogeneous tableau of divergent use provisions and access requirements tailored to regional, national and local perceptions of the correct path for fostering development through genetic gold. It is important to note that these were ostensibly specialised environmental laws referring to the treatment of genetic resources, a rather specific biodiversity component, and largely bypassed the other standard components, such as species and ecosystems. They were clearly motivated by the need to secure national sovereignty over these genetic resources, from which private ownership and market profits would flow. Hence, they were not protectionist in environmental terms, in the sense of protecting that biodiversity component from perceived threats or destructive practices.

Thus, the CBD, as the de facto soft regulator the market economy of genetic gold, did not actually bring about the rationalization of conservation practices, globalisation of control and ownership of natural resources or the advent of some form of centralised development planning. Nevertheless, genetic gold instigated a proliferation of laws that effectively accepted the particular pathology of the South set out by biodiversity. This is the precisely the global situation that the Cancun Declaration spoke to in 2002.

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[47] Kerry ten Kate, 'Science and the Convention on Biological Diversity' (2002) 295 Science 2371, 2371 and note 4

[48] CBD, Art. 15(2): 'Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources... and not to impose restrictions that run counter to the objectives of the Convention.'

III | GOVERNMENTAL METHOD

While it would be comforting to have the CBD as a fixed anchor and a steady fort against this hovering maelstrom of laws, strategies aspirations, markets and contracts, the above transformations, driven by the idea of genetic gold, suggest the biodiversity complex, i.e. biodiversity as an arrangement for governing, has travelled far from the traditional borders of international environmental law into unknown territories, incorporating 'an analysis of what happens and a programme of what should happen'[49]. From the above it can be argued that the object of governance has been transformed, from biodiversity in general to the specific market economy of genetic gold. As a result, the goals of the biocomplex have equally changed to energizing, supporting and overseeing this economy, and to fostering competition and market participation. However, the most crucial transformation remains the governmental method by which these goals are to be pursued, as this section illustrates.

Under a model of sovereign power, the operation of an environmental treaty regime depends on the distinction between lawful and unlawful action in relation to the specific environmental problem at hand. For example, CITES concentrates on the trade of wild animals and wants to isolate and prevent its more destructive manifestations by establishing the illegality of trade in a number of globally listed endangered animals. The Montreal Protocol to the Ozone Treaty likewise establishes and enforces the illegality of the use of certain ozone depleting chemicals. The treaty breach in such regimes is easy to verify based on their system of prohibition; their future success is 'what remains when everything that is prohibited has in fact been prevented'[50]. Under the influence of the law of treaties, this search for the codified division between the permitted and the prohibited always leads back

[49] Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* 40
[50] Ibid

to the text – the legal code – in order to define the internal legal rationality working towards the commonly agreed goal.

In the post-genetic gold period, this juridical model for encoding power (permission-prohibition and breach-enforcement) is insufficient when used on the biodiversity complex. There is no future eclipse of biodiversity loss as the common good that sovereign power pursues. Instead, following the notion that an apparatus that 'grasps the point at which things are taking place, whether or not they are desirable [...] at the level of their effective reality'[51], the biocomplex is a dispositional mechanism for 'getting a hold' on (i.e. arranging) the reality of biodiversity (i.e. history, uses, effects on human society etc.), as opposed to eliminating biodiversity loss. Foucault observes the following regarding mechanisms regulating grain and the phenomenon of scarcity, which can equally be said of the governmental approach to biodiversity and the phenomenon of biodiversity loss:

> 'For arranging things so that, by connecting to the very reality of these fluctuations, and by establishing a series of connections with other elements of reality, the phenomenon is gradually compensated for, checked, finally limited, and in the final degree cancelled out, without it being prevented or losing any of its reality'[52].

Since the 'strategic imperative'[53] of this disposition or arrangement in the biodiversity complex is not strictly the conservation and sustainable use of biodiversity, but the general improvement in the South, the 'urgent need'[54] that biodiversity as an apparatus is currently responding to is not actually a global biodiversity crisis, but rather the lack of development or poverty of certain localities.

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[51] Ibid 46-47
[52] Ibid 37
[53] See this chapter, note 8 above
[54] See this chapter, note 7 above

Therefore, this broad strategic project, of spiralling trajectories and multiplying directions, functions through the disposition or arrangement of the relations between people and resources towards the improvement of conditions in the South. Thus, this mode of operation precludes the establishment of law or the state as the privileged source of authority and, ultimately, power. Instead of producing and enforcing environmental laws to prevent destructive behaviour leading to biodiversity loss, the objective is to arrange and guide, to 'conduct the conduct' towards the strategic aims adapted from sustainable development. The reversal in this complex is not solely its near-exclusive Southern focus, but that it constitutes a form of environmental governance that considers human population as a collection of subjects to be governed according to ends related to them as individuals and collectivities, rather than as targets of regulation in relation to hierarchically predetermined environmental aims.

From a Foucaultian perspective, the goal of the biocomplex is not to simply manage biodiversity as a genetic resource, i.e. according to a set of updated bioeconomic rationalities of the World Bank, but to manage biodiversity-related phenomena at their intersection with the market and society; to govern all three, by irrevocably linking the physiology of biodiversity loss with the pathology of the South; to articulate a form of biopolitics of 'the perpetual conjunction, the perpetual intrication of a geographical, climatic, and physical milieu with the human species'[55], and to ultimately 'exercise power at that point of connection where nature, in the sense of physical elements, interferes with nature, in the sense of nature of the human species'[56].

[55] Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* 23 23
[56] Ibid

In terms of techniques employed within this biodiversity complex to bring these goals about, it has already been mentioned that subjectification is increasingly the preferred choice. Subjectification posits a kind of alternative Kuznets curve leading to sustainable development. A 'curve of normality' is hypothesised, where the genetic gold-influenced environmental management is simply distributed along a continuum with other forms of hard and soft environmental intervention. In place of prohibitive environmental laws or binding standards, it is simply through the overwhelming promise of genetic gold that 'the most unfavourable, deviant normalities are to be brought back in line with the more favourable ones'[57]. In this way, the promise of genetic gold itself can also be interpreted as a governmental technique that entails:

> 'positing of an optimal model in terms of a certain result... and trying to get people, movements, and actions to conform to this model, the normal being precisely that which can conform to this norm, and the abnormal that which is incapable of conforming to this norm'[58].

There is no longer reliance on the imposition of external rules 'in relation to an extrinsic standard of authority, morality, virtue, order, duty or obedience'[59], but a notion of subjectification emerging 'out of the very nature of that which is governed'[60]. If biodiversity is accepted as a genetic resource, it also becomes normal that it should be managed as such. If the majority of biodiversity is located in the South, then it also becomes normal that such managerialist approaches should adopted in the South. Genetic gold appears to quietly remove the need for enforcement, replacing it with an incitement to conduct oneself normally, i.e. according to the goals set by an analysis of the object to be governed.

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[57] Ibid 62
[58] Ibid 57
[59] Rose and Valverde, 'Governed by Law?' 544
[60] Ibid 544

At the micro, nonstate level, the biodiversity complex thus incites individuals in the South to attain a particular subjectivity, and not simply to implement, enforce or obey a new set of environmental laws. By calculating their conduct according to a set of bioeconomic norms, by aligning themselves with the normality curve set by the biodiversity complex, individuals, groups, communities, societies can grow, develop and improve. It is not a task for the state or an international institution like the CBD to accomplish, but the individual and community who –if successful – will have turned themselves into self-governed subjects in addition to targets of regulation. This process includes proposed Southern-based counter-conducts, such as, for example, those envisioned by Shiva or the biopiracy narrative[61], which are directed towards the modification of individual and communal ways of living against the state and the market without rejecting the concept of biodiversity itself. Thus, they remain part of the complex.

Under this different rubric, it is not surprising that one of the first acts of INBio was the training of a cadre of informal 'parataxonomists' to assist in the production of genetic information[62]. It certainly highlights that even the grandest possible strategic vision of genetic gold will invariably have to start with people on the ground physically going out and collecting samples of plants, insects, other animals and organisms and returning them to a lab where they can be studied, catalogued, measured and turned into biological and genetic information, the input format for the biotechnology industry.

However, the important function of this training is not the transfer of the rudimentary technical know-how related to preserving, transferring and identifying samples of biological and genetic resources required for the preparatory phase of sample collection and database

[61] See Chapter 4, page 129
[62] See Chapter 4, page 127

creation. It is the dissemination of 'responsible attitudes', eco-managerial norms, environmental ethics and perceptions of Costa Rican identity, i.e. of subjectivity in general, that differentiates this seemingly small-scale taxonomic activity from long-standing and socio-ecologically catastrophic export-led industrial agricultural production, where the local population represents nothing more than untrained, menial, less than minimum wage labour. It is also –in Foucaultian terms – a political technology of individuals, i.e. 'a way by which, we have been led to recognize ourselves as a society, as a part of a social entity, as a part of a nation or of a state'[63].

Whether this knowledge and skills will coalesce into a hyper-economic rationality, where the search for the next bioprospecting contract organises a new form of neoliberal enterprise society or – in contrast - into a political rationality of devolving resource management to the local level and adopting decentralised and community-based decision making is left completely open and is indeed a site of conflict and struggle[64]. The point remains that through such forms of training, the biodiversity complex can alter the relation between nature and society at a very 'intimate' level - one individual or community at a time. The lesson of genetic gold is simply and subtly delivered, without resorting to overt legal acts.

Therefore, the reduction of genetic gold to an ideology belonging to the capitalist North, neoliberal globalisation or the equation of the biodiversity complex with the programmes of the old developmental state of the 1970s and 1980s should be resisted. The idea that biodiversity may be valuable or indeed that the South should profit from it is not rejected outright even by the discourse of biopiracy. Vandana Shiva noted that 'the Third World must urgently take stock of its genetic resources, particularly those contained in tropical

[63] Foucault, 'The Political Technology of the Individuals' 404
[64] As analysed in subsequent Chapters 6 and 7

forests'[65]. It is the particular methods of commercialisation and commodification primarily for export in global markets that are resisted as 'working inherently against justice and ecological sustainability'[66], and will usher in 'a new era of bio imperialism built on the biological impoverishment of the world'[67]. The conflict here resides seems to mimic phenomena from similar governmental methods arising out of other natural resources. For example, Michael Watts notes that oil, aside from being a biophysical entity and a market commodity, also 'harbours fetishistic qualities [...] [as] the bearer of meanings, of hopes, of expectations of unimaginable powers'[68].

As a final point regarding the governmental method of the biocomplex, it is important to note that the necessary resistance to dominant forms of genetic gold within the biodiversity complex largely occurs at the micro level; the processes and techniques for the production of subjectivity; over the distribution of normal conduct along the curve; over the ways in which individuals, communities and societies would employ genetic gold to evaluate the effectiveness of their actions and the appropriateness of their conduct. It does not refer solely to government as the structuring of the field of action for others, but also to self-government as the conduct of conduct, to the individual as an acting subject 'tied to his own identity by a conscience or self-knowledge'[69]; not only to how biodiversity was to be used sustainably, but also politically and metaphorically as the founding image of a community of governable subjects.

IV | DISSASSEMBLING BIODIVERSITY

[65] Shiva, 'Biodiversity, Biotechnology and Profit: The Need for a Peoples' Plan to Protect Biological Diversity' 47
[66] Ibid
[67] Ibid
[68] Watts 17
[69] Foucault, 'Omnes et Singulatim: Toward a Critique of Political Reason'

Striking at the heart of the environment versus development binary, the call of genetic gold emerged as a strategy that clearly attempted the cut to the Gordian knot of economic development and environmental protection. It led to the reorientation of the CBD from the very first years of its entry into force, further and further away from the treaty text. Genetic gold signifies the transition from biodiversity as an idea or a concept to biodiversity as a device, an apparatus, an arrangement through which governing is possible.

Although this aspect has been consistently underplayed in the largely political and economic history presented in this thesis, certain observations regarding the operation of this biodiversity complex in relation to environmentalism (as the general movement for more environmental protection) are in order. First and foremost, the term biodiversity complex appears almost a euphemism, as the focus rests almost exclusively on the genetic component of biodiversity to the point that the two became synonymous. After all the holistic ethics, variants of synthesis and rationalizations proposed in the history of biodiversity up to the signing of the CBD, it appears that the transformations driven by genetic gold have in effect succeeding in disassembling the host of environmental concerns housed under the umbrella of biodiversity.

Secondly, the understanding of biodiversity as genetic gold has become increasingly divorced from the rest of the environmental legal framework. In particular after the forthcoming entry into force of the Nagoya Protocol[70], genetic resources will possess their own, specialised regime that bears little resemblance to international environmental law. This reduces the importance of both the other biodiversity components (species, ecosystems) and the part of the CBD that refers to them.

[70] Presented in Chapter 1, further analysed in Chapter 6

Thirdly, this disassembly of biodiversity has inevitably derailed to a certain extent the pursuit of environmental goals within the biocomplex. If biodiversity is nothing more than genetic resources, only biodiversity 'hotspots' matter. There is no incentive, norm or ethic to protect habitats, areas and regions that do not contain unexplored, undocumented and untapped irrespective of their possibly precarious ecological status. In cynically blunt terms, no one cares - under a narrative of genetic gold - if the United Kingdom or Germany are preserving or destroying their biodiversity. Every component is doubly documented and preserved already. Again, this line of reasoning is very far from the legal text and principles that underpin the CBD.

Despite these questionable environmental credentials, a community or a state holding the correct type of biodiversity which refuses to manage its biodiversity or govern its population according to the bioeconomic knowledge of genetic gold and sustainable development respectively is bound to be considered as acting irrationally, rather than committing an unlawful act under international environmental law. It has become 'abnormal', an environmental deviant with a problematic sense of identity, irrational choices, expounding an illegible narrative that cannot be understood. This abnormal does not require punishment, the enforcement of court decisions and penalties, but is in need of care, in need of the provision of the tools and knowledge to become normal again. By extension, legal and policy reform are mobilised through a pervasive fear of failing to participate, of being left out of a global system of opportunity, of becoming fixed and immobile as opposed to dynamic and improving; ultimately the fear of the failure to attain the desired norm, change environmental behaviour and construct a legible identity through the inclusive opportunity of genetic gold.

To conclude, the decisive difference of the biodiversity complex over other forms of environmental regulation or governance rests in its ability to be implemented and operate through the technique of empowering individuals, communities and other social groups as actors. Against perceived environmental regulatory wisdom, it is a form of government that accepts and works through the freedom of individual subjects to destroy the natural environment, calibrating this capacity towards alternate ends but not seeking to forbid it outright. Within a broad context of liberal environmentalism, it also has to accept that these governed subjects will have to be capable of 'thinking otherwise'[71], problematising biodiversity loss and environmental governance in unforeseen ways and administering their biological and genetic resources accordingly.

It is evident that the idea of genetic gold confirms the biodiversity complex's place within the Western tradition of liberal modes of government, irrespective of how this may be seen in some quarters of the South. Although such rationalities of governing have produced the neoliberal subject of the profit-maximising individual in an Anglo-American society, this is not a priori necessary the case for the biodiversity complex in its particular context of Southern society. The exercise of power in the biocomplex can be about not adopting the American environmental aesthetic centred on national parks and wilderness, or the European view of sustainable development as an administrative ethic, but about recombining them in order to eventually construct different versions and adapted Southern subjectivities. The empowerment of individuals and communities in the South entails the possibility of new actors and partnerships forging new composite environmental subjects. Examples of such counter-conducts are examined in the next two chapters.

[71] Dean, *Governmentality: Power and Rule in Modern Society 21-23*

CHAPTER 6
GOVERNING IN THE BIOCOMPLEX I: THE ACCESS AND BENEFIT SHARING MECHANISM

On the 2nd February 2011, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity was opened for signature at the United Nations headquarters in New York, subsequent to its adoption at the Convention's tenth COP on the 29th October 2010, in Nagoya. This last step – until its predicted entry into force - signifies the end of a long negotiating process, primarily through the format of ad-hoc working groups within the framework of the CBD, which formally commenced in 2002 with the call to negotiate an international access to genetic resources and benefit sharing (ABS) regime in the World Summit on Sustainable Development's Plan of Implementation[1]. This was a culmination of a smaller scale process that had already been taking place within the CBD since the very first meetings[2] and had already led, by 2002, to the adoption of the 'soft-law' Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits arising out of their Utilization[3].

This chapter examines the recent Nagoya Protocol, the Bonn Guidelines and the current ABS mechanisms as envisaged by the joined reading of these two instruments. It outlines a verdict of failure over its environmental outcomes and then proceeds to examine the factors driving this perception. In the process, the reform of the ABS mechanism of the

[1] Par. 44(o). Available at: http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm
[2] Note for example that the complexity of the mosaic of different access regimes, intellectual property systems, and approaches to benefit sharing is already debated in COP3/Decision III/15 on Access to Genetic Resources (1997), in terms of the need for the harmonization of national 'legislative, administrative and policy measures' and the development of best-practice guidelines
[3] Adopted through COP 6 Decision VI/24 (2002)

treaty as mandated by the Protocol is also presented. The chapter observes a confusion in terms of the role and objectives of a perceived, but never materialised, 'international ABS regime' and traces this back to the limitations of the market economy for genetic gold that underpins the biodiversity complex. The discrepancy between the Protocol's stated goals, the presumed environmental aims attached to any environmental instrument, and the strategic goals identified within the biocomplex are used throughout the chapter to analyse the effects of ABS as a technique of governing.

I | HIDING IN PLAIN SIGHT: THE FAILURE OF THE NAGOYA PROTOCOL

The initial language and conceptual construction of the treaty did not explicitly envisage the creation of a separate international ABS regime, as was the case with the protocol governing the transfer of genetically modified organisms[4]. The ABS acronym was not even used in the first COPs, as there was no decision yet on the national procedures for implementing this provision or even on the constituent elements of what subsequently became ABS[5]. What was of great importance for the South[6], however, was that the COP affirmed, even at that early stage, that 'the CBD is grounded on mutual reliance on fair and equitable sharing for the prosperity of all humankind'[7]. This affirmation was repeated in the Cancun Declaration's aspiration of a universal 'new ethic of equity'[8].

