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Change and Subjectivity in International Environmental Law: The Micro-Politics of the Transformation of Biodiversity into Genetic Gold

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Abstract:

There is no hope for international environmental law to be an engine for global social change, when it can no longer provide a compelling account of itself. This article presents a theoretical framework, constructed from the works of Michel Foucault, capable of tracing this loss of descriptive capacity, as well as the resultant prescriptive confusion. The analysis examines the challenges posed by the triptych of biodiversity, biotechnology and neoliberalism housed under the idea of genetic gold and calls for attention to micro-politics, in the shape of the apparatuses for the production of environmental subjectivity that operate outside the formal structures of the international legal sphere. The trope of genetic gold is revealed as an obsolete attempt to protect a fixed idea of biodiversity based on an outdated conception of environmental value. In response, the author argues for a mature confrontation with the end(s) of international environmental law.

Keywords: biodiversity, methodology, Foucault, subjectivity, micro-politics, bioeconomy

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1. INTRODUCTION

A paradox characterizes international environmental law today. The present era of legitimacy – of elaborate global regimes, ever more high profile summits, rigorous scientific reports and ambitious strategic plans – has also been a period of increasing difficulty in building upon the existing achievements of the field.[1] In the 21st century, the spectre of ineffectiveness haunts the long-established paradigm of international environmental law.[2] The steadfast faith in the structure of the issue-specific environmental regime, the insistence on the widest consensus and the attachment to the 'formalist culture of the international legal process' as the primary defence against the excesses of polarized environmental politics[3] do not seem to produce the desired effects anymore.

A succinct summation of the field can be found in the first issue of this journal:'(l)aw's prowess as a stabilizing force operating within clearly defined jurisdictional boundaries is well established, but its credentials as an engine for global social change are much shakier'.[4] It is proposed that this contradiction does not stem from any conflict between the domestic and the international jurisdictions, but instead identifies a methodological challenge. The paradox is the effect of the unravelling of the methodological fusion between what Daniel Bodansky has distinguished as the doctrinal and the policy approaches to international environmental law; i.e., the fusion between articulating what the law is and what the law should be.[5] In a manner hinting at its common law origins, the normativity of international environmental law had methodologically been based on the discovery of already existing

[1] V. Heyvaert & T.F.M. Etty, 'Introducing Transnational Environmental Law' (2012) 1(1) Transnational Environmental Law, pp. 1-11, at 1-2.
[2] D. Bodansky, *The Art and Craft of International Environmental Law* (Harvard University Press, 2010), at pp. 252-66.
[3] P.H. Sand, 'The Evolution of International Environmental Law', in D. Bodansky, J. Brunnée & E. Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), pp. 29-43, at 42.
[4] Heyvaert & Etty, n.1 above, at p. 3.
[5] Bodansky, n. 2 above, at pp. 4-8.

legal norms and principles. It will be argued in this article that the unravelling of this foundational descriptive/prescriptive fusion is due to the loss of the field's capacity to describe, that is, to comprehend the presently evolving social and ecological realities, and thus provide a compelling account of global social change. There is no hope for the field to be an engine for global social change, when it can no longer understand it.

In line with a commitment to methodology in the sense of 'developing methodologies that are best suited to the type of questions being asked'[6], this article will present a theoretical framework, constructed from the works of Michel Foucault, capable of tracing this loss of descriptive capacity, as well as the resultant prescriptive confusion. This is achieved by shifting analytical emphasis from the proliferation of discourse towards the emergence of actors or active subjects. This theoretical framework calls for attention to micro-politics, in the shape of the practices and mechanisms (the apparatuses) for the production of environmental subjectivity that operate outside the formal structures of the international legal sphere. A unique methodological contribution of this approach lies in its Foucaultian conception of power that underpins that enables analytical connections to be made between changes occurring at the level of the person and the processes of global environmental governance.

The following section outlines the case study of the historical transformation of biodiversity into genetic gold, before the concept of micro-politics is introduced in the third section. The fourth section applies this framework and outlines practices for the production of subjectivity under the sign of genetic gold. The final section outlines the adverse reaction of law towards these micro-political processes and concludes that only a confrontation with its own end(s) will enable international environmental law to move past the paralyzing paradox.

[6] For the need to focus on methodology in environmental law scholarship see E. Fisher, B. Lange, E. Scotford & C. Carlarne, 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' (2009) 21(2) *Journal of Environmental Law*, pp. 213-50, at 226-7.

2. CHANGE, VALUE AND NATURE: THE MANY GUISES OF BIODIVERSITY

Under the method of the prescriptive/descriptive fusion, international environmental law seeks to assign values to an external ecological reality in order for a protective environmental norm to be posited. The necessity of locating environmental value has been firmly established as self-evident: '[p]lainly, if action is to be taken to protect or conserve elements of the natural world, that must equally be based upon the recognition of some form of value in their continued existence'.[7] However, as we know from Max Weber, value is, as Sunder Rajan calls it, a 'double-jointed word'.[8] It suggests both a process of material economic valuation by the market, as well as a different valuation from an ethical perspective. Secondly, leaving aside the environmentalist normativity, nature is always already both a material space in relation to which certain human practices are formed as well as a concept that guides human thought.[9] Although remaining largely unacknowledged, this duality of both value and nature invariably complicates the traditional legal method in the environmental field.

A major sub-field where this phenomenon can be clearly observed is biodiversity. Writing on the topic, Geoffrey Bowker alludes to the difficulty of engaging with this double duality in the context of global change:

[7] M. Bowman, 'The Nature, Development and Philosophical Foundations of the Biodiversity Concept in International Law', in M. Bowman & C. Redgwell (eds), *International Law and the Conservation of Biological Diversity* (Kluwer Law International, 1996), pp. 5-31, at 17.
[8] K.S. Rajan, *Biocapital: The Constitution of Postgenomic Life* (Duke University Press, 2006), at p. 19.
[9] For a classical analysis of this duality of nature see R. Williams, 'Ideas of Nature', in R. Williams (ed), *Problems in Materialism and Culture: Selected Essays* (Verso, 1980), pp. 67-85, at 69-73.

> <start quote>while it is clear in a general sense that we as a globalizing species and globalizing economy are currently deeply renegotiating the relationship between nature and culture, we really have no place to site a reflective discourse about the range of ecological and economic issues.[10] <end quote>

Biodiversity was declared dead in 1997.[11] For the conservationist making that claim, its formal biological-ecological definition as variability across the three levels of genes, species and ecosystems, the 'catch-all term of everything biotic',[12] was 'so all-inclusive that it has become meaningless'.[13] Despite the attempt to frame disparate ecological traditions and concerns regarding the loss of species, habitats and ecosystems under a single umbrella conservation agenda, neither a normative ethic for nature nor a practical set of conservation solutions materialized.[14] By increasing knowledge complexity, ecology was left with a vacuous universal banner-word that could only function as a declensionist narrative of environmental loss. According to this type of ecological thought, the attempt to include all environmental values under a singer umbrella term had ended up being worthless.

