# GHETTO'ING WORKERS WITH HI-TECH: EXPLORING REGULATORY SOLUTIONS FOR THE EFFECT OF ARTIFICIAL INTELLIGENCE ON "THIRD WORLD" FOREIGN DIRECT INVESTMENT

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"Entre le fort et le faible, c'est la liberte qui opprime et la loi qui affranchit." ("Between the powerful and the weak, it is liberty that oppresses and the law that sets free.")

Pere Henri Lacordaire (1802-1861)<sup>1</sup>

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#### I. INTRODUCTION

In early 2007, MSNBC Science Editor Alan Boyle wrote an article about human-robot interaction as life for the future. Reporting on the work of scientists such as MIT robot specialist Cynthia Breazeal, Boyle pointed out that it will be just a matter of time before various technologies will produce sophisticated, "thoughtful" robots that can serve as "artificially intelligent advice-givers,

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<sup>1.</sup> Father Henri Lacordaire was a French Dominican priest, a liberal Catholic who was elected to the French Parliament in 1848. He was successor to Alexis de Tocquerville in the French Academy (*L'Academie Francaise*).

assistants or companions" for humans.<sup>2</sup> According to Boyle, scientists have said that computers will match the capability of the human brain by 2029, leading to a socio-technological singularity "that cannot be anticipated . . . . Someday you could be taking orders from a robot . . . but in a nice way . . . . "<sup>3</sup>

Boyle has articulated the optimistic vision that occasionally appears in the media about the possibilities offered by artificial intelligence ("AI"). AI can be defined in simplistic terms as the science and technology that enables the simulation of the human brain's functions by a computer, therefore allowing machinery and software to replace humans. The robotic technology described by Boyle is only one application of AI.<sup>4</sup> For instance, the global positioning system ("GPS") in many of today's modern cars is a form of such robotic technology.

But AI is not a new concept. National governments used AI methods during past world wars, referred to as "Operational Research."<sup>5</sup> Since then, AI has been developed and used by government organizations such as the National Aeronautics and Space Administration (NASA)<sup>6</sup> and has enabled systematic massive automation of factory labor, leading to mass commodity production.<sup>7</sup> The advent of technology has boosted AI's development, raising concerns as to what may happen to our society if robots eventually replace humans.<sup>8</sup>

6. WHITBY, supra note 5, at 19.

7. Lewis D. Solomon, *The Microelectronics Revolution, Job Displacement, and The Future of Work: A Policy Commentary,* 63 CHI.-KENT. L. REV. 65, 83-84 (1987).

8. See Lee Gutkind, Robo-Nation: 12 Questions about the Future of Robotics, THE AMERICAN SCHOLAR, Summer, 2007, 16 at 16-17, available at http://www.theamericanscholar.org/su07/roboticsquestions-gutkind.html; see also Boyle, supra note 2. Concerns expressed by members of the public via the internet have included the following:

This is creepy .... I hope that the individuals creating these androids don't make any mistake now...I find myself in an abusive relationship with my robot...I am not so much worried about the robots malfunctioning and "taking over" as I am with the corruption of corporations .... simply because the people making the robots cannot be trusted .... H]ow much of your freedom and privacy do you want to give up to have a robot .... [who] is collecting information on you...? No androids for me thank you ....

forum,

MSNBC, private

<sup>2.</sup> Alan Boyle, *Robots Could Soon be Calling the Shots*, MSNBC, Feb. 21, 2007, http://www.msnbc.msn.com/id/17244922/.

<sup>3.</sup> *Id.* 

<sup>4.</sup> *Id*.

<sup>5.</sup> The most famous example is the work of Tjalling Koopmans in the United States and Kantorovitch in the Soviet Union, applied respectively for the transportation of U.S. troops in the Pacific and for the transportation of Soviet base metals in Siberia during World War II. Both scientists received Nobel Prizes in economics. *See* Tjalling C. Koopmans, *Optimum Utilization of the Transportation System*, 17 ECONOMETRICA 136 (1949); L. Kantorovitch, *On the Translocation of Masses*, 5 Management Science 1 (1958); BLAY WHITBY, A BEGINNER'S GUIDE TO ARTIFICIAL INTELLIGENCE 12 (2003) (recounting the work of Alan Turing on "Enigma," used to break German military codes during World War II); Lee Loevinger, *Reflections on Computer Technology & The Law: The Invention and Future of the Computer*, 15 J. MARSHALL J. COMPUTER & INFO. L. 21, 36 (1996) (forewarning the coming of an information revolution where "society will be divided into a class of sophisticated technological technocrats, who are able to cope with and afford all the complexities of advanced networks and mechanisms, and a much larger class of plebeians who still have trouble programming their VCRs.").

http://boards.msn.com?MSNBCboards/threatd.aspex?