[4] Or *living modified organisms (LMOs)* in the language of the CBD. See CBD, Article 19(3), which explicitly envisages the adoption of the Cartagena Protocol on Biosafety (1999)
[5] For example see COP Decision II/12 (1995), which dealt solely with intellectual property rights and their impact on biodiversity conservation, without reference to access to genetic resources or benefit-sharing
[6]Mainly expressed though the -then- newly formed negotiating Group of 77 (G77) and China, also active in the context of WTO negotiations. See CBD, *Report of the Second Meeting of COP to the CBD* (UN Doc. UNEP/CBD/COP/2/19, 1995), par. 107
[7]Jakarta Ministerial Declaration on the Implementation of the CBD (UN Doc. UNEP/CBD/COP/2/19, 1995), Appendix, par. 5
[8] See Chapter 5

Before Nagoya, there was Bonn. In 2002, the Convention adopted the voluntary 'Bonn guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization'[9]. These guidelines applied to both genetic resources as genetic material[10] and their derivatives[11], assigning limited property rights over them[12]. The guidelines were drafted as a 'soft-law' instrument, marking the first concerted multilateral contribution towards assisting the achieving the CBD's fair and equitable benefit sharing objective. The main legal task was to elaborate and expand upon primarily CBD Article 15, laying the groundwork for a future introduction of a standardized process for granting access to genetic resources and sharing of benefits arising from their utilization. The Bonn guidelines were thus designed as model legislation to assist primarily Southern states in 'constructing national regulatory capacity'[13], and for this reason included detailed provisions regarding the elaboration of ABS provisions at various levels.

Therefore, the legal objectives of this initiative were multiple: (i) the harmonization of national and regional law and policy regarding ABS, after the legislative explosion of ad hoc regimes during the years 1995-2002 in line with the idea of genetic gold[14]; (ii) the provision of a 'model law', assisting states with limited legislative capacity regarding the complex issue of regulating the new genetic resources markets and; (iii) creation and gradual enhancement of a customary or legal obligation of states to always provide some form of ABS measures or mechanism within their jurisdiction, acting as a source of new international environmental law.

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[9] COP Decision VI/24 (2002), Annex. [Bonn guidelines]
[10] I.e. containing functional units of heredity as defined in CBD, Art. 2
[11] I.e. biochemicals. On derivatives see page 186 below
[12]For more information on the additions to standard CBD 'doctrine' see Stephen Tully, 'The Bonn Guidelines on Access to Genetic Resources and Benefit Sharing' (2003) 12 Review of European Community and International Environmental Law 84, 86
[13]Phrase used by the influential LMMC
[14] As outlined in Chapter 5

Building on the Bonn guidelines negotiations commenced on a new international ABS regime in 2004, 'with the aim of adopting instrument/instruments to effectively implement Article 15 and Article 8(j), and the three objectives of the Convention'[15]. This would eventually lead to the adoption of the Nagoya Protocol.

In addition to the Bonn guidelines, some form of centralized, global ABS mechanism or 'joint regulatory framework'[16] had been understood as a response to the legislative proliferation induced by the acceptance of genetic gold[17]. The adoption of ad hoc national biodiversity legislation focussing on access to genetic resources was expected to foster destructive regulatory competition, especially between neighbouring states with similar genetic resources. The fear of a 'race to the bottom', a reciprocal lowering of standards in order to attract the desired foreign investment, initially led to a number of regional initiatives as attempts to eradicate the perceived limitations inherent in national approaches to ABS legislation[18]. Most prominent amongst those was the Andean Pact's Decision 391[19], as well as the more broadly-themed African Model Law[20]. The Bonn guidelines initially brought a similar harmonizing logic to the global stage, further confirmed by the Nagoya Protocol. The 'race to the bottom' phenomenon could have been negated with the institution of a 'biodiversity cartel'[21] of price control and trade quotas, similar to the OPEC arrangement for oil-producing states. The Bonn guidelines and the Nagoya Protocol did

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[15] COP Decision VII/19 (2004), Article 1

[16] Timo Goeschl and others, 'Incentivizing Ecological Destruction? The Global Joint Regulation of the Conservation and Use of Genetic Resources' (2005) 38 Indiana Law Review 619

[17] Shamama Afreen and Biju Paul Abraham, 'Bioprospecting: Promoting and Regulating Access to Genetic Resources and Benefit Sharing' (2009) 36 Decision 121

[18] For more on the "race to the bottom" scenario and the proposals to counter it see Cabrera, Jorge and Garforth, Kathryn, 'Global Access, Local Benefits: An International Access and Benefit Sharing Regime?' in Cordonier Segger, M C and Weeramantry, C G (eds), *Sustainable Justice: Reconciling Economic, Social and Environmental Law* (Martinus Nijhoff Publishers, Leiden; Boston, 2005) 223

[19] Andean Pact, Decision 391, *Common System on Access to Genetic Resources* (1996). [Decision 391]. The decision instituted minimum rules to be applied by all member states

[20] *African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources* (2000) by the (then Organization of African Unity) African Union. [African Model Law]

[21] Tilford, David S., 'Saving the Blueprints: The International Legal Regime for Plant Resources' (1998) 30 *Case Western Reserve Journal of International Law* 373, 436-40

not follow this trajectory of monopolization, due to the incompatibility with the individualist and market rationality of genetic gold dominating the biocomplex.

Interestingly, the advance text of the Protocol contained a synthesizing, umbrella definition of a new international ABS regime that:

> 'Is constituted of the Convention on Biological Diversity, the Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising from their Utilisation, as well as complimentary instruments, including the International Treaty on Plant Genetic Resources for Food and Agriculture and the Bonn Guidelines'[22].

This statement comes fairly close to constituting a legal acknowledgement of the existence of the broader governmental framework termed the biocomplex, where the CBD is simply one of many legal instruments, measures and tactics for achieving strategic goals. However, this inadvertent confirmation has subsequently been removed from the final text of the Protocol now open for signature due to jurisprudential reasons. First, it is very difficult to argue, as will be explained further on in this chapter, that the Protocol is actually instituting a new international legal regime. Secondly, such a statement obviously raised jurisdictional issues in terms of the interactions of the different legal regimes under the synthesis.

The Nagoya Protocol was concluded as the presumed final piece of a legal jigsaw consisting of a succession of legal instruments expected to coalesce into a fully-fledged international ABS regime. However, on closer reading the Protocol has largely failed in this crucial legal task. For practitioners hoping for the untangling of the web of conflicting

[22] Protocol, Preamble.

access legislation, intellectual property systems and benefit sharing mechanisms referring to genetic resources overlapping at national, regional and international levels, this is certainly not the ambitious legal text to achieve the particular goal of legal clarity. For legal analysts hoping for a rationalization of the conflicting strands of legal thought imbricated within the ABS mechanism, the Protocol is still meant only to accompany, rather than supersede existing legal regimes addressing property rights, access, use and protection of genetic resources, such as those created under the auspices of the WTO, the International Union for the Protection of New Varieties of Plants and FAO.

In a move echoing the negotiation and signing of the CBD itself[23], the effective function falls short – strictly from a legal perspective - of the aspirational conceptual function (in this case an international ABS regime) that drove the Protocol negotiations in the first place. The protocol is instead modestly identified as 'the instrument of implementation of the access and benefit-sharing provisions of the Convention'[24]. Recognising that it pursues the CBD's third overall objective of fair and equitable sharing of benefits arising from sustainable utilisation[25], the scope of this new international regime is equally limited to precisely those genetic resources already within the scope of Article 15 of the Convention[26].

In international relations terms, the Protocol cautiously ventures into areas and jurisdictions already claimed by other international organizations and regimes. Even before setting up an institutional framework and instituting any procedures, the text of the Protocol addresses first this contentious issue of the position of the CBD's potential ABS regime in relation to other international instruments in the maze of overlapping

[23] On the never-realised proposal for the CBD to be an amalgamated nature conservation treaty, see Chapter 4
[24] Protocol, Art. 4.4
[25] Protocol, Preamble
[26] Protocol, Art. 3. With the slight exception of derivatives discussed below

jurisdictions over genetic resources. This sensitive issue is filed away by recourse to the standard statements and treaty provisions. Therefore, rights and obligations from existing international agreements are not affected by the Protocol[27], and no hierarchy is to be created between the Protocol and other international agreements[28]. There are no structural changes to the either pre-existing CBD framework or the broader international environmental law relating to biodiversity. Thus the Protocol emerges as yet another standard addition to the vast legal mosaic of international legal instruments dealing with environmental issues, and follows the pattern of the altered role of the CBD as the market regulator within the biocomplex, as instructed by the idea of genetic gold.

In fact, it can be argued further that the wording of Art. 4 on institutional relations seems engineered to make any international regime as inconsequential and irrelevant as possible. The perception of a de facto no-effect clause is further strengthened by the future pre-emption that 'nothing in the Protocol shall prevent Parties from developing or implementing relevant international agreements, *including other specialized access and benefit-sharing agreements*'[29]. The particular emphasis on the possibility of replacing the ABS mechanism with newer 'specialised access and benefit-sharing arrangements' is a reference to the current Doha round of trade talks for reforming the WTO, and thus seeks to prevent the use of the Protocol to influence or alter the intellectual property arrangements of that regime,[30] as was the case with the CBD and the initial TRIPs agreement.

While this submissive approach is qualified by clauses regarding existing rights and obligations not 'causing serious damage or threat to biodiversity' and new agreements that

[27] Protocol, Art. 4.1
[28] Protocol, Ibid.
[29] Emphasis added. Art. 4.2
[30] Protocol, Art. 4.3: 'Due regard should be paid to useful and relevant on-going work or practices under such international instruments and international organizations.'

have to be 'supportive and not run counter to the objectives of the Convention', it is obvious that compliance with the Protocol is somewhat provisional and optional; in any case, any eventually instituted regime will function in parallel (or 'mutually supportive manner'[31]) to other existing and future related instruments, without being able to affect or impinge upon them in any way. To a certain extent, the Protocol assigns a wholly subsidiary role for the much-advertised international ABS regime; it becomes dependent on a lack of overlap with other agreements - past, present *and* future - for it to have any effect on the utilisation of genetic resources and achieve any form of sharing or redistribution of benefits.

In terms of the institutional framework, it is important to reiterate that the Nagoya Protocol does not establish an international ABS regime, as advertised and mandated during the negotiations and following the example of FAO's multilateral system for plant genetic resources[32]. For example, the Protocol's preamble recognizes that:

> 'An innovative solution is required to address the fair and equitable sharing of benefits [...] associated with genetic resources that occur in transboundary situations or for which it is not possible to grant or obtain prior informed consent.'

However, this innovative solution is not provided in the rest of the text. Furthermore, the gratuitously named 'global multilateral benefit-sharing mechanism' is *not* actually instituted by the article of the Protocol bearing the same title[33]. Instead, the 'need and modalities' of such a mechanism are to be further considered by the Parties, with the added restriction that it will only cover benefits arising from the utilization of genetic resources and

[31] Ibid
[32] This related regime is examined in Chapter 7 below.
[33] Protocol, Art. 10.

traditional knowledge 'that occur in transboundary situations or for which it is not possible to grant or obtain prior informed consent'[34]. Hence, even if instituted, such an ABS regime would not be a centralized management system akin to FAO's regime, but would only apply to specific categories of genetic resources not covered by national legislation or bilateral trade agreements; the leftover resources not valuable or significant enough to be claimed. The overall smoke and mirrors character of this provision is the clearest illustration of the effective failure of the negotiations for an international ABS regime being hidden in plain sight within the legal text purporting to be an agreement on the very topic.

This failure of the Protocol to achieve its mandated legal objective is further reflected in the immediately following weak provision regarding this 'transboundary cooperation'[35]. As genetic resources or indeed traditional knowledge or indigenous communities may not fall neatly inside the lines of national jurisdictions, the cases of overlap and competition between different jurisdictions having sovereign rights over the same resource or knowledge are common occurrence. However, the Protocol simply asks the Parties where the same resources or traditional knowledge are to be found to 'endeavour to cooperate, as appropriate... with a view to implementing the Protocol'. The transboundary character of biodiversity would be precisely the major gap, incentive and primary target of regulation for an actual global ABS regime, but no such mechanism is forthcoming in the Protocol.

There are no new international institutions or authorities being created by the Protocol, except the specialised ABS clearing house mechanism for information sharing being added to the existing clearing house mechanism of the treaty[36]. The Protocol will generally use the existing Conference of the Parties, Secretariat, financial mechanism and the rest of the

[34] Protocol, Art. 10
[35] Protocol, Art. 11
[36] Protocol, Art. 14. For more information on institutional see Section II below

existing institutional structure of the Convention, in similar fashion to the previous Cartagena protocol to the Convention. As regards implementation, monitoring and compliance, the Protocol on the whole follows the format of the Convention itself and relies exclusively on national 'legal, administrative and policy measures' to achieve its objectives.

The verdict of qualified failure reserved for the Protocol[37] is of course based on a standard legal analysis that is based on the internal legal rationality of the text and external standards derived from international environmental law under Lyster's constant fear of the sleeping treaty. Within this doctrinal framework, it is clear that the Protocol is engineered to create the least amount of reform of the CBD, international environmental law, the jurisdiction of FAO over certain types of genetic resources, the control of all property rights regimes by the WTO rationality, or indeed existing domestic ABS legislation[38]. It is thus rather a waste of an expansive negotiating mandate. The aim of harmonization was already being accomplished via the Bonn guidelines and other regional initiatives. The Protocol simply applied a veneer of binding form and occasionally more direct and forceful legal language[39].

If the Protocol is considered as nothing more than the Bonn guidelines redux, then it is a very poor return for eight years of complicated negotiations. Furthermore, such a Sisyphean exercise exemplifies the current blackmail of environmental law, as even without state consensus on primary substantive provisions – such as whether a global ABS regime

[37] E.g. Stuart R. Harrop, "Living in Harmony With Nature'? Outcomes of the 2010 Nagoya Conference of the Convention on Biological Diversity' (2011) 23 Journal of Environmental Law 117

[38] See for example, in Art 4.4, the condition that: 'where a specialized international access and benefit-sharing instrument applies that is consistent with, and does not run counter to the objectives of the Convention and this Protocol, this Protocol does not apply to the Party or Parties to the specialized instrument in respect of the specific genetic resource covered by and for the purpose of that special instrument.'

[39] E.g. substituting the CBD's 'shall endeavour to take' with 'shall take' and avoiding the caveats of 'as far as possible' etc.

should actually be constituted – the CBD must move forward at all costs, presenting the image of progress in law and policy to counteract biodiversity's continuing decline.

II | THE ABS MECHANISM AFTER THE NAGOYA PROTOCOL

To complete this standard normative analysis, the second element to examine would be the substantive provisions regarding the regulation of access to genetic resources and the mechanisms for benefit sharing. In this part of the Protocol, novel contributions to the CBD regime are in fact identifiable. These include a new legal definition guiding the benefit-sharing provisions of the Protocol, an elaborate transnational monitoring and compliance mechanism, the detailed integration of local and indigenous communities and their traditional knowledge throughout the text of the Protocol, and the resetting of the directions and goals of the ABS regime.

The following section identifies and analyses the operation of a transnational ABS mechanism gleaned from the Protocol's provisions, as opposed to the formal global ABS regime envisaged but never materialized by the Protocol. Emphasis is placed on changes on three fronts: (i) scope of application, (ii) the process of signing ABS agreements, and (iii) the new decentralised monitoring and compliance system.

SCOPE OF APPLICATION

Although it has proven difficult to distinguish effectively, genetic resources are defined in the CBD as 'genetic material of actual or potential value'[40], whereas genetic material is defined as 'any material of plant, animal, microbial or other origin containing functional units of heredity'[41]. Genetic resources are further distinguished from the broader category of biological resources, which are defined as including 'organisms or parts thereof,

[40] CBD, Art 2
[41] Ibid

populations, or any other biotic component of ecosystems with actual or potential use or value for humanity'[42].

Utilization of genetic resources is specifically defined in the Nagoya protocol as 'to conduct research and development on the genetic and/or biochemical composition of genetic resources'[43]. This type of utilization gives rise to a legal obligation to share the benefits with the provider of these resources[44]. Biotechnology is explicitly included in this obligation as a specialised sub-category of utilisation defined as 'any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use'[45]. The Protocol specifically mentions that biotechnology can make use of a derivate - i.e. 'a naturally-occurring biochemical compound resulting from the genetic expression or metabolism of biological or genetic resources', even if it constitutes genetic material without functional units of heredity, and thus not legally a genetic resource according to the CBD - and still create such benefit sharing obligations.

This arsenal of legal definitions of utilization and biotechnology indicate efforts at clarifying the benefit-sharing function of the CBD. The syntax of the original Convention article relating to benefit-sharing is convoluted, resulting in conflicting interpretations of the scope of application. Note especially the phrase:

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[42] Ibid

[43] The CBD only included a definition of the broader term 'sustainable use', which was essentially an adjustment of the sustainability/sustainable development definition of the 1987 Brudtland Report. See CBD, Art. 2: '"Sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations'

[44] CBD, Art. 15.3, 15.7. Protocol, Art.5

[45] CBD, Art. 2. Protocol, Art. 2

> ' [...] with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources'[46].

In the above wording, there is a series of confusing choices in language. First, research and development is distinguished from utilisation, which in turn produces a second undefined distinction between results and benefits, which was depicted at the time by the US government as a 'ploy' by the developing world to interfere and circumvent the emerging intellectual property regime being negotiated at the WTO by forcing the transfer of patented biotechnology; i.e. the 'results' of research and development[47]. Secondly, the open-ended nature of the term 'other utilization' of genetic resources, too close to the more general, but wholly different term 'sustainable utilization or use' that constituted the second objective of the Convention, also created confusion as to what kind of activities would create an obligation for benefit-sharing, fuelling additional fears over forced transfers of technology and compulsory licensing regimes.

The Protocol replaces this muddled provision with a clearer structure that recognizes three distinct categories of use: utilization (general R&D), application (biotechnology) and commercialization that all create an equal obligation to be accompanied by a written benefit sharing agreement with the provider[48].

In another major innovation of the Nagoya Protocol, the scope of application of ABS is specifically extended to local and indigenous communities. This is a significant change from the original treaty text that worded their concern over these communities in

[46] CBD, Art 15.7
[47] See Coughlin and page 119 above
[48] Protocol, Art. 5

protectionist terms and placed them under the in situ conservation article, and thus the biodiversity conservation objective of the CBD[49]. In contrast, the Protocol conceives of community involvement as an integral element of the ABS mechanism. They are recognised as holders of genetic resources, provided this recognition stems from 'domestic legislation over [their] established rights'[50], and thus entitled to benefit sharing. At the same time, the utilization of traditional knowledge associated with genetic resources, instead of resources themselves, is equally and separately recognised as a category of utilization also creating a full benefit sharing obligation for the user[51]. If the rights of these communities to control their resources and knowledge associated with them are established in domestic law, then access to their resources is dependent on their 'approval and involvement'[52], which may be subject to separate 'criteria and/or processes' compared to the standard process of obtaining prior informed consent[53].

The same requirements generally apply to accessing the traditional knowledge of these communities[54], although special attention is afforded to the issue of traditional knowledge as it relates to these communities' customary law and practices. The Protocol supports the idea that these communities should develop their own community protocols, minimum mutually agreed terms and model contractual clauses for ABS specifically in relation to traditional knowledge[55], while existing 'customary laws, community protocols and procedures' have to be taken into account in the implementation of ABS legislation[56]. It is important to note that this special treatment is attached solely to ABS provisions regarding

[49] CBD, Art 8(j)
[50] Protocol, Art 5.2
[51] Protocol, Art. 5.5
[52] Protocol, Art. 6.2
[53] Protocol, Art. 6.3(f)
[54] Protocol, Art. 7
[55] Protocol, Art. 12.3
[56] Protocol, Art. 12.1

traditional knowledge, inferring that ABS on genetic resources will have to follow the more standardised process outlined in the Protocol.

