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THE IMPACT OF NEW TECHNOLOGIES ON MULTILATERAL TRADE REGULATION AND GOVERNANCE

THOMAS COTTIER*

We cannot and should not put genies back in bottles. But we must devote more of our attention to the public policy implications of global technological development and integration.

F.M. Abbott (1995)

INTRODUCTION

The last fifty years have seen dramatic changes in the development of international law and relations: Decolonization substantially increased the number of state actors but eventually affirmed classical notions of sovereignty in an new era of international cooperation; the advent of Human Rights as an international concern shaped new values and interventions in what formerly was considered a purely domestic affair with the exception of minority rights. Yet, if I had to choose the single most influential factor in international law, and in particular in the regulation of economic activities since World War II, it would be the progress of science and technology. This advance has shaped both the substance of law and the way international law is made, more so than the other factors such as the multiplication of state and nonstate actors, theory, or valuational changes affecting human behavior and conduct in international relations.¹

In customary international law, the evolution of the continental shelf doctrine² in the Law of the Sea during the 1950s and 1960s, as well as that of the exclusive economic zone³ some twenty years later,

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I am indebted to my colleagues at the Berne Institute of European and International Economic Law, Krista Nadakavukaren Schefer, J.D, attorney-at-law, and Marc Stucki, LL.M., attorney-at-law, for discussion, advice and suggestions.

1. Cf. A.E. Gotlieb, *The Impact of Technology on the Development of Contemporary International Law*, 170 COLLECTED COURSES OF THE HAGUE ACADEMY OF INTERNATIONAL LAW I, at 125-329 (1981).

2. See generally E.D. BROWN, *THE LEGAL REGIME OF HYDROSPACE* 3-78 (1971); R.R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 108-22 (1983).

3. See generally DAVID JOSEPH ATTARD, *THE EXCLUSIVE ECONOMIC ZONE IN INTERNATIONAL LAW* (1989); FRANCESCO ORIEGO VICUÑA, *THE EXCLUSIVE ECONOMIC ZONE: REGIME AND LEGAL NATURE UNDER INTERNATIONAL LAW* (1989); Anne Hollick, Note and Comment, *The Origins of 200-Mile Offshore Zones*, 71 AM. J. INT'L L. 494, 494-500 (1977).

are among the most impressive recent examples of the effect of particular technologies on law. Like before when the advent of artillery established the breadth of the territorial seas (the "cannon-ball rule"), it was technology that brought about new claims and eventually the emergence of new sovereign rights over natural resources. Without new technologies to exploit off-shore oil and gas resources in the continental shelf, such legal development would not have taken place. Without the advent of large factory-ship fishing operations and freezing technologies, no need would have emerged to claim exclusive economic zones.

In the specific field of treaty-based multilateral trade regulation, a comparable observation can be made: when the General Agreement on Tariffs and Trade ("GATT") was framed in 1947, there were relatively few rules directly regulating technology or specific technologies. Since the industrial revolution, however, it has been technology that allows for the production of most products. A glance at tariff lines demonstrates the immense variety of commercial products technology has produced. Equally, technology allows for the relatively inexpensive transportation of goods and services and accounts for an unprecedented growth of international trade since the end of World War II. While world production quintupled, the amount of trade increased fourteen times in the same period.⁴ For a long time, it simply did not seem necessary to address particular technologies, or the specific problems relating to technology, in the realm of the GATT.⁵ Sophisticated technical advances, again, changed this perception in the 1970s. First, it became necessary to enact multilateral regulations on technical barriers to trade in the GATT Tokyo Round. These rules directly relate to technological requirements in order to ensure their safety while at the same time avoiding protectionist barriers to the importation of similar and competing products.⁶ Moreover, the production of civil aircraft became the first sector of high-technology to be directly

4. See WORLD TRADE ORGANIZATION, INTERNATIONAL TRADE, TREND AND STATISTICS 15 (1995) (measured as real increases).

5. One, if not the only, example is Article IV of the GATT 1947 specifically regulating the performance of cinematographic films and therefore an aspect of cultural services. We note that the same is true for the elaborate 1948 Havana Charter for an International Trade Organization. *United Nations Conference on Trade and Employment*, Havana, Cuba, U.N. Doc. ICITO/1/4 (1948). Beyond films, no provision was found which directly addresses particular technologies.

6. See Agreement on Technical Barriers to Trade, Apr. 12, 1979, reprinted in THE TEXTS OF THE TOKYO ROUND AGREEMENTS 1-25 (1986), amended by the Uruguay Round [hereinafter TEXTS OF THE TOKYO ROUND]; WORLD TRADE ORGANIZATION, THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS: THE LEGAL TEXTS 138 (1994); see also *Agreement on the Application of Sanitary and Phytosanitary Measures*, id. at 69.

addressed by a separate multilateral agreement.⁷ Second, an entirely new generation of technology-driven rules, discussed shortly, was born during the GATT Uruguay Round. Third, the need for effective rules on environmental protection increasingly emerged as a response to the use of traditional and often hazardous technologies created and applied before the coming age of sustainable development.⁸ This need will contribute to the shaping of future agendas of trade negotiations within the World Trade Organization (“WTO”).⁹

This Paper seeks to explore some of the factors which led to an enhanced influence of new technology in recent international trade regulation before and during the Uruguay Round. It suggests that both in the fields of intellectual property and in services, new technologies were the driving forces for establishing new rights and for seeking enhanced market access. This Paper, however, not only is interested in the substance of norms. It is equally interested in the present and future problems of how such rules are brought about, and what impact new technologies may have on what we may call “governance” or “multilateral governance” in international trade regulation.¹⁰ I submit that new technologies are important for the substance of decisions as well as for the structure of decision-making.

7. Tokyo Round Agreement on Trade in Civil Aircraft, *reprinted in* TEXTS OF THE TOKYO ROUND, *supra* note 6, at 181 (negotiations during the Uruguay Round did not produce amendments to this plurilateral agreement).

8. See generally *The Rio Declaration on Environment and Development*. U.N. Doc. A/CN.151/5/Rev.1, *reprinted in* 31 INT'L L. MATERIALS 876 (1992) [hereinafter *Rio Declaration*]; *Agenda 21*, *reprinted in* THE EARTH SUMMIT: THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED) 138 (Stanley P. Johnson ed., 1993) (in particular see Chapter 2(B), *Making trade and environment mutually supportive*).

