

CARBON EMISSIONS AS A PHYSICAL PROPERTY:
 ONTOLOGICAL APPROACHES TO THE WTO
LIKE PRODUCTS DEBATE

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This note brings novel philosophical approaches to bear on an old debate in trade law: whether and how two products may be differentiated on the basis of their production methods. Specifically, it considers the question of whether unilateral action to tax or regulate the greenhouse gas emissions from manufacturing imported goods is consistent with the law of the World Trade Organization (WTO). The note examines several proposed arguments for why a carbon tax or cap-and-trade scheme applied to imports is WTO-legal and demonstrates the risks posed for each scheme by WTO jurisprudence. This note proposes a new solution, which is to view the carbon emissions from manufacturing a product as a physical property of that product, and so view emissions-heavy and emissions-light versions as unlike. Although manufacturing-related emissions initially seem more like a historical fact about the genesis of an object than a property of that object, this note argues that they are a property of the final object within the meaning of property in WTO Law. The analysis here draws on the philosophy of John Locke and Nelson Goodman, along with principles of life cycle analysis, in making this point. Finally, the note shows that other authors' arguments that a process or production method (PPM) must be incorporated into the final product to be relevant to a determination of likeness do not have a basis in WTO treaties' text, negotiating history, or case-law.

I. INTRODUCTION

A growing number of scholars are addressing how international trade law potentially limits governments wishing to address climate change via market-based mechanisms, such as a tax or cap-and-trade scheme for greenhouse gas (GHG) emissions.¹ Specifically, academics are concerned that the non-discrimination law of the WTO, which requires generally equivalent taxation and regulation of like domestic and foreign goods, may prevent countries from applying a cap-and-

1. See, e.g., Jagdish Bhagwati & Petros C. Mavroidis, *Is Action Against US Exports for Failure to Sign Kyoto Protocol WTO-legal?*, 6 *WORLD TRADE REV.* 299, 303–04 (2007) (placing the process of setting emissions caps within the Kyoto Protocol framework); Robert Howse & Antonia L. Eliason, *Domestic and International Strategies to Address Climate Change: An Overview of the WTO Legal Issues*, in *INTERNATIONAL TRADE REGULATION AND THE MITIGATION OF CLIMATE CHANGE* 48, 62 (Thomas Cottier, Olga Nartova & Sadeq Z. Bigdeli eds., 2009) (describing a tax on emissions as a Border Adjustment Tax under the GATT); Joost Pauwelyn, *Carbon Leakage Measures and Border Tax Adjustments Under WTO Law*, in *RESEARCH HANDBOOK ON ENVIRONMENT, HEALTH AND THE WTO* 448 (Geert Van Calster & Denise Prévost eds., 2013) (evaluating policy options to address the conflict between environmental regulation and economic competitiveness).

trade scheme or carbon tax² to imports.³ The legal issues are complicated—one scholar calls the question of the WTO legality of such border measures “a riddle, wrapped in a mystery, inside an enigma.”⁴

Yet interest in this question revived with the Trump administration’s decision to withdraw from the Paris Climate Accord.⁵ The absence of the largest economy from the global compact poses problems for countries that continue to pursue their nationally determined contributions (NDCs), especially if they do so via methods such as cap-and-trade or carbon taxes that make their goods less competitive at home and abroad. In response to their goods becoming less competitive, these governments may impose a tariff on goods from the United States. For example, before Trump’s decision, world leaders threatened to tax the carbon content of imports from the United States should it pull out of the Paris Accord.⁶

Such actions, however, may violate World Trade Organization (WTO) law. The WTO legal problem likely depends on which policy the leaders choose—a carbon tariff, some attempt to extend cap-and-trade, or an outright ban. The doubt over such measures’ legality stems largely from the fact that carbon taxes or emissions trading schemes do not target some feature of goods immediately tangible to the consumer, but

2. For ease of reading, and in keeping with the language used in news reports and the public debate, this note refers to “carbon” or “carbon dioxide” and “greenhouse gases” interchangeably despite the fact that there are several important greenhouse gases besides carbon dioxide.

3. See, e.g., Carol McAusland & Nouri Najjar, *The WTO Consistency of Carbon Footprint Taxes*, 46 GEO. J. INT’L L. 765, 784 (2015) (“[I]t is an outstanding legal question . . . whether a tax on CO₂e or fuel inputs would be deemed GATT-consistent.”).

4. Charles E. McLure, Jr., *The GATT-Legality of Border Adjustments for Carbon Taxes and the Cost of Emissions Permits: A Riddle Wrapped in a Mystery, Inside an Enigma*, 11 FLA. TAX REV. 221, 231 (2011).

5. Demetri Sevastopulo, Barney Jopson & Pilita Clark, *Trump Takes US out of Paris Climate Deal*, FIN. TIMES (June 1, 2017), <https://www.ft.com/content/ab93d8ea-46fa-11e7-8519-9f94ee97d996>.

6. See Coral Davenport, *Diplomats Confront New Threat to Paris Climate Pact: Donald Trump*, N.Y. TIMES (Nov. 18, 2016), <https://www.nytimes.com/2016/11/19/us/politics/trump-climate-change.html> (quoting present and former Mexican and French officials warning of a carbon tariff against U.S. exports in case of its withdrawal from the Paris Accord).

rather target their *process and production methods* (PPMs).⁷ Some scholars and practitioners question whether under the agreements of the WTO a country may legitimately target PPMs of goods produced in other countries, especially so called “non-product-related” or unincorporated PPMs—those that do not noticeably affect the observable features of a product.⁸

This argument comes in two forms. First, various scholar-practitioners such as Reinhard Quick and Christian Lau⁹ and government bodies from the British House of Lords to the European Commission, argue that *particular* provisions of WTO Law *indirectly* forbid targeting PPMs through trade measures.¹⁰ These commentators focus on the Most Favored Nation and National Treatment provisions in the General Agreement on Tariffs and Trade (GATT) Articles I and III, sometimes in combination with Article XI’s prohibition on quantitative re-

7. See, e.g., Steve Charnovitz, *The Law of Environmental “PPMs” in the WTO: Debunking the Myth of Illegality*, 27 YALE J. INT’L L. 59, 67–70 (2002) (offering a taxonomy of PPM-based measures and delineating which are likely WTO-legal); Won-Mog Choi & Freya Baetens, *Like Products*, MAX PLANCK ENCYCLOPEDIA OF PUB. INT’L L. ¶ 17, <http://opil.ouplaw.com/abstract/10.1093/law:epil/9780199231690/law-9780199231690-e1756> (last updated May 2014) (describing the distinction scholars and trade jurists have drawn between products and the methods of producing those products); Robert Howse & Donald Regan, *The Product/Process Distinction—An Illusory Basis for Disciplining ‘Unilateralism’ in Trade Policy*, 11 EUR. J. INT’L L. 249 (2000) (disputing whether that distinction has any basis in the text of the GATT); Douglas A. Kysar, *Preferences for Processes: The Process/Product Distinction and the Regulation of Consumer Choice*, 118 HARV. L. REV. 526, 528–35 (2004) (providing a helpful theoretical background on debates between public choice theorists and others over the extent or desirability of consumer decision-making based on production processes).

8. See, e.g., Charnovitz, *supra* note 7, at 76–79 (collecting statements viewing attempts to restrict imports based on unincorporated foreign PPMs as WTO illegal, including statements from the former WTO Director General and WTO Secretariat). R

9. Reinhard Quick & Christian Lau, *Environmentally Motivated Tax Distinctions and WTO Law*, 6 J. INT’L ECON. L. 419, 431–33 (2003) (arguing that, where goods are only distinguished by their PPMs, only consumer preferences *could* make them unlike, but that they *should* only be found unlike if those preferences were developed absent government intervention and are sufficiently strong, which they deem unlikely to occur in practice).

10. See Charnovitz, *supra* note 7, at 77 (quoting HOUSE OF LORDS SELECT COMM. ON EUROPEAN CMTYS., THE WORLD TRADE ORGANISATION: THE EU MANDATE AFTER SEATTLE ¶¶ 223–24 (2000)). R

strictions,¹¹ or the Agreement on Technical Barriers (TBT) to Trade Article 2.¹² Generally, they argue that measures that restrict the sale of or tax products on the basis of their PPMs act to treat like products differently, because PPMs never, or rarely, affect product likeness, and like products must receive equal treatment.¹³

The second group of writers looks either to a principle emerging from the totality of the WTO texts, or to other sources of international law, and argues that how a product is produced is only a legitimate concern for the country of production.¹⁴ For a time this was the official interpretation of the WTO secretariat.¹⁵ However, since at least the early 1990s, there has been growing recognition that regulators need to concern themselves with not only dangerous products, but also dangerous production or disposal methods.¹⁶ This awakening parallels a technical revolution that has enabled increasingly sophisticated “life cycle assessment”—a measurement of all the external costs and benefits of a product from manufac-

11. General Agreement on Tariffs and Trade arts. I, III, XI, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 [hereinafter GATT]

12. Agreement on Technical Barriers to Trade art. 2, Apr. 15, 1994, 1868 U.N.T.S. 120 [hereinafter TBT Agreement].

13. Quick & Lau, *supra* note 9 at 431-33.

14. Charnovitz, *supra* note 7, at 78 (quoting the then-Director General of the WTO as saying, in 1997, “[b]asically . . . the issue of production and process methods lies within the sovereign jurisdiction of each country.”).

15. *Id.* (reproducing the following statement from the WTO website: “[t]he WTO agreements are interpreted to say two important things. *First*, trade restrictions cannot be imposed on a product purely because of the way it has been produced. *Second*, one country cannot reach out beyond its own territory to impose its standards on another country.”).

16. *See, e.g.*, CHRIS T. HENDRICKSON ET AL., ENVIRONMENTAL LIFE CYCLE ASSESSMENT OF GOODS AND SERVICES: AN INPUT-OUTPUT APPROACH 9 (2006) (noting that “[f]ocusing on the product itself while ignoring all other parts of the life cycle would lead to inaccurate and biased results [in a comparison of products’ environmental friendliness],” giving the example of early zero-emissions vehicles, whose lead batteries had significant life cycle impacts); Johannes Norpoth, *Mysteries of the TBT Agreement Resolved? Lessons to Learn for Climate Policies and Developing Country Exporters from Recent TBT Disputes*, 47 J. WORLD TRADE 575, 578 (2013) (“The environmental rationale behind [measures targeting Process and Production Methods] is that it is ecologically worthwhile to analyse environmental externalities of a product by looking at the whole life-cycle of a product, thus, evaluating all environmental aspects of the product from its processing or production to its transportation, its intended use and final disposal as waste.”).

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turing to disposal.¹⁷ These developments inspired the search for reconciliation of PPM-targeting measures with the international trade regime,¹⁸ including within the WTO itself.¹⁹

This note adds to the literature on PPMs by focusing on the first question of whether products manufactured with significantly different levels of greenhouse gas emissions should be deemed “like products” under WTO law.²⁰ This question is foundational for analysis of either a carbon tariff or cap-and-trade scheme applied to imports under any of the relevant WTO provisions: General Agreement on Tariffs and Trade Articles I and III; or Agreement on Technical Barriers to Trade Article 2.1.²¹ These provisions prohibit discrimination against “like products” based on their national origin, but if the products are “unlike,” the provisions will not be violated.²² Therefore, if differences in the production process of two otherwise similar products are enough to make them unlike, a tax or regulatory measure that treats goods made via one production

17. See Michael Z. Hauschild & Mark A.J. Huijbregts, *Introducing Life Cycle Impact Assessment*, in LIFE CYCLE IMPACT ASSESSMENT 1, 1, 2–4 (Michael Z. Hauschild & Mark A.J. Huijbregts eds., 2015) (describing the history of environmental life cycle assessment and introducing life cycle impact assessment which goes beyond tallying resource use and emissions to determining impacts on ecological systems).

18. See, e.g., Christopher A. Cherry, *Environmental Regulation Within the GATT Regime: A New Definition of “Product”*, 40 UCLA L. Rev. 1061, 1064, 1095-96 (1993) (proposing that the GATT, or its Standards Code, be amended to “incorporate the environmental impact of production into a product’s definition,” such that regulations targeting PPMs would be legal).

19. See, e.g., *WTO Rules and Environmental Policies: Key GATT Disciplines*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/envir_e/envt_rules_gatt_e.htm (last visited Apr. 5, 2019) (noting that “different processes or production methods (PPMs) used in the manufacture of such products do not per se render these products ‘unlike’” and calling for a case-by-case analysis).

20. See *id.* (requiring such a case-by-case analysis). For an introduction to the process and production methods approach, see Choi & Baetens, *supra* note 7, ¶ 17. See generally WON-MOG CHOI, ‘LIKE PRODUCTS’ IN INTERNATIONAL TRADE LAW: TOWARDS A CONSISTENT GATT/WTO JURISPRUDENCE (2003).

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21. See Choi & Baetens, *supra* note 7, ¶ 1 (“The concept of ‘like products’ plays a central role in determining the coverage of various international trade law obligations.”).

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22. GATT, *supra* note 11, arts. I:1, III:2, III:4; TBT Agreement, *supra* note 12, art. 2.1.