Additionally, in a clear reference to the practice of seed exchange between farmers, it is stated that the Protocol 'shall [...] not restrict the customary use and exchange of genetic resources and associated traditional knowledge within and amongst indigenous and local communities'[57]. But this commitment only stretches to 'as far as possible' and does not preclude the implementation of other international agreements (i.e. TRIPS) actually restricting such practices. The role of local and indigenous communities in biodiversity governance will be more fully examined in Chapter 7.

In contrast to the extremely broad definition of biodiversity adopted by the CBD, the ABS provisions have a significantly reduced scope of application. ABS currently applies to the utilisation of genetic resources (based on the Treaty text) and traditional knowledge (addition of the Protocol). The following section presents the processes and practices to be followed in the fulfilment of the benefit sharing obligation.

THE ABS PROCESS

As already stated, the sharing of benefits is not centrally managed at international/CBD level. The conception of the ABS mechanism in the Nagoya Protocol remains largely unchanged compared to what had already been achieved with the Bonn guidelines; they are to be instituted at the national level through the appropriate legislative, administrative, and policy measures of each state; benefit sharing must be fair and equitable and upon mutually agreed terms[58]; benefits to be shared can be both monetary and non-monetary[59]; again

[57] Protocol, Art. 12.4
[58] Protocol, Art. 5.1. These terms should be agreed in writing before the access permit is granted. An indicative list of such terms is included in Art. 6.3(g)

following the template of the Bonn guidelines, an indicative list of potential benefits is included in an annex to the Protocol[60]. The 'provider' of genetic resources is identified at the level of the state, i.e. 'the Party providing such resources that is the country of origin of such resources or a Party that has acquired the resources in accordance with the Convention'[61].

Despite the textual clarification in the Protocol of a number of terms previously elusive in legal doctrine, a continuing difficulty is that the terms 'fair and equitable' remain undefined, aside from the tautological solution that fair and equitable sharing is sharing under mutually agreed terms[62]. Since there continues to be no clarification included in any of the international texts discussed and adopted within the framework of the CBD, it is safe to argue that these terms are determined by the authorities assessing access applications, as well as the private parties to specific ABS arrangements in the context of the mutually agreed terms. A 1999 report[63] advanced a somewhat procedural definition of the terms, proposing that fair should relate to a process that achieves 'a proper balance of needs, rights, or demands' and equitable should be associated with an outcome that is based on criteria and indicators for equity. Of course, the complexity of ABS arrangement means that flexibility is always crucial; the Bonn guidelines recognize that the benefits to be shared will 'vary depending on what is regarded as fair and equitable in light of the circumstances'[64].

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[59] Protocol, Art. 5.4
[60] Ibid.
[61] Protocol, Art. 5.1
[62] Meaning that the sharing *will be* fair and equitable if completed under terms that both parties have agreed to beforehand. This is of course circular, self-fulfilling and open to abuse.
[63] Marie Bystrom, Peter Einarsson and Gunnel Axelsson Nycander, *Fair and Equitable: Sharing the Benefits from Use of Genetic Resources and Traditional Knowledge* (1999)
[64] Bonn guidelines, Article 45

Regarding the benefits themselves, the types of benefits to be shared, as well as the method and the timing of the sharing process[65] are open to negotiation. The perception of biotechnology is one of huge profit attached to exclusive patents based on advanced R&D, a pillar of the idea of genetic gold. This creates an assumption and expectation that the benefits to be shared must equally take the form of a monetary windfall. Instead, the ABS working group considered capacity building, i.e. the transfer of legal, scientific and business skills, as the 'essence of ABS under the CBD'[66]. This is also in line with the bottom-up policy approach promoted by the UN's Millennium Development Goals. Capacity-building is considered necessary for adequately negotiating ABS arrangements, particularly when it builds up the negotiating and entrepreneurial capacity of individuals, institutions and communities as an element of their overall managerial capacity. The recognition of the importance of capacity-building can be observed from the outset in the fact that the COP decision mandating the constitution of the ABS working group also includes an action plan on capacity building specifically for ABS[67].

A controversial type of non-monetary benefit is what can be broadly included under the label of technology transfer[68]. While it is acknowledged as one of the 'essential elements for the attainment of the Convention'[69], it has also been historically acknowledged as one of the main reasons for the US continued rejection of the CBD[70]. More specifically, the inclusion of biotechnology in the technology transfer and ABS provisions[71], along with the

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[65] Bonn guidelines, Article 45
[66] CBD, *Report of the Panel of Experts on Access and Benefit Sharing on the Work of its Second Meeting* (UN Doc UNEP/CBD/WG-ABS/1/2, 2001), par. 47, 112
[67] UNEP/CBD/COP Decision VII.19 (2004), Annex
[68] Protocol, Art. 23
[69] CBD, Art. 16.1
[70] See US Declaration on the CBD, 31 ILM 848 (1992). Also Klaus Bosselman, 'Poverty Alleviation and Environmental Sustainability through Improved Regimes of Technology Transfer' (2006) 2 Law, Environment and Development Journal 19
[71] CBD, Art. 19

requirement that any technology transfer must be 'under fair and most favourable terms'[72], i.e. below market prices, proved a 'bridge too far' for the country with the most advanced biotechnology industry in the world[73].

The basic principle that underpins the ABS process is that access is granted subject to the prior informed consent of the country of origin or in general of the owner of the genetic resources[74]. This is relatively straightforward when research takes place in public land owned by the state, but a significant number of the remaining areas of high biodiversity are located in the South and in locales predominantly inhabited by traditional or indigenous communities[75]. The Bonn guidelines explicitly illustrate the inadequacy of a completely state-centric ABS model by 'recognizing that Parties and stakeholders may be both users and providers'[76]. The Protocol goes further by explicitly extending the ABS mechanism to the sub-national level, where this right to grant or refuse access is devolved to the local and indigenous communities[77]. For these communities, prior informed consent can be substituted by the more pro-active 'approval and involvement'[78], indicating the institution of a different, more detailed, direct and participatory process compared to the granting of access by the relevant competent authority at the national level[79]. However, any such right of local and indigenous communities has to be established in domestic law and is not guaranteed in the text of the Protocol[80].

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[72] CBD Article 16(2)
[73] For more information on the problems with the interpretation of the CBD's technology transfer provisions, see Biswajit Dhar, 'The Convention on Biological Diversity and the TRIPS Agreement: Compatibility or Conflict?' in Cristophe Bellman, Graham Dutfield and Ricardo Melendez-Ortiz (eds), *Trading in Knowledge: Development Perspectives on TRIP, Trade and Sustainability* (Earthscan 2003); Coughlin
[74] Protocol, Art. 6.1
[75] R.V. Anuradha, 'In Search of Knowledge and Resources: Who Sows? Who Reaps?' (1997) 6 Review of European Community and International Environmental Law 263; Glowka 257
[76] Bonn guidelines, Article 16.
[77] Protocol, Art. 6.2
[78] Protocol, Art. 6.2
[79] Protocol, Art. 6.3(f)
[80] Protocol, Art. 6.2 '...where they have the established right to grant access to such resources.'

The prior informed consent requirement is a reflection of a modicum of participatory ideals being incorporated into the largely market-oriented ABS construct. The term 'informed' implies that consent must not be a procedural formality, but instead must be based on as complete as possible information on the process of collection and utilization of the genetic resource and on the negotiation of mutually agreed terms. This information might include the environmental impact of the collection process or the envisaged uses that might arise from research on the genetic resource to be accessed. It is the responsibility of the user, seeking to secure prior informed consent, to provide all relevant information to the authority designated to make the access determination, as well as to the local community that must consent, if such a community is directly involved in the access arrangements[81].

The granting of access to genetic resources or traditional knowledge based on prior informed consent and mutually agreed terms, as well as the subsequent compliance of the benefit sharing obligations outlined in the access permit is to be enforced through domestic legislation in both provider and user states. Generally, they are to take measures 'to provide that genetic resources utilized within its jurisdiction have been accessed in accordance with prior informed consent and that mutually agreed terms have been established, as required [...] by the regulatory requirements of the other party'[82], including 'measures to address situations of non-compliance'[83]. This enforcement also applies to traditional knowledge[84].

COMPLIANCE AND MONITORING

This reliance on domestic measures does not mean that the ABS process is to be completely divorced from the international milieu of the CBD. In place of a classical

[81] Bonn Guidelines, Art. 36.
[82] Protocol, Art. 15.1
[83] Protocol, Art. 15.2
[84] Protocol, Art. 16

centralised international institution collecting reports and producing knowledge, the Protocol aims to institute a decentralised transnational network of institutions performing reporting and compliance functions. This loosely harmonized regulatory framework is closer to the objectives of the Bonn guidelines than to what would be expected of an environmental treaty.

Compliance is achieved by first setting out the general principles for issuing access permits, including those of 'legal certainty, clarity and transparency'[85], as well as the more functional commitment to actually have information available for users regarding the process of application itself[86]. It is also important to note that in general applying for access to genetic resources has to be governed by 'fair and non-arbitrary rules and procedures'[87], leading to 'a clear and transparent written decision [...] in a cost-effective manner and within a reasonable period of time'[88], thus precluding outright blocking of applicants, unreasoned rejections of applications, or de facto rejections through inordinate delays in reaching a decision.

There are two types of national institutions assigned to this process in provider states. Initially, the availability of information regarding the access legislation has to be maintained through the designation of a 'national focal point', where interested applicants can direct their enquiries[89]. The decision to issue an access permit, verifying that access requirements (prior informed consent and mutually agreed terms) have been met, is to be made by the

[85] Protocol, Art. 6.3(a)
[86] Protocol, Art. 6.3(c)
[87] Protocol, Art. 6.3(b)
[88] Protocol, Art. 6.3(d)
[89] Protocol, Art. 13(1)

designated 'competent national authority'[90], which may not necessarily be the same institution as the 'national focal point'[91].

The sole international aspect of this compliance network calls for both the information on national ABS legislation and issued access permits to be made available to the ABS Clearing-House established by the Protocol as part of the CBD's clearing house mechanism[92]. Once this notification occurs, the permit is then recognised as an 'internationally recognised certificate of compliance'[93]. These centrally-issued certificates form the basis of user state monitoring through an additional decentralised and transnational network of multiple 'designated checkpoints'[94] for collecting information regarding the utilization (as opposed the access procedures) of the genetic resources. Information to be collected and made available through these checkpoints includes '*inter alia*, any stage of research, development, innovation, pre-commercialization or commercialization'[95].

This system aims at enhancing transparency in the journey of these resources from collection to utilization, i.e. the question of how genetic resources are actually utilised and the benefits that accrue from this utilization, by creating a network of information nodes not tethered to the formal administrative apparatus of the state-centric treaty regime of the CBD. Hence, this chain of monitoring and reporting is not solely envisaged at the inter-state or inter-authority level. Users of genetic resources may be required by law to provide such information to designated checkpoints directly[96]. It is also worthwhile to note that in contrast to provisions regarding the national focal points and the competent national

[90] Protocol, Art. 13(2)
[91] Protocol, Art. 13(3)
[92] Protocol, Art. 6.3(e) and 14
[93] Protocol, Art. 17(2)
[94] Protocol, Art. 17
[95] Protocol, Art. 17.1(a)(iv)
[96] Protocol, Art. 17.1(a)(ii)

authorities, there is no designated adjective characterising these checkpoints; therefore, aside from the national level, they may also be constituted at sub-national (e.g. for a single indigenous/ethnic group across national borders) or regional levels (e.g. a single point for the European Union).

This alternative system of monitoring and compliance does alter the basis for transboundary cooperation on ABS, by focusing on guaranteeing market transactions as opposed to sovereign rights. By essentially pairing the granting of an access permit by the provider with requirement on the user to secure a certificate of compliance[97], a certain legislative, administrative and policy homogeneity is required, so that private actors assume centre stage in a global market for genetic resources and traditional knowledge. This may appear expedient given the failure to reach consensus on an actual multilateral benefit sharing mechanism, but it still makes odd reading in a binding international agreement put forward as a tool of implementation of global environmental policy.

III | THE GOALS OF THE ABS MECHANISM

In this section, the above standard textual reading of the Nagoya Protocol and the ABS mechanism is placed within the broader biodiversity complex, as outlined in the previous chapter. The verdicts of failure and innovation returned for certain parts of the Protocol and the mechanism are assessments based on either an internal legal rationality of the text or certain external standard of the effective environmental legal instrument. However, the ABS mechanism can also be considered a small strategic project still driven by the idea of genetic gold, a technique of governing within the apparatus of biodiversity, contributing to the establishment of a new market economy of genetic gold. In this guise, its primary goal is to produce the subject of the provider/seller of genetic resources capable of navigating

[97] Protocol, Art. 16.2.

this new reality. This is achieved by constructing the normality of the market for genetic resources, replacing any environmental goals and aspirations with a general incitement to manage resources for development. However, this function now takes place amidst growing uncertainty over the specifics (i.e. beyond the generalities of the economic grid of neoliberalism) of this new market economy as an object of biodiversity governance established by the idea of genetic gold.

OBSTACLES AND CONFUSION

The genetic material traded in this market refers mainly to non-domesticated and non-documented varieties of plants and other organisms located in situ, in the last remaining biodiversity hotspots. Thus, the ABS market is a market for wild biodiversity descended from the bioprospecting practices popularized with the creation of INBio. It is thus a very specific market that is centred on only one type (wild) and one component (genetic) of biodiversity. A number of obstacles to its smooth hypothesized operation can stem from this character.

The first obstacle in the envisaged operation of this market and the materialisation of all the benefits promised by the idea of genetic gold is that for the purposes of R&D conducted by the biotechnology industry a much more accessible raw material is the ex-situ holdings of documented genetic material that were collected before the entry into force of the CBD. These collections are located predominantly in the North[98], under the care of institutions such as botanic gardens, gene banks etc. Due to the old collection methods, most of this genetic material held ex-situ is of unknown origin, so benefit-sharing with a

[98] An actual 75% of genetic material held in ex-situ collections are located in either the US or Europe. Stated in Tully 97

providing country or local community cannot proceed[99], even if the CBD or the Nagoya Protocol were somehow endowed with retrospective application. The practical consequence of this lack of benefit-sharing obligation, coupled with the additional access requirements for in situ collection of genetic samples, makes these resources much more attractive, to the extent that resorting to these ex-situ collections is fast becoming preferred research practice[100]. This in effect circumvents and short-circuits the adoption of further ABS legislation in the South.

Secondly, it is a market largely dominated by the decisions and behaviour of private actors of considerable force, such as multinational pharmaceutical corporations or the biotechnology industry, but the genetic resources to be traded are very often publicly owned. Since the technologies for screening, genetic manipulation and modification became increasingly available, it is these actors, as well as various research institutions and universities that are the buyers and 'users' of these resources. They undertake commercial and non-commercial (applied and academic) research projects for the collection and testing of new biological and/or genetic samples of plants, animals or other micro-organisms. On the other hand, the sourcing of the genetic material takes place mostly in public lands, designated as protected areas - the so-called, untapped biodiversity hotspots, as well as in locations where the competing claims and rights of local and indigenous communities against the central state authority are wont to play out. Almost by default, ABS contracts are not actually 'just' written contracts for the procurement of genetic material. They often have to be hybrid public/private arrangements touching upon a multiplicity of social, economic, political and environmental issues, in addition to making some form of business sense. This phenomenon places a significant burden on these agreements, while placing

[99] In fact, only 25% of the genetic material collected before the entry into force of the CBD is of known origin. Ibid

[100] On present practice in this area see McManis

them firmly within a series of politically-charged questions, at the very least regarding ownership of lands and resources, that exceed the regimented confines of environmental, property and contract law[101].

Thirdly, the possibility of a global ABS regime, however remote it has remained after the Nagoya Protocol, is actually an additional obstacle or at least source of confusion for the operation of this market. The path of decentralization and transnational networking currently preferred is at its logical conclusion against the institution of a centralised benefit-sharing mechanism, the mandated objective of the negotiations. This is a problem of future direction for the whole market and the CBD, which aims to mimic the basic elements of benefit sharing under the FAO treaty.

In the FAO system, a central benefit-sharing mechanism is a well-suited addition because the plant genetic resources under the scope of that system are actually held in the public collections of the global CGIAR network, which is in turn controlled by FAO[102]. So there is a conceptual and structural correspondence between a type of global and publicly held resource and its utilization through public, non-commercial R&D[103]. The circumstances of the genetic resources under the scope of the CBD's ABS mechanism are so different – in terms of resource ownership, legal status, and type of research amongst other factors - as to make a wholesale copying of the regime from one legal context to the other impractical. One is a centrally controlled economy, while the other aspires to be deregulated and 'liberalised'.

[101] Some of these questions are further explored in Chapter 7
[102] The FAO system is also helped in its operation by its reduced complexity due to limited scope. There is a list of about 60 specific varieties for food and agriculture that are managed through the system. A CBD-based system by necessity would have to be much more open-ended
[103] Patents are not granted on products developed based on CGIAR genetic resources

Even if presented to the South as an escape route out of the denigrating 'banana republic' status as primary provider of cheap natural resources, there is no escaping the fact that, both as a policy and as a market, ABS remains heavily dependent on the biotechnology industry of the North. Biovalue is constituted when the genetic resources are utilized, when commercial products materialise, but only a limited number of multinational corporations across the world engage in such cutting-edge, applied genetic research. There is also the inescapably neoliberal argument that additional regulation of the sector as attempted by the Nagoya Protocol and the rising costs of securing access permits and certificates of provenance will push these corporations towards different research paths, such as channelling R&D investment towards ex situ collections rather than ABS arrangements. In addition, a wholesale copying of the FAO model would possibly remove some of these private actors currently involved in the genetic gold market.

A different form of confusion is related to the environmental outcomes expected to materialize out of this market. Bilateral private ABS contracts are at the very least unconventional tools of environmental law and policy[104]. According to a certain legal taxonomic orthodoxy, they can be classified as incentive mechanisms belonging to the broader category of market-based environmental regulation[105]. The incorporation of strands of environmental or ecological economics[106] clarifies the question of capturing biovalue and can predict the level of incentives required to achieve behavioural modification. There are two main issues with this economic theorising: first, it is unclear what kind of behaviour is being incentivized and whether it is in fact conducive to environmentalist goals; secondly, it is questionable whether there is significant biovalue in

[104] For example they are not mentioned at all in the nomenclature of available market-based environmental measures in Bodansky, *The Art and Craft of International Environmental Law 57-85*
[105] Joseph Henry Vogel, 'From the 'Tragedy of the Commons' to the 'Tragedy of the Commonplace': Analysis and Synthesis through the Lens of Economic Theory' in Charles R. McManis (ed), *Biodiversity and the Law : Intellectual Property, Biotechnology & Traditional Knowledge* (Earthscan 2007)
[106] Nick Hanley, Benjamin White and Jason F. Shogren, *Introduction to Environmental Economics* (Oxford University Press 2001)

the narrow economic sense for such incentives to materialize. What one ends up with is that 'like so much economic theorizing, the logic is impeccable as long as one buys into the assumptions'[107].