9. See *Decision, Trade and Environment*, April 14, 1994, *reprinted in* 33 INT'L L. MATERIALS 1267 (1994); see also subsequent work to be adopted at the 1996 Ministerial Meeting. For a survey and discussion of trade related issues see, for example, *THE GREENING OF WORLD TRADE ISSUES* (Kym Anderson & Richard Blackhurst eds., 1992).

10. In contemporary international law and relations, “Governance” or “Good Governance” is mainly used in the context of development projects and strategies, depicting governmental qualities and conditions which are essential to bring about successful social and economic sustainable development. It is a most promising approach, introducing—even if somewhat late—the issue and importance of law, legal structures and processes into development programs. See generally *THE WORLD BANK, GOVERNANCE: THE WORLD BANK'S EXPERIENCE* (1994); *OECD, PARTICIPATORY DEVELOPMENT: FROM ADVOCACY TO ACTION* (Hartmut Schneider & Marie-Helene Libercher eds., 1995); *SUSTAINABLE DEVELOPMENT AND GOOD GOVERNANCE* (Konrad Ginther et al. eds., 1995). *Mutatis mutandis*, the term, is of equal help in the present context. It will help to frame essential structural and constitutional requirements of the multilateral trading system. See *infra* pp. 428-435.

I. TECHNOLOGY AND THE GENESIS OF THE TRIPS AGREEMENT AND GATS

Looking back at the genesis of the two new pillars of the WTO—the Agreement on Trade Related Aspects of Intellectual Property Rights (“TRIPS”)¹¹ and the Agreement on Trade in Services (“GATS”)¹²—new technologies played an essential role in both. While this was apparent in the field of intellectual property, it was a less visible engine for the field of services.

A. *The Agreement on Trade-Related Aspects of Intellectual Property Rights*

The importance of intellectual property rights (“IPRs”) in international trade has been recognized for a long time. In fact, the nineteenth century’s Paris and Berne Conventions¹³ were among the first attempts to achieve multilaterally acceptable trade standards, long before the GATT came into effect. Interestingly, however, these rules never developed into customary international law. A comparison of standards and rules of protecting investment and real property abroad and IPRs protection reveals a complete absence of the latter in the body of customary international law. No rules emerged with respect to compensation for the expropriation of intellectual property or with respect to the protection of trade secrets over the last decades.¹⁴ It is interesting and somewhat surprising to observe that customary law still is silent, and, for example, does not provide any guidance for settlement of IPR-related investment and trade disputes with states not or not yet Members of the WTO.

It appears to be a matter of speculation whether this was an omission due to ignorance, or whether for a long time there simply was no need to seek such protection in customary law. The history of attempts to revise the Paris Convention, however, suggests that these problems were well known, but that strategies focused exclusively on

11. See Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, LEGAL INSTRUMENTS RESULTS OF THE URUGUAY ROUND, vol. 31; 33 I.L.M. 365, 365-403 (1994) [hereinafter TRIPS Agreement].

12. See General Agreement on Trade in Services, reprinted in 31 I.L.M. 325, 325-64, amended by The Second Protocol to the General Agreement on Trade in Services (S/L 11 of 24 July 1995) and Related Decisions, reprinted in 35 I.L.M. 199, 199-205 (1996).

13. Paris Convention for the Protection of Industrial Property, March 20, 1883, as last revised at Stockholm, July 14, 1967, 828 U.N.T.S. 305; Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1883, as last revised at Paris, July 24 1971, 828 U.N.T.S. 221.

14. See J.H. Reichman, *Intellectual Property in International Trade: Opportunities and Risks of a GATT Connection*, 22 VAND. J. TRANSNAT’L L. 747, 776-81, 796-800 (1989) (elaborating on the obsolete distinction between tangible and intangible alien property).

treaty law. Yet these strategies faced long-lasting LDC opposition at the time of efforts towards a New International Economic Order in the 1970s and 1980s,¹⁵ before the change of previously hostile attitudes to IPR protection¹⁶ occurred during the Uruguay Round. This change was induced by many factors—both related and unrelated to IPRs—but it is fair to say that new technologies and the interest to share and participate in them, were among the driving forces for the developing countries to actively negotiate the TRIPS Agreement.¹⁷ Importantly, former policies of objecting to international rules of protection had not brought about the transfers of technology and the stimulation of their economies that these countries had expected.

From the viewpoint of industrialized countries, the need to establish effective and enforceable standards of IPRs in Member States of the WTO around the world became pressing for a number of reasons. First, with the increasing integration of developed and developing countries into the world market, it was no longer financially possible to leave these markets without IPR protection comparable to that of Western European and North American standards and traditions. While it is true that the prime motivation to begin the TRIPS negotiations can be found in the absence of adequate protection in LDCs, it would be wrong to assume that the results are limited to North-South relations. Quite the contrary. As the negotiations evolved, more and more problems among industrialized countries emerged and became the most difficult ones to overcome.

The need to promote IPR protection lies less in increasing trade flows than in the nature and quality of new technological products. Compared to the situation when the GATT was negotiated, the amount of intellectual input and components subject to IPR protection has increased considerably. In the United States, for instance, it was estimated that more than twenty-seven percent of U.S. exports

15. See Charter of Economic Rights and Duties of States, Dec. 12, 1974, UN (G.A. Res. 3281) (1974), reprinted in 14 I.L.M. 251, 251-65 (1975). The thinking of that period is reflected in LEGAL ASPECTS OF THE NEW INTERNATIONAL ECONOMIC ORDER (Kamal Hossain ed., 1980) and INTERNATIONAL LAW AND DEVELOPMENT (Paul de Waart et al. eds., 1988).

16. See, e.g., C. RAGHAVAN, RECOLONIZATION: GATT, THE URUGUAY ROUND & THE THIRD WORLD 114 (1990) (efforts by industrialized countries "aimed at constricting [LDCs'] process of industrialization and autonomous development").