AI has clearly changed consumer behaviors, improved quality of life, and transformed our way of thinking and solving problems. More specifically, AI has been applied to render services such as decision-making assistance; diagnostic services, especially in health and medicine; interpretation of signals; voice recognition; image interpretation; machine adjustment; assistance in industrial processes and learning processes; computer vision; game playing;<sup>9</sup> or other futuristic robotic assistance described by Boyle. Depending on future research, the potential of AI can go much further beyond these applications, including a complete lifestyle revolution.<sup>10</sup> AI is recognized as a motivational force in the "New Economy,"<sup>11</sup> which is sometimes referred to as the "Knowledge Economy." The question remains whether AI is also responsible for a new global division of labor, leading to a new distribution of wealth and power that can further disadvantage the existing disadvantaged segments of the human population.

This Article examines the potential impact that systematic and large-scaled industrial application of AI may produce on foreign direct investment ("FDI")<sup>12</sup> in the new century. The Article suggests that as higher forms of AI increase the productivity of the economy, they can also potentially reverse existing global FDI patterns. Although such reversal of trends may appear positive on the surface,<sup>13</sup> it

11. The concept of the "New Economy" was raised in the United States around 1997. The New Economy introduced the sector of "the new Technologies of Information and Communication" ("TIC") and the economic growth that this new sector induced. The concept also reflected a new approach to the economy based on knowledge and creativity, rather than the old approach based on raw natural resources and commodities. See generally Robert J. Gordon, Does the "New Economy" Measure Up to the Great Inventions of the Past?, 14 J. ECON. PERSPECTIVES 49 (2000); THE NEW ECONOMY: BEYOND THE HYPE, THE OECD GROWTH PROJECT (2001); DANIEL COHEN & MICHELE DEBONNEUIL, LA NOUVELLE ECONOMIE (1998); JORGENSON & STIROH, RAISING THE SPEED LIMIT: US ECONOMIC GROWTH IN THE INFORMATION DEP'T OF COMMERCE, DIGITAL ECONOMY, AGE: U.S. 1 (2000).http://www.rand.org/scitech/stpi/Evision/Supplement/jorgenson.pdf; ROGER ALCALY, THE NEW ECONOMY (Farrar, Straus and Giroux Books 2003); JEAN GADREY, NEW ECONOMY, NEW MYTH (Andrew Wilson trans., Routledge Publishing 2003).

12. FDI is defined as an investment between a resident entity in one economy, the foreign direct investor or parent enterprise, and an enterprise resident in an economy other than that of the foreign direct investor. This long-term relationship is characterized by a lasting interest and control. The term FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy. Such investment involves both the initial transactions between them and among foreign affiliates, both incorporated and unincorporated. FDI has three components: equity capital, reinvested earnings and intra-company financing. World Investment Report 2006, *infra* note 34.

13. Globalization can lead to nations competing with each other in lowering labor standards

BoardID=475&ThreadID=207576; accord PAMELA MCCORDUCK, MACHINES WHO THINK 353, 381 (2004) (raising issues such as "[f]orging the God" and whether "a [m]ade-[u]p mind [can] be [m]oral").

<sup>9.</sup> In 1997, Gary Kasparov, chess world champion, was defeated by a computer program called Deep Blue, or Chess Genius 2.9. WHITBY, *supra* note 5, at 4.

<sup>10.</sup> According to writers, Hollywood can now have Humphrey Bogart and Marilyn Monroe (the computer-based reconstructions of them) make movies again. Likewise, the feasibility of "virtual girlfriends" and "artificial companions" will bring AI to the pornographic industry. WHITBY, *supra*, note 5, at 128-29.

can also inflict further harm on Third World nations, widen the gap between the have's and have-not's, and ultimately bring about a new global division of labor that can ghetto the disadvantaged. This gloomy vision fits in with what critics have envisioned about the adverse effect of globalization—an ongoing, heated international law and economic debate.

This Article also points out the need for systematic, coordinated transnational AI regulation. This means an effectively enforced international economic law system that transcends cultural and territorial borders for the protection of all constituents: intellectual property ("IP") rights holders, technology producers, and the global workforce. This Article proposes that the regulatory scheme should aim to highlight "Knowledge" as an endogenous production factor in the New Economy, with the view to protect workers and close the gap in access to "Knowledge" between the ruling elites and the workforce, because such a gap would disenfranchise the latter. This Article proposes an enlarged definition for "Knowledge," which in effect can potentially alter the patentability of intellectual property under the current legal system.<sup>14</sup> This Article further concludes that efforts at regulation will require global law and policymakers to conduct a comprehensive review of, as well as coordinated amendment and better specification to, the existing international legal framework in all relevant areas of the law. These areas include intellectual property, antitrust, labor, trade, ecommerce, cross-border data flow, and Internet usage.