The non-environmental focus of ABS mechanism as it currently stands is further enhanced by the legal terminology employed in the Protocol, derived largely from contract and property law. The market, buyers, sellers, contractual clauses, dispute resolution proliferate throughout the Protocol, to the extent that it is difficult to see the contribution of this mechanism to environmentalism. The connection with the other two objectives of the CBD, i.e. conservation and sustainable use, has grown so distant in nearly two decades of debates and conflict over the sharing of profits that the Nagoya Protocol includes a reminder in case it has been forgotten that ABS is still part of the CBD:

> 'The Parties shall encourage users and providers to direct benefits arising from the utilisation of genetic resources towards the conservation of biological diversity and the sustainable use of its components'[108].

Despite this textual reminder, it is still very difficult to see the Nagoya Protocol as an environmental instrument and not simply as a trade instrument, an agreement more at home in the 'stable' of the WTO, rather than that of UNEP. The ABS mechanism of the CBD is still traversed by the logic of the bioprospecting contract, and thus by default ABS arrangements will continue to accrue in areas where there is a better chance of striking 'genetic gold', rather than areas that suffer from environmental degradation. ABS contracts are in essence private arrangements between parties that quite possibly may not be motivated by environmental concerns. The market expects that contracts to be negotiated

[107] Vogel 121
[108] Protocol, Art. 9

according to economic and not conservation priorities. They would more often than not be confined within national borders, a practice which might constitute an obstacle to any regional environmental conservation initiatives. Lastly, the predictability and flow of financial and/or non-monetary benefits is ultimately contingent on negotiating skills, and not on the national or local needs. In short, ABS offers nothing to biodiversity that has been or is in danger of being irrevocably destroyed, but can improve the already sustainably managed parts of it. It remains unclear why a system of focusing exclusively on the limited number of areas of high biodiversity should be translated into environmental policy for the very diverse whole that is trapped under the label the 'South'.

FORGETTING EQUITY AND ACADEMIC RESEARCH

The perception of the ABS contract as a win-win exchange consistently obscures the consideration that the concept of fair and equitable sharing, even if not defined in legal text, has a clear redistributive connotation. There is of course no mention of collective, social or environmental justice in the ABS mechanism or any other legal texts of the CBD, as that would be an overtly political gesture. Although this oversight may be explained away as simply being outside the remit of environmental law, Cancun Declaration's 'new ethic of equity' has not aged well. Access to justice is given only token consideration[109], and then only in relation to a strict juridical definition of justice as dispute resolution, mediation or arbitration.

Another long-standing objective mishandled in the Nagoya Protocol is the clarification of distinct access and benefit sharing requirements for academic and applied research[110]. It is obvious that success in bioprospecting is not measured in the same way in academic and

[109] Protocol, Art. 18

[110] Sylvia I Martinez and Susette Biber-Klemm, 'Scientists - Take Action for Access to Biodiversity' (2010) 2 Current Opinion in Environmental Sustainability 27

applied fields. For academic research programmes, success is measured in terms of building knowledge on life, what has been termed biodiscovery, or at least increasing taxonomic precision. Industrial or commercial programmes aim to develop marketable products, in the form of new natural products, pharmaceuticals and/or crop varieties; to 'commercialize' biodiversity. Different criteria for success also imply different types and levels of funding. Applied research is privately funded by large multinational corporations, while academic research has to rely at least to a certain extent on some form of public funding or grant.

Despite such obvious differences, the Protocol continues to regard the ABS mechanism as equally applicable to all types of biodiversity research. The only ground ceded is the restatement of the principle that ABS legislation is not meant to fence off and block access to genetic resources, but to promote research and development, especially of the type that contributes to the other two objectives of the CBD (conservation and sustainable use) in the South[111]. However, there is no specific allowance made for academic research to be subject to simplified measures compared to commercial R&D. Given the discrepancy in financial resources and the differing objectives, excessively onerous access requirements will invariably continue to stifle any form of non-commercial and public good-oriented research that is not native to the market economy of genetic gold.

ABS, like the bioprospecting/biopiracy labels before it, can serve to make such distinctions unclear, and to homogenise the varied purposes for sample collection and genetic research. The multiplying joint ventures and links between business and academia further blur the lines between the two types of research[112]. By not addressing this distinction, the added irony is that the current, post Nagoya-mechanism ABS mechanism will stop public projects

[111] Protocol, Art. 8(a)
[112] For example, INBio and Merck were brought together by Cornell University.

benefiting the South, while leaving commercial projects that benefit private corporations and individuals in the North largely intact. This would constitute another blow to the reasoning that drove the adoption of the protocol in the first place, not to mention completely obviating the goals of the CBD itself.

GOVERNING THROUGHT THE CONTRACT

The ABS mechanism, if understood solely as a mode of regulation, is geared primarily towards improving the operation of the market for genetic resources, but more broadly towards assisting the documentation, indexing, commodification and commercialisation of these resources. It initially appears that we have not moved on from structural, macro level explanations; an abstract logic dictates that these goals are to be achieved by facilitating exchanges between the South, possessing genetic gold that the North requires for further developing its biotechnology industry, and the North, possessing the scientific, technical and financial means that the South requires for sustainable development[113]. Already in 1996, even before the ABS acronym even existed in the terminology and conceptual horizon of the CBD, a concept paper presented at the third COP put forward this idea of the CBD:

> 'The Convention can be interpreted broadly as an instrument to promote the equitable exchange, on mutually agreed terms, of access to genetic resources and associated knowledge for finance, technology and participation in research'[114].

The standard analysis of the Bonn guidelines, the Nagoya Protocol and the ABS mechanism undertaken in this chapter does not challenge this conception. However, within this simplistic *quid pro quo* there is clearly a more nuanced understanding of the micro level

[113] Swanson, 'The Reliance of Northern Economies on Southern Biodiversity: Biodiversity as Information'
[114] UNEP/CBD/COP/3/Inf. 53 (1996).

as well; a producer and a buyer for this raw material or in the terminology of the CBD a 'provider' and a 'user'[115] to be brought together through a market transaction.

If the ABS mechanism is then to be understood differently, as a technique of governing within the biocomplex, then it would be geared towards arranging the details of this coming together so as to produce the desired effects and contribute to the goals of the biocomplex. The main instrument for this task of arrangement is the written contract, the ABS arrangement as the conceptual descendant of the bioprospecting contract. The quantity of these contracts is of paramount importance for sustaining this market and the provider-user relation on which the operation of the biocomplex is based.

Provided they follow the internationally developed standardized material transfer and benefit sharing agreements[116], these contracts are deemed to have a number of advantages in achieving the strategic goals of the biocomplex: (i) they directly empower local communities as stakeholders, provided there is sufficient capacity-building for them to take advantage of their stake at the negotiating table; (ii) they lower negotiation costs and enhance legal certainty and clarity; and (iii) they simplify dispute settlement with the inclusion of resolution clauses. More generally, they establish a base of reciprocity by outlining a choice of fair and equitable returns for the sale of genetic material.

However, there are also acknowledged drawbacks. In the ABS contract, the provider of genetic material is still left with the preparatory tasks of the process, such as collection, initial screening or taxonomy, while the user is tasked with the task of utilization and commercialization that will yield the requisite benefits. By standard economic theory and

[115] E.g. CBD, Art. 15
[116] Such as for example those outlined in Bonn Guidelines, Article 42(b)(iv).

trade practice in this area[117], the majority of these benefits, at least financially, should accrue to the user as opposed to the provider of the raw material. In this light, the differences between the market economy of genetic gold and the agricultural export-oriented model are not as significant as initially advertised.

Despite these drawbacks, the ABS mechanism implies that the award of stakes and the creation of incentives for modifying behaviour are replacing the constant financial, juridical and operational struggle to enforce top-down environmental legislation. The major shift in the mode of governing brought about by the dominance of the ABS contract and the idea of genetic gold is nowhere more apparent than in the treatment of nature reserves and protected areas in the South. The pre-genetic gold round of designations of protected areas as a method for conserving the dwindling reserves of high biodiversity across the world lacked the support, input and participation of the local groups and communities closest to the resource or the area being protected[118]. Instead of excising persons and communities from the environmental management – if not physically barring from these areas - the ABS mechanism focuses on their active involvement in this process as producers of genetic resources and holders of traditional knowledge. Without resorting to the 'persisting myth' that tends to romanticize these communities and their transcendental wisdom[119], a general rationality or 'idiom'[120] of inclusion is disseminated. This means that they are not only encouraged and trained to participate in the new market economy of genetic gold, but they also aspire and conduct themselves accordingly in order to participate in these processes.

IV | THE MANY GUISES OF THE ABS MECHANISM

[117] Graham Dutfield, *Intellectual Property, Biogenetic Resources and Traditional Knowledge* (Earthscan 2004)
[118] Laird
[119] Jean-Marie Baland and Jean-Phillipe Platteau, *Halting Degradation of Natural Resources: Is there a Role for Rural Communities* (FAO/Oxford University Press 1996) 183
[120] Cori Hayden, 'From Market to Market: Bioprospecting's Idioms of Inclusion' (2003) 30 American Ethnologist 359

As a legal output of the CBD, a legal regime steeped in the narrative of sustainable development, the Nagoya Protocol follows the general direction of balancing social, environmental and economic concerns. In turn, the Protocol further positions the CBD as the regulatory watchdog of the global market for genetic resources, with a responsibility to ensure its continued smooth operation and growth.

At its most progressive, ABS could be characterised as a mechanism for participatory decision-making through the involvement of local and indigenous communities as stakeholders. In this guise, the ABS mechanism must facilitate the coming together of 'providers' and 'users' – sellers and buyers - as distinct entities at the micro level, outside the realm of interstate relations and agreements that produced the concept of ABS in the first place.

At its most pragmatic, as an expression of environmental economics, ABS could be interpreted as an innovative funding mechanism that further consolidates the restructuring of conservation finance; abandoning the model of development assistance from the North to the South and adopting market-based approaches. However, the location and type of beneficiaries offers only indirect and hazily understood benefits in terms of environmental protection. It remains unclear whether these ABS arrangements are supposed to procure funding predominantly for the environment or for development, once outside the facile closure of the assumptions underpinning sustainable development.

At its most aspirational, ABS has been advertised as the core of an alternative development model[121], but the size of finance created exclusively by ABS arrangements over the past two decades cannot compete with the profit of other biodiversity-related sectors, such as

[121] Gamez

industrial agriculture. Doubts were expressed about the viability of the emerging market for genetic resources as early as in 1988, even before genetic gold was disseminated as a win-win scenario of environmental management for the South[122]. For these genetic resources to act as a source of significant benefits and sustained income for the providers of genetic material, bioprospecting programmes and ABS arrangements have to attain a unreal level of success that has simply not yet materialised since the CBD's entry into force and the adoption of the bioprospecting/ABS contract as a tool of environmental policy[123].

At its most legalistic, ABS is the first detailed legal interpretation of some of the rationalities and goals of the broader biocomplex constructed based on the idea of biodiversity as genetic gold, and not as an environmental ideal. Perhaps due to this originality, the mechanism appears to be caught between the highly competing paradigms of neoliberal win-win scenarios and redistributive social justice. In most parts it reads like a technical regulatory instrument or policy manual more at home in the WTO stable instead of the UN, while in other –far fewer- parts the reader can discern nostalgia for the simplicity of command and control. This is simply a continuation of the struggle over the extent of the plurality of the goals pursued in the context of the CBD, which has already led to the US rejection of the regime.

In the end, the continuing confusion over the function, goals, implied and overt politics of the ABS mechanism strengthen the notion that the formation of another binding multilateral mechanism is not the correct governmental method for the pursuit of the plurality of goals of the biocomplex. This fixation with evolving the legal regime through binding law appears to ignore fundamental aspects of the history of the regime itself and of

[122] See reservations already expressed in David Ehrenfeld, 'Why Put a Value on Biodiversity?' in Edward O. Wilson (ed), *Biodiversity* (National Academy Press 1988)
[123] Miller

the concept of biodiversity more generally, while making a considerable amount of assumptions regarding the genetic resources market that it seeks to regulate.

The many guises of this ABS mechanism also imply the blackmail of environmental law in action. National sovereignty over biodiversity and private enterprise have been consistently reinforced throughout the operation of the CBD, yet significant resources and six years of negotiations went into devising a global scheme that would be better suited to the previous - and forcefully rejected by all - legal status of the resources as belonging to a global commons. The existence of such a variety of roles attributed to the ABS mechanism has loaded the process with the huge weight of failed development ideologies and environmental policies in the South. It appears as ABS is frantically trying to escape from a maze of environmental and developmental concerns and aspirations.

In all the versions of ABS outlined above, the common element is the necessity of a non-state, 'localised and localisable'[124] entity for the whole conceptual mechanism to make sense and operate as envisaged. As the provider/seller of genetic resources or information in the form of traditional knowledge, as the target of an incentives policy located close to the natural resource to be protected, and as a local group given a stake in the management of its own natural capital, community is further confirmed as an essential institution and concept in the operation of the biocomplex.

Given the conflicts of different trajectories coursing through ABS, community has become a place of solace, a briefly sketched guiding principle, an ideological attachment not requiring definition or clarification, a political buzzword capable of motivating support without too much analysis; virtually, the biodiversity field's own particular sustainable

[124] Hayden

development. The following chapter attempts to analyse some of the implications of this call to return to community.

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CHAPTER 7
GOVERNING IN THE BIOCOMPLEX II: THE PARTICIPATION OF LOCAL AND INDIGENOUS COMMUNITIES

Biodiversity has created – through its varied global, transnational, regional and national manifestations and the idea of genetic gold - paths of interaction between the local and the global. The symbol of this interaction is the enhanced role for local and indigenous communities within the biocomplex. In a 2007 message, the executive secretary of the CBD characterised indigenous and local communities as 'environmental managers with immense ecological knowledge' (i.e. not wise stewards, environmentalists, ecologists or rural poor) and 'crucial partners' in both conservation and sustainable use of biodiversity.[1] More recently, the preamble of the Nagoya Protocol on ABS took note of:

> 'The interrelationship between genetic resources and traditional knowledge and their inseparable nature for indigenous and local communities, the importance of traditional knowledge for the conservation of biological diversity and the sustainable use of its components, and for the sustainable livelihoods of these communities'[2].

The Protocol then proceed to formally recognise that these communities hold certain property rights over both genetic resources and traditional knowledge of biodiversity use,

[1] See 'Message from the Executive Secretary, Ahmed Djoghlaf, on the Occasion of the International Day of the World's Indigenous People' (2007). Available at: www.un.org/esa/socdev/unpfii/documents/MessageSCBD07_es.doc
[2] Protocol, Preamble

which give rise to benefit sharing obligations from the part of the users/buyers of these resources or knowledge[3].

Such statements indicate that these communities are clearly approached with an integrative goal. This strategy further confirms the biocomplex's immanent shift towards the South, the grafting of an overlay of local communities onto the pre-existing global map of biodiversity that highlighted the pathology of the South. The chapter examines this full realization of the entry of community into biodiversity. This most recent shift in the history of biodiversity has changed both the conceptual and physical geography of the field, and has been widely heralded as creating more balanced and inclusive governance arrangements, predominantly in the shape of the 'equitable partnership'[4] within the ABS, a form of biodiversity enterprise.

At the same time, these newly included environmental subjects are taking advantage of this role attributed to them, by providing sites of resistance within the biocomplex. Positioning themselves as the concrete counterpoint to the forces of global markets, they delineate in themselves a real locality to counteract the abstract globality. In this way, governing through the community in the biocomplex fluctuates between two images; of community as a dynamic source of an economic enterprise, and of community as a fixed destination of benefits.

I | COMMUNITY IN THE BIOCOMPLEX

After a long history of environmental rhetoric oscillating in a futile manner between the competing state and market-based paradigms, community-based approaches have emerged

[3] As already examined in Chapter 6.
[4] Laird

generally as a 'third way' of sorts in environmental regulation. Past failures of both state and market approaches have led to a certain level of cynicism and resignation:

> 'Communities could not do a worse job than corporations, states, multilateral agencies and development experts who have caused an extraordinary amount of human and environmental damage'[5].

The potential of a community-based approach to conservation was acknowledged in international environmental law as early as 1992, when Principle 22 of the Rio Declaration completely redefined the role of indigenous and local communities[6]; Agenda 21 further dedicated a separate chapter on the issue, calling for the 'empowerment' of indigenous communities, their 'participation in the national formulation of policies', and their 'involvement, at the national and local levels, in resource management and conservation strategies'[7]. The promise of sustainable development appeared to infuse this 'third way' with the goal of regeneration of economic, political and historical agency previously denied to these communities. This recharged agency was broken down in the more specific mechanisms of empowerment, participation and involvement.

This attention to local and indigenous communities has emerged on the basis of what has been called the 'founding assumption':

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[5] J. Peter Brosius, Anna Lowenhaupt Tsing and Charles Zerner (eds), *Communities and Conservation: Histories and Politics of Community-Based Natural Resource Management* (AltaMira Press 2005) 1

[6] 'Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development' (UNCED 1992, Principle 22)

[7] CSD 1992: Paras 26(3)(a)-(c)

> '[P]eople who live close to the resource and whose livelihoods depend on it have more interest in sustainable use and management than do state authorities or distant corporations'[8].

Environmental NGOs can be added to that list by someone of a cynical disposition. Irrespective of the precise targets of comparison, this claim to truth is fairly basic: simple proximity to biodiversity increases knowledge of it and reinforces an interest in its sustainable use due to the relation of immediate dependency between people and resource.

The CBD initially adopted a heavily qualified[9] provision for 'protecting and respecting the knowledge, innovations and practices of local and indigenous communities' solely as an additional policy component of in-situ biodiversity conservation[10]. Furthermore, as regards this 'knowledge, innovations and practices', states are also asked to 'promote their wider application'[11]. Traditional knowledge has been described as the 'body of knowledge built up through generations, by a group of people living in close proximity to nature and manifested by practices in which tradition filters human innovation'[12], although the term is not legally defined in the legal text[13]. This first CBD provision is much more limited and restrained compared to the expansive wording of the Rio Declaration and Agenda 21, if only because it implies that community constitutes another passive 'outside' to protected in conjunction with biodiversity, the environment and nature.