17. See, e.g., Frederick M. Abbott, *Protecting First World Assets in the Third World: Intellectual Property Negotiations in the GATT Multilateral Framework*, 22 VAND. J. TRANSNAT'L L. 689, 689-775 (1989); Marco C.E.J. Bronckers, *The Impact of TRIPS: Intellectual Property Protection in Developing Countries*, 31 COMMON MKT. L. REV. 1245, 1245-81 (1994); Thomas Cottier, *The Prospects for Intellectual Property in GATT*, 28 COMMON MKT. L. REV. 383, 386-92 (1989); Thomas Cottier, *Intellectual Property in International Trade: the GATT Connection*, 47 SWISS REV. INT'L ECON. REL. 79, 88-94 (1992).

contain intellectual property components while the rate was less than ten percent when the GATT was negotiated.¹⁸ The value of IPR-protected products exported increased from \$7.5 billion in 1986 to some \$20 billion in 1992.¹⁹ Perhaps even more important is the fact that new technologies, requiring high investment in research and development, can be reproduced and copied relatively easily—again thanks to new technologies. New chemical entities and pharmaceuticals, compact discs, integrated circuits, and soft-ware immediately come to mind. It was estimated in 1986 that some \$50 billion were lost in the United States due to inadequate IPR protection abroad.²⁰

Much of the effort to enhance protection in the TRIPS negotiations was aimed at avoiding such losses through substantive standards and procedural rules assuring effective enforcement in national legal systems. Upon implementation, it may be expected that intellectual property not only will be better protected, but also that the TRIPS Agreement will foster and facilitate new technologies and their use around the world. This is also of particular importance for the promotion of technologies for sustainable development in industrialized and developing countries alike.

New technologies also induce qualitative changes in the regime of IPRs. The TRIPS Agreement was not merely a matter of transposing existing national rules or rules contained in other conventions into the GATT-WTO system. It was often necessary to create new rules for protecting intellectual property. In some areas, new technology challenges existing patterns and makes the interface of different legal traditions necessary. In the field of copyright, novel technologies and structures change continental European *droit d'auteur* which is traditionally centered on the individual rather than corporate needs. They increasingly shift the emphasis from protecting individual authors and their works to overall regulation of industrial activities. The transition to, and interface with, Anglo-American copyright law (and vice-versa) remains a major challenge.

The legal changes incurred with TRIPS are of paramount importance to the trading system. They may indicate that—after policies of

18. See R. Michael Gadbaw, *Intellectual Property and International Trade: Merger or Marriage of Convenience?*, 22 VAND. J. TRANSNAT'L L. 223, 229 (1989).

19. See generally Bureau of Economic Analysis, U.S. Dept. of Commerce, Bureau of Economic Analysis, *Intellectual Property Rights are a Growing Source of Export Revenues 1986-1992* (on file with author).

20. See U.S. Int'l Trade Comm'n, Pub. No. 2065, I.T.C. Foreign Protection of Intellectual Property Rights and the Effects on the U.S. Industry and Trade (1988); see also Abbott, *supra* note 17, at 699-702.

interventions and state ownership and expropriation became largely matters of the past—the protection of intellectual property has removed traditional customary law protection of investment and real estate as the primary guarantee to attract and secure foreign investment and trade. To a large extent, this shift is caused by the ubiquitous nature of intellectual property (i.e., its simultaneous presence in different places), new technologies, and their importance in a highly competitive world market.

B. *The General Agreement on Trade in Services*

The impact of new technologies in the genesis of the GATS is less obvious, but was nevertheless an important driving force.²¹ The advent of modern tools of electronic and satellite communication substantially reduced the costs of transporting data²² and created global markets. It facilitated the control of business operations abroad even more so than before—when air travel first rendered the world a much smaller place. Without such technologies, potentials to provide services abroad, and therefore the drive to seek liberalization of market access for an ever-increasing service industry, would have hardly gained such prominence. While the GATS covers all services, it was industries using modern technologies that were at the forefront of the search for a framework agreement for a long-term liberalization of market access. It is not a coincidence that the liberalization of services directly based on human resources, such as labor, was met with opposition from industrialized countries unwilling to open their markets for providers of labor from low-income countries.²³

II. THE REGULATORY CHALLENGES OF NEW TECHNOLOGIES

While new technologies considerably contributed to the enlargement of the WTO-GATT multilateral trading system, the regulatory challenges caused by these new technologies are far from met.

21. See, e.g., J.V. Reyna, *Services*, in 2 *THE GATT URUGUAY ROUND: A NEGOTIATING HISTORY* (1986-1992) 2335, 2342 (Terence P. Stewart ed., 1993) (“The technological advances in the 1960s, particularly in the area of electronics and computers, spurred the growth of international trade in services.”).

22. Technologically reduced costs of transportation of data is considered a major factor in enhancing trade in services. See P. Zweifel, *Overview and Synthesis*, in *SERVICES IN SWITZERLAND: STRUCTURE, PERFORMANCE, AND IMPLICATIONS OF EUROPEAN ECONOMIC INTEGRATION* 3 (P. Zweifel ed., 1993).

23. Negotiations will continue on this subject. See *Decision on Negotiations on Movement of Natural Persons*, 31 *INT’L L. MATERIALS* 458-59 (1992).

A. Genetic Engineering (Biotechnology)

It is generally agreed that genetic engineering or modern biotechnology is a member of the group of so-called "key" technologies.²⁴ Scientific and technological leadership in biology, nutrition, agriculture, and medical sciences will largely depend on it in the twenty-first century.²⁵ How do these technologies affect the international trading system and multilateral trade regulation? To a considerable extent, existing rules and experiences will apply to this field as they do in other areas (such as general principles of WTO law and the rules on technical barriers to trade and phytosanitary measures). The same holds true for labelling. Biotechnology, however, raises a number of new and value-laden issues not yet resolved: biological safety, IPRs, and property rights on nonmodified genetic resources.

The release of genetically modified plants, microorganisms, and animals calls for safety standards in order to protect the public from potential health hazards. Moreover, beyond the scientific dimension, the problem has important psychological and ethical sides. No internationally agreed-upon standards exist so far beyond the emerging precautionary principle,²⁶ either within or outside of the WTO. National regulations rely upon recommendations either by national bodies and/or by international organisations, in particular by the Organisation for Economic Co-operation and Development ("OECD").²⁷

Although there are obligations to negotiate and to seek common standards, in particular in the Convention on Biodiversity,²⁸ efforts to achieve such standards are protracted. It is likely that countries like the United States and others, which are seeking to keep relatively open and favorable conditions to attract investment and research activities, enjoy a comparative edge against Europe where the public at large is generally more skeptical, if not hostile about biotechnology.