During the same period, biodiversity was debated in starkly contrasting terms, as 'a metaphorical magnate that currently galvanizes the conservation, scientific and funding communities'.[15] The addition of the funding to pre-existing conservation expertise and ecological movement strands was indicative of a change in perceptions of biodiversity. The complexity of biodiversity inherently implied a large-scale undertaking, which certain strands

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[10] G.C. Bowker, 'Time, Money and Biodiversity', in A. Ong & S.J. Collier (eds), *Global Assemblages: Technology, Politics and Ethics as Anthropological Problems* (Blackwell, 2009), pp. 107-23, at 110.
[11] R.A. Lautenschlager, 'Biodiversity is Dead' (1997) 25(3) *Wildlife Society Bulletin*, pp. 679-85.
[12] Ibid, at 683.
[13] Ibid, at 679.
[14] For a detailed history see T.J. Farnham, *Saving Nature's Legacy : Origins of The Idea of Biological Diversity* (Yale University Press, 2007). For a critical history see D. Takacs, *The Idea of Biodiversity: Philosophies of Paradise* (The John Hopkins University Press, 1996).
[15] C. Zerner, 'Telling Stories about Biological Diversity', in S.R. Brush & D. Stabinsky (eds), *Valuing Local Knowledge: Indigenous People and Intellectual Property Rights* (Island Press, 1996), pp. 68-101, at 72.

of environmental thought had abandoned; if it had become a magnate, what was it attracting? Although couched early on in terms of a North-South 'grand bargain',[16] which can admittedly be used to interpret the *quid pro quo* of a number of international negotiations at state level both in the environmental field and beyond, the debate on biodiversity had started attracting new sets of non-state actors, and predominantly private actors seeking to realize economic value out of biodiversity.[17]

The initial commercialization of biodiversity as a set of valuable genetic resources[18] was made possible by the development of the biotechnology industry. From the 1970s onwards, advances in molecular biology and genomics, and in particular recombinant DNA technology, made possible not only the identification of specific genes, but also the extraction and re-application of this genetic code in the production of new genetic matter, in the shape of DNA or protein. Applied biotechnology expanded the possible uses of biodiversity,[19] transforming it into a set of genetic resources – 'raw material inputs for medical and agricultural biotechnology'.[20] New pharmaceuticals, crops and other substances appeared to be just around the corner. The promise of these technological advances transformed mostly publicly-funded natural product discovery programmes that searched for bioactive

[16] K. ten Kate & S.A. Laird, 'Biodiversity and Business: Coming to Terms with the 'Grand Bargain'' (2000) 76(1) *International Affairs*, pp. 241-64 at 242.

[17] K.I. MacDonald, 'The Devil is in the (Bio)diversity: Private Sector "Engagement" and the Restructuring of Biodiversity Conservation', in D. Brockington & R. Duffy (eds), *Capitalism and Conservation* (Wiley-Blackwell, 2011), pp. 44-81, at 53-64 ; K. McAfee, 'Selling Nature to Save it? Biodiversity and Green Developmentalism' (1999) 17(2) *Environment and Planning D: Society and Space*, pp. 133-154 ; M.C. Rubino, 'Biodiversity Finance' (2000) 76(2) *International Affairs*, pp. 223-40; Ten Kate & Laird, n. 16 above.

[18] The idea is developed fully in K. ten Kate & S.A. Laird, *The Commercial Use of Biodiversity* (Earthscan, 1999).

[19] This is only hinted by the early argument that '[s]cience is discovering new uses for biological diversity in ways that can relieve both human suffering and environmental destruction'. See E.O. Wilson (ed), *BioDiversity* (National Academy Press, 1988), at p. 3.

[20] K. McAfee, 'Neoliberalism on the Molecular Scale: Economic and Genetic Reductionism in Biotechnology Battles' (2003) 34(2) *Geoforum*, pp. 203-19, at 203.

compounds by screening samples from plants, insects and other micro-organisms[21] into mostly private for-profit bioprospecting enterprises.

Biotechnology transformed biodiversity into a form of natural capital, from which economic value could be extracted. Initially, the potential of this transformation was only conceived in terms of enhancing funding for conservation. This led to a very limited conception of the 'grand bargain' as the coming together of the conservation, scientific and funding communities or in even more simplistic terms the nebulous entity of the South extracting additional funds by restricting access to a resource that had become valuable to the equally nebulous entity of the North.[22] This initial commercialization of biodiversity was conceived as fuelling a perpetually positive economic 'feedback loop'.[23] Based on the assumption that accelerating the collection and screening of genetic samples would increase the chances of new commercial products, and that the profits from these products would in turn fund further conservation of areas containing collectable samples, both the odds of finding new profitable genes and the ecological status of conservation areas would be perpetually improved.

[21] During this period, such bioprospecting programmes were on-going in the United Kingdom, administered by the National History Museum, Kew Gardens and the London Zoo. See F. McConnell, *The Biodiversity Convention: A Negotiating History* (Kluwer Law International, 1996), at p. 39. In the United States, 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. See E. J. Asebey & J.D. Kempenaar, 'Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention' (1995) 28(4) *Vanderbilt Journal of Transnational Law*, pp. 703-54, at 719-36; J.S. Miller, 'Impact of the Convention on Biological Diversity: The Lessons from Ten Years of Experience with Models of Equitable Sharing of Benefits', in C.R. McManis (ed), *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (Earthscan, 2007), pp. 58-70, at 68.

[22] For this conception of the grand bargain see the past work of environmental economist Timothy Swanson, indicatively: T. Swanson, 'The Reliance of Northern Economies on Southern Biodiversity: Biodiversity as Information' (1996) 17(1) *Ecological Economics*, pp. 1-8; T. Swanson, *Global Action for Biodiversity* (Earthscan, 1997).

[23] The initial proposal of this feedback loop by one of the originators of the INBio experiment (discussed below in this article) can be found in: T. Eisner, 'Prospecting for Nature's Chemical Riches' (1990) 6(1) *Issues in Science and Technology*, pp. 31-4; T. Eisner, 'Chemical Prospecting: A Global Imperative' (1994) 138(3) *Proceedings of the American Philosophical Society*, pp. 385-93.

Development economics picked up this specific feedback loop and generalized it as an alternative development path based on taking advantage of the 'unique asset' of biodiversity to produce goods and services for the global markets, i.e. on adding a new form of capital to developing countries' portfolios.[24] In that guise, the environmental concern over biodiversity loss was transmogrified into an economic concern over achieving sustainable development via an 'alternative path'.[25] In its most ambitious versions, this alternative elevated bioprospecting to the level of 'another type of agriculture, a very sophisticated agriculture'[26], fully capable of competitively displacing other more intensive land uses. Farming was to be supplemented by bioprospecting, and selling agricultural products by selling genetic information. In the end, the economic innovation associated conception of biodiversity as genetic gold[27] made a mockery of its dismissal by ecologically-minded biologists.