Because such coordinated global regulation will take time and may not be feasible due to obstacles and challenges deeply rooted in current legal and political systems, this Article urges developing nations to formulate and implement national policies that immediately place workforce education, technology independence, freedom of ideas, and innovation as the highest priorities in meeting and joining the New Economy. Sadly, in many cases, this cannot be accomplished without grass-roots political reform in many Third World countries.<sup>15</sup>

in order to attract FDI, resulting in non-standard work, a decline in the power of trade unions, and other social ills such as the exploitation of migrant workers, child labor, and the feminization of the workforce at substandard conditions, all detrimental to worker welfare. Katherine Van Wezel Stone, *To the Yukon and Beyond: Local Laborers in a Global Labor Market*, 3 J. SMALL & EMERGING BUS. L. 93, 96 (1999); ROGER BLANPAIN ET AL., THE GLOBAL WORKPLACE 11-12 (Wolters Kluwer 2007). Now, if AI can replace human labor, one could easily conclude that all the above problems may disappear. As argued in this Article, this may not be the case.

<sup>14.</sup> A review of the patentability of "Knowledge" as proposed by the Article will be saved for another day. As explained herein, I propose that "knowledge" consists of four types: (I) pure knowledge of technology and related methodologies, such as computer software and hardware; (II) know-how, referring to knowledge arising from culture, context, utilization, employment, or tasks, which enables the application of Type I knowledge (for a definition of know-how, see *infra* note 211); (III) factual data and information such as that which may be contained in a database or an encyclopedia; and (IV) relational knowledge, which helps us locate the sources of information or expertise. *See infra* discussion in Part VI. A. [hereinafter Duong].

<sup>15.</sup> For convenience, the term "*Third World*" refers collectively to the newly industrialized economies, the transitional economies, the developing economies, the lesser-developed economies, and the least developed economies. Terminologies such as "developing country" and "least-developed country" have been used in the GATT-WTO framework to grant exemptions, preferences, or transitional grace periods to nations that need economic help in order to achieve

# II. BACKGROUND AND CONTEXT: UNDERSTANDING AI AND IT'S RELATIONSHIP TO FDI

### A. Historical Background

The desire to create an "artificial human" dates back to Homer's *Iliad*, when the Greek god Hephaestus created "golden wives" who had the capacity to speak and work.<sup>16</sup> Concretely, the genius French scientist and philosopher Blaise Pascal created a calculator in 1642, the *Pascaline*, the first machine capable of accomplishing what was once considered the domain of the human mind.<sup>17</sup>

To understand the concept in context, let's look at one application of AI: robot technology. Industrial robots first appeared in factories a long time ago, during the earlier part of industrialization. Since then, there have been three generations of robots. A first-generation robot is able to execute a set of preestablished movements. A second-generation robot is endowed with visual perception that enables it to make some decisions. Robots of the third generation, the subject of current research, are like those discussed by Boyle. These robots are capable of becoming humans' personal assistants and companions. They have a more complex autonomy equipping them with the ability to move in an unknown environment.<sup>18</sup>

Since the 1970s, the development of AI has been extraordinary, thanks to the tremendously increased capability of computers. Starting in the 1980s, AI broke into the commercial world and the field of information technology ("IT"), becoming the meeting point of biologists, scientists, mathematicians, statisticians,

parity with the developed nations of Asia-Pacific, North America and Western Europe. See, e.g., Agreement on Trade-Related Investment Measures (TRIMS), available at http://www.wto.org/english/docs\_e/legal\_e/18-trims.pdf. In this Article, "Third World" simply refers to all countries that do not belong to the developed Asia (i.e. Japan), Western Europe or North America. Western Europe and North America exemplify Anglo-American Common Law and Civil Law traditions. Wendy Duong, Partnerships with Monarchs – Two Case Studies: Case One: Partnerships with Monarchs in the Search for Oil: Unveiling and Re-Examining the Patterns of "Third World" Economic Development in the Petroleum Sector, 25 U. PA. J. INT'L ECON. L. 1171, n. 12 (Winter 2004) [hereinafter Duong, Case One].