24. See, e.g., LESTER THUROW, HEAD TO HEAD: THE COMING ECONOMIC BATTLE AMONG JAPAN, EUROPE, AND AMERICA 45 (1992).

25. See P. KENNEDY, PREPARING FOR THE TWENTY-FIRST CENTURY 65-81 *passim* (1993).

26. *Rio Declaration*, *supra* note 8, at 879, Principle 15 ("Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.").

27. Of particular importance was the 1986 OECD report Recombinant DNA Safety Considerations (OECD Doc. 9386021) and the 1992 report Safety Considerations for Biotechnology (OECD Doc. 9391051). For a comprehensive survey see M.F. Cantley, *The Regulation of Modern Biotechnology: A Historical and European Perspective*, in 12 BIOTECHNOLOGY: MULTIVOLUME COMPREHENSIVE TREATISE 505-795 (D. Brauer ed., 1995).

28. Convention on Biological Diversity. June 5, 1992, at Art. 14, *reprinted in* 31 I.L.M. 818, 827-28 (1992).

International harmonization of opinion is impeded by the competing strength of both publics. Public policies on biosafety therefore, beyond the minimal rules expressed by the precautionary principle and customary international law (such as *Trail Smelter* arbitration standards)²⁹ may well remain a matter of national or regional legislation.

Things are different with respect to the patenting of biotechnological inventions. Differing national rules on patenting create trade distortions. A prohibition on obtaining a patent paradoxically has the effect that inventions made abroad can be freely used—not only in research, but also as a basis for the commercialization of a product derived thereof. Article 27 of the TRIPS Agreement bars the commercialization of products in any country in which the grant of the patent was denied. This is a new and still often ignored innovation which does not yet exist in national or regional patent regulation. Yet even with this prohibition, it is evident that industries and governments are deeply interested in achieving harmonized rules. While the rules allow a foreign producer to bar commercialization of unpatented competing domestic products, the same rules also bar the importation and commercialization of unpatented foreign products. Obviously, efforts to avoid such nontariff barriers will have to be undertaken if serious trade disputes are to be avoided in the next century.

The issue of patenting life forms will therefore remain on the agenda of the WTO. The Agreement requires a review process of the issue by the year 2000.³⁰ In particular, Members of WTO will need to examine the public policy goals of the general exception that prohibits all plants and animals, except microorganisms, from being patented. Despite obligations to provide for other forms of plant variety protection, the exclusions will limit patent protection and cause problems in future years for the trade-related reasons stated above. On the other hand, the issue involves difficult ethical problems. In Switzerland, for example, which strongly depends on favorable conditions for research and development as its main edge in a globalizing economy, there is an initiative pending that, *inter alia*, would prohibit the patenting of life forms.³¹ In the same strain, the European Parliament rejected a

29. *Trail Smelter Arbitral Tribunal, Decision*, 33 AM. J. INT'L L. 182 (1939); *Trail Smelter Arbitral Tribunal, Decision*, 35 AM. J. INT'L L. 684 (1941). On standards in customary law see PATRICIA W. BIRNIE & ALAN E. BOYLE, *INTERNATIONAL LAW AND THE ENVIRONMENT* 88-89 (1992).

30. TRIPS Agreement, 1994, § 5, art. 27(3)(b).

31. See *Botschaft über die Volksinitiative "zum Schutz von Leben und Umwelt vor Genmanipulation (Gen-Schutz-Initiative)"* 6. June 1995, Gov't. Doc. 95.044, 36 *Bundesblatt* (Federal Reporter) vol. III 1333 (1995).

first directive in 1995, adopted by the Council, that would have expanded the patenting of life forms.³²

These problems will not be easy to solve on a global scale. It is perhaps the first time that international economic regulation is confronted with profound ethical problems caused by new technologies (as security policies have been in the nuclear age); and so far there is little experience in dealing with this dimension of public policy issues on the international level. The question arises whether the trading system is in a position to address and solve these issues with traditional modes of international diplomatic decision-making.

With regard to LDCs, the issue of the patenting of life forms will depend on yet another, equally difficult problem related to the new technology. National and international intellectual property law, created in and for a technological age, honors innovation by the application of technical rules. No such property titles exist for genetic resources cultivated over time through custom and experience. In light of the fact that some ninety percent of all genetic resources of potential interest can be found in LDCs, it is likely that advances in international rules on patenting life forms, necessary for biotechnology, can only be achieved after establishing an equitable balance with property rights on existing, non-modified resources. How such rights, often called farmers rights, can be introduced and to whom they should be allocated, has been under discussion in the Food and Agriculture Organization³³ and was included in a United Nations draft Declaration on the Rights of Indigenous Peoples.³⁴

32. The European Parliament rejected the directive on the legal protection of biotechnological inventions, *reprinted in* 1993 O.J. (C 44) 36 as amended (*see* Bull. de l'Union européenne 3/95 1.3.17 at 16), by 188 yes, to 240 no and 23 abstentions on 1 March 1995. *See* O.J. (C 68 20.3.95) 25/26. A revised draft was submitted by the Commission on 13 December 1995, (COM(95) 661), in particular excluding patenting of human life forms and introducing farmers' privileges. *See* Bull. de l'Union européenne 12/1995 1.3.29 at 70.

33. *See* FAO Res. 4/89, *reprinted in* CPGR-Ex1/94/Inf 1, at 7; Resolution 3 of the Conference for the adoption of the agreed text of the Convention on Biological Diversity, adopted May 22, 1992 mentions farmers' rights among outstanding matters for future work, *reprinted in* 31 I.L.M. 846-47 (1992). *See generally* BIOTECHNOLOGY AND FARMERS' RIGHTS: OPPORTUNITIES AND THREATS FOR SMALL-SCALE FARMERS IN DEVELOPING COUNTRIES (Hans Brouwer et al. eds., 1992).

34. Art. 29 and 30 (entitlement to control cultural and intellectual property, to control, develop and protect science, technologies, and cultural manifestations, including human and other genetic resources; entitlement to free and informed consent prior to approval of any project affecting resources of indigenous peoples, entitlement to just and fair compensation), United Nations, Economic and Social Council, Report of the Sub-Commission on Prevention of Discrimination and Protection of Minorities on its Forty-Sixth Session, U.N. Doc. E/CN.4/1995/2 (1995), *reprinted in* 34 INT'L LEGAL MATERIALS 546, 553 (1995).