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process differently from those made via the other will not violate these provisions of the GATT or TBT.

This note proposes a new way of balancing the non-discrimination principles of the GATT with the mandate of responding to climate change. It assumes that given the extreme urgency of addressing climate change, and frustrations of the international effort to meet that challenge, there should be a way for countries to extend a carbon tax or cap-and-trade scheme to imports without running afoul of the WTO.

The note proceeds in five parts. First, it introduces the concept of life-cycle analysis, which is foundational to the understanding of manufactured goods as both objects and way-points in processes that include manufacturing, use, and disintegration. In the next part, the note describes the traditional means of controlling GHG emissions or any other environmentally harmful practice, namely command-and-control methods, a cap-and-trade system, and taxation. Third, it introduces the WTO concept of like products and its evolution through the case-law, and identifies the precise question about PPMs this note addresses, namely whether they can affect product likeness. Fourth is a review of three arguments for the legality of the identified GHG-limiting mechanisms under current WTO regimes. Though sympathetic to the arguments, this note shows that recent decisions of the Appellate Body make relying on any of them in a WTO dispute risky, especially with the examples of recent cap-and-trade legislation as a guide.

Finally, the note proposes a new solution: as a particular sort of historical fact about manufactured goods—the fact that emissions were released and caused harm to the world during production—manufacturing-associated emissions ought to be considered a de-facto physical property of their final products.²³ The analysis draws on the philosophy of John Locke, the concept of life cycle analysis, and the WTO's own decisions

23. "Physical properties" is one of the four prongs of the test for whether two products are "like." See, e.g., Appellate Body Report, *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products*, ¶ 101, WTO Doc. WT/DS135/AB/R (adopted Mar. 12, 2001) [hereinafter *EC—Asbestos*] (establishing the now-canonical "physical properties" among the four criteria for likeness); Appellate Body Report, *Japan—Taxes on Alcoholic Beverages*, 20, WTO Doc. WT/DS11/AB/R (adopted Oct. 4, 1996) [hereinafter *Japan—Alcoholic Beverages II*] (citing the criteria outlined in the Report of the

in making this point. Considering GHG emissions a physical property would not end the like products analysis. Under recent WTO case-law the ultimate touchstone of likeness, which the four prongs of the like products test all point towards, is how strong the competitive relationship is between products.²⁴ Two products' differing in their manufacturing-associated emissions would need to decrease the extent to which those two products compete in the marketplace to make them unlike under this doctrine.²⁵ Without addressing this step in a like products analysis, the note concludes only that similar objects made with significant differences in associated emissions *might* be unlike, in which case they could legally be treated differently under the WTO regime.²⁶

II. A WORD ABOUT LIFE CYCLE ASSESSMENT

This note relies heavily on the fundamental insight of the practice of life cycle assessment (LCA), namely that a product does not appear in the world fully finished, nor does it leave circulation without a trace. Specifically, the note draws on *environmental* life cycle assessment, which identifies the environmental harms and benefits that come from manufacturing, assembling, using, and disposing of a product.²⁷ The assessment provides governments and private parties a basis for selecting

Working Party on Border Tax Adjustments including “the product’s properties, nature and quality.”)

24. See *EC—Asbestos*, *supra* note 23, ¶¶ 99, 116 (“[A] determination of ‘likeness’ under Article III:4 is, fundamentally, a determination about the nature and extent of a competitive relationship between and among products.”); see also Appellate Body Report, *United States—Measures Affecting the Production and Sale of Clove Cigarettes*, ¶¶ 111–12, WTO Doc. WT/DS406/AB/R (adopted April 4, 2012) [hereinafter *U.S.—Clove Cigarettes*] (same in the context of TBT Article 2.1).

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25. Cf. Norpoth, *supra* note 16, at 588 n.69 (noting that under the “competitive relationship” test, a hypothetical regulator interested in differentiating among products based on energy efficiency could perhaps show that energy efficiency was a physical property and that it affected consumer preferences).

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26. Of course, even measures that prima facie violate GATT articles I or III may be justified under one of the general exceptions contained in Article XX. However, success under these exceptions is not guaranteed, so advocates will do better if the measures are deemed non-discriminatory in the first place. See *infra* Section V.C.

27. G. Rebitzer et al., *Life Cycle Assessment Part 1: Framework, Goal and Scope Definition, Inventory Analysis, and Applications*, 30 ENV'T INT'L 701, 703 (2004).

among alternative products and policies. Life cycle assessment is still a relatively new practice, motivated initially by production incentives to conserve energy and physical materials.²⁸ International technical standards for the conduct of LCA only began appearing in 1997–2000.²⁹ Both academics and international governmental agencies increasingly recognize life cycle assessment as an important practice for fulfillment of the goal of sustainable development.³⁰ Greenhouse gas emissions are just one type of output traceable throughout the life cycle of a product.³¹ As an output contributing to the rare environmental problem whose origin and locus of impact are nearly entirely unrelated, however, greenhouse gas emissions are understandably of particular global interest.³² Furthermore, for the majority of manufactured goods, most emissions come not from *using* the product, but from its manufacturing and its later disposal. Accordingly, solutions to climate change require targeting the production methods of products.

28. See *id.* (“LCA is still a young and evolving application, with its roots in research related to energy requirements in the 1960s and pollution prevention, which was formally initiated in the 1970s.”); see also Gjalt Huppes & Mary Ann Curran, *Environmental Life Cycle Assessment: Background and Perspective*, in LIFE CYCLE ASSESSMENT HANDBOOK: A GUIDE FOR ENVIRONMENTALLY SUSTAINABLE PRODUCTS 1, 3–4 (Mary Ann Curran ed., 2012) (describing the shift first from cost-based lifetime analysis to environmental LCA, and then from a “source” centered approach of pollution prevention to a system-wide approach via the use of LCA).

29. Rebitzer et al., *supra* note 27, at 703–04.

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30. *Id.* at 701 (“Achieving ‘sustainable development’ requires methods and tools to help quantify and compare the environmental impacts of providing goods and services (‘products’) to our societies.”); *Linking the UN Sustainable Development Goals to Life Cycle Impact Pathway Frameworks*, LIFE CYCLE INITIATIVE, <https://www.lifecycleinitiative.org/activities/key-programme-areas/technical-policy-advice/linking-the-un-sustainable-development-goals-to-life-cycle-impact-pathway-frameworks/> (last visited April 12, 2019) (describing the United Nations Environment Programme-funded project “to develop a clear linkage between the top-down process that led to the creation of the SDG’s [sic] and all the bottom-up knowledge, data and methodology in the Life Cycle Sustainability Assessment area.”).

31. See HENDRICKSON ET AL., *supra* note 16, at 11 (providing one sample set of impacts to study during an LCA).

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32. See Annie Levasseur, *Climate Change*, in LIFE CYCLE IMPACT ASSESMENT, *supra* note 17, at 41 (“[C]limate change is considered a global impact category, and impacts do not depend on where emissions occur. This means that the increase in radiative forcing caused by a given amount of GHG will be the same wherever it is released.”).

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III. METHODS OF CONTROLLING CARBON EMISSIONS

There are three basic ways to control GHG emissions or any other form of pollution: command and control, taxes, and permit trading schemes.³³ Command and control mechanisms require that firms and other actors keep pollution below some level or install the best available technology with the same aim.³⁴ Taxes, meanwhile, impose a fee per unit of pollution, and can be levied on actors at different points in the production process.³⁵ Classical economic theory predicts that whenever levied, the extra cost of the tax will be divided between consumers and producers according to each party’s sensitivity to price increases.³⁶ Finally, in permit trading schemes, the government allots or auctions a number of permits representing the right to emit a quantity of a pollutant, which firms can then resell among themselves. Any emissions without a permit are subject to sanctions. Economists typically favor market mechanisms such as permit trading or taxes because where there are variable costs of abatement, the flexibility these mechanisms offer leads to the most efficient outcomes.³⁷

Each of the three types of measures identified above will likely add to the costs of production, at least until suppliers adapt, which will hinder the competitiveness of the goods produced subject to them.³⁸ Additionally, to avoid the additional costs, domestic suppliers may move operations abroad to, or lose market share to goods produced in, less restrictive regulatory environments. This would effectively export the pollution

33. See STEPHEN SMITH, ENVIRONMENTAL ECONOMICS: A VERY SHORT INTRODUCTION 40–45 (2011) (introducing these three basic categories and some variations).

34. *Id.* at 40.

35. *Id.* at 44 (providing examples of environmental taxes levied at the point of production, sale, and disposal).

36. N. GREGORY MANKIW, PRINCIPLES OF MICROECONOMICS 124-30 (3rd ed. 2004) (demonstrating that, regardless of where the tax is levied, economic theory predicts that the tax burden will be divided between buyers and sellers based on each group’s elasticity of demand or supply).

37. See Smith, *supra* note 33 at 43–45 (“At the core of the economic argument for market mechanisms lie issues of flexibility and incentives.”).

38. See LARRY PARKER & JOHN BLODGETT, CONG. RESEARCH SERV., R40100, “CARBON LEAKAGE” AND TRADE: ISSUES AND APPROACHES 5 (2008) (“[M]ost industries are price sensitive, and therefore any increase in manufacturing costs—as by a carbon emission reduction requirement—hurts the competitiveness of a firm.”).

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and undermine the environmental goals of the program. This problem is referred to as “leakage.”³⁹ This concern, along with competitiveness worries, will lead the implementing government to search for ways to apply the same measures—or at least a carbon tariff equivalent to the additional costs—to imports, and to rebate the costs from exports.

Regulating production in foreign countries, however, presents new hurdles.⁴⁰ A tax on fossil fuels as they enter the economy according to their global warming potential, strikes the greatest balance between universal coverage of emissions and ease of administration.⁴¹ This tax shows up only indirectly in the costs of domestic manufactured goods, but does not require any entity to calculate the carbon content of those goods and can be levied on a relatively small number of actors.⁴² However, determining the equivalent tax to add to imports, as a means of addressing competitiveness and leakage concerns, is not straightforward. Doing so on a product-by-product basis, relying on the actual direct and indirect emissions from manufacturing that product, is near impossible given limited access to data about foreign plants’ emissions or energy consumption.⁴³

If anything, the problem is even knottier with cap-and-trade.⁴⁴ Governments design caps with a certain number of do-

39. See *id.* at 2–4 (describing carbon leakage).

40. See *id.* at 17 (“Either [a border tax adjustment or requirement to purchase shadow emissions credits] could be difficult to implement.”).

41. See Joseph E. Aldy & Robert Stavins, *The Promise and Problems of Pricing Carbon: Theory and Experience*, 4 (Nat’l Bureau of Econ. Research, Working Paper No. 17569, 2011) (“A carbon tax [on fuels] would be administratively simple and straightforward to implement in most industrialized countries, since the tax could incorporate existing methods for fuel-supply monitoring and reporting to the regulatory authority.”).

42. *Id.* (“Focusing on the carbon content of fuels would enable the policy to capture about 98% of U.S. CO2 emissions, for example, with a relatively small number of covered firms – on the order of a few thousand – as opposed to the hundreds of millions of smokestacks, tailpipes, etc. that emit CO2 after fossil fuel combustion.”).

43. Michael O. Moore, *Implementing Carbon Tariffs: A Fool’s Errand?* 34 *WORLD ECON.* 1679, 1681 (“[Carbon border tax adjustments] that arguably are consistent with WTO rules will have such onerous informational needs that importing countries will find implementation nearly impossible.”).

44. See Parker & Blodgett, *supra* note 38 at 32 (“[A]n International Reserve Allowance (IRA) requirement raises various implementation issues surrounding the need to administer a separate cap-and-trade program for IRAs.

mestic producers in mind, so finding a way to extend the scheme to an uncertain number of imports requires either imposing a blunt tariff on embedded carbon or setting up a parallel system of emissions credits sales with the cost linked in some way to the cost of a domestic credit.⁴⁵ Two cap-and-trade bills that failed in the U.S. Congress as part of the last sustained attempts at U.S. legislation, the Boxer-Lieberman-Warner bill of 2008⁴⁶ and the Waxman-Markey bill of 2009,⁴⁷ pursued the latter strategy. With small differences, both bills required exporters from countries that did not have equivalent emissions reductions programs to those contained in the bill to purchase allowances from the United States.⁴⁸ The price of these allowances was set to mirror the market price of emissions credits in the United States.⁴⁹ Boxer-Lieberman Warner further specified that the price of international allowances was to be adjusted depending on the carbon intensity of manufacturing in the given sector in the exporting country and that country's policies for limiting greenhouse gases.⁵⁰

IV. WTO LAW: LIKE PRODUCTS AND PPMs

To address the legality of measures described above, or any other law imposing a carbon-limiting scheme on imports under WTO law, it is necessary to first review the WTO's jurisprudence of like products.

A. *Early Interpretations of Like Products*

A cornerstone of the WTO is that an item produced abroad must receive treatment no less favorable than the same

Beyond the operating mechanics of a cap-and-trade program, the government would have to develop a pricing mechanism for IRAs, and a compensating mechanism to account for any allowances allocated free to domestic producers.”).

45. *Id.* at 18.

46. Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. (2008).

47. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009).