The term "developing" as used in this Article encompasses the earlier stages of economic development that a country or region undergoes, all the way to the newly industrialized stage of development. Accordingly, for purposes of this Article, the term "Third World" and "developing" nation, country, economy, or region are used interchangeably.

<sup>16.</sup> See HOMER, THE ILIAD (A.T. Murray, trans., Harvard University Press 1967) (1924).

<sup>17.</sup> See MCCORDUCK, supra note 8, at 526; Loevinger, supra note 5, at 22.

<sup>18.</sup> See VERNON PRATT, MACHINES A PENSER: UNE HISTOIRE DE L'INTELLIGENCE ARTIFICIELLE (1995); MCCORDUCK, *supra* note 8, at 523-533.

computer scientists, sociologists, psychologists, economists, and last but not least, lawyers.<sup>19</sup>

### **B.** Definitional Framework

John McCarthy first proposed the phrase "AI" at Dartmouth College in 1956. According to McCarthy, "It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable."<sup>20</sup>

This definition is subject to debate.<sup>21</sup> What is meant by "intelligent machines"? One can mainly consider two responses:

1. A machine is considered intelligent if it reproduces human *behaviors* in a specific (or non-specific) environment;

2. A machine is considered intelligent if it models the cognitive *functioning* of a human being.

These responses have led to two different approaches in the development of AI. The first approach is analogous to behaviorism in psychology. Behaviorism contemplates that only human behavior (e.g., stimuli-responses) may be a subject of scientific studies.<sup>22</sup> The second approach is based on cognitive science,<sup>23</sup> which

21. Not only is the definition of AI subject to debate, but the definition of "intelligence" itself is also questioned by researchers. WHITBY, *supra* note 5, at 1. Whitby, a professor of cognitive science and AI at the University of Sussex, England, suggests the following definition: "AI is the study of intelligent behaviour (in humans, animals, machines) and the attempt to find ways in which such behaviour could be engineered in any type of artifact." Id.

22. See Stanford Encyclopedia of Philosophy, Behaviorism, May 26, 2000, http://plato.stanford.edu/entries/behaviorism/ (last visited Feb. 6, 2008).

23. Although there is much disagreement as to what "cognitive science" is, it can loosely be described as the interdisciplinary study of the mind (in humans, animals, and even machines or extra-terrestrial aliens). WHITBY, *supra* note 5, at 99. According to Whitby, cognitive science was born out of opposition to behaviorism in psychology, and hence has had tremendous effect on the study of psychology, including the teaching and learning process. Just like AI, cognitive science brings together several types of experts: psychologists, neurobiologists, linguists, computer scientists, and philosophers. *Id.* 

The following summarizes the development of psychology as a field of study in an effort to explain the cognitive science. "Folk psychology" is the common sense and gathering of life experience that helps us understand and predict what people do. In the first half of the 20<sup>th</sup> century, the main scientific challenge to folk psychology was an approach to psychology called "behaviorism." This approach is premised on the notion that the only scientific way to explain human behavior is to analyze input and output. The theory is that when people are subject to a "stimulus," they give a "response," and scientific psychology is the recording and measuring of "stimuli-responses" pairing. Thus, the human brain is like a "black box," whose inner workings are not observable. Cognitive science was born as a challenge to behaviorism, and AI was crucial to that birth, because it brought about the understanding that even the computer is not exactly "a black box" in the behaviorist's sense. For example, a robot can be programmed to have a "goal."

<sup>19.</sup> See The History of Artificial Intelligence, http://library.thinkquest.org/2705/history.html (last visited Nov. 6, 2008); Nancy Blodgett, Artificial Intelligence Comes of Age, 73 A.B.A.J. 68 (Jan. 1987). See also MCCORDUCK, supra note 8, at 532-533.

<sup>20.</sup> John McCarthy, *What is Artificial Intelligence*? 2, Nov. 24, 2004, http://www.oberon2005.ru/classics/jm2004.pdf.

analogizes the human mind/brain to computer software and hardware. Today, the dichotomy between these two approaches is becoming less and less relevant to researchers and scientists as other paradigms have appeared, such as connectionism, which refers to a simulated neuronal network,<sup>24</sup> or adjustable algorithm, which refers to a genetic algorithm.<sup>25</sup> For purposes of this Article, it is unnecessary to explore these paradigms fully. Justifiably, that task should be left to scientific journals and not legal interdisciplinary reviews.

This Article proposes the following simplified, concretized definition of AI. AI is a science (and technology) that aims to create a machine, especially a computer, which can do jobs requiring the perceptive and cognitive functioning of a human being. To realize this objective, the science of AI must formalize human knowledge and mechanize the process of human reasoning in various types of activities. The methods and techniques used in this science are varied and interdisciplinary; as such, they are beyond the scope of this Article or the expertise of this author.