Conceptually the problem is a difficult one and is still in its beginning stages. We are talking here of creating—because of new technologies—entirely new concepts of private property rights. This is perhaps the most telling contemporary example of how modern technology affects the very foundations of the traditional legal orders and contemporary international law based on individual and private property rights.

In my view, it will be necessary to develop such farmers' rights within trade regulations and relate them to traditional protection of intellectual property.³⁵ First, because it is a matter of equity and general fairness in North-South relations. Second, because it provides a basis of cooperation in the collection and analysis of genetic resources. Third, from the realist point of view often defended in business life, because progress in patenting life forms around the world will hardly proceed without regulating property rights of nonmodified resources from which biotechnologically induced benefits are obtained.

B. *New Communication Technologies*

Communication has been essential for international trade since the advent of trade routes and maritime navigation. Postal services, the telephone, telegraph, and facsimile, and air travel revolutionized communications. Today, another generation of communication is evolving—computer-assisted communication. Multimedia and international networks, such as the Internet and the World Wide Web,³⁶ offer new opportunities for interactive communication. It is evident that the control of such technologies will be equally decisive as biotechnology in shaping economic leadership and the equation of power among nations.³⁷ Yet, it is not clear what their impact on international trade and trade flows will be. Certainly, where available, such technologies reduce transaction costs: they decentralize information and business opportunities; they make information and global interaction available virtually instantaneously; and presumably they will consider-

35. See Thomas Cottier, *Current and Future Issues Relating to the TRIPS Agreement: A European Perspective*, in AIPPI, XXXXVIe Congrès de Montréal 1995, Workshops I-X, 83, 89-91 (J.D. Meissner ed., 1995); Thomas Cottier, *The Protection of Intellectual Property Rights: A Requirement for Technology Cooperation, Foreign Investment and Equitable Returns in Biotechnology Prospecting*, in BIOTECHNOLOGIE FÜR ENTWICKLUNGSLÄNDER: CHANCEN UND RISIKEN DER BIOTECHNOLOGIE BEI LANDWIRTSCHAFTLICHEN NUTZPFLANZEN 65-72 (1995).

36. For a brief history of the evolution of internet technology, from its beginnings at CERN, Geneva in 1976 to its world-wide academic and commercial use see B.M. Segal, *A Short History of Internet Protocols at CERN* (1995), <<http://www.w3.org>>.

37. See, e.g., Joseph S. Nye, Jr. & William A. Owens, *America's Information Edge*, 75/2 FOREIGN AFF. 20-36 (1996).

ably contribute to economic growth and the increase of business transactions. Further, they have the potential for fostering cooperation and exchanges which could not or would not take place otherwise.

Competition also will be broadened to new scopes. Particularly for services, the net enables sellers to reach buyers around the world, and in turn gives buyers a never-before feasible opportunity to comparison shop. While the goods market is likely to become more regionalized, due to internalized (and therefore higher) environmental costs of transportation, the globe will become the market for invisible services.

The legal nature of such communication networks might be novel. They seem to be commercial services in the sense of GATS—they are a privately-owned commercial system, accessible to paying subscribers. They are still indirectly subsidized by universities around the world who pay not only a periodic set fee and variable costs, but also provide for part of the infrastructure. Equally, it is not entirely clear today what the new technologies' impact will be on international trade regulation. At present there are virtually no restrictions imposed on such networks. They are available world-wide wherever the technical facilities are available. There is no need for liberalization in the sense of GATS; rather, it is a matter of examining what public policies need to be adopted, both nationally and internationally. Indeed, global networks pose a host of unresolved legal issues: copyright, data protection, protection of privacy, and decency.³⁸

An interesting issue to explore for the specialist is whether these technologies can still be meaningfully regulated on national or regional levels. Given their worldwide and unlimited operation, will it be necessary to provide multilaterally agreed-upon standards within an international system? Do such rules fall within the ambit of WTO law or within other bodies of law? Perhaps these new communication technologies call for an entirely new kind of regulatory approach. National boundaries no longer exist, and the regulatory instruments related to them (tariffs, quantitative restrictions) are therefore absent. Neither do they require an establishment or a presence abroad, and they can be delivered entirely through crossborder trade. On the other hand, perhaps the new technology is really no different than other communication methods such as telephone or telefax. Indeed,

38. See, e.g., Jonathan Cameron, *Approaches to the Problems of Multimedia*, 18 EUR. INTEL. PROP. REV. 115 (1996); see also Sara John, *What Rights Do Record Companies Have on the Information Superhighway?*, 18/2 EUR. INTEL. PROP. REV. 74 (1996).

noncontrolled discussions also can take place instantaneously over the phone and written transactions can occur globally with the fax. Would the transboundary nature of the new technologies make regulatory systems similar to other transboundary legal issues—such as international tax, criminal, or environmental law—helpful in formulating responses to complex legal and sensitive practical questions?

These are all questions for which we have no answers yet. They are, however, important ones, and warrant study in all their various aspects. I could well imagine, however, that the task is not one of liberalizing old and rusty structures (such as in traditional telecommunications), but rather is one of framing global public policies. This would often have to occur without taking the time to pass through national experiences in the first place, and would require entirely new approaches within the multilateral trading system. The challenges for rule-making processes are obvious.

C. *Technology and Labor*

New technologies always have tended to stir social unrest. The term *sabotage* in French was created when weavers threw their wooden shoes (sabbots) into the new weaving machines that had drastically reduced labor opportunities. The experience of the Unabomber in the United States is just another, albeit extreme, expression of this preoccupation.

Today, new electronically driven tools are about to produce the same labor reductions in offices as have been occurring in manufacturing. With high labor costs and international competition increasing, businesses are forced to invest in capital-intensive equipment, thus shifting employment opportunities from the many unskilled to the fewer skilled. We are talking about an emerging two-tiered society in industrialized countries. What is the impact of such evolutions on the international trading system? Economics and conventional wisdom may argue for abstaining from addressing such issues, and for continuing to follow the principles of economically efficient allocations of goods, services, capital, and investment. The question, however, is: can an international trading system, shared by democracies and depending on voters, afford to neglect the social costs that its very principles threaten to impose?

