

SCIENCE, TECHNOLOGY, AND INTELLECTUAL PROPERTY
RIGHTS IN AMERICAN FOREIGN POLICY

*Patrick Mendis**

I.	INTRODUCTION	18
II.	GOVERNANCE OF DOMESTIC INTELLECTUAL PROPERTY RIGHTS	19
III.	GLOBAL INTELLECTUAL PROPERTY RIGHTS REGIMES AND THE WORLD TRADE ORGANIZATION	21
IV.	UNITED STATES FRAMEWORKS AND CHALLENGES	22
	A. <i>Role of the Department of State</i>	23
	B. <i>Model IPR Annex for International Science and Technology Agreements</i>	25
V.	STRENGTHENING AMERICAN SCIENCE AND TECHNOLOGY CAPACITY	26
VI.	CONCLUSION	28

* Dr. Patrick Mendis, who served as a mid-career science and diplomacy fellow of the American Association for the Advancement of Science at the U.S. Department of State, is an adjunct associate professor of economics and management at the UMUC Graduate School of Management and Technology at the University of Maryland. As a foreign affairs officer for science and technology cooperation, he chaired the U.S. government interagency working group on international science and technology agreements and authored the State Department's Supplementary Handbook on the Circular 175 Process for Routine International Science and Technology Agreements. Mendis received his Ph.D. in geography/applied economics from the University of Minnesota and his M.A. in international development and foreign affairs from the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota. This Article is written in the author's personal capacity, not as an American diplomat or a government official. The author wishes to thank Bill Gaines at the White House Office of Science and Technology Policy (OSTP) and other colleagues and anonymous reviewers for their critiques, suggestions, and valuable comments. Any opinions, findings, and conclusions are those of the author and do not necessarily represent the views of the U.S. government and its agencies or any other organizations with which he has been affiliated in the past or the present.

I. INTRODUCTION

The intrinsic nature of science and technology (S&T) is global and increasingly collaborative with international partners. As a global enterprise, S&T have not only added the commercial value of their innovations to economic growth and development of both the United States and other countries but have also addressed critical research areas in biodiversity and the environment, global climate change and alternative energy sources, HIV/AIDS and other infectious diseases, international oceans and fisheries, safety in chemical and biological terrorism, nanotechnology, nuclear energy, and medical applications, all of which are inherently transnational. In these areas of advanced research and commercialization, the United States provides the needed global S&T leadership that is driven largely by global market forces and domestic political and economic realities.

For the United States, the Department of State negotiates and administers government-to-government routine international S&T frameworks or umbrella agreements with other countries. Seven U.S. government departments and technical agencies directly administer over five hundred ongoing S&T agreements. They also manage their own implementing agreements with over fifty countries and more than twenty international organizations and groups of organizations.¹ In 1997, for example, the Department of State administered 33 broad international S&T agreements and the Department of Energy managed 257 implementing arrangements. Other specialized agencies like the National Aeronautics and Space Administration (NASA) maintained 127 implementing arrangements. The National Institutes of Health (NIH) had 44. The National Institute of Standards and Technology (NIST) carried out 56. The National Oceanic and Atmospheric Administration (NOAA) administered 32. And, the National Science Foundation (NSF) maintained 26. This demonstrates both the global nature of science and technology collaboration and the diverse and often complex relations within the U.S. government and among other countries.

Generally, umbrella agreements address a wide range of broader S&T issues within which technical agencies and their foreign counterparts agree to undertake specific arrangements as beneficial to their missions. By federal law, the Department of State has been given the authority to oversee and coordinate international umbrella agreements and implementing agreements by ensuring that such collaborative activities are

1. U.S. Gov't Accounting Office, SER. NO. GAO/RCED-99-108, INFORMATION ON INTERNATIONAL SCIENCE AND TECHNOLOGY AGREEMENTS (1999) (on file with the author).

implemented in congruence with U.S. foreign policy.² These umbrella agreements and implementing agreements are the governing frameworks for S&T-related international economic and trade policy, and their relationships to the regimes of intellectual property rights (IPRs)³ have increasingly become more complicated and contested, both domestically and internationally.