48. H.R. 2454 §§ 767(c), 768(a)(1)(E); S. 3036 §§ 6006(a)(1), 6006(d)–(e).

49. H.R. 2454 § 768(a)(1)(B); S. 3036 § 6006(a)(3).

50. S. 3036 §§ 6006(d)–(e).

product produced domestically (National Treatment) or in any other exporting nation (Most Favored Nation status), once it enters a member’s country. Both the General Agreement on Tariffs and Trade (GATT) and the Agreement on Technical Barriers to Trade (TBT) express this principle of equal treatment for like products.⁵¹ These agreements are part of the WTO’s single undertaking.⁵² Specifically, GATT Article III:2 establishes that internal taxes—those other than tariffs—are not to be applied to imports in a discriminatory manner. GATT Article III:4 establishes that other forms of regulation “affecting [the] internal sale, offering for sale, purchase, transportation, distribution or use” of products must also not favor domestic goods.⁵³ TBT Article 2 forbids *technical* regulations from treating imported products less favorably than like domestic products.⁵⁴ Annex 1 of the TBT defines a technical regulation as a “[d]ocument which lays down product characteristics or their related processes and production methods.”⁵⁵ Given the TBT’s limitation to technical regulations, and the fact that each treaty has its own chapeau and other interpretive aides, a measure may violate the TBT but not the GATT or vice versa.⁵⁶ However, the Appellate Body has said that the GATT provides context for interpreting the TBT, especially on the meaning of “like products”—a term that is present in both.⁵⁷

Early WTO-era cases created a four-pronged test for determining whether products were like. In *Japan—Alcoholic Beverages*, the WTO Appellate Body announced that it would con-

51. GATT, *supra* note 11, arts. III:2, III:4; TBT Agreement, *supra* note 12, Annex 1, art. 2.

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52. See Claude Chase, *Norm Conflict Between WTO Covered Agreements—Real, Apparent or Avoided*, 61 INT’L & COMP. L. Q. 791, 795 (2012) (“The approach taken by negotiators during the Uruguay Round was to opt for a single package of multilateral trade agreements that were annexed to the WTO Agreement.”).

53. GATT, *supra* note 11, arts. III:2, III:4.

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54. TBT Agreement, *supra* note 12, art. 2.

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55. *Id.* Annex 1.1.

56. See, for example, Appellate Body Report, *European Communities—Measures Prohibiting the Importation and Marketing of Seal Products*, WTO Doc. WT/DS401/AB/R (adopted May 22, 2014) [hereinafter *EC—Seal Products*], in which measures were found not to have violated TBT Article 2.1, yet to have violated GATT Article I:1. *Id.* ¶ 6.1.

57. *U.S.—Clove Cigarettes*, *supra* note 24, ¶ 100.

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sider i) physical properties, ii) end-uses of products, and iii) consumer preferences, in deciding whether or not two products were like.⁵⁸ Later cases confirmed tariff classification as a fourth prong of the test.⁵⁹ The Appellate Body also stated that the meaning of the phrase “like products”—i.e. how similar two products must be in order to be considered like—contracted or expanded according to the treaty article.⁶⁰ The Appellate Body in *Korea—Alcoholic Beverages* established that “directly competitive or substitutable products,” a broader category mentioned in a note to GATT Article III:2 that encompassed like products, should also not be taxed differentially in a way that protected domestic products.⁶¹

In *United States—Malt Beverages*, a case decided under the original GATT dispute settlement procedures, the panel found that micro-brewed beers and beers produced in large breweries were like products, meaning the size of the facility in which the product was manufactured was not a relevant consideration to product likeness.⁶²

In *European Communities—Asbestos*, however, the Appellate Body confirmed that minute physical differences between products which had important health consequences could make those products unlike. They made this determination on the basis of consumer preferences and, crucially, the physical properties prongs of the like products test.⁶³

B. Overall Structure

It is worth taking a step back from these specific cases to consider the overall structure of the international trade regime. Howse and Regan identify two different views of the

58. *Japan—Alcoholic Beverages II*, *supra* note 23, at 20.

59. *E.g.*, *EC—Asbestos*, *supra* note 23, ¶ 101.

60. *Japan—Alcoholic Beverages II*, *supra* note 23, at 21. For a description of how such a broadening and narrowing of the concept of “like products” would work depending on the treaty and article in question, see Choi, *supra* note 20, at 91–153.

61. Appellate Body Report, *Korea—Taxes on Alcoholic Beverages*, ¶¶ 114–16, WTO Doc. WT/DS84/AB/R (adopted Jan. 18, 1999) [hereinafter *Korea—Alcoholic Beverages*].

62. Report of the Panel, *United States—Measures Affecting Alcoholic and Malt Beverages*, ¶ 5.19, DS23/R (June 19, 1992), GATT BISD (39th Supp.), at 206, 275 (1992) [hereinafter *U.S.—Malt Beverages*].

63. *EC—Asbestos*, *supra* note 23, ¶¶ 114, 126.

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overall structure, with relevant differences for interpreting the articles outlined above. Under what they term the “general right of access” view, the GATT as a whole, or perhaps via its preamble, guarantees traded goods open access to the markets of WTO members, with only enumerated exceptions.⁶⁴ This view treats Article III as “authorizing” in that, despite its negative language, it establishes what sorts of internal taxes or regulations a country *may* apply without running afoul of the open access principle.⁶⁵ This seems more or less the view of the panel in the unadopted panel report of *United States—Tuna (Mexico)*.⁶⁶

The alternative “specific right against discrimination” view, which Howse and Regan endorse and which is a more accurate reading of the text and recent case law, does not view the GATT or other WTO treaties as establishing any general right to open access. Instead, certain provisions of those treaties provide a right of *non-discrimination* to imported goods, subject to certain qualifications.⁶⁷ Under this view, countries are generally free to regulate products, including foreign-produced products, but must comply with GATT Article III:4 and TBT Article II.1. Similarly, countries may apply any “internal” taxes to the sale of products as long as they are applied evenly to domestic and imported goods.⁶⁸ Countries also cannot charge importers fees above those contained in the tariff schedules, except to equalize for certain taxes that affect the cost of producing like goods domestically. This is the principle of border tax adjustments.⁶⁹

The significance of the difference between these perceptions of the trade structure is that under the *general right to access* view, GATT Article III and TBT Article II establish the few situations in which a country may regulate or tax foreign

64. Howse & Regan, *supra* note 7, at 257, 276–77.

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65. *Id.* at 257.

66. In that case, from the fact the measure was not a regulation on products—and therefore was not under GATT Article III—the panel deduced its illegality. See Report of the Panel, *United States—Restrictions on Imports of Tuna*, ¶¶ 5.9–14, DS21/R (Sept. 3, 1991), GATT BISD (39th Supp.), at 155, 193–96 (1993) [hereinafter *U.S.—Tuna (Mexico)*]. This supports the general right to access view.

67. Howse & Regan, *supra* note 7, at 257, 276–77.

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68. *Id.*

69. GATT, *supra* note 11, arts. II:1(b), II:2(a).

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goods. Therefore, if a law that regulates foreign goods is not of the sort a treaty provision refers to—for example, if it is not a regulation affecting the sale of products, in the case of GATT Article III:4—the law would be presumptively illegal under that article. In contrast, under the *specific right to non-discrimination* view, countries are assumed to have the right to pass regulations on foreign goods. Any regulation or tax that *is of the type* identified by GATT Article III or TBT Article II must comply with the non-discrimination requirements of those articles. However, if the measure is not caught by those articles, then it is presumptively WTO-legal. *EC—Seal Products* provides strong support for the *general right to regulate* view. In that case, the Appellate Body held that the measure in question was not a technical regulation, and *therefore* it did not violate the TBT.⁷⁰ This note proceeds under the *general right to regulate* view.

Under this perspective, it also makes sense to distinguish two inquiries about measures that treat goods differently based on their process and production methods. The first is mentioned above regarding whether a particular provision of the GATT catches such a measure. The second, asked only if the answer to the first question is positive, is whether such a measure violates the GATT provision *by treating like products differently in a way that affords more favorable treatment to the domestic one*. This second question contains within it a sub-question when the measure targets PPMs, namely, whether the process and production methods themselves are relevant to likeness. These two questions were distinct in, for example, *European Communities—Asbestos*.⁷¹ There, the Appellate Body first found that the regulatory measures provided product characteristics, and so fell within the scope of TBT Article 2.1.⁷² They separately considered whether the products under comparison were like or unlike.⁷³ Other authors cover the first question in some detail, but fewer consider the second, focused on here.⁷⁴

70. *EC—Seal Products*, *supra* note 56, ¶¶ 5.60, 5.70.

71. *EC—Asbestos*, *supra* note 23.

72. *Id.* ¶¶ 72–75. The Appellate Body declined to actually rule on whether the measures violated the TBT for lack of a factual record on that question developed by the panel. *Id.* ¶ 83.

73. *Id.* ¶¶ 133–47.

74. *But see* James Rowland, Trade and Climate Change—Tracing the Conflict Between Trade and Climate Change Reform and Plotting a Mutually Supportive Route Forward 33–37 (2017) (unpublished LLM thesis, Uni-

V. THREE ALTERNATE THEORIES FOR THE LEGALITY OF A CARBON PRICING MEASURE APPLIED TO IMPORTS

With this background, it is possible to begin exploring solutions within the WTO framework for a hypothetical country looking to tax or regulate imports based on the manufacturing-associated carbon emissions. This note briefly consider three alternative strategies for arguing that a carbon tax or cap-and-trade scheme extended to imports comports with the WTO’s non-discrimination principles. The strategies, drawn from other authors, are: (1) invoking the WTO’s provision permitting border tax adjustments; (2) arguing that there is no discrimination when the same requirements apply both to domestic and foreign products since discrimination requires unequal treatment; and (3) relying on the general exceptions to the GATT strictures contained in Article XX or the specific exceptions in TBT Article 2.2. Ultimately, depending on the structure of the carbon tax or regulation, each of these strategies could conflict with WTO case-law or other authoritative interpretations of the treaties.

A. Border Tax Adjustment

The first theory concedes that emissions-heavy and emissions-light versions of the same product are “like products,” but proposes a border-tax adjustment on imports to compensate for a domestic carbon tax, relying on GATT Article II:2.⁷⁵ This theory must be evaluated in light of interpretations of Article II:2. An early GATT panel of experts, the Working Party on Border Tax Adjustments, interpreted GATT II:2 in light of GATT III:1 to mean that “tax[es] levied directly” are adjustable, while “taxes that were not directly levied” are not.⁷⁶ As

versity of Waikato), <https://hdl.handle.net/10289/11223> (summarizing those authors who discuss whether PPMs can be relevant to product likeness).

75. GATT, *supra* note 11, arts. II:2, III (“Nothing in this Article shall prevent any contracting party from imposing at any time on the importation of any product: (a) a charge equivalent to an internal tax imposed consistently with the provisions of paragraph 2 of Article III in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part . . .”).

76. Rep. by the Working Party on Border Tax Adjustments, ¶ 14, WTO Doc. L/3464 (Nov. 20, 1970). Confusingly, the Agreement on Subsidies and Countervailing Measures, also uses the terms “direct” and “indirect,” in

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examples of the former, the report listed “specific excise duties, sales taxes and cascade taxes and the tax on value added,” while it listed social security taxes and payroll taxes as examples of the latter.⁷⁷ The basic idea seems to be that direct taxes are levied on the product and so may be adjusted, while indirect taxes are levied on one specific factor of production—labor—and so may not.⁷⁸

Professor and WTO rostered panelist Joost Pauwelyn argues that the relevant distinction as drawn by the Working Party is between taxes on products and taxes on producers.⁷⁹ This distinction is grounded in economic reasoning, Pauwelyn claims, because taxes on producers, such as corporate income tax, are unlikely to be passed on to consumers in the form of higher prices. They therefore do not affect the competitive relationship between products, and so do not need to be adjusted to preserve competitive equality.⁸⁰ Pauwelyn argues that carbon taxes, however, whether levied on products or on producers, aim to force both producers and consumers to internalize social costs of carbon.⁸¹ They should therefore be viewed as adjustable product taxes. He acknowledges that an official interpretation on the WTO website appearing until 2006 contradicted his theory. The statement asserted that “product taxes” were adjustable while “process taxes” were not, and as an example of the latter listed a tax on the energy consumed in producing a ton of steel.⁸² A carbon tax for manufactured goods would be based in large part on the energy used in producing them. Moreover, emissions, like energy, are not incorporated physically into the final product. Therefore, the

nearly the opposite way. Agreement on Subsidies and Countervailing Measures Annex I n.58, Apr. 15, 1994, 1869 U.N.T.S. 14 [hereinafter SCM Agreement].

77. Rep. by the Working Party on Border Tax Adjustments, *supra* note 76, ¶¶ 14–15.

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78. The Working Party was unable to reach agreement on whether taxes on other inputs of production, such as capital equipment, auxiliary materials, or services were adjustable. *Id.* ¶ 15.

79. Pauwelyn, *supra* note 1, at 476–77.

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80. *Id.*

81. *Id.* at 480. Pauwelyn uses the ASCM’s terminology and calls such taxes “indirect.” *Id.* at 478. For clarity this note uses the phrase *product taxes* when referring to his argument.