The legitimacy and acceptance of relatively free trade, in the long-term, will depend on evidence of whether it is providing happiness not only to the few, but to the large majorities. We should not

forget that the goal of full employment was the major concern of the post-World War II negotiations under the auspices of the United Nations Conference on Trade and Employment on the International Trade Organization.³⁹ This goal stayed with the GATT⁴⁰ and remains a prime, and perhaps increasingly pressing, goal of the WTO.⁴¹ Issues such as labor rights keep emerging in trade talks for similar reasons.⁴² They may provide the wrong answer; but the concern is real. Failure to address the underlying issues of eroding workplaces for labor supplies will result in new waves of protectionism and will eventually undermine the fragile trading system. Again, technology raises questions which traditional approaches to trade regulation cannot answer.

III. THE IMPACT OF NEW TECHNOLOGIES ON GOVERNANCE

A. *The Shift of Powers*

The regulatory challenges relating to biotechnology as well as to new communications and to labor issues, yet to be explored, suggest that the matter will possibly need to be regulated, at least in part, multilaterally by international law. In other words, the trend, witnessed in the past Uruguay Round, of intruding more and more into domains which formerly pertained to national legislation will con-

39. See WTO, *supra* note 4. Realizing the aims set forth in the Charter of the United Nations, particularly the attainment of higher standards of living, full employment and conditions of economic and social progress and development, envisaged in Article 55 of that Charter, Purpose and Objectives, Preamble, Havana Charter for an International Trade Organization.

40. See GATT 1947, Preamble ("ensuring full employment").

41. See *Marrakesh Agreement Establishing the World Trade Organization*, Preamble at 9 GATT Doc. MTN/FA, reprinted in 33 I.L.M. 13 (1994) ("Recognizing that their relations in the field of trade and economic endeavor should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, . . .").

42. See, e.g., *Communications by the United States to the GATT Counsel*, GATT Doc. L/6196 (July 3, 1987) ("Trade which is based on denial of worker rights does not benefit workers in either exporting or importing countries. It runs counter to the GATT objective of raising standards of living through expansion in the context of a liberal trading régime"). See also *Communications by the United States to the GATT Council*, GATT Doc. L/6729 (Sept. 21, 1990) (requesting, upon consultation, the establishment of a working party with a view to focus on three basic rights: freedom of association; the right to organize and bargain collectively; and freedom from forced labor). Reference to workers rights were not included in the Final Act of the Uruguay Round. A compromise found with opposing LDCs included them in Chairman's statement for further work. See AGENCE EUR., Apr. 8, 1994, at 8. France announced it would push for this agenda in 1995, FT 2, Feb. 1995. See generally Steve Charnovitz, *Fair Labor Standards and International Trade*, 20/1 J. WORLD TRADE L. 61 (1986); Steve Charnovitz, *The World Trade Organization and Social Issues*, 28/5 J. WORLD TRADE L. 17 (1994); D. Chambovev, *Das multilaterale Handelssystem und die Problematik der Arbeitsnormen* (1995) (unpublished mimeograph on file with author).

tinue.⁴³ Modes of regulation to be found in agricultural support systems and standard setting in the field of IPRs are likely to continue, partly due to new technologies, partly because present and future barriers to trade are mainly located within countries and regulated by national law and practices.

The shift toward international legislation mainly induced by the advent of new technologies raises a number of extremely difficult issues, not only in terms of adequate substance (such as proper standards on patenting life forms). It also poses extremely difficult issues on the structures and procedures by which such rules are created. In all the fields where international standard setting becomes necessary in order to sustain an open trading system, traditional, constitutional models of legislation and democratic representation are challenged.

The more trade rules intrude on formerly domestic issues, the more they need particular legitimacy in order to be successfully implemented and enforced. It is a matter of time until similar discussions on democratic deficits and democratic rule will emerge in the context of the global trading system, as they exist in the context of the European Union,⁴⁴ as they may exist tomorrow in the context of the North American Free Trade Agreement and other free trade agreements, and as they increasingly penetrate the realms of formerly domestic legislation.

Today, the influence of national parliaments and democratic domestic processes is eroding to the benefit of rule-making by executive branches, diplomats, and experts. Perhaps this is not felt to the same extent in the United States or the European Union as it is in many other and smaller countries of the globe. These days, few states have the privilege of remaining masters of treaties. The filling of these positions is virtually limited to hegemon powers which can afford to reject multilateral trade agreements and pursue their interests by other unilateral or bilateral means. From a realist, power-oriented point of view, international trade rules and standards may therefore be per-

43. On the impact of globalization and internationalization on the nation-state and its new functions within the international system, see generally PETER SALADIN, *WOZU NOCH STAATEN?: ZU DEN FUNKTIONEN EINES MODERNEN DEMOKRATISCHEN RECHTSSTAATS IN EINER ZUNEHMEND ÜBERSTAATLICHEN WELT* (1995).

44. Enhancing legitimacy through enhanced democracy and transparency is one of the major goals of the 1996 Intergovernmental Conference of the European Union, see Commission Report for the Reflection Group (1995); Reflection Group's Report of June 2, 1995, (March 1996) <<http://europa.eu.int/en/agenda/igc-home/eu-doc/reflect/final.html>>; the Maastricht II negotiating agenda Turin European Council 29 March 1996 Presidency Conclusions, (March 1996) <<http://europa.eu.int/en/record/turin.html>>.

ceived as an instrument of domination by a few, at the expense of the self-determination and democratic governance of the many.

I do not suggest that this stage has yet been reached. The results of the Uruguay Round passed smoothly in national constituencies upon the ordinary bargaining process for internal compensations—even in Switzerland where they were subject to a right of noncompulsory referendum, which did not materialize since the necessary number of signatures calling for such a referendum failed to be collected by opposing environmentalists and farmers.⁴⁵ But the impact of new technologies and a presumably enhanced need for multilateral regulation of formerly domestic affairs may alter the present overall legitimacy and acceptance of WTO rules in the future. It may, in the long term, result in a lower legitimacy of such rules. Consequently, such rules may not stand up to serious political difficulties. Nobody dedicated to a stable, rule-oriented trading system has an interest in seeing the authority and legitimacy of international trade regulation decline.

For such reasons, it is essential to focus on how such rules are brought about. The structures of decision-making become as important as the substance and quality of the rules. The latter, of course, remains of prime importance. Bad rules destroy a system even if enacted in perfect structures. However, even good rules, formally approved but enacted in insufficient modes and ways, risk lacking adequate legitimacy and support in implementation.