Thus, AI is the simulation of the human brain by a computer.<sup>26</sup> Scientific methods are used to identify those superior functions of the brain that can be simulated. For example, researchers will analyze and document what an engineer must do to design a system for the factory production of a particular commodity. Mathematical models, often requiring algorithms,<sup>27</sup> are then used to memorialize, express, and document these superior human brain functions. These mathematical models are fed into a computer so that when a standardized instruction or an inquiry is given, the computer will generate the desired result, exactly like the work product of the engineer. The software will then replace the engineer. At this point, AI will have been used in the system design of factory production in order to free the engineer for other tasks.<sup>28</sup> Basic machine intelligence results in the

28. Edwina L. Rissland, Artificial Intelligence and Law: Stepping Stones to a Model of Legal Reasoning, 99 YALE L.J. 1957, 1958-59 (1990).

Instead of sending a robot to the kitchen to get coffee, scientists can program the robot to have a "make-coffee" goal. *Id.* at 98.

<sup>24. &</sup>quot;Artificial neural nets" are a type of computer program directly inspired by knowledge of how the brains of humans and similar animals work, raising inquiries such as whether artificial neural nets are keys to intelligence. WHITBY, *supra* note 5, at 42.

<sup>25. &</sup>quot;Genetic algorithm" is one particular form of "evolutionary computing," defined briefly as a field of AI that takes the basic principles of evolution and applies them in the form of a computer program. *Id.* at 58-59.

<sup>26.</sup> At least one writer has distinguished the invention of the computer from other inventions. Other inventions with popular usage are designed for utilitarian purposes whereas the computer is also designed for the specific purpose of advancing scientific research. AI is an example of this fact. Loevinger, *supra* note 5, at 21-23.

<sup>27.</sup> A number of mathematicians (such as John Lucas and Roger Penrose) have opposed AI, reasoning that human thought cannot be algorithmic. These mathematicians do not feel that they are following an algorithm when they make creative leaps in their own mathematical work. WHITBY, *supra* note 5, at 77; *accord* ROGER PENROSE, THE EMPEROR'S NEW MIND: CONCERNING COMPUTERS, MINDS, AND THE LAWS OF PHYSICS 5-11 (Oxford University Press 1999); ROGER PENROSE, SHADOWS OF THE MIND: A SEARCH FOR THE MISSING SCIENCE OF CONSCIOUSNESS 12-16 (1994).

automation of repetitive tasks that require little thinking capacity, but higher forms of AI can truly simulate the human mind.

In other words, in the development of AI, experts study how humans think, work, perceive, and communicate in order to program those functions into mathematical formulas that can be fed and incorporated into a machine. Robotic intelligence is just one way in which some form of AI is used to service society.<sup>29</sup> At a more sophisticated level, there is the model of the human brain and its varied thinking and cognitive functions. One of the most spectacular results is the "recognition of form" via vision intelligence, i.e., the capture of visual information by an artificial retina.<sup>30</sup>

But one point remains: no matter how sophisticated AI becomes, it cannot and should not replace human aesthetics, moral expressions and choices, or human decisions that require emotions, passion, imagination, the ability to weigh consequences, or the human wisdom of predicting the future with nuances. For example, can or should AI compete with Homer or Shakespeare or replace the White House in a decision on whether or where to drop a bomb?<sup>31</sup>

## III. ONE PAST AND PRESENT FDI PATTERN-FROM RICH TO POOR

# A. Outbound Flow of FDI from Rich to Poor.

For several decades, developing nations have become manufacturing sites for transnational commodity producers who desire cheaper labor and raw natural resources. This has accounted for the volume of outbound FDI from developed countries to the "Third World," well-demonstrated by the mere fact that China has been described as the "workshop of the world."<sup>32</sup>

Recent data released by the United Nations Conference on Trade and Development (UNCTAD) reinforce the existence of this pattern: U.S.-based transnational corporations dominate the flow of outbound FDI globally, both in

<sup>29.</sup> See, e.g., Seth Borenstein, Robots with Humanity, THE ASSOCIATED PRESS, Nov. 24, 2006, http://www.msnbc.msn.com/id/15831851/; accord Seth Borenstein, Robots Can Be So Lifelike They're Scary, THE ASSOCIATED PRESS, Nov. 24, 2006, http://www.msnbc.msn.com/id/15831863/page/2/print/1/displaymode/1098/.