82. *Id.* at 478 n.79.

WTO website’s statement apparently suggests both directly and by analogy that a carbon tax is not border adjustable.

Even with the disappearance of that counterevidence from the WTO website, Pauwelyn has little positive support in case-law for his theory. The one case he cites, *United States—Taxes on Petroleum*,⁸³ does not provide a readily applicable holding given the ambiguity in the fact-pattern.⁸⁴ Further, Hoover Institution Senior Fellow Charles McLure’s argument that carbon taxes are neither direct nor indirect, but fall into the third category of “taxes occultes,”⁸⁵ weakens Pauwelyn’s case even further. The Working Party faced internal disagreements over whether occult taxes were adjustable.⁸⁶ Despite this ambiguity about its legality, the idea of using a border tax ad-

83. Report of the Panel, *United States—Taxes on Petroleum and Certain Imported Substances*, L/6175 (June 17, 1987), GATT BISD (34th Supp.), at 136 (1988) [hereinafter *U.S.—Superfund*].

84. Both the text of the regulations at issue in *U.S.—Superfund* and the decision itself are unclear about the conditions under which products were taxed. It appears that the measure taxed certain chemical products that were manufactured in the United States and incorporated into U.S.-produced gasoline, and therefore sought to tax imported products that were “produced or manufactured from” those chemicals as a Border Tax Adjustment. *Id.* ¶ 2.1. The confusion is over whether this law and the implementing regulations required the chemicals to have been incorporated into the final product—there is a good plain text reading that they did not, and therefore, as to imported products, were partially a tax on unincorporated process and production methods. The panel nevertheless found that this was a tax “directly imposed on products,” because as to U.S. produced goods, it was imposed directly on the chemicals used in the production of other products. The panel therefore found that the tax was eligible for border tax adjustment. *Id.* ¶ 5.2.4. See also McLure, *supra* note 4, at 254 (noting that “[t]he panel [in *U.S.—Superfund*] did not indicate explicitly whether the foreign feedstock chemicals were physically incorporated in the exported chemicals—or whether it thought that the answer mattered.”). However, that same reasoning would likely not extend to a carbon tax, which is never a tax on a product in the same way—carbon emissions are not sold on the market in the same way that the feedstock chemicals used in manufacturing were, even if the *right to produce those emissions* itself becomes commodified.

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85. McLure, *supra* note 4, at 244. The Working Party defined taxes occultes as “consumption taxes on capital equipment, auxiliary materials and services used in the transportation and production of other taxable goods” and gave energy as a possible example. See Rep. by the Working Party on Border Tax Adjustments, *supra* note 76, ¶ 15(a).

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86. Rep. by the Working Party on Border Tax Adjustments, *supra* note 76, ¶ 15; see also Keith Kendall, *Carbon Taxes and the WTO: A Carbon Charge Without Trade Concerns?*, 29 ARIZ. J. INT’L & COMP. L. 49, 87 (2012) (“The

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justment to tax the carbon embedded in imports without running afoul of the WTO remains popular.⁸⁷

B. *One Regulation*

The next theory centers on extending a cap-and-trade system in some way to include imports. Under this theory, because the cap-and-trade law would essentially craft one set of regulations that applied to both domestic products and their *like* imports, it would not be discriminatory. However, in practice, it is very difficult to design a cap-and-trade scheme that treats imports and domestic goods identically. As described above,⁸⁸ two bills that failed in the United States Congress sought to stem the problems of leakage and loss of competitiveness by requiring importers of covered goods to purchase international reserve allowances. The baseline price for these allowances was set to mirror the auction price for the right to emit a ton of GHGs domestically.⁸⁹

However, the bills set up different conditions of market access for domestic producers and importers of similar manufactured goods. Domestic manufacturers of goods like iron or paper would face largely indirect costs based on their energy consumption,⁹⁰ as well as potentially direct costs if they emitted enough greenhouse gases at their facilities to be covered.⁹¹ Yet both direct and indirect costs were individualized in that

major hurdle for a carbon tax to be legitimate under the WTO is its uncertain status as an indirect tax . . .”).

87. See, e.g., Daniel Becker et al., *EU Emissions Trading System Without Competitive Disadvantages 1* (Re-Thinking the Efficacy of Int'l Climate Agreements Post COP15, RECAP15-Policy Brief No. 2, 2015), https://www.europa.uni.de/de/forschung/institut/recap15/downloads/PolicyBriefs/Brief2_Paper18_ENGLISH.pdf (arguing that the EU should use a border tax adjustment to better address leakage under its trading scheme and that doing so would likely be WTO legal).

88. See *infra* Part III.

89. See *supra* notes 46–50 and accompanying text.

90. See COMM. ON INT'L ENVTL. LAW, N.Y.C. BAR ASS'N, *THE WTO IMPLICATIONS OF TITLE VI OF AMERICA'S CLIMATE SECURITY ACT*, S. 2191, at 5 (2008) (describing an earlier but, in critical respects, identical version of the Lieberman-Warner bill and its impact on domestic producers of primary goods compared to importers).

91. See Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. § 4(7)(A) (2008) (defining a “covered facility” as, inter alia, one that uses more than 5000 tons of coal).

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they depended on actual consumption of energy and/or fossil fuels. In contrast, importers would need to purchase a quantity of international reserve allowances that depended on the *overall* emissions intensity of that foreign covered sector and the country’s level of economic development.⁹² Under this scheme, importers would inescapably receive less individualized treatment than domestic firms. The quantity of allowances required would not depend on their individual carbon intensity, but rather on country-sectoral-level averages, adjusted based on country-level wealth.⁹³

Pauwelyn writes that whether a cap-and-trade scheme is deemed a tax or a regulation, a “border adjustment” provision, whereby the same scheme as is applied to domestic goods is imposed on imported goods, would likely be WTO-legal.⁹⁴ He acknowledges his position is in tension with the holding of the panel in the famous *U.S.—Tuna (Mexico)* decision. That panel found an import ban on tuna caught by vessels of countries without requirements of dolphin-safe fishing methods similar to those mandated by the United States violated Article III:4 and Article XI on quantitative restrictions, despite the fact that similar requirements applied to U.S. vessels.⁹⁵ Pauwelyn correctly points out that the WTO member states never adopted this panel decision, as the original GATT dispute settlement procedures required in order for it to bind the parties.⁹⁶ How-

92. *Id.* § 6006(c)–(d).

93. *Id.*

94. Pauwelyn, *supra* note 1, at 486–88.

95. The measure required U.S. fishing boats to employ certain dolphin-safe fishing techniques and banned sale in the United States of canned tuna-fish using tuna from countries that did not have similar requirements of their fishing fleets. While one interpretation of the measure is that it treated all canned tuna sold on the U.S. market the same by requiring any tuna to be caught in a dolphin safe manner—see Howse & Regan, *supra* note 7, at 259, for a fleshed out version of this argument—the panel instead found that the measure treated tuna from the countries challenging the measure, which did not put the same requirements on their fleets, unfavorably compared to American-caught tuna. *U.S.—Tuna (Mexico)*, *supra* note 66, ¶¶ 5.9–15.

96. Pauwelyn, *supra* note 1, at 483. The case was decided under the pre-WTO dispute settlement process of the GATT, which allowed any country to block adoption of a report, and as the WTO website put it, “Mexico decided not to pursue the case.” *Mexico Etc Versus US: ‘Tuna-Dolphin’*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/envir_e/edis04_e.htm (last visited Apr. 5, 2019).

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ever, Pauwelyn does not focus on the detailed mechanics of extending a cap-and-trade scheme, making his conclusion only provisional.

Those who focus on detailed proposals are less sanguine. For example, Professors Robert Howse and Antonia Eliason, considering a proposal very similar to the bills described above,⁹⁷ withhold judgment on whether such a plan would violate the National Treatment requirements.⁹⁸ Professor Charles McLure argues that it is quite likely that the Boxer-Lieberman bill, if enacted, would have violated the Most Favored Nation provision of Article I of the GATT.⁹⁹ Similarly, Professors Carol McAusland and Nouri Najjar, both of whom work on these detailed design questions, believe that the National Treatment obligation would require that the implementing country take into account firm-level differences in emissions among exporters when deciding how many allowances they would need to purchase (since domestic firms will be treated on a firm by firm basis).¹⁰⁰ There is support for this view in the early WTO case *United States—Gasoline*.¹⁰¹ However, the international reporting and monitoring that would be necessary for

97. The proposal put forward by the International Brotherhood of Electrical Workers (IBEW) and American Electric Power (AEP), as described in Howse & Eliason mirrored Waxman Markey but would have allowed exporters to purchase their allowances from an international voluntary market. Howse & Eliason, *supra* note 1, at 69.

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98. *Id.* at 70 (“[T]he question would be whether the actual design and operation of the scheme is truly even-handed in its overall effects on imports in relation to domestic products. . . . [S]everal design elements will be important.”).

99. McLure, *supra* note 4, at 265–66.

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100. McAusland & Najjar, *supra* note 3, at 796 (warning that the application of cap-and-trade to imports “may . . . violate GATT Article 3 because a domestic carbon tax would ‘involve variable burdens based on individual domestic firms’ carbon emissions’ and thus the products of foreign producers must also be judged on a firm-by-firm basis.”).

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101. In that case, an American law mandated reductions in the concentrations of harmful chemicals in gasoline. Domestic gasoline refiners were able to use individual baselines from which they would measure their mandated reductions in certain chemicals in the gasoline; foreign producers, however, were in some situations unable to do so, and instead had to rely on a country-wide baseline. The panel ruled that this put those foreign producers at a disadvantage and so represented less favorable treatment. Panel Report, *United States—Standards for Reformulated and Conventional Gasoline*, ¶ 6.11, WTO Doc. WT/DS2/R (adopted Jan. 29, 1996) [hereinafter *U.S.—Gasoline*].

individualized emissions measurements at foreign plants is likely politically and administratively infeasible.¹⁰²

Moreover, the recent decision of the Appellate Body in *United States—Clove Cigarettes*¹⁰³ also casts doubt on the legality of extending a cap-and-trade scheme to imports. In that case, the Appellate Body found a law that banned the sale of cigarettes with certain flavorings while exempting those with other flavorings to violate national treatment obligations of the TBT. It reached this conclusion, despite the apparent facial neutrality of the measure, because the banned flavors were overwhelmingly foreign in origin while the exempted flavors were largely produced in the United States, and the different flavors did not pose different health threats.¹⁰⁴ In other words, the panel found the justification for the differential impacts experienced by foreign producers of flavored cigarettes to be pretextual.

A truly universal cap-and-trade scheme would likely not run afoul of this precedent.¹⁰⁵ However, if there are exemptions from the scheme for goods primarily produced domestically, then *U.S.—Clove Cigarettes* suggests the Appellate Body may find the scheme pretextual and so a violation of the National Treatment obligations.

Exemptions are the rule rather than the norm for cap-and-trade schemes. Many cap-and-trade schemes initially apply only to certain sectors, or only to manufacturing plants above a certain size.¹⁰⁶ Other authors detail how lobbying by domestic interest groups often leads to these exemptions.¹⁰⁷ It might

102. Moore, *supra* note 43 at 1681. R

103. *U.S.—Clove Cigarettes*, *supra* note 24. R

104. *Id.* ¶ 226. R

105. See Norpoth, *supra* note 16, at 594 (arguing that in order to show that an environmental regulation having a disparate impact on international products was conceived for a legitimate purpose, a state should design “broad measures without exemptions watering down the environmental effectiveness of the measure.”).

106. See, e.g., Simone Borghesi & Massimiliano Montini, *The Best (and Worst) of GHG Emission Trading Systems: Comparing the EU ETS with Its Followers*, 4 FRONTIERS ENERGY RES. 1, 7 (2016) (analyzing the design of the EU cap-and-trade scheme as well as those of California and Quebec and finding that “all the regimes analyzed establish exemptions for installations below certain . . . thresholds.”).

107. For example, Peter Markussen and Gert Svendsen show that between the draft European Union directive establishing an E.U. cap-and-trade

be that after such lobbying, most domestic manufacturers of a certain product are below a threshold size at which they would be required to obtain permits, while most exporters from a foreign country are above the threshold. Whether or not the foreign country could prove the lobbying led to this outcome, such a result might facilitate a successful challenge similar to that brought by Indonesia in *U.S.—Clove Cigarettes*.¹⁰⁸ Finding a violation of the substantive principles of Article III would not necessarily condemn the cap-and-trade scheme. A defendant country could still resort to GATT Article XX, but that strategy is risky for similar reasons, as detailed below.

C. Article XX Exceptions

As the foregoing analysis demonstrates, relying on the GATT's provision for border tax adjustments, or arguing that cap-and-trade extended to imports represents essentially one regulation applied equally to all products, are risky strategies. The next strategy others propose again involves admitting that emissions-heavy and emissions-light versions of a product are *like*. However, this strategy goes further and admits that a carbon tax or cap-and-trade scheme treats foreign products less favorably than domestic counterparts, violating GATT Article III and possibly TBT 2.2. To prove legality under the GATT, this strategy seeks to rely on the exemptions contained in Article XX.