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[8] Tania Li, 'Engaging Simplifications: Community-Based Natural Resource Management, Market Processes, and State Agendas in Upland Southeast Asia' in J. Peter Brosius, Anna Lowenhaupt Tsing and Charles Zerner (eds), *Communities and Conservation: Histories and Politics of Community-Based Natural Resource Management* (AltaMira Press 2005) 428

[9] Qualifications included in CBD Article 8 include 'subject to national legislation' and 'as far as possible and as appropriate'.

[10] CBD Article 8(j).

[11] Ibid

[12] Tully 93

[13] Or in the more recent Nagoya Protocol

The first step towards expanding the role of the local and indigenous communities was their recognition as stakeholders in the context of the Bonn Guidelines in 2002. In 2004, the CBD adopted the voluntary Akwé: Kon Guidelines[14], which introduced the concept of a wide environmental, social and cultural impact assessment in the design and implementation of development projects taking place on or near indigenous lands. This holistic impact assessment included measures for enabling the participation - and consideration of the needs and concerns - of local and indigenous communities in the process. Again, close proximity to the harmful effects of these projects is the major criterion for taking advantage of these legal provisions.

After two decades of CBD operation, and the rise of the idea of genetic gold, a more active role for local and indigenous communities was ultimately formally recognised in the Nagoya Protocol. Under the reformed ABS process, local and indigenous communities, as recognised stakeholders, join national governments and public institutions as possible providers of genetic resources and traditional knowledge and recipients of benefits from their utilization. This was still achieved somewhat indirectly, by the incorporation of traditional knowledge as a separate form of resource to be accessed and utilized through an ABS contract. These limited fragments of a community-based approach are still removed from the processes of empowerment, participation and involvement described in Agenda 21 or the 'devolution to local polities' frequently cited in the 'communities and conservation' literature[15]. Nevertheless, the link between community and biodiversity, however rudimentary, is clearly being formed.

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[14] Akwé: Kon: Voluntary Guidelines For The Conduct Of Cultural, Social And Environmental Impact Assessments Regarding Developments Proposed To Take Place On, Or Which Are Likely To Impact On, Sacred Sites And On Lands And Waters Traditionally Occupied Or Used By Indigenous And Local Communities. Available at http://www.cbd.int/doc/publications/akwe-brochure-en.pdf

[15] Justin Rose, 'Community-Based Biodiversity Conservation in the Pacific: Cautionary Lessons in "Regionalising" Environmental Governance' in Michael I. Jeffery, Jeremy Firestone and Karen Bubna-Litic (eds), *Biodiveristy, Conservation, Law + Livelihoods: Bridging the North-South Divide* (Cambridge University Press 2008) 213

In terms of the history of biodiversity, this process by which traditional knowledge and local concerns are being recognised and incorporated in biodiversity governance represents additional evidence of the complete abandonment of the idea of biodiversity as a conservation mentality, since that understanding of biodiversity largely equated the designation and protection of nature reserves with the removal of the human element. This direct manifestation of state power, whereby certain territories are 'walled–off' and granted special legal protection from human intrusion, remains one of the most direct ways by which environmental law can influence both the physical environment and human society.

Additionally, the idea of separating and recapturing pristine nature from degraded and degrading humanity has a long history as an ethical edict belonging to an ecocentric belief system that conceptualises the health of the nature as independent from, or in conflict with, humanity[16]. The conservation area thus represents a conceptual walling-off of nature, an attempt to preserve a single conception of nature as a repository of nebulous values associated with the natural. As these values are deemed lost to urban populations, it is almost an exercise in nostalgia, and ultimately an impossible attempt to rid nature of social and cultural elements, in order to locate within the means by which human alienation can be reduced. Thus, it can be argued that the cultural and social origins of the practice of designating of protected areas are avowedly Northern and urban. Conservation areas also require specific forms of ecological knowledge and managerial practices to re-establish their natural character and maintain this separation.

[16] John Alder and David Wilkinson, *Environmental Law and Ethics* (Macmillan 1999); James G. Cantrill and Christine L. Oravec (eds), *The Symbolic Earth: Discourse and Our Creation of the Environment* (The University Press of Kentucky 1996)

From the perspective of international environmental law, the designation of protected areas remains at the core of a state-centric model. A number of environmental treaties traditionally were delegated the international authority to hold national governments responsible for designating and maintaining a sufficient number of protected areas as an essential component of national environmental policy on that specific issue. Indeed, the environmental credentials of national governments are often still measured by the extent of these conservation areas. This state-centric process often inferred that the strict laws and boundaries required for these protected areas are to be directed against the local and indigenous communities seen as resisting environmental protection[17]. More specifically, both environmentalists and administrators in the past depicted local and indigenous communities as short-sighted, incapable of sustainably harnessing the economic value or realising the intrinsic environmental value and of their land, too poor and uneducated to understand; obstacles to the institution of rational resource management[18].

In effect, the idea of genetic gold had brought with it the rejection of the designation of conservation areas as the measure of first resort when taking action on biodiversity – as a part of the model where the state was the primary actor. As the notion of community entered into biodiversity discourse, so the previously walled-off protected area is transformed into a multi-stakeholder locality, the site of multiple interactions between nature and humanity. The natural landscape can now include the local human element, which can in turn interact with nature in different ways and not only as the destructive encroacher. As analysed already, genetic gold additionally proposes that this new locality can also be a profitable enterprise if the reserves of genetic resources were managed

[17] Mark Dowie, *Conservation Refugees: The Hundred-Year Conflict Between Global Conservation and Native Peoples* (MIT Press 2009)

[18] Arun Agrawal and Clark C. Gibson, 'Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation' (1999) 27 World Development 629 For similar perceptions encountered by local communities in a US setting see Timothy P. Duane, 'Community Participation in Ecosystem Management' (1997) 24 Ecology Law Quarterly 771

correctly. Conceptual and physical boundaries around these protected areas are torn down, opening them up to the possibility of sustainable utilisation and drawing the South into environmental governance that had previously sought to keep local and indigenous communities at arm's length.

The rediscovery of these communities within the biocomplex is a foundational political-economic act in support of the functions of genetic gold. Benefit sharing requires community as a physical place in order to create 'an "uninterrupted" chain of transactions – starting and ending with resource providers as benefit recipients, and to be guaranteed, as it were, by the benefit-sharing contract'[19]. For this chain of transactions to function as theorised and benefit-sharing practices to become established and widespread, these communities by necessity have to conduct themselves in certain ways as part of the economic model being advocated. They have to be territorialised as a bounded source of genetic material and a destination of benefits, each role articulating a different form of environmental subjectivity. By becoming delineated conceptually and geographically, by being made to fit the rationality of the ABS process, these communities are included as targets of government within the biocomplex.

The next sections examine this dual role (as source and as destination) required of community within the biocomplex. This duality is apparent in the ABS mechanism, which at the same time ascribes a political and cultural 'otherness' to the community - stemming from its characterization as indigenous and symbolised by the image of the biodiversity 'steward' – as well as forcibly requiring an entrepreneurial approach when managing the 'stake' that such communities are holding. This duality can be traced to the confusion created when community is indiscriminately and interchangeably considered both a

[19] Hayden 366

physical location, signifying proximity and locality, and a conceptual principle, signifying alternative collectivities and the 'third way' of governing.

The following sections of the chapter illustrate that community empowerment, participation and involvement manifest as governmental techniques for enhancing the dissemination and adoption of managerialist and entrepreneurial practices in relation to the environment, based on the specific perception of biodiversity as genetic gold, leading to widespread financialisation of conservation. As governmental techniques however, they have also been appropriated in varied ways for the re-attribution of rights and responsibilities between the local level and central state authority.

II | COMMUNITY AS SOURCE: AN INVITATION TO THE BIODIVERSITY ENTERPRISE

As analysed in the preceding chapters, the biodiversity complex has promulgated a 'managerialist' understanding of biodiversity in which biological and economic theories are combined to conceptualise biodiversity as a system of primarily genetic resources, under the sign of genetic gold. When it enters into force, the Nagoya Protocol will add a decentralised and transnational component to the ABS mechanism that expands the role of communities away from its original protectionist character in the text of the CBD. More rights are offered and more responsibilities assigned; a model behaviour by which they are to be evaluated and through which they will be included in the ABS mechanism. From the perspective of the economic grid of genetic gold, the task for these communities is quite simply to effectively manage biodiversity as genetic gold, i.e. according to the tenets of neoliberal economics, and sustainably, i.e. so that this resource is maintained and further developed. In short, they have to reform themselves in order to be recognisable, legitimate providers of biodiversity.

However, their active involvement and participation in the market economy also has to be placed within a broader, and not CBD-specific, reform agenda that has targeted traditional agricultural societies and farming practices, such as seed exchange. This agenda, which includes such non-environmental instruments as the WTO's Agreement on Agriculture and TRIPS[20], has precipitated, in the CBD context, a bundling together of agricultural and wild biodiversity (the 'original' genetic gold), despite their obvious differences[21]. As a condition for achieving market participation - referring to genetic resources (wild biodiversity) - certain aspects of the agricultural biodiversity market are also to be reformed, despite the rationale for this latter change being less clear. This will inevitably expand once more the scope of the biocomplex, already far beyond the remit set out in the treaty text, towards governing the rural and indigenous character of the communities themselves. It is the social organization, the economic life of these communities in proximity to biodiversity that is to be worked on by the biocomplex. A further transition is occurring; from the market economy of genetic gold as the principle of intelligibility and decipherment within the biocomplex to a broader market economy covering other types and biodiversity components. The specifics of this transition are outlined below.

The attraction to sweeping reforms, indicative of classical developmental thought[22], has meant that the local and indigenous communities now stand more firmly than ever in the midst of a confusing proliferation of predicted new biodiversity markets. Genetic gold is to be pursued like a phantom at the exciting global markets for genetic resources, while the life and livelihood of such local communities is more associated with the more mundane

[20] For more information on the complex relationship between the CBD and the WTO see Cabrera and Garforth

[21] Despite acknowledgements such as in Protocol, Preamble: 'Recognizing the special nature of agricultural biodiversity, its distinctive features and problems needing distinctive solutions'

[22] Gillespie

agricultural biodiversity. In short, the ABS process actually requires them to be providers of wild biodiversity for global markets, while seemingly ignoring that they may already be competent providers of agricultural biodiversity for local, national and regional markets. This creates a huge contradiction at the heart of the link between biodiversity and community.

As the next section illustrates, agricultural biodiversity markets are very different in terms of economic performance, as well as in relation to how they contribute to biodiversity loss, when compared to their wild biodiversity counterparts. To treat them as indistinguishable or as a single entity obfuscates the dangers for the welfare of the communities involved in these markets' operation.

AGRICULTURAL BIODIVERSITY

Current plant varieties used for agriculture are the product of a long history of building knowledge, stewardship and interaction with nature. The domestication and cultivation of specific varieties of plants for food goes back to the beginning of human civilisation. Since prehistory, the practices of seed collection and exchange under a largely common heritage regime[23], present even today in traditional farming systems, have been a major factor in the establishment of certain crops as food staples in certain regions of the world (e.g. wheat in Europe, rice in Asia etc.). Innovation has been achieved through the infusion of various forms of existing knowledge of plants with technological advances, such as during the Green Revolution or more recently through genetic modification. The colonial expansion of Europe had expanded the practice of sample collection and innovation on a world-wide scale, across continents and oceans, leading to the establishment of large collections of plants, seeds and eventually germplasm, such as botanical gardens. Due to these long-

[23] Stephen R. Brush, 'Farmers' Rights and Protection of Traditional Agricultural Knowledge' (2007) 35 World Development 1499

standing practices, the aim of preserving diversity in agriculture is greatly assisted today by the maintenance of a number of these ex situ collections. The obvious discrepancy here is that while such collections are descended from informal practices and localised barter economies, they have long been systematised in the 20th century and organised by formal institutions holding property rights over the collected plant resources.

At a global level, certain plant genetic resources of importance to food and agriculture are currently held by the network of International Agricultural Research Centres (IARCs) around the world, essentially seed banks managed by the Consultative Group on International Agricultural Research (CGIAR)[24], which is in turn governed by FAO[25]. The plant varieties held in these research centres are in the public domain and available without restriction or access fees, but access terms and benefit sharing obligations are regulated by FAO Treaty's multilateral system through standardised material transfer agreements[26]. Since the providing country cannot be identified because of past collection methods, financial benefits accrue to a multilateral trust fund, managed by FAO, for the benefit of the international community, and the purpose of strengthening public sector research on food and agriculture. It is important to note that even this system does not extend to all the genetic material held by these seed banks: the FAO Treaty has adopted a list of plant varieties in an appendix to the Treaty. The appendix does include all the major food crops, which thus become easily available for research towards the FAO objective of food security. This is a centralised system of collective management of genetic resources for the international community that contradicts the idea of genetic gold by retaining elements of a common heritage regime, at least for the specific list of 64 crops.

[24] CGIAR holds 12% of the world's collected genetic material.
[25] See International Treaty on Plant Genetic Resources for Food and Agriculture (FAO Treaty)
[26] FAO Treaty, Articles 10-13, 15-16.

Thus, the history and current status of the global agricultural biodiversity market is quite different from the wild biodiversity one, even though they are often conflated and confused. Most importantly, it is not solely through recent scientific and technological advances that some form of biovalue has been realised, bringing with it private property rights, restriction of access and the creation of a market over resources previously considered free. The value of agricultural biodiversity as a source of food and sustenance is as old as human society.

This crucial difference in the two markets is better illustrated by the difference in source areas. Historical research indicates that all essential food crops have originated from very few identifiable and well-known 'domesticated' plant varieties found within specific 'cradle' areas around the world, the so-called 'Vavilov' centres. These centres are different from biodiversity 'hotspots', which constitute much wider areas. The smaller Vavilov centres represent critical repositories of the evolution of all food crops[27], as well as a much more restricted gene pool of raw material for the development of new varieties of food crops (compared to the 'hotspots' of wild biodiversity).

The conception of biodiversity hotspots is deeply utilitarian, but in a conditional manner: They have the character of untapped reserve with unidentified and unrealised value until a specific plant, organism and gene is located and successfully turned into commodity, mostly by chance. It is value based on questionable future potential rather than present economic utility. The idea of genetic gold relies precisely on the enhancement of this potential biovalue, by always counteracting the tendency to consider them as simply

[27] Stephen R. Brush, 'The Demise of 'Common Heritage' and Protection for Traditional Agricultural Knowledge' in Charles R. McManis (ed), *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (Earthscan 2007) 297

'undeveloped', empty lands, at best possessing an aesthetic or ecological value that is worthless from an economic perspective.

On the other hand, the much smaller Vavilov centres have no such running battle with 'underdevelopment' to contend with. Theirs is a more direct and tangible economic value and social utility, easier to comprehend. They constitute a form of backup warehouse for global food supply. If a new disease, pest or natural phenomenon harms, for example, the most widely used variety of wheat, global wheat production is going to be severely affected. In all likelihood, the advantages of that specific variety mean that it will be planted in every continent, and all yields will have been severely damaged. Vavilov centres and seed banks make it possible to develop a variant resistant to whatever calamity befell the original crop. In the case of such a disaster, the poorer countries and segments of population in the South will be the first to be unable to afford the increased prices as formulated in the global markets. Therefore, the continued existence of these Vavilov centres is bound to have a significant positive impact for global food security.

Secondly, as indicated above 'plant genetic resources for food and agriculture', to use the FAO terminology, have a long history of being exchanged, not necessarily traded according to the neoclassical or neoliberal economic theory, and of being improved, not necessarily through advanced scientific methods. The practice originated from the tradition of free exchange of seed between farmers and was subsequently structured around the idea of common heritage and property. These crop genetic resources belonged to the public domain, could not be owned or monopolised and their exchange was covered by a general principle of reciprocity[28]. Conversely, traditional crop breeding methods traditionally relied

[28] Ibid

on promoting combination of traits[29], located within multiple genes, through selective breeding so as to maintain both the quantity and quality of food supply. In pulling genes together instead of apart, it bore no relation to the isolated search for the next wonder genetic sequence of pharmaceutical research. Thus, a fully-fledged alternative –by today's economic standards - bio-economy was already in place long before the invention of biodiversity, the introduction of environmental politics and the market economy of genetic gold.

In plain terms, wild biodiversity is provisionally valuable because of its future potential, while the value of agricultural biodiversity is perpetually valuable due its continuous utility as food source. If a successful new crop is developed, then this can change farming practices worldwide. Conversely, there is little doubt that this ancient economy of freely moving seeds based on principles of reciprocity, instead of market exchange, was altered significantly by the advent of industrial farming in the South, made possible after the success of modern industrial agriculture programmes (such as the Green Revolution of the 60s), as well as the more recent use of genetically modified crops in the US and elsewhere. Regarding farming as industry invariably leads to the adoption of monocultures, in pursuit of an ever-increasing yield, and has become another economic production sector. It presently depends on a limited number of domesticated varieties of staple crops (such as wheat, rice etc) that have been selectively bred over time, or genetically modified more recently, with the specific purpose of increasing productivity through yields, as well as resistance to various pests and diseases.

Thirdly, the output of agricultural research (i.e. industrial crops) directly affects agricultural biodiversity itself, which is not the case of wild biodiversity. The wide adoption of these

[29] Ibid 304

crops in monocultures and industrial methods of farming mean that wild biodiversity, along with all forms of natural and cultural diversity are reduced, primarily through deforestation. Forests become agricultural lands, and small and diverse farms are abandoned in favour of vast industrial farms cultivating a single crop. Under present human needs and conditions then, the successful utilization of agricultural biodiversity thus leads to the reduction of the wild biodiversity available for the pursuit of genetic gold. In some ways, it is the success of agricultural biodiversity markets that has contributed significantly to the general loss of biodiversity on a global scale, to the point where the limited number of plant varieties turn the term of agricultural biodiversity into a misnomer, as diversity has given way to uniformity.

ECONOMIC LIFE OF THE COMMUNITY

These reforms of the agricultural economy are external to the operation of the biocomplex or international environmental law per se, but they do impact significantly upon the role of local and indigenous communities within it. A series of practices belonging to rural societies are being forcibly phased out or abandoned, while the gap is being filled with notions such as CBD's objective of sustainable use or the more market-oriented pursuit of genetic gold. In this context, the introduction of sustainability and environmental management is not an addition in the shape of a general understanding of biodiversity as natural resource system that can be utilised 'in ways that can relieve both human suffering and environmental destruction'[30]; it is instead a substitution in favour of globalization.

Genetic gold suggests that the life of the community is – or should be - interwoven not with the local environment, but primarily with environmental markets and guided by the belief that the profits from participating in these markets will benefit both conservation

[30] Wilson, *BioDiversity* 3

and rural economic development[31]. In aspiring towards this goal, it is not radically different from any other modernizing or developmental project. But genetic gold refers to wild biodiversity and is built upon bioprospecting practices, whereas the majority of practices being reformed in order to enable the pursuit of genetic gold actually concern agricultural biodiversity.