A number of writers from the late 1980s onwards criticized this close connection between biodiversity and biotechnology ('they already sound as if they were made for each other'[28]), highlighting the ethical implications of biological life becoming raw material for industry and of the attempt to 'offer nature the opportunity to earn its own right to survive in a world market economy'.[29] These critiques were directed against the anthropocentric, utilitarian and economic values assigned to nature within the discourse of genetic gold, against the

[24] The theory of an alternative development path can be found in T. Swanson, 'Conserving Global Biological Diversity by Encouraging Alternative Development Paths: Can Development Co-exist with Diversity?' (1999) 8(1) *Biodiversity and Conservation*, pp. 29-44 ;T. Swanson, 'Why is There a Biodiversity Convention? The International Interest in Centralized Development Planning' (1999) 75(2) *International Affairs*, pp. 307-331.
[25] Swanson, n. 22 above, p. 43.
[26] Quoted in Takacs, n. 14 above, at p. 292.
[27] For some discussion of the analogy implicit in the term see P. Ariansen, 'Bioprospecting: A Hybrid of Commerce, Politics and Science', in H. Svarstad & S.S. Dhillion (eds), *Responding to Bioprospecting: From Biodiversity in the South to Medicines in the North* (Spartacus, 2000), pp. 155-66, at 155; McAfee, n. 17 above, at pp. 146-8.
[28] C. von Weizsacker, 'Competing Notions of Biodiversity', in W. Sachs (ed), *Global Ecology: A New Arena of Political Conflict* (Zed Books, 1993), pp. 117-31, at 122.
[29] McAfee, n. 17 above, at p. 134.

prominence of the global markets as regulatory instruments, as well as the impact of this change for farmers' practices and lives in the South.[30]

The Organization for Economic Cooperation and Development's (OECD)'s International Futures Programme spent 18 months between 2007 and the end of 2008 examining 'a world where biotechnology contributes to a significant share of economic output',[31] i.e. the world of a global bioeconomy characterized by the diffusion of biotechnology. According to the OECD, the three main elements of this bioeconomy are predicted to be:

> <start quote>the use of advanced knowledge of genes and complex cell processes to develop new processes and products, the use of renewable biomass and efficient bioprocesses to support sustainable production, and the integration of biotechnology knowledge and applications across sectors.[32] <end quote>

This emerging bioeconomy would span the agriculture, health and industry sectors. The OECD report is effusive in its praise of the technological solutions proposed by biotechnology, but this praise is based on forecasts of likely future scenarios, and not on existing applications. By consequence, the proposed policy interventions and regulatory mechanisms are geared towards enabling this biotechnological potential that is set to arrive in the future.

This new biotechnology-driven bioeconomy is not however a singular triumphant stage of future innovation, but firmly belongs within an existing larger phenomenon of

[30] For an overview of such critiques see J. R. Kloppenburg (ed), *Seeds and Sovereignty: The Use and Control of Plant Genetic Resources* (Duke University Press, 1988); V. Shiva *et al, Biodiversity: Social and Ecological Perspectives* (Zed Books, 1991).
[31] OECD, *The Bioeconomy to 2030: Designing a Policy Agenda* (OECD International Futures Programme, 2009), at p. 8.
[32] Ibid.

financialization.[33] Very briefly, financialization, viewed as the latest phase in the history of neoliberalism, refers to the domination of financial markets and their particular economic rationality across all political, economic and social formations. This dominance has remained largely unaffected by the most recent global financial crisis of 2008. Financialization installs the constant future modelling, the speculation of the stock market, 'the crazed prophecies of financial analysts and the cynical advice of interested investment bankers',[34] at the centre of a post-industrial economic system and society itself. 'The evaluation of future profits becomes the decisive factor in determining price'[35] and thus promise becomes the 'one fundamental', that which 'enables production to remain in a permanent state of self-transformation, arming it with a capacity to respond to the most unpredictable of circumstances, to anticipate and escape the possible "limit" to its growth long before it has even actualized'.[36] In this way, surplus value is disconnected from actual production and extracted from the potential of speculative hype itself. Attracting investment through this promise (e.g. through an attractive business plan) becomes central, while realising profit through production for exchange is only of secondary importance.

As an industry, biotechnology fits very well within this new economic paradigm. As Rajan points out, it represents 'a game that is constantly played in the future in order to generate the present that enables that future'.[37] This framing is evident in the OECD report, where the promise of wondrous new pharmaceuticals, crops and chemicals will only be realized in the future if the correct regulatory framework is implemented in the present. By speculating on

[33] Analyses of this economic process can be found in M. Aglietta & R. Breton, 'Financial Systems, Corporate Control and Capital Accumulation' (2001) 30(4) *Economy and Society*, pp. 433-66; A. Leyshon & N. Thrift, 'The Capitalization of Almost Everything: The Future of Finance and Capitalism' (2007) 24(7-8) *Theory, Culture & Society*, pp. 97-115.
[34] Aglietta & Breton, n. 33 above, at pp. 433-4.
[35] M. Cooper, *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era* (University of Washington Press, 2008), at p. 23.
[36] Ibid, at p. 24.
[37] K.S. Rajan n. 8 above, at p. 34.

nature and the biological potential of life itself, biotechnology attaches the promise to transcend natural limits to financialization's promise to transcend the economic limits to growth.[38] In this way, the relationship between nature and value is being renegotiated via the establishment of this close link between life and finance.[39] Thus, the earlier lament that biodiversity and biotechnology 'already sound as if they were made for its other' now reflects only a partial view; it is also the case that the foundational rationalities of biotechnology and neoliberalism are equally entwined.

In light of this bioeconomic promise to transcend all limits, biodiversity as genetic gold can also be reconceptualized as signifying a triptych of biodiversity-biotechnology-neoliberalism; indicating a different stage in biodiversity's commercialization, this time within a context of a knowledge-based bioeconomy. Following Kean Birch and David Tyfield's argument regarding the particularities of biocapital,[40] it can be argued that the transformation of biodiversity into valuable genetic resources now constructs this newly discovered resource as an asset, rather than a commodity. If we accept that an asset is a resource that both possesses latent value in itself and that can also be used to realize surplus value without the necessity of exchange (e.g. a patent) - whereas a commodity can only produce value by being profitably exchanged (e.g. a product), then it becomes clear that biodiversity is not solely a 'genetic crop' as Shiva and others critics have intimated, i.e. a commodity to be exchanged for profit, but also possesses asset-like characteristics. This represents a significant strategic change. Funding conservation, in the sense of making biodiversity pay its own way through sustainable use, is no longer important. Attracting investment based on biodiversity's future potential is paramount. In that sense, the previous feedback loop that underpinned the bioprospecting rationality is no longer in operation. There is no need for genetic resources to

[38] K. Birch & D. Tyfield, 'Theorizing the Bioeconomy: Biovalue, Biocapital, Bioeconomics or ... What?' (2012) 38(3) *Science, Technology, & Human Values*, pp. 299-327, at 306.
[39] Ibid, at 305-6.
[40] Ibid, at 301-2.

be profitably exchanged in the global marketplace as raw material input to be conserved; as long as there is a corporation or investment fund that will believe in the forecasts about the future profitability of the associated biotech venture.[41]

The ever elusive construction of biodiversity as genetic gold (conservation ethic, development path, funding source, land use type or financial asset) points towards a series of changes in the value of biodiversity. In the most recent guise of genetic gold as the triptych between biodiversity, biotechnology and biodiversity, global social change manifests as a dual attempt to transcend all ecological and economic limits through the application of scientific and economic knowledge. In that case, biodiversity will be used to restructure social relations,[42] once more making prominent the duality of nature as both physical and conceptual space.