II. GOVERNANCE OF DOMESTIC INTELLECTUAL PROPERTY RIGHTS

Domestically, the influence of industrial and commercial interests and the confluence of academic and scientific communities vary significantly. At the time the U.S. Constitution was written, the protection of IPRs was recognized “to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”⁴ Thus, IPRs have not only emerged as legal properties in the form of patents, copyrights, and trademarks to promote American ingenuity and innovation, but they also develop an equitable global trading system. The U.S. government requires that the federally supported international S&T agreements be negotiated by properly protecting intellectual properties.⁵ In the Information Age, however, IPR issues present a series of complex dilemmas for legislative, scientific, and business communities.⁶ Yet, these communities generally agree that the commercialization of scientific and technological innovations positively associates with the recent growth in American productivity and economic expansion. However, there still exists recognition that the sharing of scientific information and knowledge openly and freely is constrained by legislative and administrative frameworks.⁷ In a more restrictive ownership of IPR regimes, several fundamental questions are raised:

2. See Case-Zablocki Act of Aug. 22, 1972, (codified as amended at 1 U.S.C. § 112b (1972)).

3. The meaning of “intellectual property” is explained in Article 2 of the Convention Establishing the World Intellectual Property Organization (WIPO). Convention Establishing the World Intellectual Property Organization [hereinafter WIPO] (explaining the meaning of intellectual property), *available at* <http://www.wipo.int/clea/docs/en/wo/wo029en.htm> (last visited May 12, 2004).

4. See U.S. CONST. art. I, § 8.

5. See 22 U.S.C. § 2656b.

6. NAT'L RESEARCH COUNCIL, THE DIGITAL DILEMMA: INTELLECTUAL PROPERTY IN THE INFORMATION AGE (1999).

7. The Science, Technology, and Economic Policy Board at the National Academies takes the leading role on these issues. Board on Science, Technology, and Economic Policy, *available at* <http://www7.nationalacademies.org/step/> (last visited Jan. 29, 2004).

1. Who owns the science-related IPRs resulting from publicly funded government owned and operated facilities or from research laboratories operated by public universities such as the Lawrence Livermore National Laboratory?
2. Should the technology-related IPRs be owned by the private sector even though they are initially developed by government funded joint venture projects?
3. Can we separate science (largely funded by the public sector) from technology (mainly funded by private investment) when mutually inclusive projects yield more innovations?

These and other important issues are cited in the National Research Council's book, *A Question of Balance*.⁸ The policy framework to address these three questions emanates from the Bayh-Dole Act of 1980 where nonprofit universities and laboratories, small business firms, and nonfederal inventors are allowed to own the inventions resulting from federally funded research projects.⁹ The U.S. government funded national laboratories may also assign their rights to a sole or joint invention made under a cooperative research and development agreement.¹⁰ However, if a government contractor performs research under an international S&T agreement, the U.S. government does not have the legal authority to assign foreign rights in any invention produced in another country. There are, however, some exceptions to this policy whereby the Bayh-Dole Act allows the assignment on a case-by-case basis in "exceptional circumstances."¹¹ The Act requires participating American nonprofit organizations or small business firms to provide sub-licensing to a foreign government pursuant to specific international agreements as reflected by regulation.¹²

In terms of public service employees' inventions, the U.S. government generally owns the IPRs.¹³ However, the government is required to make the rights allocation by appealing to the Department of Commerce before securing an assignment from the inventors. The regulation also allows government employees to own IPRs if the government does not patent or otherwise commercialize the invention.¹⁴ A public employee's residual

8. NAT'L RESEARCH COUNCIL, *A QUESTION OF BALANCE: PRIVATE RIGHTS AND PUBLIC INTEREST IN SCIENTIFIC AND TECHNICAL DATABASES* (1999).