Article XX exempts laws and practices that would otherwise violate provisions of the GATT. A measure must satisfy two conditions to enter consideration under Article XX: it must have been passed to further one of the enumerated regulatory purposes in that Article, and it must satisfy the conditions in the chapeau. The chapeau prohibits application of regulations in a manner that constitutes "arbitrary or unjustifiable discrimination between countries where the same conditions prevail" or "a disguised restriction on international trade."¹⁰⁹

scheme for GHGs and the final directive, "rent-seeking . . . affect[ed] the design of emission trading in favour of well-organised interest groups." Peter Markussen & Gert Tinggaard Svendsen, *Industry Lobbying and the Political Economy of GHG Trade in the European Union*, 33 ENERGY POL'Y 245, 255 (2005).

108. See *supra* notes 103–105 and accompanying text.

109. GATT, *supra* note 11, art. XX (emphasis added).

Scholars convincingly argue that measures to achieve greenhouse gas emission reductions pursue the allowed regulatory purposes of either Article XX(b), measures necessary to protect plant, animal, or human life, or Article XX (g), measures to conserve an exhaustible natural resource.¹¹⁰ However, such measures may not meet the requirements in the chapeau to Article XX. There are at least two ways that the Appellate Body indicates a market based mechanism might violate the chapeau: (i) by making market access in some way depend on whether the exporting country has adopted an *identical* scheme to that employed domestically; and (ii) by exempting categories of producers disproportionately located domestically.

The first defect is essentially one of insufficient flexibility. As outlined above, one way of extending a cap-and-trade scheme to imports is by requiring exporters from countries without an equivalent program of emissions reductions to acquire allowances.¹¹¹ However, this design is dangerously close to a U.S. scheme found to violate the chapeau in the famous *U.S.—Shrimp* decision. That decision concerned an American law requiring that domestic shrimp trawlers use turtle-excluder devices and outlawing shrimp imports from countries that did not require technology of equal effectiveness on their trawlers and did not achieve equivalent levels of turtle by-catch.¹¹² The Appellate Body found that though the law was provisionally justified under Article XX(g),¹¹³ the application as codified in State Department guidelines and administrative rulings violated the chapeau to Article XX. It violated the chapeau by inflexibly requiring countries to adopt essentially the same requirements as the United States.¹¹⁴

110. See, e.g., McAusland & Najjar, *supra* note at 3, at 785–87.

111. See *supra* notes 44–50 and accompanying text.

112. Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, ¶¶ 3–4, WTO Doc. WT/DS58/AB/R (adopted Oct. 12, 1998) [hereinafter *U.S.—Shrimp*].

113. *Id.* ¶¶ 134, 142, 145.

114. See *id.* ¶ 165 (“[D]iscrimination results not only when countries in which the same conditions prevail are differently treated, but also when the application of the measure at issue does not allow for any inquiry into the appropriateness of the regulatory program for the conditions prevailing in those exporting countries.”).

As Professor Rachel Brewster notes, determining whether a foreign country's emissions reductions program is equivalent to one's own presents a baseline problem.¹¹⁵ If the foreign country instituted a targeted emissions reduction program and achieved reductions prior to the baseline year, that country arguably has already done its part to reduce emissions. Making further reductions could be technologically challenging, and requiring the foreign state to do so is arguably unfair.¹¹⁶ This hypothetical demonstrates that, as with *U.S.—Shrimp*, the cap-and-trade bills described above could be insufficiently flexible to comply with the article XX chapeau.

It is true that a cap-and-trade measure designed and applied with enough flexibility might satisfy the chapeau. Looking at the *U.S.—Shrimp* case, the United States eventually brought its shrimp trawling regulations in line with the Appellate Body's recommendations for Article XX compliance, in part by granting more flexibility to other countries.¹¹⁷

However, there is a good deal of uncertainty involved in how to design and apply a scheme that provides enough flexibility on the one hand, while not discriminating *among* foreign countries and violating the Most-Favored Nation (MFN) clause of GATT Article I on the other.¹¹⁸ The regulating country must make educated guesses about which differences between countries require differential treatment under cap-and-trade, and which differences are irrelevant, such that taking them into account would violate MFN. For example, under the United States cap-and-trade bills outlined above, the regulator would need to decide whether and to what extent policies to pursue reforestation, subsidize renewable energy, or limit population growth would entitle a country to lower International Reserve Allowance requirements. Any time one of these criteria was used to justify lowering the allowance requirement,

115. Rachel Brewster, *The Dangers of Carbon Tariffs*, 103 AM. SOC'Y INT'L L. PROC. 372, 372 (2009).

116. *Id.* at 373.

117. Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products: Recourse to Article 21.5 of the DSU by Malaysia*, ¶¶ 144–54, WTO Doc. WT/DS58/AB/RW (adopted Oct. 22, 2001) [hereinafter *U.S.—Shrimp (Article 21.5)*].

118. See McAusland & Najjar, *supra* note 3, at 795 (“Letting permit requirements vary across goods based on country of origin would violate the Most Favoured Nation Treatment (MFN) principle.”).

countries not pursuing that policy but pursuing another for which credit was not given could justifiably complain about a violation of MFN.

The second possible defect of a cap-and-trade program would be if it contained exemptions or measures that, especially as applied, disproportionately benefited domestic producers. For example, as Brewster notes, the Boxer-Lieberman-Warner proposal allowed domestic producers to bank or borrow credits in a way foreign producers could not. This had the potential to constitute arbitrary or unjustified discrimination against products from countries with similar conditions.¹¹⁹ Under this structure, as described above, the total costs of compliance per unit of carbon would very likely differ between foreign and domestic consumers.¹²⁰ Although the motivation for these differences in treatment was likely the greater quantity of information regarding domestic production available to regulators, the Appellate Body has held that the lack of easily available data about foreign producers is an insufficient reason to treat them differently under Article XX.¹²¹

The chapeau of Article XX is not concerned with regulatory *purpose* for a law, but instead focuses on whether the law *as applied* discriminates between countries in an arbitrary or unjustified manner.¹²² Exemptions for producers below a certain size, or for sectors of the economy, may represent an attempt

119. Brewster, *supra* note 115, at 373.

120. See *supra* notes 90–92 and accompanying text (noting the less individual treatment foreign producers received, which for many would arguably have led to higher costs of compliance).

121. In *United States—Standards for Reformulated and Conventional Gasoline*, the dispute settlement bodies evaluated a U.S. law regulating the presence of certain harmful chemicals in gasoline. The law required refineries and blenders to reduce the presence of these chemicals compared to a baseline. The law allowed domestic refineries to rely on individualized baselines in a way that foreign producers could not, which the United States justified by the more reliable data it could obtain, and indeed mandate, of domestic refineries. The panel found, and the Appellate Body agreed, that the United States had not made adequate efforts to obtain the data that would allow foreign refineries in Venezuela and Brazil to use individualized baselines, and the law was therefore applied in a manner constituting arbitrary or unjustified discrimination. Appellate Body Report, *United States—Standards for Reformulated and Conventional Gasoline*, 25–29, WTO Doc. WT/DS2/AB/R (1996).

122. U.S.—*Shrimp (Article 21.5)*, *supra* note 117, ¶ 149.

to pilot a scheme on the most impactful producers,¹²³ or they may stem from a calculation that the benefits of a regulation on the whole only exceed the costs when applied to larger producers, whose compliance and monitoring costs are lower as a percentage of revenue.¹²⁴ These are arguably sound policy reasons not to make a cap-and-trade scheme or carbon tax universal. However, if through those exemptions or other features the law imposes burdens on a class of foreign producers it does not on domestic, it may violate the chapeau.¹²⁵

Distinctions between producers in the U.S. cap-and-trade bills are not simply poor design choices. Theories about the legality of trade measures addressing emissions must account for the likely design of such laws in practice. Political pressure is inescapable, and there are, as described above, several sound policy reasons to design something short of a universal cap-and-trade scheme. Yet any exemptions risk violating the article XX chapeau—as does requiring countries to adopt essentially identical legislative standards. Both cases—de facto less favorable treatment of goods from other countries, or inflexibly requiring that other countries adopt identical emissions reductions programs—may violate the chapeau even without any discriminatory intent. Accordingly, a solution that does not re-

123. See Winston Harrington & Richard D. Morgenstern, *International Experience with Competing Approaches to Environmental Policy: Results from Six Paired Cases*, in *MOVING TO MARKETS IN ENVIRONMENTAL REGULATION* 95, 97–99 (Jody Freeman & Charles D. Kolstad eds., 2006) (describing emissions trading schemes and command and control frameworks for various air pollutants that applied only to those industries most responsible for pollution, plants above a particular size, or both).

124. See Thomas Sterner & Lena Höglund, *Output-Based Refunding of Emission Payments: Theory, Distribution of Costs, and International Experience* 3 (Resources for the Future, Discussion Paper 00–29, 2000) (“Often, it is desirable to target an instrument to a subset of polluters. These polluters may cause more environmental damage than others do (depending on location or size), or, as in the case of the Swedish NO_x scheme, monitoring and control costs may be too high to motivate the inclusion of small producers.”).

125. See *U.S.—Gasoline* 1996, *supra* note 121, at 28 (“The United States wished to give domestic refiners time to restructure their operations and adjust to the requirements in the Gasoline Rule. This may very well have constituted sound domestic policy from the viewpoint of the EPA and U.S. refiners. At the same time we are bound to note that, while the United States counted the costs for its domestic refiners of statutory baselines, there is nothing in the record to indicate that it did other than disregard that kind of consideration when it came to foreign refiners.”).

quire justification within Article XX is preferable to one that does.

VI. A NEW SOLUTION: CARBON EMISSIONS AS A PHYSICAL PROPERTY

Instead, advocates of the legality of border measures should bite the bullet and argue that versions of a product manufactured with significant emissions are *unlike* versions of the product made with low emissions. Under the test for like products as developed by the Appellate Body, this effectively requires arguing that carbon emissions from manufacturing a product should be counted as a physical property of that product, and as one that matters to consumers. Physical properties and consumer preferences are two prongs of the like products test, yet differences between products under only one prong will likely not be enough to prove the products unlike.¹²⁶ Therefore relying on the preferences of consumers for low-carbon goods alone will likely not succeed.¹²⁷ However, if manufacturing emissions are considered a physical property, and one that matters to at least some consumers—such that embedded carbon content affects the competitive relationship between products—similar goods made with different emissions may well be *unlike*.¹²⁸ With such a finding, differential treatment of the goods would not violate WTO law.¹²⁹

126. See *EC—Asbestos*, *supra* note 23, ¶ 104 (“[I]t was inappropriate for the Panel to express a ‘conclusion’ [about likeness] after examining only one of the four criteria.”); see also *id.* ¶ 113 (arguing that dangerous health effects, under the physical properties and consumer preferences prongs, could make products unlike). R

127. This is especially true because the preferences of a subset of consumers who do not differentiate between products may suffice to find two products with similar physical properties like. Norpoth, *supra* note 16, at 588 (citing *U.S.—Clove Cigarettes* and Appellate Body Report, *Philippines—Taxes on Distilled Spirits*, WTO Doc. WT/DS396/AB/R (adopted Jan. 20, 2012) to show that two products need not be interchangeable for all consumers to be considered like). R

128. See Howse & Eliason, *supra* note 1, at 68 (“The difficulty under Article III:2 of the GATT may be much less one of whether, doctrinally, goods produced with significantly different levels of carbon emissions can be considered like products, than one of determining accurately whether a particular imported product is produced with significantly higher carbon emissions than a particular domestic product.”). R

129. This proposal differs from a similarly motivated proposal put forward by Christopher A. Cherry to amend the GATT or its Standards Code to rede-

The main barrier to viewing emissions from manufacturing as a property of the final product is the intuitive notion that properties must be incorporated into the object they define. Yet philosophical discussions of what constitutes a property illustrate that incorporation is not a necessary feature of certain key types of properties, such as authorship. While there may initially seem to be divergence between the technical definitions of international trade law and philosophy, the careful attention philosophers pay to categorizing different features of existence can shed light on the difficult problem of defining what makes products *like*.

The key ontological works of philosophers like Aristotle¹³⁰ and Descartes¹³¹ contain notions of incorporation and dependence in their definition of properties, supporting the intuitive notion above. John Locke's classification of properties in *An Essay Concerning Human Understanding*,¹³² however, calls into question these writers' views. This note shows that carcinogenicity, which the Appellate Body deemed a physical property in *EC—Asbestos*, is what Locke might term a *tertiary quality*.¹³³ The key feature of this class of properties is that they describe power to cause change, including harmful change, in the world.¹³⁴ An object or substance's potential to create climate change by releasing emissions would be another such property.

The present argument is that within trade law, harmful changes that are necessary to *create* an object should not be treated any differently from Lockean tertiary qualities. This note acknowledges that these manufacturing-caused emissions are a sort of historical fact about the final products, and so

fine the word "product" to include the impacts of producing it. The present proposal argues that "physical properties," one of the Appellate Body's criteria for likeness, can be interpreted as covering manufacturing related harms, without amending any of the WTO texts. Cf. Cherry, *supra* note 18 at 495-96.