Looking at this brief historical background of the different values attached to biodiversity, we now know that it is not only that biodiversity has found a mirror in biotechnology, but that also biotechnology comes with its own mirror, in the shape of the political economy of neoliberalism.[43] This most recent stage in the decades-long transformation of biodiversity into genetic gold, set within a broad political economic context, now goes far beyond what environmental law has been asked to engage in the roughly 40 years since its inception. In fact, it is not the case that the link between biodiversity and biotechnology resulted in the

[41] An instructive example from the biotechnology industry is the case of Sharman Pharmaceuticals (more recently Napo Pharmaceuticals). Sharman's often tortuous quest to develop the drug crofelmer, derived from the red substance found on the Croton lechleri tree in the Amazon, to combat HIV-associated diarrhoea lasted for 23 years, from 1989 until FDA approval under the trade name Fulyzaq was secured in December 2012 (available at: http://tinyurl.com/b9lv6nu). The Sharman/Napo project attracted $200 million of funding during that period, both from public stock offerings and private investors, despite the fact that the companies had no marketable product or any other source of income during those decades. A celebratory profile of the tenacity of the founder and CEO is available at: http://tinyurl.com/jwcpmm4.

[42] J. McCarthy & S. Prudham, 'Neoliberal Nature and the Nature of Neoliberalism' (2004) 35 *Geoforum*, pp. 275-83, at 277-9.

[43] On the argument regarding the intrication between the life sciences and neoliberalism see generally Cooper, n. 35 above.

renegotiation of the boundaries between nature and value, but rather that biotechnology in itself already both represents and perpetuates significant change in these boundaries.

This section outlined key stages of the historical case study of the transformation of biodiversity into genetic gold. It was also written with reference to the methodological tasks outlined in the introduction. Following a theoretical framework broadly related to the interpretative or constructivist tradition, the section traced the emergence of environmental norms in relation to biodiversity, thus challenging positivist understandings of law by focusing on value and norms, rather than facts and rules. The emphasis on ideas and concepts, on the notion that the reality of biodiversity is socially constructed, may also lead the reader to identify the section as employing a 'environmental discourse analysis' method, which is derived from the same social science tradition.[44] In the context of what Bodansky terms 'the explanatory approach',[45] the next step would then have involved linking this historical context back to environmental law by examining the effectiveness of these constructed norms, most commonly by way of evaluating their path towards legalization.

Such a step would not take us closer to an international environmental law that needs to account for change, before it can push for it. It would simply rehash the unravelling descriptive/prescriptive fusion by internally evaluating the legitimacy and normative potential of the preceding discourses. In line with the methodological task of providing tools for comprehending already occurring global social change, the next section will instead chart a Foucaultian approach that, in terms of its analytical objects, substitutes actors or subjects for structures, and the concept of the apparatus for the concept of discourse. This framework is thus distinguished from existing applications of Foucault to environmental law by conceiving

[44] For a detailed overview see M. Hajer & W. Versteeg, 'A Decade of Discourse Analysis of Environmental Politics: Achievements, Challenges, Perspectives' (2005) 7(3) *Journal of Environmental Policy & Planning*, pp. 175-84.
[45] Bodansky, n. 2 above, at pp. 8-9.

of environmental subjects as constituted primarily through practices, rather than discursive structures.[46]

3. THE MICRO-POLITICS OF THE SUBJECT

The starting point for this approach involves 'de-institutionalizing and de-functionalizing relations of power'.[47] Foucault seeks to make the present operation of power explicit. He argues that asking questions such as 'what legitimates power?' or 'what is the state?' are not sufficient for analyzing the everyday operation of power.[48] The standard legal and institutional models require expansion; power should not be reified as an entity or a thing held, lost or handed out in pieces by the state:

> <start quote>(f)or let us not deceive ourselves: if we speak of the power of laws, institutions and ideologies, if we speak of structures or mechanisms of power, it is only insofar as we suppose that certain persons exercise power over others.[49] <end quote>

Contrary to any legal, structural or institutional understandings, power, then, emerges as a relation between persons. Power is most visible at the micro level and manifests as an action upon a human subject (whether an individual or a collective) that is free in the sense of being capable of various paths of action. This understanding of the necessary role of subjectivity within the exercise of power goes against the passive legal subject viewed as the abstract object of law. In Foucaultian terms, power:

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[46] B. Lange, 'Foucauldian-inspired Discourse Analysis: A Contribution to Critical Environmental Law Scholarship?', in A. Philippopoulos-Mihalopoulos (ed), *Law and Ecology: New Environmental Foundations* (Routledge, 2011), pp. 39-64, at 43.
[47] M. Foucault, *Security, Territory, Population: Lectures at the College de France 1977-1978* (Picador, 2007), at p. 119.
[48] M. Foucault, 'The Subject and Power', in J.D. Faubion (ed), Power: Essential Works of Foucault: Vol 3 (Penguin, 2000), pp. 326-48, at 327.
[49] Ibid, at 337.

> <start quote> […] 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 way of acting upon one or more acting subjects by virtue of their acting or being capable of action.[50] <end quote>

Any possible definition of power under this conception would be broad, such as the one proposed by Michael Barnett and Raymond Duvall: 'Power is the production, in and through social relations, of effects that shape the capacities of actors to determine their own circumstances and fate'.[51]

From this micro-political conception of the operation of power, Foucault derives a broad conception of government not as a formal institution, but as a form of power in itself understood as the 'conduct of conduct(s) and [a] management of possibilities'[52] or even more broadly as 'the right disposition of things arranged so as to lead to a suitable end'.[53] Understanding governing as 'disposition' distinguishes it from the imposition associated with more traditional conceptions of the states' sovereign power.[54] In this formulation, 'the conduct of conduct' has multiple meanings; it can refer to the government of others, i.e. the activity of managing or governing; it can also refer to the practices of conducting oneself or allowing oneself to be conducted by others, as well as generally how one behaves in relation to the required or imposed conduct.[55] In this broad sense, then, 'to govern is to structure the possible field of action of others',[56] namely by enabling these others (subjects) to govern

[50] Ibid, at 341.
[51] M. Barnett & R. Duvall (eds), *Power in Global Governance* (Cambridge University Press, 2005), at p. 3.
[52] Foucault, n. 48 above, at 341.
[53] Foucault, n. 47 above, at 96.
[54] Ibid, at 108.
[55] Ibid, at 193.
[56] Foucault, n. 48 above, at 341.

themselves through their capacity to calculate and evaluate their actions. In Foucault's work, 'the self is not a natural, given entity but a political one, in the sense that it is constituted by power relations'.[57] In a circular fashion, the subject on which power acts is produced by that very exercise of power.