<sup>30.</sup> MCCORDUCK, *supra* note 8, at 274; VisRecog Visual Recognition Module, http://mind.sourceforge.net/visrecog.html (last visited Nov. 6, 2008).

<sup>31.</sup> Alan Turing, one of the greatest AI pioneers of the 20<sup>th</sup> century, raised nine objections to AI possibilities, including, among others, theological objection and mathematical objection. *See* THE ESSENTIAL TURING: SEMINAL WRITINGS IN COMPUTING, LOGIC, PHILOSOPHY, ARTIFICIAL INTELLIGENCE, AND ARTIFICIAL LIFE PLUS THE SECRETS OF ENIGMA (B. Jack Copeland ed., 2004).

<sup>32.</sup> John H. Matheson, *Convergence, Culture and Contract Law in China*, 15 MINN. J. INT'L L. 329, 332 (2006); *accord* Clay Chandler, *Chasing the Dragon – Beyond the Sweatshop: Can China Innovate* CNNMONEY.COM, Mar. 19, 2007, http://chasingthedragon.blogs.fortune.com/2007/03/19/beyond-the-sweatshop-can-china-

innovate; *cf. China: Cheap Labor and Foreign Investment Aren't Enough*, BUSINESS WEEK.COM, Nov. 18, 2002, http://www.businessweek.com/magazine/ content/02\_46/c3808158.htm.

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financial services and in manufacturing.<sup>33</sup> For example, General Electric (GE) leads the list of the top fifty financial and non-financial transnational corporations based on the value of its foreign assets and number of foreign affiliates and employees.<sup>34</sup> The data confirms the obvious: big American businesses take their capital and technology abroad, especially to poorer countries, in order to make money. These entities are also most financially capable and technologically equipped to research and develop industrial applications of AI.

#### B. The Information-Based Society, Added Value, and the New Economy

In the broader analysis, the development of AI is just one aspect of an information-based civilization<sup>35</sup> where the computer has become an essential tool in life. We are living in an era where, as the cliché goes, information or knowledge is power,<sup>36</sup> and the computer becomes a necessary tool to acquire information.<sup>37</sup> In the New Economy, economic theory has formally incorporated technology as one engine of economic growth, and knowledge is regarded as a factor of production, just like capital and labor.<sup>38</sup> Take the computer chip for example. This chip can be made of silicon, the scientific name for a piece of sand and a material that is common and worthless. What gives the chip its value is the information and technology that the chip contains (mainly printed circuits and integrated circuits). With the information imbedded in it, the piece of silicon is no longer worthless—it now has "added value."<sup>39</sup>

In the New Economy, businesses compete to come out ahead through innovation and not merely by lowering production costs. The real market competition in today's information-based society is no longer the industrialization model of the nineteenth century, which motivated and brought about colonialism,

<sup>33.</sup> See U.N. CONFERENCE ON TRADE AND DEVELOPMENT DIVISION OF INVESTMENT, TECHNOLOGY AND ENTERPRISE DEVELOPMENT, ACTIVITIES REPORT 2006, available at http://www.unctad.org/en/docs/ite20071\_en.pdf.

<sup>34.</sup> U.N. CONFERENCE ON TRADE AND DEVELOPMENT, WORLD INVESTMENT REPORT 2006, annex table A.I.14, *available at* http://www.unctad.org/en/docs/wir2006annexes\_en.pdf [hereinafter WORLD INVESTMENT REPORT 2006].

<sup>35.</sup> See BILL GATES, THE ROAD AHEAD (Viking Penguin, New York 1995).

<sup>36.</sup> For the definition of "Knowledge" in context with the definition of "Knowledge Economy," see *infra* discussion in Part VI. A.

<sup>37.</sup> The digital computer is the main tool used in AI research. WHITBY, *supra* note 5, at 7. Researchers and experts have questioned whether knowledge is the key to intelligence, and whether research efforts should go into finding ways in which the computer can learn for itself. *Id.* at 33-35.

<sup>38.</sup> Carlos Correa, *Prospects and New Dimensions of International Transfer of Technology: An Issue Paper, in* THE LAW AND BUSINESS OF LICENSING 2633 (Jay Simon & Larry Evans eds., West 1999).