Currently, the main tenet of strengthening international trade rules focuses on substance. “Constitutionalization” of trade rules is perhaps the most prominent school of thought to that effect. Defining market access in terms of individual rights, immune from arbitrary and discretionary restrictions, and subject to judicial review by national and international courts is an important strategy, expounded in particular by Ernst-Ulrich Petersmann.⁴⁶ Indeed, the experience within the regional and supranational context of the European Union (and much different from the Community’s external relations) vividly

45. See Thomas Cottier & K. Nadakavukaren Schefer, *Switzerland: The Challenge of Direct Democracy*, in *IMPLEMENTING THE URUGUAY ROUND* (J.H. Jackson & A. Sykes eds., forthcoming).

46. See *Constitutional Problems of International Law*, in *NATIONAL CONSTITUTIONS AND INTERNATIONAL ECONOMIC LAW* 3-52 (Meinhard Hilf & Ernst-Ulrich Petersmann eds., 1993); see also, *Limited Government and Unlimited Trade Policy Powers? Why Effective Judicial Review and a Liberal Constitution Depend on Individual Rights*, *NATIONAL CONSTITUTIONS AND INTERNATIONAL ECONOMIC LAW* 537-61; *Proposals For a New Constitution For the European Union: Building-Blocks For a Constitutional Theory and Constitutional Law of the EU*, 32/5 *COMMON MARKET L. REV.* 1123 (1995).

shows that the realization of the internal market strongly depends on enforceable individual rights. The same is true in national contexts, and it is no different on the global level.

Yet, as in the European Union and in fact in any nation-state, whether central or federalist, the advent of new technologies reminds us that a constitutional doctrine needs to pay equal attention to the structures by which rights are achieved and regulations are framed. Their effectiveness depends on the overall legitimacy of the system. We need to achieve adequate substance-structure pairings in international trade regulation, just as no less than this is at the heart of domestic constitutional law.⁴⁷ We need to achieve, in other words, adequate modes of multilateral governance.⁴⁸ Such modes need to be able to cope with increasingly complex issues, such as the ones discussed above. The regulation of those issues will often be novel and no longer a mere extension and extrapolation of national rules. And again, such regulations need to be legitimate in order to work.

The question therefore arises, in the context of the global trading system of the WTO, whether the modes of decision-making traditionally and currently shaped by the rules and comities of trade diplomacy will be able to maintain adequate legitimacy in the face of increasingly intrusive trade rules? Will diplomatic traditions alone with all the skills and advances of international discourse and consensus still be able to bring about a democratic legitimacy of future rules? Will the principle of representation be satisfied by negotiations led under the auspices of elected governments and implemented upon approval of the results by democratic representation? Or is there a risk that the shift of real power will erode such rules to the end that the primacy of international law and of the founding principle of *pacta sunt servanda* will not be honored in critical moments, very much to the detriment of the international system? These are questions which cannot be answered conclusively at the present stage, but caution recommends skepticism and a search for new avenues.

On a global scale, we are still at the very beginning of a process of designing good governance for future multilateral regulation of complex technological trade-related issues. The post-war model of the United Nations does not entail sufficient regulatory powers, and cannot fully serve as a model to cope with the technological challenge and

47. For this approach, see Thomas Cottier, *Constitutional Trade Regulation in National and International Law: Structure-Substance Pairings in the EFTA Experience*, in NATIONAL CONSTITUTIONS AND INTERNATIONAL ECONOMIC LAW 409-42.

48. For the term see *supra* note 10.

globalization. On the other hand, the process of European integration, as it moves toward federacy, often goes beyond what can and perhaps should be reached on a global scale.

Novel approaches are necessary. John Jackson sets out a framework of analysis for "constitution building" going beyond the claim of the rule of law. Based upon what was achieved in the Uruguay Round and the tradition of GATT, Jackson's framework includes issues of how to take into account real power configurations, participation of citizenry, the need for checks and balances. These and other issues (such as the role of nonstate actors) need to be taken into account in the shaping of the multilateral system which is likely to prevail as the preferred mode of international governance in a complex world.⁴⁹

Beyond these structural aspects, I believe new issues such as biotechnology, technologically induced unemployment, or environmental degradation indicate that the advances of science and technology render it equally necessary to include an assessment of valuational goals in the process of "constitution-building." Beyond individual rights, legal and economic theory has to define fundamental values for a globalized economy to which good governance has to respond beyond the economist's perception of market failures. The implications of the doctrines of justice and equity in international law—liberal, distributive, and intergenerational⁵⁰—have to be examined for future trade regulation and decision-making processes. And vice-versa, the implications of a liberal trading system have to be assessed for the future of international theory of justice. The same holds true for general legal theory in the light of technology-driven economic globalization. Much work lies ahead. Two hundred years after Kant's essay on *Perpetual Peace*,⁵¹ leading twentieth century scholars and philosophers only now are beginning to address the general problem of global jus-

49. John H. Jackson, *The Uruguay Round, World Trade Organization, and the Problem of Regulating International Economic Behavior*, Hyman Solaway Lecture on Business and Trade Law, Centre for Trade Policy and Law, Carleton University, Ottawa, May 1994 (on file with author). See also John H. Jackson, *Reflections on Constitutional Changes to the Global Trading System*, 72 CHI.-KENT L. REV. 511 (1996).

50. Inter alia, such works include: PHILIP ALLOTT, *EUNOMIA: NEW ORDER FOR A NEW WORLD* (1990); MARTTI KOSKENNIEMI, *FROM APOLOGY TO UTOPIA THE STRUCTURE OF INTERNATIONAL LEGAL ARGUMENT* (1989); RICHARD FALK, *THE END OF WORLD ORDER* (1983); TERRY NARDIN, *LAW, MORALITY, AND THE RELATIONS OF STATES* (1983); JULIUS STONE, *VISIONS OF WORLD ORDER: BETWEEN STATE POWER AND HUMAN JUSTICE* (1984); *TOWARD A JUST WORLD ORDER: STUDIES ON A JUST WORLD ORDER* (Richard Falk et al. eds., 1982).