9. See 35 U.S.C. § 202(e) (2000).

10. See Stevenson-Wydler Technology Innovation Act of 1980, 15 U.S.C. § 3710a(b)(1).

11. See 35 U.S.C. § 202(a) (2000); 37 C.F.R. § 401.3(b) (2003).

12. See 37 C.F.R. § 401.5 (2003).

13. See Exec. Order No. 10,096, 15 C.F.R. § 389 (Jan. 23, 1950); 37 C.F.R. § 501.

14. See 15 U.S.C. § 3710d (2000).

rights may also preclude the U.S. government from transferring its rights to another country where the government has not submitted an application for patent. Overall, the Bayh-Dole Act and the Federal Technology Transfer Act of 1986 have served as a balancing mechanism between academic and commercial interests.¹⁵

III. GLOBAL INTELLECTUAL PROPERTY RIGHTS REGIMES AND THE WORLD TRADE ORGANIZATION

Internationally, a series of global treaties — the Paris Convention for the Protection of Industrial Property (1883),¹⁶ the Berne Convention for the Protection of Literary and Artistic Works (1886),¹⁷ and the Rome Convention for the Performances, Phonograms, and Broadcasts (1961)¹⁸ — have been signed and updated many times since their inception. The World Intellectual Property Organization (WIPO), created in 1967, administers these treaties.¹⁹ However, the 1994 Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS),²⁰ which is contained in the *Legal Texts*²¹ that created the World Trade Organization (WTO) in 1995, provides for the establishment and enforcement of standards for IPR protection both nationally and internationally.

The WTO's TRIPS agreement covers the protection of eight types of intellectual property rights: 1) copyright and related rights, 2) trademarks, 3) geographical indicators, 4) industrial designs, 5) patents, 6) plant variety protection, 7) layout designs (topographies) of integrated circuits, and 8) undisclosed information (trade secrets). In the context of U.S. international economic policy, the protection of IPRs is an essential element of S&T agreements and international trade negotiations. Thus, the federal government is committed to its constitutional mandate to protect

15. See Bayh-Dole Act of 1980, Pub. L. 96-517 § 6(a) (codified as 35 U.S.C. 5301-5307); Federal Technology Transfer Act of 1986, 15 U.S.C. § 3710.

16. Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, art. 5A, 21 U.S.T. 1583.

17. Berne Convention for the Protection of Literary and Artistic Work, Sept. 9, 1886, 828 U.N.T.S. 221.

18. Rome Convention for the Performances, Phonograms, and Broadcasts, Oct. 26, 1961, 496 U.N.T.S. 43; see Protection of Industrial Property, *supra* note 16.

19. WIPO, *supra* note 3.

20. See WORLD TRADE ORGANIZATION, ANNEX 1C, 1994 AGREEMENT ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS) [hereinafter TRIPS], available at http://www.wto.org/english/docs_e/legal_e/27-trips.pdf (last visited May 13, 2004).

21. See *id.*

intellectual property.²² However, beyond the WTO framework, there are several major issues in international S&T negotiations and implementing arrangements that remain unresolved:

1. How do we resolve IPR issues in international S&T agreements when there are countries with weak or noneffective IPR regimes of their own?
2. Would the U.S. government's legal framework be effective in protecting American innovations in light of proliferation of American creativity and invention in the globalizing Information Revolution?
3. Can the WIPO and the WTO implement and enforce TRIPS effectively?

The increasingly globalizing world, commercial interests, and shared global challenges have no national boundaries. The Berne, Paris, and Rome Conventions, implemented within the WIPO and WTO frameworks, try to achieve their agreed objectives in respective IPR regimes. The WTO has no real authority to effectively enforce S&T-related TRIPS issues, especially those dealing with Multilateral Environmental Agreements (MEAs), including the U.N. Convention on Biological Diversity.²³ These unresolved issues have become the next agenda items in global trade negotiations which the United States needs to proactively pursue in future multilateral diplomacy.

IV. UNITED STATES FRAMEWORKS AND CHALLENGES

In the United States, several laws, rules, and procedures are in place to protect IPR regimes. One of the main enforceable mechanisms deployed by the U.S. Trade Representative (USTR) is the annual Special 301 Review,²⁴ which identifies countries with TRIPS violations. It can then either bring those countries into the WTO jurisdiction or take other bilateral actions to enforce the TRIPS rules. The USTR has raised a series

22. See DEP'T OF STATE, HUMAN DEVELOPMENT REPORT 2001: MAKING NEW TECHNOLOGIES WORK FOR HUMAN DEVELOPMENT, available at <http://www.undp.org/hdro/papers/ocpapers/mendis.pdf> (last visited May 13, 2004).