<sup>39.</sup> William L. Anderson, *The Economics of Outsourcing*, LUDWIG VON MISES INSTITUTE, Apr. 21, 2004, http://www.mises.org/story/1488. For an example of value added in a computer, see Hal R. Varian, *An iPod Has Global Value. Ask the (Many) Countries That Make It*, N.Y. TIMES, June 28, 2007 (tracing the production process and supply chain of an iPod to many countries and international companies to derive added value at different stages in the production process).

e.g., the search for new sources of supplies and raw materials that ended in territorial conquest.<sup>40</sup> Colonialism caused the political division between the developed world and the colonized Third World. The division was followed by the spread of Marxism and the Cold War.<sup>41</sup> This political division has also created the divergence of value and voices between the Northern and the Southern Hemispheres,<sup>42</sup> which has persisted in the public international law discourse despite present-day globalization.

Long after decolonization in the twentieth century and up until now, however, consumer commodity producers have continuously taken their manufacturing to developing economies for cheaper labor, benefits from exploiting raw materials at their geographic source, and perhaps to some investors, the doubled-edged advantages of doing business in a transitional, and therefore flexible, system of national law (or lack thereof).<sup>43</sup> This is evidenced by the significant outbound FDI flow from developed nations to the Third World, followed by the import of the latter's cheaply produced commodities back to the former for low-cost consumption. This cycle has given rise to the kind of global economic development patterns condemned by certain activists as the "colonists' return," or "neo-colonialism" relabeled as "free enterprise."<sup>44</sup> As illustrated below, industrial development and use of AI can potentially reverse such FDI patterns, but not necessarily for the Third World's betterment.

41. See Tom Lansford, Imperialism, Cultural, in 2 ENCYCLOPEDIA OF WESTERN COLONIALISM SINCE 1450 572 (Thomas Benjamin ed., 2007).

<sup>40.</sup> Today, it is unlawful to use force to invade a nation for economic gains or to control its political process, although writers argue that conquest can still be made culturally and economically. The coming into force of the United Nations Charter ended the legality of acquisition of territorial title by military conquest. *See, e.g.,* U.S. DEPARTMENT OF STATE, DOCUMENTS ON INTERNATIONAL AFFAIRS 2662 (John W. Wheeler-Bennett ed., 1932) (statement by Secretary of State Henry Stimson (the Stimson Doctrine), announcing that the United States would no longer recognize title to territory seized by armed force); League of Nations' Assembly Resolution (Mar. 11, 1932), codified in the Chaco Declaration (Aug. 3, 1932), the Saaverda Lamas Pact (Oct. 10, 1933), the Montevideo Convention on the Rights and Duties of States (Dec. 26, 1933); Inter-American Conference on the Maintenance of Peace (1936); Declaration on the Non-Recognition of the Acquisition of Territory by Force (Eighth Pan-American Conference 1938); *see also* GERHARD VON GLAHN, LAW AMONG NATIONS: AN INTRODUCTION TO PUBLIC INTERNATIONAL LAW 367-76 (6th ed. 1992) (discussing illegality of involuntary cession of territory by conquest); Allan Gerson, *War, Conquered Territory, and Military Occupation in the Contemporary International Legal System*, 18 HARV. INT'L L.J. 525 (1977).

<sup>42.</sup> David Schneiderman, *Investment Rules and the New Constitutionalism*, 25 LAW & SOC. INQUIRY 757, 767 (2000); ROBERT GOLDSCHEIDER, EXPANDING ROLE OF LICENSING IN WORLD, *in* THE LAW AND BUSINESS OF LICENSING, LICENSING IN THE 1990S 1648 (Jay Simon and Larry W. Evans eds., West 1999).

<sup>43.</sup> In general, reputable businesses will look for a national law system that is predictable, evenly and neutrally enforced, in order to eliminate political risks. However, some investors and entrepreneurs view the frontier nature of the developing economies, because of an operational environment of lesser regulation, as a business advantage. For example, the chopping of trees, clearing forests, digging into the earth for raw materials will be scrutinized more closely by both government and the public in a more developed jurisdiction.

<sup>44.</sup> See e.g, Lansford, supra note 41, at 576. For a discussion of neoliberalism in context, see Maria Eugenia Padua, *Mexico's Part in the Neoliberal Project*, 8 U.C. DAVIS J. INT'L L. & POL'Y 1, 30 (2002).

### IV. A POSSIBLE REVERSAL OF PATTERN IN GLOBAL FDI

In the absence of regulation, large-scaled industrial and commercial use of AI may lead to a new global division of labor that pushes Third World workers further down the ladder of development. This potential negative effect will render the noble goals and aspirations of globalization a euphemism at best.