As one examines the expanding role of community in biodiversity, non-CBD and non-environmental law elements and issues proliferate. This is another clear indication of what separates the legal regime of the CBD from the broader biodiversity complex being explored in this thesis. The chapter began by discussing early treaty provisions regarding the protection of communities as a form of picturesque addition to the landscape or at most a cultural diversity component to be added to biological diversity. After two decades of regime operation, it has now reached a point where the process of the complete reorganisation of the social and economic life of these communities is being discussed. Before continuing, more detail is needed regarding how the economic life of these communities is to be organised under the biocomplex.

The requests that genetic gold makes of these communities as sources of biodiversity are several. Biodiversity 'managerialism' focuses on biological and economic interpretations of biodiversity as genetic gold and its mobilisation and accumulation as biocapital. It is a direct simplification of a multi-layered environmental concern over the loss of a specific interest in promoting the appropriate management of a newly discovered capital[32]. So, an 'invitation' to participate in the discourse of biodiversity such as that extended by the

[31] Hayden 361

[32] On the notion of 'discursive works-ups' that transform broad environmental concern into resource managerialism see Timothy W. Luke, 'Eco-Managerialism: Environmental Studies as a Power/Knowledge Formation' in Maarten Hajer and Frank Fischer (eds), *Living with Nature: Environmental Politics as a Cultural Discourse* (Oxford University Press 1999). Luke expands this notion to include the 'three Rs': resources, recreation and risk.

Convention's secretary in the beginning of this chapter can be read as an invitation to effectively become a biodiversity entrepreneur – to make use of the available capital through enhanced technical and market knowledge and skills.

This biodiversity enterprise is to be organised along the lines of any other production sector, as per Gamez's dream of devising a new sophisticated industry to replace agriculture. All the procedural rights and stakes granted to local communities by the Nagoya Protocol require the building of capacity and the development of requisite technical skills. For example, marketing is needed to attract the next ABS arrangement and investment in scientific collection and taxonomic methods will improve the quality and the price of the 'product'. In short, if a local community is to be recognised as a legitimate source of genetic gold within the biocomplex, it has to adopt a neoliberal economic model, viewing everything from the perspective of the market and organising itself, individually and collectively, as the hybrid environmental subject of the biodiversity manager/entrepreneur[33].

III | COMMUNITY AS DESTINATION: THE NECESSITY FOR BIODIVERSITY STEWARDSHIP

At the opposite end of the ABS process, the same communities also have to be formulated as a destination for the benefits being shared under ABS arrangements. For this role, they have to remain resolutely local and indigenous; to embody a nostalgic ideal of 'small, localised communities that can operate in harmony with nature'[34] and 'reified models of cohesive, village-located societies with tight tribal structures'[35]. This notion of local or

[33] McCarthy and Prudham
[34] Andreas Philippopoulos-Mihalopoulos, *Absent Environments : Theorising Environmental Law and the City* (Routledge 2007) Chap 5
[35] Lisa Wilder, 'Local Futures? From Denunciation to Revalorization of the Indigenous Other' in Gunther Teubner (ed), *Global Law without a State* (1997) 222

indigenous community is habitually used to remind and warn the outside 'observer'--usually urban societies in the global North and South--of their own alienation from their environment. As Wilder observes, this 'tendency to thematize indigenous peoples is a phenomenon that is peculiar to advanced world societies'[36].

Much of the discourse around 'communities and conservation' assumes that a local community consists of a small spatial unit, with a homogeneous social structure, guided by shared norms[37]. This is a timeless and de-contextualised entity, existing in parallel to mainstream history, linked to a static, local environment and characterized by rigid and unchanging social and cultural structures. Traditional practices of resource management are, by extension, thought to be small-scale, homogenous, not resource-intensive, isolated from external influences and naturally geared towards self-sustainability. The result is a 'persisting myth that tends to romanticize human communities and their abilities to apply wisdom and foresight in their relationships with their resources and each other'[38].

The nostalgic construction of community as a biodiversity stewardship leaves little scope for change. Paradoxically, its members must remain within the nostalgic 'stewardship' if they are to continue to be recognised as this specific form of (local, indigenous or rural) community, while at the same time adopting the managerial approach required by the biological and economic understanding inherent in biodiversity discourse. These communities are 'required to play on the ethnicity attributed to them' and adhere to their homogeneous, ecologically-wise stewardship[39]. Being bound to the image of the traditional steward and an externally-constructed, continuously imposed, history of harmonious local co-existence with nature, they also remain on the outside of modern and urban societies,

[36] Ibid 216
[37] Agrawal and Gibson 1999
[38] Baland and Platteau 183
[39] Wilder 242

despite the promises of genetic gold. In contrast to Rio and Agenda 21's promises of empowerment, their political and historical agency remains severely hampered, when they are asked to conform to the image of a fairly passive benefit recipient unable to influence, and even less likely initiate law and policy-making.

This community 'nostalgia' for a localised past in harmony with nature[40] is encapsulated in the image of the biodiversity 'steward': 'what is blessed in the "other" is nothing but the opposite of our own society; it is the hidden solution to our own anxieties'[41]. Community is defined as in perpetual opposition to the past failures of the state and the market. This valorisation is one-sided. Local communities enter into the field of biodiversity as partners in the biodiversity enterprise, not on the strength of their ecological knowledge, but in order to be reconciled and integrated into the pre-existing neoliberal economic rationality. To achieve the status of genetic resource provider (source), they should be modern entrepreneurs; to achieve the status of benefit recipient (destination), they have to be some form of premodern stewards of lost ethics and landscapes.

In order for the whole edifice of ABS to function as envisaged, these same communities are asked to adopt a conflicted, to the point of schizophrenia, subjectivity – the appropriate hybrid between market expertise and cultural otherness so that the economic models make sense. Ultimately even at the moment of their participation, of the arrival of promised modernity, these communities become trapped in a historical limbo, unable to shed their traditional subjectivity or move completely forward into constructing a modern one. Despite all the steps achieved in engineering community participation, they remain excluded; 'noble savages' locked outside the city gates of environmentalism.

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[40] Philippopoulos-Mihalopoulos, *Absent Environments : Theorising Environmental Law and the City*
[41] Pascal Bruckner, *The Tears of the White Man: Compassion as Contempt* (William R. Beer tr, The Free Press 1986) 103

THE ALTERNATIVE COMMUNITY OF THE AFRICAN MODEL LAW

The above examination of the function of community within the ABS mechanism should not be taken as suggestive of a repressive neoliberal prison from which community cannot emerge, despite the persistence of certain contradictory and stereotypical perceptions regarding indigeneity and community. While it is indeed the dominant conception of community within the biocomplex, the idea of community cannot always be limited in this economic construction and restrained by the confines of physical geography.

An example of an alternative use of community in the biocomplex has been the Organization of African Unity (subsequently African Union)'s Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources[42], drafted collaboratively by the OAU's Scientific Commission, the Ethiopian Environmental Protection Authority and Institute of Biodiversity Conservation and Research, and NGOs active in the politics of biopiracy (Third World Network, RAFI and GRAIN) over a period of four years, from 1996 to 2000, at the height of the rise of the idea of genetic gold.

Anchored by the need to make sense of and implement the contradicting, and overlapping on the issue of genetic resources, legal frameworks of the WTO and the CBD, and influenced by the collaborative nature and active NGO participation in its drafting, the Model Law is an ambitious and expansive legal text conceived at the boundaries between soft-law declaration, regional harmonizing instrument, sui generis IP system and benefit sharing mechanism. The Model Law opens generically enough by stating that:

[42] (African Model Law). Available at http://www.opbw.org/nat_imp/model_laws/oau-model-law.pdf

> 'The main aim of this legislation shall be to ensure the conservation, evaluation and sustainable use of biological resources, including agricultural genetic resources, and knowledge and technologies in order to maintain and improve their diversity as a means of sustaining all life support systems'[43].

This opening statement is very similar to the objectives and legal rationality of the CBD, perhaps the more explicit references to the inclusion of agricultural genetic resources and potential transfer of technologies being indicative of the particular realities of African biodiversity. It is the more than dozen 'specific objectives' in Part II that follow on from that initial broad statement that differentiate the tone and establish the unique comprehensive approach of the Model Law. These objectives place the promotion of both substantive and procedural community and farmer rights on the same level as more traditional objectives borrowed from the CBD, such as fair and equitable benefit sharing and conservation and sustainable utilisation of biological resources.

This has led analysts to the conclusion that the Model Law's overall strategic aim is to constitute 'a comprehensive regional framework governing all aspects of biodiversity management, intellectual property rights, and protection of indigenous knowledge'[44], thus attempting to supersede the divisions of jurisdictional scope between the benefit sharing functions of the CBD, the FAO system covering plant varieties for food and agriculture, as well as the TRIPS provisions regarding intellectual property protection.

The Model Law is neither a faithful adaptation of CBD principles and legal framework to the African experience nor a radical wholesale rejection of market principles and state law

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[43] African Model Law, Part I

[44] Noah Zerbe, 'Biodiversity, ownership and indigenous knowledge: Exploring legal frameworks for community, farmers, and intellectual property rights in Africa' (2005) 53 Ecological Economics 493 494-5

signifying a romantic return to community. It is an attempt to articulate a viable alternative to the then still being debated ABS regime being drafted in compliance to the TRIPS agreement by virtue of combining them, and without resorting to an outright rejection of either frameworks (WTO and CBD). Such rejection would constitute a defiant gesture that would have obviously doomed the legislative effort to hardship and irrelevance from the outset. In a drafting choice to be mimicked in the Nagoya Protocol, this alternative framework is transnational as opposed to interstate/international; the institutional arrangements concern the establishment of a network of institutions working towards the achievement of the Model Law's objectives[45].

The underlying logic and strategic goals of this transnational network are more important than the legal objectives and institutional arrangements. For the ABS mechanism as formulated within the CBD, the core of the framework is the ABS contract and the relations it engenders; it is a regime developed out of transactions, requiring community to be a physically and conceptually bounded place and fulfil the role of destination of benefits arising out of these transactions, so that the market is aligned with the objectives of sustainable development. Any rights afforded to this community, coming in the more subdued legal term of 'stakes', are thus regarded as an incentive based on a classical economic analysis of the merits of private over common property.

On the contrary, the core of the Model Law's conceptual framework is the community itself, which 'reflects the historical centrality of the community in African societies'[46]. It is thus a regime that emerged out of 'participatory decision-making through local consultation'[47] and the exercise of and struggle for community rights, as opposed to the

[45] Part VII, Art. 57-66
[46] Zerbe 500
[47] Ibid

conclusion of a market transaction. In addition, this alternative community-based model articulated in the Model Law is based on a very specific understanding of community compared to generality of legal language in the CBD/Nagoya Protocol. Zerbe states that:

> 'The recognition of the central role of smallholder farmers in the provision of food security in Africa is one of the key principles of the African Model Law and [...] sets it apart from the CBD and other instruments governing access and benefit sharing in the context of biodiversity'[48].

This establishes an understanding of the characteristics of the community participating in the legal mechanism, which are specific to small-scale agriculture instead of the provision of raw material and management of traditional knowledge with their implications of a modernised stewardship role integrated within the workings of the global market. These communities are primarily agricultural producers, not managers and providers of genetic material. The Model Law recognises an active role (smallholder farming) and objective (food security) for these communities within their particular context and scale, as opposed to their recognition as a seller in a global market afforded to the same communities under the CBD. Secondly, this different version of the local community is further understood to be participating in a different economy - that of informal seed exchange - compared to the local community of the ABS regime, which participates in the formal economy in the basis of legally enforceable, written contracts. Thirdly, the rights granted to farmers and by extension these local communities are not conceived as compensation or incentive to manage biodiversity using generally sustainable methods, but as 'a central component of food production and food security'[49].

[48] Ibid 498
[49] Ibid

Whether 'economic production in rural Africa remains firmly rooted in the social networks of community'[50] remains a question for further analysis and possibly a topic for political economists to dispute over. For the purposes of the discussion of community in the biocomplex undertaken in this chapter, it is even irrelevant whether the above statement is true or false. What matters is that the African Model Law engages with diversity and locality in a direct manner, actively searching for the synergy between cultural and biological diversity without burying it in a preamble. More importantly, the local community is not regarded as an afterthought, an abstracted factor required to make the economic modelling work, an addition to a law that worships at the altar of economics. In the Model Law, it is the locus of interpretation and governing, and thus leads the biocomplex into new directions, expanding its horizons in the process.

The African Model Law is now clearly superseded by other legal developments and instruments, such as the FAO treaty already analysed, the widespread if not grudging acceptance of the TRIPS approach to intellectual property, the Nagoya Protocol to the CBD, and possibly sometime in the near future by the changes introduced to this very same TRIPS model by the conclusion of the 'Doha development round' of trade negotiations at the WTO. The effect of the Model Law as a harmonizing legal instrument for national ABS legislation across Africa is minimal, as lack of political stability and technical capacity precluded its widespread adoption, while international pressure from WTO and UPOV further reduced the legislation's chances of implementation[51]. By all accounts it is a remnant of a future that never happened. Irrespective of its failure as mainstream law and policy, the importance of this Model Law for biodiversity governance and environmental law lies in its innovative use of the concept of community. It offered a glimpse of an alternative understanding of power relations built by fragmented, regional

[50] Ibid
[51] On the overall status of the African Model Law see ibid 501-4

and transnational networks of communities; a different base for the apparatus of biodiversity to be built upon.

IV | SITES OF CONFLICT

The entry of community into biodiversity represents a further customisation of the project of sustainable development under the banner of genetic gold. To fulfil the promise of genetic gold and share in the benefits localities in the South have to change, but they also have to remain the same or more accurately to remain the 'other'. The further inclusion of the interests of local and indigenous communities into the CBD by way of ABS mechanisms can be considered an initial achievement from the perspective of social movements in Southern parts of the world[52]. In terms of the biocomplex itself on the other hand, this institution of flexible, multi-stakeholder regulatory processes, as well as the 'infusion' [53] of the local with sustainable development - indicative of a progressive decentralization of biodiversity legislation - is also an additional technique of governing directed to the South.

As such, this inclusion necessitates a certain engagement with non-environmental realities in the design of this environmental governance. Community is irrevocably linked to complex webs of political, economic and social relations between localities and central authorities in the South. The size of this task seems to at times overwhelm a legal regime and discourse descending from an ecological concern over species extinction. This occurs mainly when the CBD attempts to remove itself from the biocomplex, and strives futilely to control some form of legal territory from interdisciplinary excursions and to rely on successive uncritical acceptances and steadfast idealizations of concepts. Early

[52] Arturo Escobar, Dianne Rocheleau and Smitu Kothari, 'Environmental Social Movements and the Politics of Space' (2002) 45 Development 28
[53] Hayden 361

environmental law focused on the protection of a nebulously defined environment, idealizing the intrinsic value of the natural landscape and life devoid of human intervention, as exemplified by the state-sponsored designation of protected areas and natural reserves. Under the influence of sustainable development, environmental law aimed to create the conditions for the sustainable management of a natural capital as a panacea to the woes of the preceding state-sponsored environmentalism. The last step in this process of uncritical adoption appears to prioritise 'generic, model-type ideas'[54] of local and indigenous communities, idealizing a perceived local relationship with nature as an environmental solution to alleviate the failures of both the State and the market[55].

In any case, this evolving trend towards localization is currently unfolding. There are still conditions attached to all these changes in the role of community. As analysed above, the CBD continues to reserve a limited role for these communities, specifically at the beginning (source) and at the end (destination) of the transaction chain. ABS requires the market to create profits and the community to be the recipient of these profits; and more importantly, it requires both them to be distinct, clearly delineated and separable. Additionally, only specific economic stakes on the distribution of benefits from the sustainable utilisation of biodiversity are recognised, which keeps a host of political and social problems and claims at arm's length. The extent of that 'stake' remains unclear, but it is certainly understood as something less than a political or legal right. Being trapped in the legal procedural limbo of recognition as stakeholders - but not right-holders – appears to be what the CBD has offered these communities so far.

[54] Brosius, Lowenhaupt Tsing and Zerner 2

[55] Throughout these shifts in legal discourse, the reductionisms are clear; from the reduction of nature initially to a beautiful landscape and subsequently to natural capital, to the reduction of complex localities to a rigidly structured and un-evolving traditional community.

In the end, the manager of the community as source and the steward of the community as destination are equally external constructions that characterize participatory initiatives. Lisa Wilder has discussed a similarly problematic duality in relation to the granting of native titles to Aboriginal communities. She concludes that 'if an indigenous people is successfully to claim surviving rights and interests in land, it must clothe itself with the requisite authenticity', presenting an alternative, traditional conception of land that nevertheless persists in today's modern society[56]. However, by articulating such land claims in an accessible, 'modern' form or even resorting to proceedings in a court of law, claimants can do damage to them: 'it is not clear how much change a society can tolerate before the court will regard it as insufficiently authentic to support a claim of surviving title'[57]. The more modern they become, the less indigenous, the less worthy of the 'privileges' allowed under community participation mantras they will appear. However, local communities are also fluid structures that can co-evolve according to changes in the local environments and perceptions.[58] Indeed, there are many parts of the world where, far from being a timeless enclave of authenticity, the indigenous community has been subjected to the power of numerous globalising and centralising discourses (colonialism, imperialism, cosmopolitanism, economic globalisation), resulting in violence, assimilation and dispossession.

Until a balance between the role of manager and the steward is found and communities can construct and implement their own imagined future, the link between community and biodiversity will continue to create a tension at the local level, and to allow that tension to filter up to the global level. As long as the manager is described as global, rational and

[56] Wilder 240

[57] Emphasis added. Ibid

[58] This is an argument put forward by 'grassroots' social movements that link different localities. The social movement literature is significant, but for some representative examples see Flitner; Arturo Escobar, 'Beyond the Third World: Imperial Globality, Global Coloniality and Anti-Globalization Social Movements' (2004) 25 Third World Quarterly 207; Escobar, Rocheleau and Kothari, 'Environmental Social Movements and the Politics of Space'.

scientific and the steward as the opposite, i.e. local, spiritual and traditional, the entry of community into biodiversity will remain provisional. Left unchecked, enforced managerialism and tribalism will eventually institutionalise communities as opposite, un-evolving and un-evolved 'other' to our modern selves; an addition to the beautiful landscape.

Under this rubric then, the biocomplex generally stands on a precarious perch on top of a binary between market and community. This is a binary, which has been already 'well-rehearsed' within the fields of anthropology and sociology[59], of:

> 'The market as the site of abstraction, commodity transactions, rational actors, and disembedded and disentangled relations; community as bearer of the gift, home to barter, shared values, and embedded relations'[60].

This also implies that communities constitute sites of conflict over the different meanings of the market and the state. The simple polarity of market as standing for individualism, capitalism, modernity and progress versus community standing for tradition, collectivity, justice and the endangered other is a conceptual schema, with a decidedly mixed political and legal history, that inherently creates and requires these opposites, or at least a conception of truth regarding them, to function.