23. See TRADE, ENVIRONMENT, AND THE MILLENNIUM (G.P. Sampson & W.B. Chambers eds., 2002).

24. Section 301 of the Trade Act of 1974 is the basis for "Special 301." The review procedures are also set forth in "Title VII" of the Omnibus Trade and Competitiveness Act of 1988 and other trade laws such as "Super 301" and "Section 1377." Executive Order 13116 of March 31, 1999, also gives the USTR additional authority to enforce IPRs in international economic and trade relations. See USTR, 2000 SPECIAL 301 REPORT, available at www.ustr.gov/html/special.html (last visited May 13, 2004).

of issues related to TRIPS violations in many countries that have S&T agreements with the United States.²⁵

The Special 301 law and the Digital Millennium Copyright Act of 1998 (which implement the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty²⁶) not only serve as a safeguard but they also highlight the importance of IPR protection under the rules of international law. The USTR recognizes that TRIPS is the most detailed and comprehensive multilateral agreement on intellectual property yet negotiated as a single text that established both enforceable standards and settlement mechanism.²⁷ In cooperation with the WTO, WIPO, and the World Bank, U.S. government agencies (especially the U.S. Agency for International Development, the Department of the Treasury, the Patent and Trademark Office, and the USTR) provide technical assistance for capacity building, facilitate the creation of legal frameworks, and collaborate with law enforcement agencies in other countries.

A. Role of the Department of State

The Case-Zablocki Act of 1972 serves as a policy framework for fulfilling the Secretary of State's responsibility to pursue a coherent foreign policy in international S&T partnerships.²⁸ The circular-175 authorization process (known as the C-175 process) is the mechanism that provides for coordination and policy guidance to implement S&T agreements.²⁹ The guidance related to intellectual property issues in the international S&T negotiation process derives from the 1990 Model IPR Annex in the C-175 process,³⁰ which has raised two major interrelated issues with American trading partners.

The *geographic allocation clause* (Article IIB2a in the 1990 Model IPR Annex) states that each of the partner countries "shall be entitled to obtain 'all rights' and interests"(and by extension the commercial rights) for

25. *See id.*

26. *See* Digital Millennium Copyright Act of 1998, Pub. L. 105-304 (1998) (codified at scattered sections of 17 and 28 U.S.C.).

27. *See* U.S. TRADE REP., PROTECTION OF INTELLECTUAL PROPERTY RIGHTS AND THE WTO'S TRIPS AGREEMENT, available at <http://www.ustr.gov/html/why.html> (last visited May 13, 2004).

28. *See* Case-Zablocki Act of Aug. 22, 1972, (codified as amended at 1 U.S.C. § 112a-b (1972)); *see* 22 U.S.C. § 2656d(a) (2000).

29. *See* HANDBOOK ON TREATIES AND OTHER INTERNATIONAL AGREEMENTS (THE C-175 HANDBOOK) chs. 700-750 (1985); U.S. DEP'T OF STATE, SUPPLEMENTARY HANDBOOK ON THE C-175 PROCESS: ROUTINE SCIENCE AND TECHNOLOGY AGREEMENTS [hereinafter SUPPLEMENTARY HANDBOOK], available at <http://www.state.gov/g/oes/rls/rpts/175/1456.htm> (last visited May 12, 2004).

30. This Annex was approved in May 1990 pursuant to Executive Order 12591 of 1987 and the Omnibus Trade and Competitiveness Act of 1988, Section 5171(b). Exec. Order No. 12,591, 52 Fed. Reg. 13,414 (Apr. 10, 1987).

inventions developed jointly in its own country.³¹ The major issue is that Australia, Canada, and Japan for example have objected to this provision and feel they are unfairly excluded from the U.S. market. Smaller market countries such as Australia (population 19 million) and Canada (31 million) have argued that IPRs allocation should depend on the relative effort of each partner country that has invested in the jointly collaborated research and development activities.