130. See generally ARISTOTLE, *Categories* and *De Interpretatione* 2a11–4a22 (J. L. Ackrill trans., 1963).

131. RENÉ DESCARTES, *Principles of Philosophy*, in THE PHILOSOPHICAL WRITINGS OF DESCARTES 177, 227–29 (John Cottingham et al. trans., 1985).

132. JOHN LOCKE, AN ESSAY CONCERNING HUMAN UNDERSTANDING 132–43 (Peter H. Nidditch ed., 1975).

133. Cf. *id.* at 135 (defining primary and secondary qualities).

134. Cf. *id.* at 140 (describing the third sort of quality of bodies as "[t]he Power that is in any Body . . . to make such a *change* in the *Bulk, Figure, Texture, and Motion of another Body*").

seemingly not a property. However, they are similar to other historical facts, such as authorship or the fact of having been part of famous events, which affect the competitive relationship between products. In such cases, the pragmatic pursuit of an internationally vital goal, such as reducing greenhouse gas emissions, requires looking beyond formalism about the incorporation of properties into objects. Manufacturing-associated emissions should be considered a physical property for the purposes of the like products test.

A. *Climate Forcing Potential as a Tertiary Quality*

John Locke divides a number of features of objects that normally get lumped together simply as properties into three categories. Locke describes “primary qualities” as those that really do inhere in objects, such as mass, shape, and motion.¹³⁵ Locke distinguishes these from “secondary qualities,” which he identifies as those ideas an object produces in humans via the senses, and which do not actually inhere in an object.¹³⁶ Examples of secondary qualities would include perceptions such as color, smell, or taste.¹³⁷ Though these qualities do not inhere in objects, the power to produce them does.¹³⁸ Finally, Locke discusses a third type of quality, labelled herein as *tertiary qualities*, which are the power of objects to cause physical changes in other objects.¹³⁹ This category includes, for example, the sun’s power to melt wax.

For Locke, primary qualities are the true properties of objects, whereas the latter two categories are features owing their existence to the construction of the primary qualities.¹⁴⁰ Yet in ordinary parlance, Locke’s secondary qualities, such as the color or smell of an object, are typically considered proper-

135. *Id.* at 140; see also *Locke on Real Essence*, STAN. ENCYCLOPEDIA PHIL. (Sept. 4, 2018), <https://plato.stanford.edu/entries/real-essence/> (summarizing these three categories within Locke’s philosophy and linking them to his concept of the nominal essence of an object).

136. LOCKE, *supra* note 132, at 135, 140–41.

137. *Id.* at 140.

138. *Id.* at 140–41.

139. See *id.* at 135 (describing secondary qualities); *id.* at 140–41 (discussing three sorts of qualities).

140. *Id.* at 135.

ties.¹⁴¹ Secondary and tertiary qualities differ from each other only in the medium in which the object's powers operate—whether directly upon the senses, or on another external object.¹⁴² Following Locke's scheme, the sun's power to melt wax is as much a property of the sun as its power to cause people to perceive the star as being a particular color. Much more could be said about secondary and tertiary qualities and how they depend in part on the nature of the objects being acted upon and other contingencies for their expression.¹⁴³ However, for purposes of this note, suffice it to say that in a modern, Lockean informed ontology, powers to cause change in other objects are an important class of properties.¹⁴⁴

Locke's framework would classify an object's carcinogenicity, or power to cause cancer, as a tertiary quality. This is true even though carcinogenicity involves an effect on humans, because that effect is not a perception of the object but a change in the physical structure of human cells.¹⁴⁵ This is important because the Appellate Body in *European Communities—Asbestos* ruled that carcinogenicity is a physical property within the like products analysis.¹⁴⁶ This finding was controversial: the panel below declined to consider health effects under the physical properties criterion.¹⁴⁷ However, given that the Appellate Body took this step, there is no reason to believe that other Lockean tertiary qualities could not also be deemed physical properties, including the power of an object itself to contribute to climate change by releasing emissions.¹⁴⁸

141. See *Property*, OXFORD ENGLISH DICTIONARY ONLINE (3d ed. 2007) (including examples from recent works that use color as an example of a property).

142. *Id.* at 141–43.

143. See, e.g., Michael Jacovides, *Locke's Distinctions Between Primary and Secondary Qualities*, in THE CAMBRIDGE COMPANION TO LOCKE'S 'ESSAY CONCERNING HUMAN UNDERSTANDING' 101, 125 (Lex Newman ed., 2007) (noting that in Locke's view powers to cause change in other objects explains little given their dependency on features outside the object).

144. *Id.* at 112–13.

145. Cf. LOCKE, *supra* note 132, 135, 140–41 (enumerating types of qualities). R

146. *EC—Asbestos*, *supra* note 23, ¶ 114 (“This carcinogenicity, or toxicity, constitutes, as we see it, a defining aspect of the physical properties of chrysotile asbestos fibres.”). R

147. *Id.* ¶¶ 113–14.

148. See Rowland, *supra* note 74, at 107 (“The carbon footprint of a product when it is used is clearly a characteristic of that product.”). R

Given that the manufacturing process releases most emissions associated with many goods,¹⁴⁹ pragmatism dictates that for the purposes of trade law, emissions from manufacturing an object should also be considered a property. To make the syntax comport more with the idea of a property as a feature of an object, lawmakers might instead refer to *the condition of being manufactured from a process which releases x quantity of greenhouse gas emissions*. This condition would plausibly fit within the original, broader physical properties criterion. The Appellate Body in *Japan—Alcoholic Beverages* defined physical properties as the “product’s properties, *nature and quality*.”¹⁵⁰ The condition of manufacturing could also fit within the current, narrower interpretation of the criterion of physical properties.

The most significant intuitive problem with viewing emissions as a property within even an adapted Lockean framework is that doing so relies on a broader notion of properties that does not depend on their incorporation into an object. Carcinogenicity, and other tertiary qualities or powers, arise from the physical structure of an object, and therefore in some way are incorporated into that object. The greenhouse gas emissions that result from manufacturing a product do not arise from that object’s structure. Instead, they are a historical fact about the object. Yet, as the next section demonstrates, in certain contexts similar historical facts are considered properties.

B. *Manufacturing-Based Emissions as a Historical Fact*

Historical facts are important distinguishing features of objects, especially works of art or relics or artifacts of any kind. For example, the philosopher Nelson Goodman argued that authorship, which he refers to as a “historical fact,” is critical for “autographic”¹⁵¹ works of art because authorship distinguishes authentic works from forgeries.¹⁵² In other words, to

149. Cf. Edgar G. Hertwich & Richard Wood, *The Growing Importance of Scope 3 Greenhouse Gas Emissions from Industry*, 13 ENVTL. RES. LETTERS 1, 8 fig. 4 (2018) (showing that for manufactured goods as a whole, scope 3 emissions, or those associated with creating inputs for an activity, are far larger than scope 1 emissions, or those directly associated with an activity).

150. *Japan—Alcoholic Beverages II*, *supra* note 23, at 20 (emphasis added).

151. NELSON GOODMAN, *LANGUAGES OF ART: AN APPROACH TO A THEORY OF SYMBOLS* 113, 116 (1968).

152. *Id.* Autographic types of art are those, like paintings, where a distinction can be drawn between an original and forgeries. In contrast, “allo-

argue that a forged painting, indistinguishable in every physical detail, is meaningfully different from the original, one must refer to historical facts such as authorship. Similarly, with religious relics or archaeological artifacts, the events people believe the relic or artifact experienced become important properties of that object: for example, having belonged to or been touched by a particular person, or used in a certain historical event. Historical associations are essential to descriptions of such artifacts and differentiate them from other objects. Barry Bonds's record-breaking 756th home run ball is a modern example of this concept. The ball, which sold for over \$750,000, differs from other baseballs only in the events it experienced, yet your average baseball fan would attach far greater value to it than to another ball.¹⁵³ These are all examples where historical facts seemingly morph into properties—and at the very least, become crucial for the valuation of the objects in question.

The WTO would likely be sensitive to historical facts of this kind in certain circumstances. Imagine a domestic law that made it a crime to create, distribute or sell forgeries of works of art.¹⁵⁴ Now imagine a challenge by countries where such forgeries predominantly originate under the National Treatment clause of the GATT or TBT. Part of the discussion would be over whether original paintings and forgeries were *like products*. Although the paintings might be physically indistinguishable, the historical fact of authorship is important enough to the competitive relationship between originals and forgeries that a WTO panel would likely consider them unlike.

These examples are specific to their contexts. For example, physical penmanship is not as crucial a property for what Goodman calls “allographic” works of art,¹⁵⁵ such as written

graphic” works like written texts or musical compositions are those where such a distinction cannot be drawn—there is nothing essential to the work of art about the original notation of it, although such original manuscripts may have value as artifacts. *Id.* at 113–16.

153. Jack Curry, *Deal Struck as Hall Receives Home Run Ball Hit by Bonds*, N.Y. TIMES (July 2, 2008), <http://www.nytimes.com/2008/07/02/sports/baseball/02ball.html>.

154. Assuming for the sake of simplicity that these are not copyrighted works so that the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) does not become relevant.

155. GOODMAN, *supra* note 152, at 113–15.

works or musical scores, as is who held the brush in creating a painting. In other words, with written works or musical scores, accurate reproductions of the physical text are as genuine as the original—there are no such things as forgeries of a musical score or a poem.¹⁵⁶ Yet the above examples demonstrate that some historical facts matter greatly in certain situations. In those situations, the WTO dispute settlement bodies would likely waive the typical incorporation requirement for physical properties.

It is true that the historical facts of authorship or event experiencing are associated with different ethical or aesthetic values than the historical fact of manufacturing emissions. Authorship boils down to a question of authenticity, a feature which consumers will pay a premium for, while the value of relics seems to lie in some connection between the history-making nature of the events experienced and the object. However, the fact that consumers will pay for authenticity or a piece of history does not mean that such features are *physical* properties. Nor would consumers' willingness to pay more for goods produced in an environmentally friendly manner automatically make that PPM a physical property. These examples simply show that there are situations where historical facts affect the competitive relationship between objects in a way potentially significant to the WTO. The section that follows lays out the case for classifying manufacturing emissions as a physical property of the finished product.

C. *The Pragmatic Argument: Historical Facts that Correspond to Tertiary Qualities*

There is a strong pragmatic argument for setting aside the incorporation requirement of physical properties when it comes to harmful side-effects of manufacturing. Saying an object has the power to create harm is, in effect, a statement about the probability that harm will occur because of that object. This probability need not be a certainty for a government or panel to consider the risks important enough to spur regulation. Illustrating this, the *EC—Asbestos* panel referred to “health risks” of asbestos-containing cement, rather than health *effects*.¹⁵⁷ The panel relied on the factual record, which

156. *Id.*

157. *EC—Asbestos*, *supra* note 23, ¶ 116.

generally indicated that asbestos-containing cement releases asbestos as a result of “weathering,” exposure over time to wind and rain, or as a result of “interventions” such as sawing or demolition.¹⁵⁸ However, those events are not certain to occur to any individual cement block or panel. Asbestos-containing cement, considered at the point of sale, could be destined for installation and removal in a manner that poses minimal danger to human health, and still be subject to the ban.

This lack of certainty that a block of cement would ever release carcinogenic asbestos did not prevent the Appellate Body from classifying carcinogenicity as a physical property of cement products.¹⁵⁹ Given the Appellate Body’s findings, the distinction between a harm arising in the past, such as the emissions from manufacturing a good,¹⁶⁰ and a merely probable future harm is tenuous. The growing sophistication of life-cycle analysis makes determining the impacts arising from manufacturing and disposing, in addition to using, products, increasingly more accurate.¹⁶¹ A carbon tax or permit based on life-cycle carbon emissions recognizes that these manufacturing and disposal impacts are as much externalities to the transaction of a good as impacts from using that good, if not more so.¹⁶²

The emissions released in manufacturing a product therefore ought to be deemed a property of that object within the WTO. The property is *physical* because the mechanisms by which the emissions are created and make an impact are all physical. Moreover, the property corresponds to the power to generate climate-forcing emissions, which would undoubtedly be a tertiary quality if incorporated in an object. Imagining two versions of the same product, one of which emitted a great

158. See Panel Report, *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products*, ¶¶ 5.192–96, WTO Doc. WT/DS135/R (adopted Sept. 18, 2000) (transcript of expert testimony).

159. *EC—Asbestos*, *supra* note 23, ¶ 114.

160. This note treats the emissions as essentially contemporaneous with the harm from climate change because concentrations of greenhouse gases are currently so high that it is all but certain that any further emissions will contribute to climate-change-induced harms.

161. Hauschild & Huijbregts, *supra* note 17, at 2–4.

162. Norpoth, *supra* note 16, at 578; see also McAusland & Najjar, *supra* note 3, at 769 (incorporating Life Cycle Analysis in the design of a carbon footprint tax).

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deal of greenhouse gases, and one of which did not, there is little doubt that the WTO would consider these two products physically distinct, following the reasoning of *European Communities—Asbestos*.¹⁶³ Pragmatically, there is no reason to draw a distinction between this scenario and a scenario where the emissions arise at an earlier stage in the life cycle of the product.