Therefore, the art of governing any aspect or domain of our political, economic and social realities – a world society, a sovereign state, a corporation, a social group, the environment, poverty, hunger or development or for the purposes of this analysis global social change – in effect relies upon governing a particular representation of these entities[58] produced within an 'ensemble formed of institutions, procedures, analyses and reflections, calculations, and tactics'.[59] This relationship between knowledge and power, or thought and government, draws attention to the notion that governing today is not simply a process or an activity, but a set of interconnected discourses and practices, in effect a collection of rationalities and technologies that continuously produce the human subject that they are tasked with governing.

This analytics of government can access behind the composite reality and abstract entities, such as 'the state' or 'treaty regime', to the micro level and the contingent relations between these structures, the exercise of power and the production of subjectivity. By focusing on governing as a process of subjectivation, this analytics provides an effective tool to study phenomena such as the rise of non-state agency and the diffusion of political authority, which

[57] A. Allen, 'Foucault and the Politics of Our Selves' (2011) 24(4) *History of the Human Sciences*, pp. 43-9, at 44.
[58] M. Dean, *Governmentality: Power and Rule in Modern Society* (Sage, 2010), at pp. 24-8 ;W. Larner & W. Walters (eds), *Global Governmentality: Governing Global Spaces* (Routledge, 2004), at p. 2.
[59] Foucault, n. 47 above, at 108.

a global governance literature 'tied to the triad between sovereignty, authority and legitimacy' has failed to provide.[60]

Following this diagram, the proposed theoretical framework is able to disaggregate obfuscated, abstracted and macro concepts, such as biodiversity governance or environmental regime, into 'a set of raw elements: texts, institutions, statements, gestures architectural and material forms, formalised roles and competences, and self-descriptions'.[61] The idea of identifying a permeable ensemble contingent upon heterogeneous elements and factors contributing to the production of subjectivity thus replaces the search for immobile, rigid institutional structures.[62] The framework can then disassemble the engine of international environmental law in order to observe how its constituent parts function and interact with each other as an ensemble, rather than an institution or structure. The fluid nature of the ensemble – compared to the fixity and rigidity associated with the latter terms – is crucial.

To complete the framework, it is important that these parts remain distinct and not coalesce back into the entity that was broken up in the first place. Otherwise, the whole exercise becomes an empty gesture again succumbing to the descriptive/prescriptive fusion, leading through grand theory back to the normative project that represented the point of departure. This ensemble must remain an ensemble of different parts, a contingent collection of heterogeneous elements, always on the edge of coherence but never achieving it, in order to signify 'a notion of emergent ordering – a kind of arrangement that is paradoxically, constituted by its own effects'.[63] For this purpose, the framework is complemented by the Foucaultian concept of the apparatus. Foucault describes this apparatus as:

[60] O.J. Sending & I.B. Neumann, 'Governance to Governmentality: Analysing NGOs, States and Power' (2006) 50(3) *International Studies Quarterly*, pp. 651-72, at 668.
[61] A. Pottage, 'Foucault's Law' (2011) 74(1) *Modern Law Review*, pp. 159-68, at 164.
[62] Foucault, n. 47 above, at 119-20.
[63] Ibid.

> <start quote>…a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions, in short the said as much as the unsaid.[64] <end quote>

A number of heterogeneous, 'raw', elements can therefore co-exist and link-up within the construct. Foucault explains that 'the apparatus itself is the system of relations that can be established between these elements'.[65] These elements retain their heterogeneity; they are not fused into a fixed, hierarchical structure. Gilles Deleuze's loose attribution of a 'multi-linear' character to the apparatus emphasizes this same point:

> <start quote> 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.[66] <end quote>

By identifying such a 'tangle' of lines, the apparatus is clarified as a self-constituting, fluid and temporal assemblage, not put together into a coherent, fixed, hierarchical structure by individuals, organizations or entities that 'hold' power. Instead, it 'has as its major function at a given historical moment that of responding to an urgent need'.[67] It is thus driven by a 'strategic imperative',[68] which is understood as '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'.[69]

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[64] M. Foucault, 'The Confession of the Flesh', in C. Gordon (ed), Power/Knowledge: Selected Interviews and Other Writings 1972-1977, by Michel Foucault (Pantheon, 1980), pp. 194-228, at 194.
[65] Ibid.
[66] G. Deleuze, 'What is a Dispositif?', in T.J. Armstrong (ed), Michel Foucault: Philosopher (Routledge, 1992), pp. 159-68, at 159.
[67] Foucault, n. 47 above, at 195.
[68] Ibid.
[69] Ibid, at 196.

Therein lies the cyclical nature of the apparatus as a mechanism of power 'constituted by its own effects'; it produces solutions to a problem it has itself articulated in terms that make the produced solution plausible. Through the notion of the apparatus, it is thus possible to identify and analyze 'a set of practices and mechanisms […] that aim to face an urgent need and to obtain an effect that is more or less immediate'.[70] It is important to note that both the urgent need and the effect to be obtained – around which the exercise of power as governing is organized – is internalized and conceived through the lens of the knowledge mechanisms of the apparatus itself. For this reason,

> <start quote> [t]he '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.[71] <end quote>

In this sense, this apparatus functions as a 'complex of subjectification',[72] a mechanism that produces the correct type of subjectivities in response to the problematization that the apparatus itself continuously (re)articulates. In other words, the apparatus is an urgent and practical manifestation of a foundation-less power; it constitutes itself by constituting subjects capable of being governed under the diagram of a specific strategic need, thus making apparent the link between knowledge and power, as well as between thought and government. Writing on Foucault's apparatus, Giorgio Agamben goes to simplify this concept even further:

[70] G. Agamben, *What is an Apparatus and Other Essays* (Stanford University Press, 2009), at p. 8.
[71] Ibid, at 11.
[72] F. Guattari, *Chaosmosis: an Ethico-Aesthetic Paradigm* (Power Publications, 1995), at p. 7.

> <start quote> I shall call an apparatus literally anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviours, opinions, or discourses of living beings.[73] <end quote>

This broad concept of the apparatus thus enables an engagement with the question of power without resorting to the binaries between law and politics. Instead of following the structure of international environmental law and thus starting the analysis from the treaty that spawned the respective issue-specific regime, one can instead begin with identifying the elements that have coalesced into an apparatus, and their interactions would in turn render explicit and visible the operation of power. By extension, instead of the nebulous goal of 'global social change' that international environmental law has to engineer at an impossible abstract, macro level, one can begin with the specific effect of subjectification arising from power relations; of the process by which governable subjects are produced by apparatuses.