The *equity clause* (Article IIB2b) states that IPRs are allocated to the country whose law protects intellectual property when and if the legal system of the partner country fails to guarantee such protection adequately and effectively.³² Developed countries such as Canada, Germany, Italy, and Japan have objected to this provision on the argument their laws adequately provide IPR protection similar to those of the United States; therefore, these countries believe such a clause is unnecessary and insulting.

In international S&T negotiations, the equity clause and the IPR issue have become a major challenge to American diplomats and trade negotiators. The equity clause is a concern to many of America's trading partners who object to the determination of the "home market" or territorial allocation of "rights." The heart of the equity clause is related to areas in which one country's legal framework protects certain kinds of IPRs, but not others.

When the legal system does not protect a particular right, "all rights" to IPRs will be allocated to the country whose system has the most legal protection. In general, however, each country keeps the rights to its home market where the IPR is created in joint S&T activities.³³ American negotiators also have difficulties in territorial allocation of rights with countries that have regional cooperation, such as the European Union and the Asia Pacific Economic Cooperation, and with countries that have a smaller home market compared to the United States. Those countries maintain their legal regimes and IPR protections are as strong as those of the United States and request equal treatment in access to the American market. When the involved countries have disputes over the equity clause and IPR issues, the arbitration and dispute settlement clauses³⁴ may permit the countries to resolve them under the WTO rules and TRIPS.³⁵

31. SUPPLEMENTARY HANDBOOK, *supra* note 29.

32. *See id.*

33. *See id.*

34. *See* TRIPS, *supra* note 20.

35. *See* SUPPLEMENTARY HANDBOOK, *supra* note 29.

B. Model IPR Annex for International Science and Technology Agreements

Since 1990 U.S. government agencies have incorporated the Model IPR Annexes in many international S&T agreements. Some agencies in consultation with the USTR and the Patent and Trade Office, have developed their own flexible approaches to IPR issues. For example, the National Aeronautic and Space Administration (NASA) and the Department of Energy (DOE) have their own “preferred texts” to the 1990 IPR Annex.³⁶ In many cases, partner countries had no major difficulties accepting the American provisions. In other cases, objections to the Model Annex language resulted in either protracted negotiations or failure to reach a new agreement. In other instances, significant modifications followed the 1990 Model IPR Annex. Increasingly, many countries (including Canada and Japan) and the European Union have raised questions about the continued utility and applicability of specific language in the 1990 Annex since these jurisdictions are also members of the WTO.

When the time comes to negotiate for the renewal of S&T agreements with Australia, Canada, the European Union, Germany, Italy, Japan, and South Korea, American negotiators, who strictly adhere to the two provisions in the 1990 Annex, face many challenges. Within the U.S. government, a number of technical agencies face an increasingly cumbersome interagency clearance process. The National Research Council made recommendations to streamline the C-175 authorization and to expedite the process for an effective response by the State Department.³⁷

Since recognizing the issues of global competitiveness and the interagency policy coordination process, the White House Office of Science and Technology Policy and the Department of State have worked with other government agencies to develop a better mechanism to address these contested IPR issues.³⁸ In this respect, the 2000 IPR Annex allows a country to have “a right” (as opposed to “rights”) to exploit or license

36. See *id.* app. NASA Annex Option; *id.* app. DOE Annex Option.

37. National Research Council, *The Pervasive Role of Science, Technology, and Health in Foreign Policy: Imperatives for the State Department* 69-79 (1999), available at <http://books.nap.edu/books/0309067855/html/62.html> (last visited Jan. 29, 2004). In response to this 1999 Report, see SUPPLEMENTARY HANDBOOK, *supra* note 29.