To add to the complexity of the link between community and biodiversity, it is obvious that community and indigeneity are treated as roughly the same idea, as evidenced by the widely employed 'local and indigenous community' shorthand. It may be argued that the community is the geographical term signifying the need for a local and intimate scale, while

[59] Hayden
[60] Ibid 360

indigeneity is the cultural term signifying the existence of a traditional knowledge associated with that locality, but this is a fine distinction.

In general, the enforced duality of community as source and as destination is a truly disheartening observation. It indicates that even after decades of consensus-driven international environmental law, widening participation in law-making, multi-level regulation and governance, manuals on bioprospecting practices and critiques of biopiracy, the whole discourse is still guided by 'the iconic twin images of plant-based drug discovery – the intrepid explorer crashing through the jungle and the ethnobotanist as shaman's apprentice'[61]. This observation in then end simply betrays the Western origins of environmental law; two hundred and forty years later, it is still standing outside the hut, ignoring the savages and politely remarking '*Dr. Livingstone, I presume?*'

[61] Ibid

CHAPTER 8: THE BIOCOMPLEX: A TRANSNATIONAL SPRAWLING FAVELA

The thesis was conceived as an investigation into the events that shaped the present legal understanding and status of biodiversity. This investigation was regarded as the primary starting point for undertaking a full reassessment of the existing global biodiversity regime of the CBD after two decades of operation. The project was understood as an open-ended critique, in the sense that it was a critique willing to consider and engage with the spectre of failure.

However, as recounted in the first chapter of the thesis, the possibility that biodiversity has failed as either an environmental concept or a legal regime is completely lacking from an existing biodiversity literature that offers either facile explanations of the concept or carefully restricted assessments of the law. This phenomenon is unrelated to the well-trodden separation between mainstream and critical legal studies, but originates within an environmental law currently in the grip of a blackmail that forbids different modes of thought and analysis. This blackmail of environmental law is a violent act perpetrated against every environmental scholar and forces him or her essentially to choose sides. Quite simply, in order to maintain a place at the table of environmental scholarship, one has to be 'for' environmental law by offering a standard prescriptive/normative analysis that improves the legal edifice by recourse to pre-delineated methods of compartmentalization and incrementalism. Other approaches, such as the constructivist critique of biodiversity undertaken in this thesis, run the risk of being assigned the position of being 'against' environmental law, which intimates irrationality and illegitimacy; the expulsion from the body of scholarship.

Consequently, the particular choices of theoretical framework and methodology for conducting the investigation of biodiversity are driven by the need to confront this blackmail. This confrontation is not understood as a grand theoretical battle to be waged in the abstract plateau of environmental law, but a running skirmish across many small fields of environmental problems with the aim to destabilize the certainties of this blackmail. Therefore, beneath the layer of the primary task of the thesis, which is the historical analysis of biodiversity and an assessment of the operation of the CBD, there is also the undercurrent of a critical engagement with this blackmail. Each chapter advances both tasks, seeking the pathways by which the history of biodiversity becomes a critique of environmental law. A full confrontation with the blackmail of environmental law will have to be the subject of a separate study.

Going back to the primary analytical, to trace the complex history of ideas and practices relating to biodiversity, this thesis has assumed the perspective of the nomad, a traveller across many domains but belonging to none. The only guide has been the dual edict that biodiversity has no truth to be discovered in the original meaning and that the CBD has no essence to be discovered in the legal text. The thesis as a whole can indeed be read as an environmental history of the transformation of biodiversity from idea to law, but did not aspire to a systematised, sequential legal history of laws, treaties and cases formulating a specific legal doctrine specific to biodiversity. There are some segments where a 'black letter' lawyer will be able to engage with the article-by-article analysis of legal texts, but the goal was not to discover the underlying principles of an environmental jurisprudence. The thesis has an affinity with the field of socio-legal studies, as it examined the context and impact of certain biodiversity laws on the ground, particularly in the South; but it did so without meeting the empiricist guidelines prized by that field of legal scholarship. The

thesis also addresses the global and national policy implications arising out of the acceptance of the concept of biodiversity, but was not driven by the need to articulate concrete, applied proposals for policy reform. While the nature of the human-nature relation is discussed, it was not a philosophical exploration of nature and being. Lastly, there is a concrete bias to be maintained throughout, a bias which in effect consists of avoiding both the ecocentric and anthropocentric biases as defined by standard environmental analyses. Therefore, the text of this study is in itself a commentary on the different ways we write about environmental law.

The above transient character is acknowledged here, before the presentation of the conclusions, so that the thesis is not read as a return to forms of postmodern relativism where analysis can only ever be a descriptive cataloguing of the different methods by which the phenomenon of biodiversity (and its loss) has been perceived, understood and redeployed in discourse and practice. Biodiversity is neither a discursive fiction without real basis nor an unimportant, illusory emergency produced by alarmist green politics. It is indeed a concrete reality and a crisis of serious, advancing environmental degradation; but it has also become an expansively political problematisation, irreducible to the incrementalism and compartmentalisation of environmental law; in that sense it is even more urgent presently as a crisis of environmental thought, as opposed to an environmental crisis.

Therefore, in contrast to analyses perpetually striving to separate and transform the 'global biodiversity regime' into the a legal entity that conforms to the image of the environmental treaty regime under the blackmail of environmental law, the thesis consistently argues for a reassessment of the CBD based on criteria that are particular to the biodiversity problematisation, as opposed to uniform, generic jurisprudential principles. With this goal

in mind, this final chapter gathers the limits of the CBD discovered in the previous chapters and employs them in a functional reassessment of the CBD as strategic transnational framework promoting heterogeneity and polycentricity.

I | A SHORT HISTORY OF BIODIVERSITY

In the 1980s, biodiversity emerged as a new conservation mentality aspiring to challenge established conservation practices by the application of biological theory. A 'new community of interest and concern' was formed - consisting mainly of American conservation biologists - that shared a holistic environmental vision for overcoming two primary obstacles in nature conservation: the fragmentary designation and non-scientific management of conservation areas and nature reserves and the negative perceptions attached to the activity of conservation.

After a few hesitant first steps, the 1986 Forum on Biodiversity produced the first strategic formulation of biodiversity as a crisis-oriented biological programme aiming to influence the 'real world' of institutions, states and environmental management. This articulation was influenced by sociobiological theories which took biodiversity down an altered path compared to the goal of the unification of ecological traditions that conservation biology aspired towards. This altered path consisted of the introduction of a techno-scientific understanding of both nature and society, an emphasis on the genetic component of biodiversity, and the widening of the problematization of biodiversity. This was also a far more ambitious path. It was no longer conservation practices that were to be submitted to biological theory, but all political, social and economic organization.

However, this broad and ambitious movement housed under the umbrella of biodiversity was also proven to be politically naïve after the fact. It was targeting the environmental

truth and decision-making processes of a liberal political-economic system that was already being dismantled from a different angle, through the rise of neoliberalism; it was an attempt at infiltration and a tactical positioning against an opponent that had already been vanquished. Neoliberalism thus forced biodiversity discourse to contend with a series of economic questions previously dismissed outright or treated with disdain. The economic grid of neoliberalism had emerged as the test of all governmental action, including on the environment, scrutinizing everything in terms of efficiency and cost of intervention. In addition, the Washington consensus swiftly transformed this economic grid into the grid of globalization. The biological programme of biodiversity confronted these changing realities by bringing sociobiology's genetic reductionism and Darwinist competition together with Malthusian theories of overpopulation. This combination produced a new pathology of the South as the site where the fate of biodiversity was going to be decided.

This posited pathology transformed biodiversity into a fully political problematization and formed the basis for the international negotiation for the CBD. Due to the disjointed beginnings of these negotiations and the outdated tendency of environmental law to regard the CBD as a mega conservation treaty to unify all existing legal instruments, the conceptual framework of the CBD was largely formed through the contributions of two nonstate actors, the World Bank and Costa Rica's INBio.

Furthermore, the strong link with sustainable development promoted resource managerialism and economic determinism, along with the depoliticisation of sensitive issues, such as ecological debt. With the South firmly entrenched as the site where the drama of biodiversity was going to play out, the multiplicity and heterogeneity of problems increasingly placed under the holistic embrace of biodiversity demonstrated that its political problematization had essentially become a search for a biodiversity-based rationality of

governing. By the time the CBD was signed in 1992, resistance to this strategic project of biodiversity in the South was also fully established, stressing the importance of cultural diversity and smallholder agriculture, denouncing bioprospecting as biopiracy and seeking to articulate communal ways of living and produce collective subjectivities outside the hierarchical impositions in the name of biodiversity.

In the 1990s, biodiversity appeared on the cusp of translating a peaking interest in the concept into new forms of national identity and social organisation in the South organised around the potential of biodiversity as genetic gold. The idea of genetic gold posited a new market economy as the principle of intelligibility and decipherment in the South. Development would come from participation in this new economy under conditions of free competition for benefit sharing contracts from the North. While genetic gold approximated an articulation of development model based on a new economy centred on genetic resources, only a few states veered ever so slightly towards such a grand transformation, albeit there were never any recognised 'gene states' to rival or complement 'oil states'.

While the commercialisation of biodiversity as genetic resource never lived up to the initially advertised economic potential and ABS contracts were never as numerous or lucrative as envisaged in the policy manuals, the effect of the idea of genetic gold was widespread. States and communities in the South embraced the idea of biodiversity, previously the preserve of Northern biologists, while the role of the CBD was altered. Most importantly, its function became associated with that of a regulator of the global market for genetic resources rather than an environmental regime addressing the biodiversity crisis. In many ways, genetic gold disassembled the synthesis that biodiversity

stood for in the first years of the CBD's operation and prioritized the genetic component to the exclusion of all other considerations.

Lastly, in the more recent decade the conception of biodiversity has become dispersed and fragmented, as sub-national, transnational and regional approaches rose in prominence. The community-based models of the 'third way' found their way to biodiversity, as the CBD operation became consumed with devising a viable ABS mechanism. The Nagoya Protocol further emphasized the smooth operation of the market for genetic resources as an essential element of biodiversity law and policy. It also maintained the paradoxical requirements placed on local and indigenous communities in order for the genetic gold-derived economic model of ABS to function as predicted.

The history of biodiversity outlined in this thesis confirms that there is no essential truth of biodiversity to be discovered in the beginning and no essential legality for its regulatory regime to uphold. There is only negotiation, struggle, power-at-play and spillage into more areas of world society. The invention and deployment of biodiversity has fabricated a complex and trasnational political economy, which the CBD only partially acknowledges and regulates. Across borders and jurisdictions, conflicts over the interpretation and utility of the concept have shimmered under the surface and often outside the mainstream of environmental scholarship. Any practical victory gained has been temporary; any new environmental truth discovered is subsequently challenged in the next round of paradigm shifts, discursive work-ups and new expansive sets of practices.

II | THE LIMITS OF LEGAL THOUGHT

This twisting and contradictory history of biodiversity briefly summarized above cannot be contained within legal thought. Environmental legal enquiry regards the essential legal

definition of the environmental problem, such as the one of biodiversity enshrined in the text of the CBD, as either a starting point or the logical end of the enquiry. This definition signifies either the ultimate objective at the end, the final clarification of the legitimacy of a particular environmental problem; or it can signify the fixed point on which an analysis of regulatory instruments can proceed. On the contrary, the thesis has illustrated the futility of the proposition that the formation of scientific facts, conservation ideas, economic values and environmental ethics into the composite of biodiversity was completed in 1992 with the stamp of the legal authority of the CBD.

While there is a general acknowledgment that the concept of biodiversity includes the three levels of genes, species and ecosystems based on historical grounds, the thesis traces continuous shifts in the idea of biodiversity throughout its history and no final resolution on the horizon. After decades it is perhaps appropriate to accept that reaching a fixed, static and universally accepted definition of biodiversity is not only impossible, but also unnecessary for both analytical and practical purposes. Biodiversity has been a contested terrain for the last thirty years, since its inception. A way must be found to discuss in legal terms without needing the crutch of the legal definition; or without the discussion constituting nothing more than a search for that crutch.

In fact, the continuous contestation, breaks and realignments of biodiversity have actually promulgated the acceptance of biodiversity across geographical scales and legal jurisdictions. This was achieved particularly through the transformation of the concept from conservation mentality to a wide political problematization of the South. This suggests that the meaning of the concept is not something to be controlled by the legal regime, but that biodiversity has been undergoing a continuous co-evolution along with the global regulatory regime designed to address it.

The question of the definition of biodiversity inherently implies a closure at a specific point in time to create a universal understanding of biodiversity. Coupled with a causal sequencing leading to that point in time, this question creates a chronology based on the succession of distinct stages: from scientific formation to political agenda, and on to legal institutions and the establishment of a widespread environmental practice. Instead, by asking what is happening to biodiversity in the present, the thesis maintains the open-ended character of the enquiry, illustrating that these stages constitute post facto rationalisations of a continuous process by which biodiversity is constantly reconstructed.

The irreducible complexity of biodiversity sets it apart from both the standard formations of the environmental problem (where irreducibility is recognised only in relation to ethical choices and not the formation or knowledge of the problem itself), as well as the idea of sustainable development (where complexity is recognised in relation to a combined register of social, economic and ecological policies). A continuing theme of the present thesis has been the tracing of the inability to take advantage of the uniqueness of biodiversity and the constant attempt to turn the CBD into 'more of the same'. Instead of devising ways to abstract, partition and negate the eventful history of the invention of biodiversity, the thesis has made the series of conflicts over its meaning and use the central object of analysis.

In terms of classical international environmental law, it was stated that the one clear and quantifiable contribution of the CBD has been the removal of biological and genetic resources from common heritage and the recognition of the sovereign rights of states over them, albeit constrained by the recognition of biodiversity as a common concern in the treaty preamble. Other significant commitments or responsibilities under international law are absent from the text and have not materialised in the two decades of the regime's

operation. From an international relations perspective, the formal establishment of sovereign rights over biodiversity was considered the primary gain from the CBD negotiations for Southern states with the remaining areas of high biodiversity. It was an achievement that justified their participation and engagement with the new biodiversity regime and which also placed them in an advantageous position for reaping the economic benefits of genetic gold. These conclusions are derived from a hierarchical understanding that continues to conceive of the CBD along the lines of a North-South exchange at the bilateral, interstate level.

In contrast to this hierarchical stream, the thesis also sought to bring to the surface various iterations of an additional micro level. This level refers to the recent tendencies towards localisation and dispersion that characterise the CBD and the associated rise of nonstate actors within its operations. This micro level exposes the macro level's fixation with the state. For example, the issue of the role and rights of local and indigenous communities and their traditional knowledge was initially addressed as part of CBD's first objective of biodiversity conservation. Although the provision did not even approximate the recognition of any formal rights of such communities over their resources, it nevertheless prompted the development of this parallel trajectory towards the local. The culmination of this process, the Nagoya Protocol, officially recognised certain community rights over traditional knowledge associated with genetic resources, albeit not specifically over the resources themselves. This recognition has come nearly twenty years after the entry into force of the CBD. However, long before this legal recognition, the idea of genetic gold had produced the shift in emphasis from the state to individual and collective conduct in pursuit of the normality of market participation. The Nagoya Protocol is neither the authorizing starting point nor the logical conclusion of this process, but simply a step along the way. It is also not a recognised 'bottom-up approach' of international law that allows

the unilateral definition of commitments and policies by member states, but an active fragmentation of the overall legal framework encouraged by often devolving the definition of biodiversity action to the community (the sub-national) and the network (the transnational).

These two levels can appear directly opposed. The first is still related to classical conceptions of state interest and viewing global environmental problems through the lens of collective action defined as state consensus on commitments and responsibilities to be assumed. Inevitably, this leads to a fascination with the quid pro quo game of international negotiations and the hierarchical notions of power possessed by the central authority of the state. The second direction necessitates an embrace of a variety of ideas not strictly belonging to the field of international environmental law; in the case of biodiversity, an acknowledgment that power is also exercised by the narratives of biopiracy and green orientalism, that diverse social phenomena like the rise of neoliberalism, the localisation of environmental struggles, or the decentralisation of governance do have an impact on the CBD and international environmental law in general. The example of the African Model Law is used to illustrate how community, in its many guises and not simply the physical space, can become the unit of reference to contradict state law, leading to new modes of biodiversity governance not authorized by the central authority of the CBD.

The perception that the CBD is on the verge of being pulled apart by these two opposing directions, these contrasting versions of its future function, is to be resisted. The introduction of the micro level is indeed meant to deface the convenient maps of CBD doctrine and destabilize the meticulous construction of the legal edifice. That should not be taken to infer a futile choice that will have to be made between conforming to the expectations of the role, image and function of an international environmental treaty

regime and being plunged into wide-ranging social and political conflicts not directly related to environmental concerns. The choice should not between maintaining a detached, formulaic irrelevance within international environmental law and becoming overwhelmed by the task at hand. Both representations inherently return a verdict of perceived failure for the CBD, because they presuppose that the principal advantage of environmental law in global politics lies in the abstraction and depoliticisation of disputes over environmental truth. This is understood as the ability to raise itself, through the authority of scientific fact and the power of state consensus, above the fray of often polarised environmental politics to deliver practical and technical solutions. For such an understanding of the international legal process in the area of the environment only disappointment is bound to follow when, as illustrated throughout the thesis, the CBD is repeatedly plunged into the centre of disputes, such as that between local and indigenous communities and the central authority of the state.

The supposition that these two levels exist in opposition to each other and require some form of resolution before the CBD can evolve further betrays a conflation between the legal form and content or substance of provisions. Commitments that are not blessed with binding nature and whose form is not fixed by consensus and monitored at the international level (i.e. quantifiable standards or targets) are automatically thought to be less substantive, without reference to their content. This kind of prioritisation in environmental legal thought can also be extended on a wider scale, to a preference of discourse/text over practice. Under this prioritisation, the effective operation of the CBD is evaluated largely based on the characteristics of the legal texts agreed under its work schedule, and not on the role of law in fostering specific practices of governance in the South.

These limits of legal thought have prompted attempts at reconstituting legal closure, reasserting legal control of the natural, a fear that the core characteristics that allow the recognition of the CBD as environmental law are disappearing. This can be observed for example in the fact that the authors of the Nagoya protocol felt obliged to include a provision reiterating the environmental credentials of the ABS mechanism, lest it falls into the hands of the WTO.

More importantly, these limits raise an interesting question, which follows from the examination of the descent of biodiversity and which legal analysis by itself lacks the tools to answer; namely, if the CBD has sailed off from the shores of classical international environmental law, where has it landed? While the asking of such questions is to be encouraged, the search for answers should not become a lament for the lost innocence of environmental law or a doctrinal argument for going back to some form of classical law that has been somehow lost by ceding ground to the dominance of market, the romanticism of community, or the pragmatism of sustainable development. Nevertheless, it is an argument for a more detailed reassessment of the CBD without the spectre of the blackmail of environmental law hanging over the proceedings. This implies a reassessment based on standards, criteria and goals set by the regime itself (i.e. as the wider biocomplex), and not brought in from external authorities.