The following section applies this analytics of government, i.e. the Foucaultian conception of government as a form of power encapsulated in the production of subjectivity, to the bioeconomic promise of genetic gold in order to identify relevant micro-politics of subjectification.

4. THE SUBJECTS OF GENETIC GOLD

The conjunction of biodiversity, biotechnology and neoliberalism housed under the idea of genetic gold poses significant challenges for international environmental law. The bioeconomic intrication inherent in genetic gold clearly identifies the genetic resources of biodiversity as an important factor of global social change in the shape of a coming

[73] Agamben, n. 70 above, at 14.

bioeconomy to arrive shortly in the future, but not necessarily of any pressing concern to arrest environmental decline. Keeping this realization in mind, it may well be that if genetic gold is functioning in the micro-political terms identified in the previous section, then the kinds of subjectivity that are produced may be unrelated or downright inimical to any environmentalist concern. The following section revisits the history of biodiversity as genetic gold and identifies key apparatuses where this production has taken place in the last two decades.

4.1 The Training Course

The National Biodiversity Institute of Costa Rica (INBio) was established in 1989 as a private, non-profit, public-interest organization.[74] INBio's task was two-fold: to create a comprehensive inventory of wild biodiversity present in the Costa Rica's conservation areas and to promote and integrate 'environmentally responsible' and non-destructive uses of this biodiversity into the state's economy and society.[75] The image of its Central American location as an ecological paradise, a 'Canaan for biodiversity', [76] perpetuated by conservation biologists for decades, coupled with the environmental credentials of the Costa Rican government, made the location an ideal choice for what was heralded as a biodiversity 'pilot project'.[77]

INBio was able to 'receive grants, enjoy-tax free status… tightly linked to national institutions… but not legally obligated to any of them… [as well as] fully empowered to enter into contracts and agreements with national and international institutions and

[74] R. Gamez et al, 'Costa Rica's Conservation Program and National Biodiversity Institute (INBio)', in W.V. Reid et al (eds), *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (World Resources Institute, 1993), pp. 53-68, at 57-8.
[75] Ibid, at 56.
[76] Takacs, n. 14 above, at 289.
[77] Gamez *et al*, n. 74 above, at 58.

individuals'.[78] It was quite clearly not an environment or conservation agency, but an early manifestation of the bioeconomic triptych of biodiversity, biotechnology and neoliberalism. It had no mandate in terms of managing the conservation of protected areas; it was simply designed as a vehicle for attracting funding based on the future potential of genetic gold.

To fulfil the objective of creating a biodiversity inventory, from the outset the institute began training collectors, which it called 'parataxonomists'. They were distinguished from university-educated or scientifically-trained sample collectors, taxonomists or technicians,[79] although ultimately the specific task assigned to them was similar in practice, i.e., the collection and screening of samples. The training course was promoted as an attempt to educate rural people, although the first course focused internally on public sector workers already employed within the administrative structure responsible for managing the national conservation areas.

The training went beyond the transfer of the requisite scientific knowledge for sample collection (i.e. the basics of botany, entomology, genetics, evolution, mathematics etc.), and focused on broader job-related skills:

> <start quote>The course also touched on the definition of administration, the structure and content of environmental legislation and conservation propaganda, research funding, personal relationships with government and NGO administrators, teaching skills, and self-confidence.[80] <end quote>

The training went even further, away from any notion of supporting the performance of core parataxonomist tasks. It sought to impart life skills, 'practical skills as how to drive a car,

[78] Ibid.
[79] D.H. Janzen et al, 'The Role of Parataxonomists, Inventory Managers and Taxonomists in Costa Rica's National Biodiversity Inventory', in W.V. Reid et al (eds), *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (World Resources Institute, 1993), pp. 223-54, at 224 & 227.
[80] Ibid, at 226.

operate a chainsaw… use a computer and a topographic map… manage a budget and petty cash fund, and fathom and tolerate foreigners'.[81] It went further still, to fashioning a different sense of self: 'Others needed to learn how to work alone at night in the forest without fear, how to lose weight, and how to absorb constructive criticism'.[82] It is thus clear that this course packaged additional objectives under the vocational title of teaching taxonomic and biological literacy. Students were to 'acquire a new vision, a new way of seeing nature'.[83]

Traces of the course's rationality can be found in the older notion of 'biocultural restoration'[84] that was proposed by American biologist Daniel Janzen, one of the founders of the INBio project. In its early formulations, this proposed restorative axis of biodiversity betrayed its Northern descent through its colonial problematizations. For example, the human subject to be restored through this process was initially conceptualized as: 'tropical people [...] experiencing [...] intellectual deprivation represented by the upcoming obliteration of tropical wildlands'.[85] Their communities were perceived as stable, unchanging and thus declining in the fast-moving world of globalization and biocapital. INBio's founders argued that 'biodiversity must again be a grand intellectual resource for rural tropical people, who otherwise lack intellectual challenges and cultural opportunities',[86] intricating the natural and the social. This perception of a loss of opportunity and of an absence of (e)valuation in terms of both nature and oneself, was what the training course was seeking to address.

4.2 The Contract

[81] Ibid.
[82] Ibid.
[83] Takacs, n. 14 above, at 299.
[84] As expressed in D.H. Janzen, 'Tropical Ecological and Biocultural Restoration' (1988) 239(4837) *Science*, pp. 243-4.
[85] Ibid, at 244.
[86] Takacs, n. 14 above, at 296.

In pursuit of private funding, very soon after its inception INBio signed a bioprospecting contract with Merck in 1991 and became a partner in a joint medical biotech venture. The contract provided the pharmaceutical corporation access to the institute's future biodiversity inventory (specifically samples from plants, insects and microorganisms collected from publicly administered conservation areas) for the purpose of developing new pharmaceuticals. In exchange, Merck agreed to finance the creation of this inventory, to contribute funds to biodiversity conservation, and crucially to royalty payments in the event of the successful drug development. This may have constituted a fairly standard licensing arrangement between a pharmaceutical company and a new biotech start-up engaged in upstream activities when both entities belonged to the private sector, but the blurring of the previously separate private and public, as well as commercial and academic, research domains signalled the arrival of biotechnology. This contract then became the core template, 'widely hailed as the example of what the Convention [on Biological Diversity (CBD)[87]] would do',[88] and was celebrated as a 'watershed' in the history of bioprospecting.[89]

Contemporary analyses of the impact of the Merck/INBio agreement published shortly after the entry into force of the CBD tended to view the two legal texts on an equal footing and as events in a single biodiversity-related continuum, without reference to their obvious legal differences. For example, one such commentary underlined 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'.[90] In a clear message to the CBD it had rejected, the endorsement by the United States (US) biotechnology

[87] Rio de Janeiro (Brazil), 5 Jun. 1992, in force 29 Dec. 1993, available at: http://www.cbd.int/doc/legal/cbd-en.pdf.
[88] Referring to the CBD, n. 89 below. See M.D.J. Coughlin, 'Using the Merck-INBio Agreement to Clarify the Convention on Biological Diversity' (1993) 31(2) *Columbia Journal of Transnational Law*, pp. 337-75, at 356.
[89] See W.V. Reid et al, Biodiversity Prospecting: Using Genetic Resources for Sustainable Development (World Resources Institute, 1993), at p. 1.
[90] M.D.J. Coughlin, n. 87 above, at 357.

industry[91] further distinguished the INBio project as a pragmatic, practical, market-friendly and business-oriented initiative. Being a dynamic market transaction as opposed to a slow diplomatic negotiation, it was heralded as a milestone for establishing a different biodiversity value.