D. *Legal Objections*

Legal scholars are typically skeptical that carbon emissions from production would matter to a like products analysis.¹⁶⁴ For example, McLure states that “[t]he predominant opinion is that products that are physically identical would be found to be ‘like,’ regardless of the amount of carbon embedded in them.”¹⁶⁵ Yet this skepticism, though instinctive and deep-running, has limited textual foundations. McLure quotes from the former head of the Trade and Environment Division at the WTO but cites no cases, instead apparently relying on the intuition that emissions are not incorporated and therefore not a property.¹⁶⁶

1. *European Communities—Seal Products*

The recent *European Communities—Seal Products* decision provides the strongest evidence against this note’s position.¹⁶⁷ In that case, the Appellate Body discussed what could be considered *product characteristics* under the TBT Agreement. The EU measures at issue in *EC—Seal Products* banned the sale of seal products or products containing seal on the European

163. Indeed, low-fuel economy and high fuel economy vehicles were deemed unlike in *United States—Automobile Taxes*. Report of the Panel, *United States—Taxes on Automobiles*, ¶ 5.26 (Oct. 11, 1994), 33 I.L.M. 1397, 1451 (1994), but as that case was decided using a now disavowed “aims and effects” test it is not conclusive evidence for the present argument. See Howse & Eliason, *supra* note 1, at 92.

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164. See, e.g., Rowland, *supra* note 74, at 107 (citing Bradley J. Condon, *Climate Change and Unresolved Issues in WTO Law*, 12 J. INT’L ECON. L. 895, 909–10 (2009)) (stating that “the carbon content of the production process is not inherent to the product” and so not likely to be a physical property for a like products analysis).

165. McLure, *supra* note 4, at 256.

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166. *Id.* at 256–57.

167. *EC—Seal Products*, *supra* note 56.

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market unless: (1) that seal was hunted by Inuit or other indigenous communities in a traditional manner and for their subsistence; or (2) the seal was hunted according to a national marine mammal management plan and not sold for profit.¹⁶⁸ Canada and Norway challenged the measures as violations of TBT Article 2 and GATT articles I:1 and III:4, among other provisions, and the panel largely found in their favor.¹⁶⁹

Both the challenging parties and the defendant appealed the panel decision, giving the Appellate Body the chance to comment on the definition of a *product characteristic*. The Appellate Body first considered whether the measures constituted a technical regulation under the definition in Annex I to the TBT. Annex I defines a technical regulation as a measure that “la[ys] down product characteristics” or their related process and production methods or sets out “applicable administrative provisions.”¹⁷⁰ The Appellate Body found the measures did not constitute a technical regulation, because “the identity of the hunter, the type of hunt, and the purpose of the hunt” did not constitute characteristics of the final seal products, and so the measure did not lay down product characteristics.¹⁷¹ In this finding, the Appellate Body referred to its decision in *EC—Asbestos*, where it concluded that product characteristics under the TBT include “objectively definable ‘features’, ‘qualities’, ‘attributes’, or other ‘distinguishing mark[s]’ of a product” such as tensile strength, texture, or conductivity.¹⁷² The Appellate Body in *EC—Seal Products* saw “no basis in the text of Annex 1.1, or in prior Appellate Body reports, to suggest that the identity of the hunter, the type of hunt, or the purpose of the hunt could be viewed as product characteristics.”¹⁷³

168. *Id.* ¶ 4.5.

169. *Id.* ¶¶ 1.5, 1.7–1.8. The panel found that the measures were a technical regulation that violated TBT Article 2.1. It found the measures also violated GATT Articles I:1 and III:4, and that the GATT violations were not justified under GATT Article XX. Panel Report, *European Communities—Measures Prohibiting the Importation and Marketing of Seal Products*, ¶¶ 7.600, 7.609, 7.650–51, WTO Doc. WT/DS401/R (adopted Nov. 25, 2013).

170. *EC—Seal Products*, *supra* note 56, ¶ 5.1 (quoting TBT Agreement, *supra* note 12, at Annex 1.1).

171. *Id.* ¶ 5.45.

172. *Id.* ¶ 5.11 (citing *EC—Asbestos*, *supra* note 23, ¶ 67).

173. *Id.* ¶ 5.45. The Appellate Body granted some credence to the argument that the measure mandated product characteristics for *all* products—i.e. it required all products to not contain seal except in very specific circum-

Relatedly, although carrying less precedential value, the panel in *United States—Malt Beverages*, a case decided under the GATT, found that beers from microbreweries and beers from large breweries are like products.¹⁷⁴ By implication, brewery size, a historical fact about the production method of beer, is not a relevant product characteristic.¹⁷⁵

One might consider *EC—Seal Products* and *U.S.—Malt Beverages* evidence that manufacturing emissions associated with producing an object would *not* be considered physical properties by the Appellate Body. After all, manufacturing emissions are a fact about the production of a product, much like hunter identity or type or purpose of hunt, or even brewery size. However, such an extrapolation is incorrect for at least two reasons. First, the definition of a product characteristic in *Seal Products* is specific to the TBT definition of a technical regulation. In a footnote elaborating why it did not consider hunter identity or type of hunt to be characteristics, the Appellate Body focused on the fact that it was interpreting the agreement on *technical* barriers to trade. They asserted that:

Article 2.9 of the TBT Agreement envisages that technical regulations have ‘technical content’. . . . [I]t does not appear plausible that a measure that purportedly distinguishes between seal products on the basis of . . . the identity of the hunter and the purpose of the hunt would be ‘technical’ in nature or have ‘technical’ content.¹⁷⁶

Therefore, the conclusion that hunter identity does not count as a property of a product may not apply equally in the less technical Articles I and III of the GATT, or in the like products test of TBT Article 2.1.

Second, even if the same standard did apply in those articles, carbon emissions are precisely the sort of “objectively definable” feature the Appellate Body declared fell under the

stances. However, it did not consider this a “main feature” of the provisions and so did not change its ultimate conclusion. *Id.* ¶¶ 5.39, 5.58.

174. *U.S.—Malt Beverages*, *supra* note 62, ¶ 5.19.

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175. *Id.* (“[B]eer produced by large breweries is not unlike beer produced by small breweries. Indeed, the United States did not assert that the size of the breweries *affected the nature of the beer produced or otherwise affected beer as a product.*”) (emphasis added).

176. *EC—Seal Products*, *supra* note 56, ¶ 5.45 n.942.

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definition of a product characteristic.¹⁷⁷ Emissions are quantifiable and so directly and universally verifiable in a way that the ethnic identity of a hunter, or the use of traditional hunting methods, are not.¹⁷⁸ This verification is possible in part because emissions cause physical changes to the world in a way that brewery size, as well as hunter identity and purpose of a hunt, do not.¹⁷⁹ Emissions are a certain *type* of historical fact, one which parallels a tertiary quality in the finished product. The identity of the hunter of a seal or whether it was caught using traditional methods or brewery size do not similarly correspond to tertiary qualities in seals or beer. Accordingly, there is no equivalent pragmatic argument available regarding certain past harms and uncertain future ones for those qualities.¹⁸⁰

2. *Zooming Out: Unincorporated PPMs*

Some may still argue that Appellate Body decisions establish that only those features of the production process that are incorporated into the final product are product characteristics. For example, Jagdish Bhagwati and Petros Mavroidis view the holding of *EC—Asbestos* as establishing such a distinction, writing, “[t]he key to understanding the Appellate Body’s opinion is the manner in which it construed physical characteristics . . . [t]he process, in this case, is incorporated into the final product.”¹⁸¹ Bhagwati and Mavroidis emphasize that the distinction between cement blocks was based on the incorporation of either asbestos fibers or synthetic fibers into the cement.

However, viewing the asbestos fibers as a process and production method that was somehow incorporated into the final product of cement is a fundamental mistake.¹⁸² Under the law

177. *Id.* ¶ 5.11.

178. The measure’s focus on ethnic identity may be crucial for this distinction—because the name of the person who killed a seal would seem to be objectively definable, even while that person’s ethnicity might not be.

179. *See infra* Section VI.E.

180. *See supra* note 163 and accompanying text.

181. Bhagwati & Mavroidis, *supra* note 1, at 304.

182. *See, e.g.*, DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELE, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 1229 (4th ed. 2011) (“Notably, the *Asbestos* case did not address a PPM-based measure, but rather products that were physically different (i.e. that did, and did not, contain asbestos.”));

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at issue, the differentially taxed concrete was made either out of asbestos or out of non-asbestos fibers. Thus, asbestos fibers were not a byproduct of the manufacturing process of the cement but were rather a component part of that cement, and one that affected the toxicity of the cement once it weathered.¹⁸³ *EC—Asbestos* is therefore simply not about whether PPMs must be incorporated into a product to be relevant to a like products analysis.¹⁸⁴ As proof of this, there is no discernible statement about incorporation of PPMs in the case. Similarly, although Mexico argued that “unincorporated PPMs” could not be relevant to product likeness in *U.S.—Tuna II*,¹⁸⁵ neither the panel¹⁸⁶ nor the Appellate Body¹⁸⁷ addressed this argument directly. In finding that products were like, the panel certainly implied that coming from a country without dolphin-safe fishing practices, one particular PPM/historical fact, would not differentiate products. Yet both the panel and Appellate Body avoided a sweeping claim about whether unincorporated PPMs could ever be relevant to likeness, and instead focused on whether the products were like.

Yet the Appellate Body has also not clearly said that PPMs are always or even sometimes relevant to likeness. The closest

Steve Charnovitz & Carolyn Fischer, *Canada—Renewable Energy: Implications for WTO Law on Green and Not-So-Green Subsidies*, 14 *WORLD TRADE REV.* 177, 201 (“*Asbestos*, of course, was about product characteristics and not PPMs . . .”).

183. *EC—Asbestos*, *supra* note 23, ¶ 128.

184. See Charnovitz, *supra* note 7 at 90 (“[The *EC—Asbestos* Panel decision] was not a PPM decision since the French ban was based on the dangers of the product to the user; but if the decision had been upheld, it would have had negative implications for PPMs.”); Howse & Eliason, *supra* note 1, at 68 (making the same critique of Bhagwati & Mavroidis’s argument).

185. Panel Report, *United States—Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, ¶ 7.232, WTO Doc. WT/DS381/R (adopted Sept. 15, 2011) [hereinafter *U.S.—Tuna II*].

186. See *id.* ¶¶ 7.233-7.234 (ignoring this contention); *id.* ¶¶ 7.240–51, 7.378 (finding Mexican and American tuna products to be “like products” on the basis of the traditional four criteria, though ultimately finding that the measures did not treat Mexican tuna less favorably).

187. The finding of likeness was not appealed, so the Appellate Body did not consider Mexico’s claim about unincorporated PPMs, though it did overturn the panel and find less favorable treatment. Appellate Body Report, *United States—Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, ¶ 298–99, WTO Doc. WT/DS381/AB/R (adopted May 16, 2012).

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the Appellate Body came to doing so was in *Canada—Renewable Energy*.¹⁸⁸ *Canada—Renewable Energy* concerned a feed-in-tariff¹⁸⁹ with a local content requirement for participating energy providers. This local content requirement clearly treated the foreign suppliers of energy equipment less favorably than domestic suppliers, but Canada claimed a derogation from the norms of National Treatment under GATT Article III:8.¹⁹⁰ Article III:8 allows governments to favor domestic suppliers when they procure goods under certain circumstances.¹⁹¹

Determining the propriety of a government invocation of Article III:8 involves first determining whether the foreign goods discriminated against are competitive with the domestic products.¹⁹² Critically, the Appellate Body said, “[w]hat constitutes a competitive relationship between products may require consideration of inputs and processes of production used to produce the product.”¹⁹³ In another case, the Appellate Body reinforced that the like products test ultimately is a way of determining whether products are in a “competitive relationship.”¹⁹⁴ Assuming the phrase has the same meaning across articles, this statement lends support for considering PPMs in a like products analysis.

188. See Charnovitz & Fischer, *supra* note 182, at 202–03 (noting that both the statement at ¶ 5.69 and the recognition of separate markets for clean and renewable energy in the context of subsidies at ¶¶ 5.177–5.178 could be helpful for those who argue governments can legally regulate PPMs within the WTO framework).

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189. A feed-in tariff is essentially a favorable long-term guaranteed price per unit of a product, in this case electricity, to be delivered to the government. *Id.* at 179.

190. Appellate Body Report, *Canada—Certain Measures Affecting the Renewable Energy Generation Sector*, ¶¶ 1.2, 4.17–23, 5.17, WTO Doc. WT/DS412/AB/R (adopted May 6, 2013) [hereinafter *Canada—Renewable Energy*].

191. GATT, *supra* note 11, art. III:8(a) (“The provisions of this Article shall not apply to laws, regulations or requirements governing the procurement by governmental agencies of products purchased for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale.”).

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192. See *Canada—Renewable Energy*, *supra* note 190, ¶ 5.63 (“Article III:8(a) thus concerns, in the first instance, the product that is subject to the discrimination.”).

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193. *Id.*

194. See, e.g., *U.S.—Clove Cigarettes*, *supra* note 24, ¶¶ 111–12; *EC—Asbestos*, *supra* note 23, ¶ 99 (in the context of GATT Article III:4).