51. IMMANUEL KANT, *PERPETUAL PEACE: A PHILOSOPHICAL ESSAY* (M. Campbell Smith, M.A. trans., 1903) (1795).

tice beyond North-South relations⁵²—leaving the realm of society of the pluralist and democratic nation-state which, so far, has provided an often assumed framework of philosophical analysis.⁵³

All this does not suggest that we need to strive for grand designs in “constitution-building.” The experience of GATT and the Uruguay Round teach us that the building process is not revolutionary, but evolutionary: Stone upon stone it was built and so it should continue. This should equally apply to the impact and use of new technologies and the values which need to accompany such use. It also should apply to the evolution of new, technologically-induced procedures of decision-making, to which we finally turn.

B. *Procedural Potentials and Risks of New Technology*

Novel technologies not only pose difficult regulatory problems. They equally change and shape the process of decision-making. Thus, television fundamentally has altered political life and decision-making processes, even if the formal setting of eighteenth century constitutionalism has largely remained unchanged. The same is true for politics of international trade.

It is at this point that a reflection of the impact of new communication technologies on governance should therefore commence in the process of building a global trade constitution. What are the potentials, and the risks, of this new age in communications? Could new means assist in establishing a wider participation shaping international trade regulations, indeed shaping law in general? Is it conceivable that domestic consultation will no longer be limited to a few interested producers, but that it will be open to all interested, at home and abroad?

Worldwide networks of interactive electronic communications could offer new opportunities. Of course, there are risks of abuse. There are practical problems: how to evaluate contributions by interested concerned citizens? There are problems of principle: should participation rely on ownership of a particular and advanced technology? What about societies where such technologies—even the telephone—

52. Jörg P. Müller, *Kants Entwurf globaler Gerechtigkeit und das Problem der republikanischen Repräsentation im Staats—und Völkerrecht*, in MELANGES J.-F. AUBERT (A. Auer & P.M. Zen Ruffinen eds., forthcoming 1996).

53. See JOHN RAWLS, *A THEORY OF JUSTICE* (1971), and the very limitations of the model in international relations and hierarchical societies; John Rawls, *The Law of Peoples*, in *ON HUMAN RIGHTS: THE OXFORD AMNESTY LECTURES 41-82* (Stephen Shute and Susan Hurley eds., 1993). Similar observations may be made for other leading scholars.

are not yet sufficiently available? All these problems, however, should not discourage the exploration of the potentials of the new-age technology. It is encouraging to observe that governments increasingly resort to the Internet to submit draft proposals and draft legislation for comments by the public at large.⁵⁴

It is therefore conceivable that new technologies also will alter the process of decision-making within WTO and other international organizations. It may render them more transparent and more open by means of new communication. This is not merely a matter of making documents available on-line and abandoning policies of diplomatic confidentiality where confidentiality is not required in order to serve the public good. It is also a matter of exploring means of enhancing interactions for the citizenry and other private subjects with their governments and international organizations on problems and issues of their concern. New technologies may assist in achieving a wide and robust discourse among individuals and governments concerned along the lines of ethics of discourse (*Diskursethik*)⁵⁵ with a view to achieving consensus solutions under participation of all concerned and therefore high legitimacy of global rules.

Again, it will not be a matter of creating grand designs. Rather the very existence of these technologies exerts pressures on governments and the WTO to go public. The new technology is likely to bring about and enhance the willingness on the part of executive organs, be it in governments or in international organizations, to open their decision-making processes to public scrutiny and input. In most countries, not all citizens enjoy the right to examine all government documents and accounts of policy discussions. With technology-driven pressure to open such processes, supported by enhanced WTO rules on transparency, and the usage of communication technologies by governments, international organizations, and private actors, a new international public can be created. Democracy could be fostered and the legitimacy of international rules would be raised.

54. For example, the Swiss Government not only put the 1995 draft federal Constitution on the Internet for comments by citizens, but also pending legislation. See (March 1996) <<http://www.admin.ch/ch/d/gg/pc/pendent.html>>. This is an innovation since consultations before deliberation in parliament were formerly held only upon invitation. They were generally limited to interested circles, political parties and cantonal governments. It remains to be seen to what extent Internet communication will change patterns in legislative consultations.

55. See JURGEN HABERMAAS, *ERLÄUTERUNGEN ZUR DISKURSETHIK* (1991); JURGEN HABERMAAS, *FAKTIZITÄT UND GELTUNG: BEITRÄGE ZUR DISKURSTHEORIE DES RECHTS UND DES DEMOKRATISCHEN RECHTSSTAATS* (1992); JÖRG P. MÜLLER, *DEMOKRATISCHE GERECHTIGKEIT* (1993).

CONCLUSION

New technologies are, in my view, the most important driving force in the process of globalization of the economy. They have a profound impact on the future of international law as the elaboration of international trade regulation is likely to become more complex. They pose entirely new public policies issues, not familiar to the international trading system and international law so far. In the field of biotechnology, it was seen that both ethical and other fundamental issues are under debate. The relationship of technology and labor is widely unknown in international trade law. Without addressing it, we risk falling back into the nineteenth century "social question."

In new communication technologies, the shape of potential rules is yet unclear, but it is likely that this technology will require more rather than less international legislation. Such legislation will eventually lead to increased regulatory intrusion into domains formerly pertaining to domestic affairs, legislation, and decision-making. These shifts run the risk of eroding both traditional constitutional structures of nations and the international trading system.

Besides paying attention to the quality of rules, new technologies therefore increasingly force us to rethink the structures of international rule-making in the interest of preserving long-term legitimacy of rules necessary for a relatively free trading system. Long-term effectiveness depends on democratic legitimacy of rules, in particular if they are expected to withstand times of difficulty.

It will not be a matter of simply adopting established principles of constitutionalism and transferring them to the level of global governance. The international society is far from a world government, and structures modelled after such an idea may not be successful. Moreover, leading doctrines and models of good governance, justice, and democracy are all still much too focused on the nation-state and society. Theories on global justice and equity, coping with the challenges of the twenty-first century, are still in their beginnings. This, however, does not exclude putting into effect in a process of "constitution building," step by step, those elements of democratic constitutionalism which proved in long human experience to be the main pillars of long-term legitimacy of rules: individual rights, open government, checks and balances, wide open participation and robust debate in rule-making; and combining this with successful traditions of diplomatic consultation, negotiation, and consensus. New communication technologies bear the potential to assist these processes and create a wider public

which is necessary to achieving legitimate global rules. Thus, new technologies create new and complex regulatory needs. But they also offer new horizons and avenues in order to meet these needs in adequate substance-structure pairings of an emerging global trade constitution.