The impact of the hype associated with the Merck/INBio contract was significant. Within a seven-year span from 1995 to 2002, over 100 states - possessing the majority of the world's remaining biodiversity - introduced national and regional laws de facto restricting access to genetic resources,[92] often in explicit and direct contrast to the CBD provisions requiring them to facilitate access.[93] This was an example of biotechnology-induced financialization; enacting laws in the hope of taking advantage of an uncertain future market opportunity. Since the INBio template had framed this legislative intervention in terms of a choice between the exciting promise of biotechnology within a global bioeconomy and the dour statist, consensus-based collectivisms of international law, it was no surprise that market rationality of genetic gold won over the formal legal discourse of the CBD.

Despite the fact that the original Merck contract was concluded without yielding any marketable products, the now called 'research collaborative agreements' have flourished, without significant changes from the initial bioprospecting arrangement.[94] Even if the OECD's specific predictions regarding the bright future of the bioeconomy are challenged,[95]

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[91] Ibid.

[92] K. ten Kate, 'Science and the Convention on Biological Diversity' (2002) 295(5564) *Science*, pp. 2371-2, at 2371.

[93] E.g. Art. 15(2) CBD: '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'.

[94] On the contents of these arrangements see R. Gamez, 'The Link Between Biodiversity and Sustainable Development: Lessons From INBio's Bioprospecting Programme in Costa Rica', in C.R. McManis (ed), *Biodiversity and the Law: Intellectual Property, Biotechnology & Traditional Knowledge* (Earthscan, 2007), pp. 77-90, at 82, which features a table of current INBio research partners may be found at p. 85.

[95] E.g. in relation to medical biotechnology see P. Nightingale & P. Martin, 'The Myth of the Biotech Revolution' (2004) 22(11) *TRENDS in Biotechnology*, pp. 564-69.

as long as the bioeconomic promise of the triptych of biotechnology, neoliberalism and biodiversity remains these partnerships will continue to attract funding globally. Bowker argues that there have been two ways of dealing with biodiversity's complexity and scope: the 'list' and the 'coin'.[96] The trajectory initiated by the Merck/INBio arrangement clearly illustrates that INBio was not restricted to classifying or selling biodiversity as a genetic crop, but also crucially hyping and promoting its potential locally and globally.

4.3 The Declaration

The extension of the bioeconomic promise into the realm of national salvation was formally unveiled at the international level with the fleeting formation of the group of 'Like-Minded Megadiverse Countries' (LMMC).[97] The transformative idea of genetic gold, after being put into practice on the ground in Costa Rica, was now being transferred into abstract legal discourse. The LMMC's 2002 Cancun Declaration 'emphasized' that:

> <start quote>The resources of biological diversity and the environmental services that depend on them have an immense strategic, economic and social value, and offer development opportunities to our populations and to the international community.[98] <end quote>

The emphasis on 'development opportunities' indicated the aspiration that some notion of a North-South 'grand bargain' should be installed as the strategic imperative, which seemed

[96] Bowker, n. 10 above, at 107-8.
[97] The group of 'megadiverse' states initially consisted of Brazil, China, Colombia, Costa Rica, India, Indonesia, Kenya, Philippines, Mexico, Peru, South Africa, and Venezuela before expanding to include more Southern states. It has been inactive since 2005.
[98] Cancun Declaration of Like-Minded Megadiversity Countries, Cancun (Mexico), 18 Feb. 2002, available at: http://pe.biosafetyclearinghouse.net/actividades/2009/grouplmmc.pdf, Preamble.

outdated within the financialized commercialization of biodiversity as genetic gold. However, this larger goal consisted of multiple smaller aims:

> <start quote>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 affect us, and preserve our cultural integrity.[99] <end quote>

In pursuit of these aims, the declaration proposed a new general ethic of 'equity'.[100] This ethic was not presented as a concrete proposal for a new general principle of international law, or a specific proposal for the re-orientation of the CBD, e.g. by placing more weight on the equitable benefit sharing objective. Conservation and sustainable use of biodiversity were to be ensured simply by 'responsible attitudes',[101] with no mention of additional regulation. It appeared as an ethic directed generally to individuals or to communities, and not, as expected, solely to institutions, such as the states themselves, the relevant treaty regime or other organizations. The influence of genetic gold and INBio turned the declaration from a standard piece of development rhetoric into a guide for individual and collective conduct, directed at types of subjects previously absent or conceived only as passive objects, receptacles of international environmental law implemented via the conduit of the state. In another subtle twist of the standard expectations of the field, concern was further expressed over the limitations of international instruments themselves in terms of protecting - not biodiversity itself - but the 'legitimate interests of the countries of origin of biodiversity'.

[99] Ibid, Art.1(c).
[100] Ibid, Preamble.
[101] Ibid.

This new ethic of responsibility was advanced as part of the coming bioeconomy 'associated with the use of biological diversity, genetic resources and biotechnology'.[102] The urgency present in the declaration is not related to a perceived environmental crisis or problem of biodiversity loss, but is instead associated with the need 'to develop human resources, institutional capabilities, as well as an appropriate legal framework and public policies to enable our countries to take an active part in the new economy', i.e. with not losing out on the economic promise presented by biodiversity.

It is easy to denigrate the Cancun Declaration as 'soft-law', an aspirational discourse from a group of disparate states with very few common interests and thus undeserving of the same attention and standing as formal international law. The LMMC initiative can be further belittled by arguing that any state grouping or consensus is easy to achieve when hard law commitments are absent. In fact, the transient nature of this grouping has now been proven by its swift dissolution, but that does not mean that the declaration should be swept under the carpet. It represents a significant conceptual inversion, precisely because it uses nature as a conceptual space to govern human conduct, rather than a physical space to be governed according to some environmental ethic. This inversion further confirmed the trajectory initiated by INBio in 1991. In the context of genetic gold, law reform itself had displaced biodiversity loss as the main concern. Already in 1993, prescient arguments were being put forward regarding a 'policy vacuum' that 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'.[103]

More than ten years before OECD's enthusiastic embrace of biotechnology, the INBio pilot project had already intervened to restructure the environmental subjectivities of its

[102] Cancun Declaration, n. 98 above.
[103] W.V. Reid et al, n. 88 above, at 2.

participants: 'biodiversity is the product line, Costa Rica Inc. is the corporation, its citizens are the stockholders, and Rodrigo Gamez is the CEO'.[104] It also constituted a break from standard environmental advocacy revolving around the image of the ecologically-aware scientist diligently sounding the alarm regarding a specific environmental problem, organizing support and lobbying national governments for stricter environmental laws or better enforcement. Instead, the ecologically-aware scientist would from now on become an entrepreneur seeking financing for a new venture.