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The statement in *Canada—Renewable Energy* regarding PPMs was arguably dicta. The Appellate Body ultimately held that the derogation of Article III:8 is only available where the competitive relationship is between the product procured and the product discriminated against. This was not true in the matter before it, where the Canadian government procured energy while discriminating against foreign solar panels and turbines.¹⁹⁵ The Appellate Body did not need to consider PPMs to determine whether the products being discriminated against were competitive with those being procured, since they clearly were not.¹⁹⁶ Therefore, the statement about PPMs did not affect the holding of the case, but represents a foothold for advocates of considering PPMs.

3. *Drafting History*

Drafting history supports a broad concept of physical properties and a correspondingly narrow concept of likeness that makes only a relatively small subset of pairs of products like. For example, drafting history for Article I, Most Favored Nation status, suggests a concept of like products that distinguishes between plants at the genus level. This means, for example, distinguishing wheat cereals from other forms of cereal and between manufactured goods based on somewhat arbitrary numeric thresholds in measurements such as weight.¹⁹⁷ This supports the broad reading of the physical properties prong of the like products test argued for by this note.

Similarly, drafting history for Article III, National Treatment, supports a narrow reading of *like*, which would differentiate between merely similar products.¹⁹⁸ Drafting history for the Agreement on Subsidies and Countervailing Measures also supports a broad reading. The definition of like products in

195. *Canada—Renewable Energy*, *supra* note 190, ¶¶ 5.74–75, 5.79.

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196. *Id.*

197. See CHOI, *supra* note 20, at 94–95 (referencing statements during the drafting of the GATT by the U.S. rapporteur to the effect that wheat cereals and other cereals would not be considered *like* and by a committee chair that automobiles above and below 1500 kilograms would not be like).

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198. Rex J. Zedalis, *A Theory of the GATT “Like” Product Common Language Cases*, 27 VAND. J. TRANSNAT’L L. 33, 67 (1994) (noting that a subcommittee draft of this article used the phrase “identical or similar products” and that “the very scope of likeness would seem informed by the subcommittee’s use of the term ‘identical.’”).

that agreement, provided in a footnote, changed between a draft and the final text by dropping the word “physical” from the phrase “physical characteristics closely resembling those of the product under consideration.”¹⁹⁹ Though this treaty post-dates the GATT and its definition is not incorporated in the GATT, it does govern the question of border tax adjustments on outbound goods, such as rebating a carbon tax for exports to countries without one, and whether border tax adjustments constitute a subsidy.²⁰⁰

E. *Other Objections*

Beyond its legality, the proposal above for considering historical emissions a physical property might be criticized for opening a “Pandora’s box”²⁰¹ of what can be considered properties. For example, one might argue that by the same logic, past uses of manufactured goods would also affect likeness. In other words, two cars, identical in every respect, could be found different because one had already been driven and emitted more greenhouse gases than the other, which would be an irrational and potentially boundless source of differentiation. However, the grounding of the above proposal in life cycle analysis explains the difference. A more emissions-heavy manufacturing process changes the total lifetime emissions associated with an object, from creation to disposal. Yet two identical cars, manufactured in the same way and considered from their inception, have the same probable lifetime and the same probable lifetime emissions.²⁰² The used car in the hypothetical above has simply used more of those emissions up than the other, and the new car will, at least in theory, catch up with time.

Another mistaken objection would be that this proposal classifies wage and hour violations, animal slaughtering practices, and any other facts about the manufacturing process as

199. Konstantinos Adamantopoulos & Diego De Notaris, *The Future of the WTO and the Reform of the Anti-Dumping Agreement: A Legal Perspective*, 24 *FORDHAM INT’L L.J.* 30, 36 (2000); see SCM Agreement, *supra* note 76, art. 15.1 n.46. R

200. SCM Agreement, *supra* note 76, Annex I(h), Annex II.I(2). R

201. John H. Jackson, *World Trade Rules and Environmental Policies: Congruence or Conflict?*, 49 *WASH. & LEE L. REV.* 1227, 1243 (1992)

202. For a description of how a life cycle analysis of carbon emissions might work, see McAusland & Najjar, *supra* note 3, at 769. R

physical properties. Were that the case, many more trade-limiting measures would be deemed legal. This concern is addressed in two ways. First, to be faithful to the Appellate Body's test for like products, which refers to *physical* properties, this proposal only states that manufacturing impacts that occur through *physical* channels should count as properties. One can roughly implement this test by asking whether there is a chain of cause and effect, which, outside of an initial process-design decision, does not feature human agency.²⁰³ Removing the contingency of human agency ties the manufacturing-associated-impacts more closely to the ultimate product and closer to a necessary condition of its existence. This criterion excludes the examples given of wage and hour violations or animal slaughtering methods, which depend on decisions of supervisors to withhold wages, or of workers to follow a certain slaughtering technique.

However, on a strictly materialist view of the world, even those decisions might be considered physical effects of the manufacturing process that occasioned them. There must be, therefore, an additional way of addressing this concern. This is accomplished by requiring that the harmful effects of a manufacturing process be impacts that could conceivably also arise from use or disposal of *a* product on the market. The key point is whether the power to cause the impact—the corresponding tertiary quality—would ordinarily lead to consumers differentiating between two products on the basis of said power. This limitation is an assumption behind the pragmatic argument above regarding the certainty of harms of manufacturing and the uncertainty of harms from product use.²⁰⁴ Wage and hour violations or method of slaughter do not meet this threshold criterion: they do not correspond to tertiary qualities of consumer goods. Consumers likely do not care whether climate forcing potential lies in the use of a product or in its manufacturing. They feel the effects of climate change either way. Thus manufacturing-associated emissions likely af-

203. *See id.* at 779 (noting that “the externality arising from CO₂e emissions is mechanical in nature” and comparing that to “moral externalities” such as concern over working conditions).

204. *See supra* Section VI(C).

fect the competitive relationship between products in a similar way to fuel economy.²⁰⁵

As a possible further limiting principle, one could stipulate that only the physical effects of foreign manufacturing *that directly impact the regulating country* should count as physical properties. In other words, this principle would limit the broad definition of physical properties to those PPMs that cause transboundary harms. Many international law scholars argue that this distinction between transboundary harms and harms felt purely in the country of origin is or should be relevant for trade law.²⁰⁶ Clearly climate change from greenhouse gas emissions *is* a transboundary harm and a harm to a global commons.²⁰⁷

However, the limitation to transboundary harms is not strictly necessary for compliance with WTO law. The Appellate Body came close to requiring something like transboundary harm for an Article XX(g) justification in *U.S.—Shrimp*. It said that “in the specific circumstances of the case before us, there is a sufficient nexus between the migratory and endangered marine populations involved and the United States for purposes of Article XX(g),”²⁰⁸ suggesting there is some requirement of a connection between the environmental harm and the regulating state. However, in the sentence before, the Appellate Body declined to rule on the question of “whether

205. *But see* Rowland, *supra* note 74, at 106 (noting that the substitutability for some consumers of products with different use-based emissions poses problems for this analogy given the holding in *United States—Clove Cigarettes* that a subset of consumers finding goods substitutable may be enough for the consumer preferences prong of the like products test).

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206. Kysar, *supra* note 7, at 545 (citing DANIEL C. ESTY, GREENING THE GATT: TRADE, ENVIRONMENT, AND THE FUTURE 121–25 (1994), and ORG. FOR ECON. COOPERATION & DEV., PROCESSES AND PRODUCTION METHODS: CONCEPTUAL FRAMEWORK AND CONSIDERATIONS ON USE OF PPM-BASED TRADE MEASURES 12 (1997) as both differentiating among process-related harms based on whether they were experienced by the regulating country, in which case they were more likely to be legitimate subjects of regulation).

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207. *Cf.* United Nations Framework Convention on Climate Change pmbl., May 9, 1992, 1771 U.N.T.S. 107 (“Acknowledging that change in the Earth’s climate and its adverse effects are a common concern of humankind . . .”).

208. *U.S.—Shrimp*, *supra* note 105, ¶ 133.

there is an implied jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation.”²⁰⁹

Moreover, that discussion was in the context of Article XX. For the purposes of a like products test, harms to third parties, even in other countries, can and do affect the competitive relationship between otherwise similar products.²¹⁰ While in the cases reviewed for this note, the WTO has not examined consumer preferences based on harms to *human* third parties,²¹¹ it is at least possible that such preferences could make products unlike.²¹² Those arguing that whether a trade measure targets transboundary, as opposed to purely foreign, harms affects its WTO legality are arguably concerned with the legitimacy of the regulatory purpose behind the measures.²¹³ Yet the Appellate Body established that regulatory purpose is not a relevant consideration at the stage of determining whether products are like.²¹⁴ The push to consider only trans-

209. *Id.*

210. Kysar, *supra* note 7, at 529 (noting that “[c]onsumers . . . often have preference for processes” that is not dependent on those consumers’ immediate well-being, including for manufacturing processes without labor violations or ecological harms).

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211. Arguably there have now been several cases examining laws whose motivation concerned consumers preferences for the well-being of animals, e.g. *European Communities—Seal Products* and *United States—Shrimp*. Yet those cases were resolved, at least at the Appellate Body, without performing a like products analysis. There was no analysis in *Seal Products* because the measure was not a technical regulation, and none in *Shrimp Products* because the United States never contested, even before the panel, the violation of Article XI, but only whether the measure fit within the Article XX exceptions. *U.S.—Shrimp*, *supra* note 105, ¶ 7.11–.17.

212. See Howse & Regan, *supra* note 7, at 273–74 (arguing that no government limits its use of regulatory authority to constraining only behavior that directly impacts the majority, as opposed to behavior that offends majoritarian moral sensibilities including concern for the welfare of animals).

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213. See, e.g., ESTY, *supra* note 206 at 121 (“The more clearly the source of the harm can be identified and the more directly the harm affects a party, the stronger is that party’s claim of right to invoke trade measures unilaterally in response to the environmental injury”); *id.* at 123 (“Where the harm results from transboundary pollution spillovers, the threshold for establishing a legitimate environmental interest should be relatively low.”).

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214. *U.S.—Clove Cigarettes*, *supra* note 24, ¶ 116 (“[W]e do not consider that the concept of ‘like products’ in Article 2.1 of the *TBT Agreement* lends itself to distinctions between products that are based on the regulatory objectives of a measure.”); see also Ravi Soopramanien, *Never For-GATT: What Recent TBT Decisions Reveal About the Appellate Body’s Analysis of Environmental*

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boundary harms of manufacturing as relevant in a like products analysis therefore seems, at least for now, unwarranted.

VII. THE COMPETITIVE RELATIONSHIP

Establishing manufacturing-associated emissions as a physical property would not, on its own, establish that products are unlike. In recent decisions, the Appellate Body said that all the prongs of the like products test are primarily relevant insofar as they establish whether two products are in a competitive relationship.²¹⁵ Therefore, even if GHG emissions from manufacturing are a physical property, the Appellate Body or a panel following it would need to find that emissions-heavy and emissions-light products are sufficiently *uncompetitive* to find the two products unlike. This is an empirical, product-specific analysis that could well not support the view put forward in the argument above.²¹⁶ However, the burden-shifting framework established in *EC—Asbestos* would be helpful to defendant countries. Under that framework, once two products differ significantly in their physical properties, the burden lies with the complainant to prove that end uses and consumer preferences nevertheless make the products like.²¹⁷ If carbon emissions are a physical property, the burden of proving the products are in a competitive relationship would land on those arguing emissions heavy and light versions are like. The potential success of this argument and what facts the parties would need to prove regarding the competitive relationship are fruitful lines of further research.

VIII. CONCLUSION

Acknowledging the common focus among both philosophers, legal scholars, and lay persons on incorporation as es-

Regulation Under the WTO Agreements, 17 SUSTAINABLE DEV. L. & POL'Y 4, 12 (2016) (“[A]n inquiry into regulatory purpose under the TBT has been limited to a non-discrimination analysis of ‘even-handedness’ between imported and domestic products . . .”).

215. *U.S.—Clove Cigarettes*, *supra* note 24, ¶¶ 111–12 (in the context of Article 2.1 of the TBT Agreement); *EC—Asbestos*, *supra* note 23, ¶ 99 (in the context of GATT Article III:4).

216. *Cf. EC—Asbestos*, *supra* note 23, ¶ 102 (“[T]he adoption of a particular framework to aid in the examination of evidence does not dissolve the duty or the need to examine, in each case, all of the pertinent evidence.”).

217. *Id.*, ¶ 118.

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sential to the definition of *property*, this note nevertheless notes several examples of historical facts such as authorship or event-experiencing, which are not incorporated into objects, but may be the most important distinguishing features of objects. This note argues that in the WTO context, the particular historical fact of emissions from manufacturing a product should be deemed a property of the product. The note offers pragmatic reasons for why this is so, based on relative certainty of harms to the environment at various points in the life-cycle of a product. This solution avoids the problems that plague the other proposed solutions for justifying a carbon tax or cap-and-trade scheme applied to imports within international trade law. Moreover, adopting this interpretation of physical properties fits within the holdings of Appellate Body decisions and provides a feasible path forward for reconciling a commitment to open markets with the urgent need to avoid the precipice towards which unabated emissions are driving our planet.