III │THE REASSESSMENT OF THE CBD

The CBD signifies a point where international environmental law ceases to be the exclusive province of the ecologist, the economist, the diplomat, the environmental lawyer or indeed the environmental activist. The binary of lawful/unlawful, the pragmatism of economics, the ecological truth of the global biodiversity crisis, the North South bargain are not enough by themselves to establish the goals of the regime. The positing of the notion of

biodiversity as an apparatus, i.e. the biocomplex, requires an ability to engage with the multiplicity of issues in a non-legal, integrative manner: poverty alongside deforestation, social welfare alongside pollution and waste, industrial agriculture alongside conservation, global markets for genetic recourses alongside smallholder agriculture, autonomy of local and indigenous communities alongside the protection of natural reserves, and so on.

Once dissected in this way, it becomes apparent that the very object of knowledge imprinted with the biodiversity label is diverse and composite in itself. Biodiversity is too many things to too many people. This diversity de facto assigns central importance to the ways this knowledge is instrumentalized by the biocomplex, which in turn supports the pursuit of diverse and composite goals. This means that there is also no single, universal good, such as preventing biodiversity loss, to be achieved; the strategic imperative of the biocomplex is diffuse and diversified.

Consequently, there is no reason to evaluate this project by hypothesizing or forcing upon it precisely such a universal goal. The CBD cannot be analysed in isolation from the broader rationalities implicit in its current operation. It cannot be forced to adhere to external homogenising benchmarks or universal ethics alien to the assemblage of thoughts and practices constituting the regime. When the regime inevitably fails to live up to these externally imposed standards, then the objective of the analysis becomes to twist its shape until it conforms; anything to avoid a verdict of failure and keep venturing blindly onwards and upwards.

Therefore, the introduction of the term biocomplex is not meant solely as a descriptive tool to better grasp the complexity of biodiversity governance. It also includes in its

presentation a reassessment of the CBD itself, or at least of the general view that it is precariously perched between empty rhetoric and disastrous, 'sleeping' treaty.

Strictly defined in terms of 'hard law', the legal output of the CBD has been sparse. Guidelines, strategies, and policies, the often-described soft-law, dominate the legal output of the regime. Even the Protocol on Access and Benefit Sharing agreed during the Nagoya conference does not actually introduce a binding global ABS regime or indeed include any binding commitments for signatories, except the designation of national competent authorities for the process of granting permits. In the absence of jurisprudential (and juridical) standards expected of international environmental law, it appears that there is somehow less ontological anxiety and need to constantly reinforce the role, function and authority of international environmental law by providing a steady stream of binding rules.

This fact that the CBD does not constitute classical or recognisable international environmental law has often been taken to mean that the CBD constitutes ineffective or failed international law. Like an unruly teenager whose behaviour is not understood by the parents, the CBD is met with either outright hostility or uncomfortable indifference; everyone is waiting for a time when it will be thrown out of the family home – i.e. it is excised from international environmental law as a failure. However, no one wants to go ahead and actually call the CBD a failure. Such forms of strong critique are deemed too dangerous under the rubric of the blackmail of environmental law, as they would automatically considered an attack on the foundations of international environmental law. It's preferable to let the sorry mess trundle on, rather than confront it.

Instead, through the biocomplex we can consider the view that the CBD is strictly neither a failure nor a success as environmental law, because it operates differently than a standard

environmental treaty regime. In effect, to ask whether the CBD 'works' or not is the wrong kind of question to entertain. The question to be asked is how does the CBD work? This can be broken down into a series of queries. If the CBD does not operate according to certain established juridical standards, then how does it establish or accomplish its goals? Secondly, how has this differentiation in operation altered its objectives? Finally, does this hypothesized altered operation affect the ever-looming question of effectiveness positively or negatively?

THE ABSENCE OF UTOPIA

The first marked difference that sets the CBD apart from other environmental regimes is that it does not envision only a single future utopia, as for example the climate change regime does with its aspiration of a low-carbon economy. While both the previous and the newly introduced strategic plan for the CBD did include official targets for reducing biodiversity loss, some of them having the substance of environmental standards, there is no clearly state future utopia except a loose agglomeration of targets, policies and practices aiming to create a 'world of living in harmony with nature'.

Instead of a vision of a future gene or bio-economy muted in the beginning of genetic gold but swiftly abandoned, there is a type of immanent long emergency linked to a general pathology of the South that has to be continually managed, but never resolved. This malleability, bordering on incoherence, of vision has often been the target of criticism, and the outcomes of the Nagoya conference are no exception to this tendency. This implies a reading of the regime's goals and objectives that is driven by a largely ecocentric ethic as the ultimate standard of success. The CBD is criticised for not accomplishing enough for environmental protection, for a future when biodiversity loss will have been eliminated. In simple terms, there appears to be a quasi-grundnorm at work that enunciates that because

environmental treaties usually posit a utopian future implies that all environmental treaties have to posit a utopian future. The CBD refutes this; instead of a future, it simply has a problematic present that it has to contain and administer.

The fact that the CBD was not drafted or planned in the specific manner it currently operates should not be a crucial element in its assessment. The origin of the CBD as an environmental instrument does not hold some form of sacred truth about its environmentalist essence, which is being lost by the developmental focus. Driven by the ever-widening problematization of biodiversity, the biocomplex now functions as a mechanism for managing present realities, as opposed to arresting biodiversity loss. These realities foster a multiplication of aims, calculations and actors, linked to the conditions of Southern societies in close proximity to biodiversity hotspots. The absence of utopia represents evidence that the object of regulation in the biocomplex has ceased to be nature viewed through lens of biodiversity, as initially hypothesised by conservation biology, but 'a complex of men and things' arranged through the lens of genetic gold; the social systems of the South viewed in conjunction with the eco-systems of biodiversity. The fact that the CBD did not morph into an international instrument promoting and enforcing large-scale conservation programmes, based on detailed ecological metrics, standards and ethics seems to support the argument for a biocomplex more grounded in socio-economic realities.

THE RELIANCE ON THE IDEA OF GENETIC GOLD

In terms of the strategic imperative of this broader biocomplex, the translation of genetic gold into a series of techniques of governing is of crucial importance. One can deduce from Part II of the thesis that there have been two different understandings of the governmental effects of genetic gold. The first is the more ambitious and expansive, exemplified by the INBio school of thought. INBio supported the view that there is

enough economic and political potential in biodiversity to build an alternative development model for Costa Rica, by moving away from resource-intensive/extractive industries, such as agriculture and logging. Such a view calls for a complete repositioning of biodiversity within global, but not necessarily environmental, politics. It seems to imply that in addition to oil states and, in the past, colonial 'banana republics', there can be a type of biodiversity or 'gene state', organised around the management, development and export of genetic material.

It is important to underline that this INBio model is centralised to the extent that INBio envisions itself as an organization implementing a state-led and pre-defined set of developmental policies, without devolution to localities. However, such a project inevitably applies only to certain states within the recognised biodiversity hotspots of the world, but even in those instances the proposal that the market-oriented management of natural reserves would become another form of agriculture rivalling existing agricultural practices has not been proven correct. Biodiversity as genetic gold has not been a natural resource to rival oil, gas or water. Furthermore, the strict separation of genetic resources as the most valuable component has not been borne out by economic research that suggests that ecosystem services is actually the more valuable form of natural capital[1]. In this ambitious and top-down format then, the political project of genetic gold has failed.

There is however another understanding of the function of genetic gold within the biocomplex that is less ambitious in terms of political rhetoric, but derived from existing practices, bottom-up and diffuse. Genetic gold here refers to a different method of allocating investment in natural and human capital in a context of neoliberal globalisation. In this guise, the empowerment of individuals and communities is seen as a more efficient

[1] TEEB, see Chapter 3

and effective intervention or policy, based on the increasing cost of enforcing environmental law (especially the top-down international variety), not only measured in economic terms but also political and social. Although the legal language of the CBD text is amenable to a classical interpretation of bridging the North-South divide through international aid - when for example it calls for developed countries to 'provide new and additional financial resources' to meet the costs of implementing biodiversity law and policy in the South - this understanding of genetic gold suggests that it is wrong to organise a centralised, large-scale funding arrangement for a state-led development project through institutions such as the CBD or INBio.

Indeed, the role of the CBD, since its inception, has not been to procure additional funding and monitor conservation expenditure; it appears more akin to a specialised, global watchdog or regulator for the genetic resources markets, as illustrated by the two accompanying protocols (Cartagena and Nagoya). This understanding is compatible with the role of (state) law within neoliberal doctrine and further illustrates that this second version of genetic gold has made more inroads within the biocomplex.

In this light, initiatives such as the ABS mechanism represent a liberalisation and deregulation of environmental action; considered realist or pragmatic attempts to enable the market to provide additional sources of funding and additional incentives to invest in natural and human capital. Under this guise, this market economy structured around genetic gold appears is a variation of sustainable development that places importance on the individual and the community that will venture on the market in search for the next ABS contract, as opposed to the centralized INBio model where the directive to realize the full economic potential of genetic resources is removed to the state but only as far as INBio itself.

Irrespective of the failure of the first version of genetic gold, this second notion is still going strong, as it does not depend exclusively on a measurable economic benefit from the utilisation of genetic resources to justify the wholesale adoption of a development model. Instead, this 'second' genetic gold, as exemplified by the mechanisms analysed in Chapters 6 and 7, is a technique of governing that focuses on everyday choices, on individual conduct self-evaluated in relation to norms that represent normality as opposed to normativity. This set of norms has little connection to ideals of environmental protection or ethics of conservation; what is incentivised is market participation, the testing of biodiversity action according to the economic grid of neoliberalism. This second version of genetic gold makes the biocomplex teeter on the edge of becoming assimilated as another subservient instrument in the service of neoliberal globalisation or becoming another green-washing exercise promoting and legitimizing the exploitation of the natural environment.

WORKSHOPS FOR ENVIRONMENTAL SUBJECTIVITY

This danger is kept in check by a third version of genetic gold that takes the non-hierarchical aspect to its logical conclusion. In this version, the biocomplex does not prioritise either economic growth or environmental protection. Individuals, communities and social networks in the South are very far from simply being subjected to sets of environmental laws or norms specifically tailored to the holistic principles of biodiversity as put forward by conservation biology and ecology or to the economic principles as put forward by neo-Malthusian demography and development theory modified by neoliberalism. Instead, these social entities continue to resist by articulating their own imaginings of the biodiversity concept and proposing goals and functions for new legal mechanisms. The thesis presented examples of these bottom-up processes, such as the

solidarity networks built around the biopiracy narrative or the community-based articulations of biodiversity. These processes do not match the dominant conceptualisation of the biodiversity regime as essentially a grand deal between two groups of states known as the North and the South over the right to exploit biodiversity; neither do they match the conception of the CBD as simply another mechanism for the imposition of managerial and entrepreneurial rationalities. Instead, the primary effect of the biocomplex in this guise relates to the production of alternative environmental subjectivities that combine the above perceptions in novel ways.

An early example of such a 'workshop' for the production of subjectivity is again INBio, but viewed from a different, non-authoritative angle. After being handed managerial control over the country's biodiversity, INBio has indeed worked within the neoliberal economic grid, but has also modified it with the additional project of 'biocultural restoration'. This modification manifests in the training of parataxonomists, the attempt to educate and empower individuals and communities regarding the value of biodiversity. Despite clearly being a modernizing project aimed at disseminating an entrepreneurial and managerial mentality, the training received and the general entry of the concept biodiversity into Costa Rican life intermixed with existing local relations between nature and society to produce different environmental subjects[2].

Another example of such workshops is the loose alliance or solidarity movement of farmers and activists mobilised in opposition to bio-imperialism and biopiracy. They instead chose a wholesale rejection of ideas of development, market participation and individual empowerment attempted by the genetic gold narrative, choosing to build networks of localised biodiversity knowledge and communal action directed against both

[2] Takacs

state and market. In this case, the African Model Law represents a textual testament of these processes of subjectification. Through the investigation of the multiple effects of the concept of community for biodiversity, various forms of community-based conservation and participatory decision-making were produced.

The common element in these instances of genetic gold in action was the emphasis on producing environmental subjects, as opposed to rules or institutions. More precisely, rules and institutions were only the power effect of negotiating the various forms of environmental subjectivity that could be spawned by the idea of biodiversity as genetic gold. The biocomplex thus functions by instituting smaller 'workshops' for the production of environmental subjectivities. This is achieved by transferring to communities, institutions and states in the South the capacity to devise and pursue their own developmental and environmental policies, while at the same time linking this capacity to open-ended and flexible ideas of local government producing forms of conduct. It has nothing to do articulating top-down alternative developmental models for Southern states rich in biodiversity, but with a more intimate approach building on the relation between people and resources. All of these workshops, irrespective of their origins in opposite ends of the political spectrum have collectively been very influential in the development of a biocomplex from the bottom up. By entertaining the possibility of thinking otherwise, of conceiving of biodiversity in different ways, different environmental subjects are formulated – and by extension varied forms of conduct and counter-conduct.

IV │ CONCLUDING REMARKS: THE TRANSNATIONAL PLATFORM OF THE BIOCOMPLEX

The result of this bottom-up process is diffusion, dispersion, fragmentation. The biocomplex is a framework that has been quietly dismantling the meticulously built

conception of the treaty regime as a remote institution charged with producing internationally-agreed environmental rules and norms, and with monitoring their implementation at national level. Despite ostensibly following exactly the same centralised and hierarchical law-making process and organizational structure as any other international regime (conference of the parties, subsidiary bodies, working groups etc.), both the function and the goals are quite different.

The incorporation of the CBD into a biocomplex means that the hierarchical process of seeking consensus at an inter-state level is on longer the core centre of the regime. The main role of the complex is not to legitimise and codify environmental norms through the repeated rituals and mechanisms (or ritual mechanisms?) of international law. The role is instead to build up from the bottom up through these various 'workshops' outlined throughout the thesis. Therefore, the biocomplex can be described as a non-hierarchical, polycentric and transnational platform for environmental problematisation. This raises the general potential for inclusion of alternative conceptions of biodiversity and modes of subjectification resulting in counter –conducts, even against established environmentalist or conservation tenets and not authorized by the formal state-centric process. It includes a multiple incentive and incitement to utilise biodiversity, both conceptually and materially, in novel ways; ultimately to enable the South the freedom to govern itself by reference to the natural environment, as opposed to being forced to adopt a specific stance towards it.

Under this rubric, the biocomplex is confirmed as a locus for rejecting the blackmail of environmental law, as predicted in Chapter 1. It does not concentrate or refer every aspect of its operation back to the ontological defence of environmental law. It prioritises environmental conduct, individual and collective, over codified rules, the fragmented and dispersed over the centralised and the hierarchical. This should not be taken to infer a

unreserved positive verdict for a CBD that has morphed into a promising, dynamic and flexible governance arrangement. The danger remains that discourses of inclusion, freedom and empowerment may hide a much more homogeneous underbelly strictly adhering to neoliberal doctrine, thus reverting to the second version of genetic gold outlined above. The presentation of these workshops for environmental subjectivity without a clear structure or categorization does not mean that they are all of equal stature, or magical wellsprings of power against the state and the market.

In fact, there is a final limit that seems insurmountable, irrespective of whether one approaches the CBD as a legal regime or a biocomplex: the fact that the echo of the INBio-Merck bioprospecting contract still reverberates through biodiversity discourse and practice. It can be observed in the beliefs that freedom is perceived as the possibility of contractual exchange between two free individuals, that inclusion is equated with market participation and that the sustainable utilisation of biodiversity through techno-scientific means constitutes the primary method of receiving direct benefits and raising the biovalue of the natural resources. Despite the fact that ABS contracts were never agreed in enough numbers to support the actualisation of a global market for genetic resources, there is little doubt that the CBD can be still reduced to being simply a trope for the dissemination of a single managerial and entrepreneurial subjectivity, as a form of green extension of the abstract economic subject of the rational, profit-maximising individual on which neoliberalism is based on.

Even with the history of biodiversity laid out on a different map and the alternative analysis of the operation of the biocomplex, the discourse is inevitably still hounded by the ghost of effectiveness. An environmental lawyer would still call the CBD a failure, as the notion of genetic gold has not functioned the way it was originally envisaged by the founders of

INBio. This is only true, if this political project was defined exclusively by reference to a future terminal end point of a construction of a novel form of eco-state revolving predominantly around the use of biodiversity as a natural resource; or a past origin where the truth of biodiversity as genetic gold has been conclusively defined and to which we have to continuously refer to in solemn acknowledgement. This conclusion would constitute a repeat of the same mistakes underlined in relation to the frantic search for a biodiversity definition; another attempt to make sense of the world through legal closure.

Ultimately, the purpose of this thesis has been to assess and evaluate the global biodiversity regime at a very crucial and dangerous junction in its development. This task was placed within a broader search for alternatives to the simplistic blackmail of environmental law that has dominated legal thought. The final conclusion is that what the CBD accomplishes is to organise, direct and enable the multiple and heterogeneous workshops of environmental subjectivity that have come to interpret, apply and adapt the concept of biodiversity to a variety of contexts. What the CBD has never accomplished is to directly devise or authorise additional binding international environmental law for the purpose of conserving or utilizing biodiversity. In other words, the three objectives set out in the treaty text are not actually pursued by the CBD; the regime simply creates the conditions for other actors to strategically organize the pursuit of these goals, in conjunction with their own.

The thesis has analysed the biodiversity regime based on the effective reality it has managed and practices it has spawned, without resorting to empirical analysis. It has presented the heterogeneous, multipolar context of its operation, and actively enquired after the possibility of its failure as a legal and/or political project. For the mainstream of environmental law that is still tied to the blackmail of binary oppositions, this is a

profoundly irrational way of looking at the problems of the biodiversity regime. What's the point of even having an environmental regime of biodiversity, if it does not actually affect biodiversity and its loss? If the primary goals of the regime do not bear any resemblance to ecocentric ethics, what's the point of regarding it as an environmental regime in the first place? Such seemingly self-evident 'so what' questions are of course symbols of this blackmail in action, which forbids different ways of thinking about environmental problems not welded to existing binaries.

The results of these investigations reverse the perception of failure or irrelevancy that has been associated with the CBD in recent years. That does not imply that it has been a 'success' instead, nor that some qualification is needed for a final verdict to be passed. It actually means that the uniform criteria that have been employed in such judgements have been evaluated as failures in themselves. For environmental law, the CBD is a disappointment because it does not conform to the standard model, because it does not pay homage to legal closure, coherence and certainty, because it is neither a success nor a failure according to legal metrics of effectiveness or efficiency; it just exists - a transnational, sprawling favela resisting Le Corbusier's modernization.

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