It is important to note the micro-political scale and dispositional character of this apparatus, operating outside of the control or even awareness of the traditional actors of international environmental law and policy (international treaty system, organizations, and large Northern environmental non-governmental organizations (NGOs)). Under the banner of genetic gold, biodiversity, rather than an endpoint itself as the normative object, and in addition to its identification as a set of valuable resources capable of financing a virtuous circle of conservation and development, also constituted an 'intellectual resource', associated with a set of entrepreneurial values connected to the emergence of an economic opportunity. Both the training course and the contract indicated in effect a different method of living and thinking through biodiversity; once the necessary knowledge and skills to take advantage of these opportunities was acquired.

The adoption of its rationality by the declaration illustrated that INBio was an apparatus instituting change in society, rather than in the state's environmental laws or its management of its conservation areas. Its strategic imperative, the urgent need that it was responding to was an economic deficiency in human conduct preventing the maximization of the asset of biodiversity, rather than an ecological deficiency resulting in biodiversity loss. It directed the government of the self, rather than of the environment. In this way, this apparatus was not

[104] Takacs, n. 14 above, at 292.

responding to a structural crisis at the level of the state or its institutions in terms of lack of environmental action, but a crisis of subjectivity that it had itself produced; the problem of having valuable genetic gold, but not having the tools to use this asset productively.

In the case of biodiversity, international environmental law during the 1990s was in direct competition with a project that redefined the problematization of biodiversity in practical terms through the micro-politics of the subject. As it was completely unaware that such a competition was taking place, it lost badly. Environmental law was in the way – a relic attempting to protect a fixed idea of biodiversity based on a conception of environmental value that had already changed. The final section outlines the details of this failure, as well as the lessons that can be drawn from this episode in the history of environmental law.

5. REFRAMING INTERNATIONAL ENVIRONMENTAL LAW: ADRESSING FAILURE

The article identified a paradox in the present operation of international environmental law related to the unravelling of the descriptive/prescriptive fusion that defines the horizon of the field. This unravelling was compounded by the refusal to fully acknowledge the implications arising from the duality of both nature and value. The effect of this paradox is that law appears incapable of dynamically engineering global social change due to the absence of a theoretical framework for understanding change as already occurring across the world, outside the strict assumptions and fixed certainties of environmental discourse. To investigate this methodological hypothesis, the article then proceeded to discuss a node of significant changes in the way the environment is perceived and valued: biodiversity, as transformed over time under the elusive banner of genetic gold. In order to investigate how the idea of genetic gold operates in practice, the analysis eschewed the primacy of the legal text and took

a step back from structural and institutional analyses, towards the micro-political level. Bringing methodological components from the work of Michel Foucault into an analytics of government, the article sought to illustrate how genetic gold proliferates through the production of the kinds of subjects that would fit within the future of a knowledge-based, neoliberal bioeconomy; the parataxonomist and the biodiversity entrepreneur.

International environmental law remains strangely disconnected from these subjects of genetic gold. By the time of the LMMC's Cancun Declaration, the CBD had been in force for approximately ten years, steadily instituting an elaborate legal regime working towards the formally stated goals of conservation, sustainable use, and equitable sharing of the benefits arising out of the use of biodiversity. The most recent result of this process has been the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (Nagoya Protocol).[105] That Protocol was adopted despite not instituting the legal mechanism (a global regime on access and benefit sharing arising from the utilization of genetic resources) that was the object of its seven-year negotiation in the first place.[106] Article 10 masks the on-going nature of the negotiations by stating that 'the Parties shall consider the need for and modalities of a global multilateral benefit-sharing mechanism' in the future. The flipside of the paradox is precisely that international environmental law has to persevere, even when there is no consensus on what that law should be.

Under a conventional model of effectiveness built on a conception of power attached to the triad of sovereignty, authority and legitimacy, the effective operation of any environmental treaty regime, such as the CBD, depends on achieving consensus on an internationally-agreed

[105] Nagoya (Japan), 29 Oct. 2010, not yet in force, available at: http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

[106] For an outline of the Protocol's provisions see S.R. Harrop, ''Living in Harmony With Nature'? Outcomes of the 2010 Nagoya Conference of the Convention on Biological Diversity' (2011) 23(1) *Journal of Environmental Law,* pp. 118-27.

normativity that would then be translated by domestic law into sets of everyday impositions. This essential chain of legal fictions is required in the service of addressing the specific environmental problem as defined in the treaty (i.e. biodiversity loss). This is the model that the CBD is desperately hanging on via its most recent protocol. Under a Foucaultian conception of power, this legal chain is not essential; indeed it is challenged as irrelevant. Instead of any concerted global social change to address the problem of biodiversity loss, a multitude of other changes have occurred under the triptych of neoliberalism, biodiversity and biotechnology that is genetic gold today. These can be easily observed from just focusing on few micro-political examples from the history of the transformation of biodiversity into genetic gold.

Of course, the suggestion that a short training course and a contract have irrevocably changed humanity's valuation and treatment of biodiversity, while for two decades hundreds of international meetings fumbled in the dark may be anathema to certain strands of legal thought. The additional dissemination of these templates, as evidenced in legal terms by and the establishment of a heterogeneous tableau of access regulations regarding genetic resources, as well as the overall rationality of the Cancun Declaration, further challenged international practice. Perhaps strangely for an international treaty that is championing diversity, the CBD is seeking to reverse this micro-political process and re-establish its legal authority through the vacuous Nagoya Protocol. At this point, however, masking the paradox through proliferation of legal text may need to give way to an engagement with changing practices on the ground.

A serious debate regarding methodology and theory in environmental law should not be exclusively self-serving. The construction of any pedestal for an active law dynamically driving global social change does not represent a quest for restoring international environmental law's effectiveness *ex ante*. Maturity will emerge when not every change or

critique is taken as an ontological challenge or a sign of the impeding failure of the whole field. The task of international environmental law at this moment in time should consist of a confrontation of its own ends and possible end. In both questioning and fashioning a role for itself, it has to move from closed and isolated reactionary tasks to engaging with more complex governmental projects at play in the world today. The paradox can be seen as tracing such a novel path; no longer about engineering change in a fixed external entity, but simply about managing to incorporate what is already happening in an ever-changing heterogeneous world.

The field may be loath to abandon its long cherished universals and normativity. But the question cannot yet be whether genetic gold or the neoliberal bioeconomy is 'good' or 'bad' from an environmental perspective. International environmental law has certainly made them dangerous for both environmental protection and its own existence, simply by being oblivious to the full scale of changes that they entail. In the end, the micro-politics of environmental subjectivity can offer the level of descriptive detail and the possibility of prescriptive connections needed to lift the paradox of international environmental law. Only further application will show whether that is enough.