38. To accomplish this, the White House’s National Science and Technology Council (NSTC) and the White House’s OSTP were given the mandate to provide the across-the-board review of S&T policy with budgetary recommendations for agencies like the Department of Energy and NASA. The NSTC and OSTP also have the authority to formulate U.S. government policies related to international S&T programs and activities. The NSTC’s Committee on International Science, Engineering and Technology is the central reference point of the U.S. government’s interagency coordination on international S&T agreements and activities. The Assistant to the President for S&T has the overall responsibility for management of the NSTC and its interagency working groups.

intellectual property created in its geographical territory.³⁹ Inventions owned by the government through its employees can be licensed under the Bayh-Dole Act.⁴⁰

The rapidly evolving globalization of information technology, nanotechnology, and biotechnology prevents the United States from enforcing the 1994 TRIPS regimes in every country. Industrialized countries have better IPR regimes than other developing and less developed countries. Given global challenges in trade and the environment (including public health issues, especially related to HIV/AIDS treatments in Africa and elsewhere), the U.S. government has considered a flexible IPR framework when entering into S&T agreements with these countries (e.g., some exceptions are made under the Bayh-Dole Act on a case-by-case basis for “exceptional circumstances”). It is beneficial to coordinate these exceptions with the USTR in its Special 301 and with the Department of State for practical and political reasons.

To put in place flexible IPR frameworks, for example, the Department of Human and Health Services has worked with USTR in countries where IPR regimes are insufficient or nonexistent for issues related to HIV/AIDS. It appears the negotiation of IPR issues on a case-by-case basis may be the most productive approach to reaching international S&T agreements. Such flexibility is within the purview of the WTO’s TRIP guidelines for greater social and economic welfare as well as for national security and emergency considerations, particularly in the context of the global HIV/AIDS pandemic.⁴¹

V. STRENGTHENING AMERICAN SCIENCE AND TECHNOLOGY CAPACITY

The U.S. government, including all executive departments and technical agencies, demonstrates that its joint S&T research activities with other countries have mutually benefitted their domestic missions and promoted America’s international trade and economic policy objectives. Numerous other activities such as technical assistance, formulating rule of laws, and legal enforcement in developing countries and more recently with the Newly Independent States of the former Soviet Union must be further carried out simultaneously. These long-term “investment” strategies would enhance their capacity building (and American goodwill

39. See Revised 2000 IPR Annex, in SUPPLEMENTARY HANDBOOK, *supra* note 29, § 111A(2)b.

40. See 35 U.S.C. § 207 (2000).

41. Articles 7 and 8 of the TRIPS Agreement contain provisions not only to protect health and nutrition but also to promote public interest in sectors that are vital to national development. BRIAN McDONALD, THE WORLD TRADING SYSTEM: THE URUGUAY ROUND AND BEYOND 165-66 (1998).

abroad) and advance American industrial competitiveness and business interests abroad. The U.S. Agency for International Development, the Department of the Treasury, and other technical agencies have played an important role in this capacity building enterprise, both in institutional and human resource development. Not only U.S. governmental agencies, but also nongovernmental entities, the business community, and individuals must engage in achieving broader American foreign policy and economic development goals in S&T cooperative agreements and partnerships.

To strengthen S&T capacity, American embassies and other executive departments and technical agencies must continue to monitor partner countries' international S&T activities and programs under the U.S. cooperative agreements and implementing arrangements. The 1987 Executive Order also stipulates the results of overseas S&T research and development activities must be reported to federal agencies, academic institutions, and the private sector through the Science and Technology Reporting Information Dissemination Enhancement (STRIDE) Program.⁴²

Internally, the Department of State must have greater resources available to ensure that international S&T policies and programs are developed and implemented to achieve American foreign policy goals and to take necessary actions to address any deviation from the overall international economic and trade policy goals. In the past, the allocation of funding and personnel resources, as well as environmentally driven policies, appeared to put less importance on S&T aspects of foreign policy. Yet, the American S&T policy has become a crosscutting issue, imbedded in many foreign policy and international trade promotion goals. A few major United States embassies have environment, science, and technology (EST) officers to cover increasingly growing S&T innovations and controversies. Innovative strategies by the State Department, such as the science and technology fellowship and exchange programs that place American scientists in our embassies and the Department's various bureaus, assist in strengthening S&T capabilities in international diplomacy.⁴³ Critical global issues such as biodiversity, global climate change, the HIV/AIDS pandemic and other infectious diseases, genetically

42. See Exec. Order No. 12,591, 52 Fed. Reg. 13,414 (Apr. 10, 1987) (establishing the mechanism known as the STRIDE Program for unclassified reporting), available at <http://www.nttc.edu/products/guide/seca05f.html> (last visited May 13, 2004). STRIDE, which stands for Science and Technology Reporting Information Dissemination Enhancement, ensures that federal agencies and laboratories assist universities and the private sector in broadening our technology base by moving new knowledge from the research laboratory into the development of new products and processes. *Id.*

43. See U.S. Dep't of State, Bureau of Oceans and International Environmental and Scientific Affairs Web page, available at <http://www.state.gov/g/oes> (last visited May 27, 2004).

modified foods and nuclear energy and safety, although challenging to EST officers, are the driving issues in multilateral diplomacy.

Moreover, U.S. government agencies must engage in more cooperative activities in other developed and developing countries where science and technological talents, facilities, and commitments reside to resolve these global issues. The American involvement in S&T collaborative activities in less developed countries must be pursued through humanitarian, defense, and development assistance programs to address global issues that have a direct link to American national security and international terrorism. A recent bilateral S&T agreement with Bangladesh illustrates an example of evolving asymmetrical strategies to assist friendly countries in capacity building and economic development.⁴⁴ The decision to declare HIV/AIDS as a national security issue during the Clinton Administration may also demonstrate that American people are vulnerable to the devastation taking place in other parts of the world, especially Africa, and increasingly in Asia. In a highly interdependent world, a flexible and asymmetrical strategic vision is essential for international S&T policy to better address changing global and domestic security needs.

VI. CONCLUSION

In coming years, global S&T cooperation will open a wide range of opportunities to advance America's foreign policy and international trade promotion goals including:

1. By reaching out to scientists, scholars, and technology-minded young entrepreneurs in other countries, the United States would promote American idealism and democratic governance because international S&T activities are a neutral and apolitical instrument for peaceful change.
2. International S&T collaboration facilitates democratic changes and promotes open trade with other countries. This would lighten the American military's mission to protect national security and maintain global peace.
3. Within the framework of global institutions, American S&T collaborative agreements help create a better environmental, scientific, and technological infrastructure in other countries promoting American business and economic interests and to protecting IPRs and equitable

44. U.S. Assistant Secretary of State for South Asia signed an umbrella S&T agreement with Bangladesh on March 1, 2003. *Media Note: United States signs Science and Technology Agreement with Bangladesh*, Mar. 6, 2003, available at <http://www.state.gov/r/pa/prs/ps/2003/18430.htm> (last visited Mar. 4, 2004).

access to their markets. This is an extension of the U.S. Constitution and its enshrined democratic values which can be shared broadly with other nations.

4. By implementing the *Agenda 21* of the Rio Earth Summit of 1992 in Brazil and subsequently the World Summit on Sustainable Development of 2002 in Johannesburg in South Africa, the United States helped efforts to create a series of MEAs that will demand transnational solutions in science and technology fields. The American leadership in new geospatial technology, biotechnology, and nanotechnology will not only promote economic growth domestically but also enhance the stewardship of the global environment and sustainable development strategies.
5. By promoting the current status of cooperative S&T agreements, the United States enhances its ability to deal with global dangers like terrorism, narcotics, and other criminal activities that threaten our national security and domestic peace and prosperity.

The instruments of IPR regimes have become a major issue that continues to arise frequently in international S&T negotiations. Yet, such agreements foster greater economic welfare, better international communication and exchanges, higher transparency, and more trust among partner countries around the world. Thus, S&T agreements offer reliable confidence and capacity building frameworks for greater national security. The current IPR provisions, which still pose a challenge to American negotiators, need to be resolved to gain greater mutual benefits in cooperative S&T activities. Therefore, to be more competitive in the global marketplace, a more progressive and balanced IPR regime is required. This regime would be facilitated by a comprehensive appraisal of current legislative, policy, and administrative instruments.