### A. Hypothetical Illustration

Let's take a hypothetical case<sup>45</sup> involving a Western European business that manufactures a product whose production process is quite suitable for industrial application of AI. The product, a self-assembly piece of furniture with a functional design but made of low-quality wood, can be manufactured cheaply in developing markets such as China, Vietnam, India, Romania, Sri Lanka, or Mexico. This type of furniture is typically sold inexpensively in discount stores such as IKEA, Home Depot, or Lowes in the United States. The combination of low cost, a trendy yet functional appearance, and optimal utilization of space in the average home of any culture will make the product appealing to consumers across all economic classes. The success of IKEA products demonstrates this point.

I have chosen the furniture industry for this hypothetical for several reasons. First, production of raw wood is heavily regulated in developed nations due to environmental concerns, making its extraction more attractive and cost-effective in developing nations. Second, the furniture industry has been relatively slow to mechanize; it has traditionally been suitable for the cheaper artisan skills found in developing nations, rendering its end products more competitive and cost-effective compared to manufacturing in developed economies. Third, this industry typically consists of enterprises that have grown from formerly family-held businesses originally operating as "arts and crafts." As the business matures and grows, its employees begin to develop professional skills and expertise, and acquire industry knowledge that can be demonstrated empirically.

Let us assume that this Western European manufacturer has steadily experienced a healthy annual increase in turnover of roughly 15% for several

<sup>45.</sup> The hypothetical used in this Article is based on real-life data and interviews of corporate executives and financiers who have successfully incorporated AI into their businesses or projects. Entrepreneurs and founders of closely held high-tech startup companies were also consulted. Due to proprietary concerns, the interviewees have requested that all identities be omitted and that the real-life experience be made into a generic hypothetical.

years. This growth indicates the financial maturity of the business as well as the solidity of its market share, making the business "ripe" for AI application.

To the business decision-maker, steady turnover growth should call for expansion in manufacturing. Because of the high costs of expanding manufacturing capabilities in the developed home country, however, the business would consider taking manufacturing and production to, for example, Asia,<sup>46</sup> for the geographical advantages of ready raw supplies (e.g., wood), cheaper labor, and the consumer market potential of a number of growing economies such as India, China, and Vietnam.

### 1. Without AI

To manufacture in Asia, the business would need the following:

- a qualified management and technical team at the headquarters level consisting of, for example, financial professionals and engineers. Important functions covered by these employees would include: product concepts, research, designs, raw material purchasing, technical management of factories, and logistics (e.g. warehousing and delivery). The research and development that goes into the system design remains at headquarters.
- 2. an operational system at the factory level based on a "product-line" concept, which consists of nine functions:
  - i. receiving and stocking raw supplies (e.g., panels of wood)
  - ii. cutting the wood into various sizes of components
  - iii. decorating for aesthetic designs

I have also selected Vietnam, France, and China as country examples because:

- France serves as a European contrast to America from the Western Hemisphere.
- Vietnam serves as an example of a transient economy that still struggles with political reform.
- China is unique because of its "Dr. Jekyll and Mr. Hyde" status. It is an ambitious superpower and a developing economy at the same time, and its people are still struggling with standards of living and political freedom, contrasting interestingly with a proud national heritage and a collective propensity to respect hierarchy.

<sup>46.</sup> I use Asia for this hypothetical because of the continent's uniqueness on issues of economic development. While still possessing all characteristics of the transitional economies, the continent also offers examples of milestone economic success in the case of Japan, Taiwan, South Korea, and more controversially, China. In the cultural, metaphoric language of the Asian economist or business analyst, on the ladder of economic development, an Asian country first becomes a "Tiger," and then proceeds to achieve the omnipotent economic status of a holy "Dragon." Peter A. Coclanis & Tilak Doshi, *Globalization in Southeast Asia*, 570 ANNALS AM. ACAD. POL. & SOC. SCI. 49, 53-55 (2000). While Japan has certainly evolved "out of the economic development ladder" all together to join the rank of superpower, commentators have labeled the remaining countries in Asia as either "Dragon" or "Tiger" in their perceived progress of economic development. *Id*; *accord* GOLDSCHEIDER, *supra* note 42, at 1648 (identifying South Korea, Taiwan, Singapore and Hong Kong as the "little tigers" of the early 1990s, and recounting the economic progress of Japan); Chandler, *supra* note 32 (discussing China's economy by Fortune Asia editor).

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- iv. preparing for assembly format (e.g., making holes in wood panels)
- v. preparing for assembly and actually assembling
- vi. conducting quality control check
- vii. packaging
- viii. warehousing
- ix. delivering to retailers

To produce and deliver, for example, approximately 20,000 pieces of furniture per day in this system, the traditional product-line factory would need to employ approximately 800 employees. These employees would include mid-level technicians trained primarily in machine operation.

Although the number of factory employees may grow, the nine functions identified above remain the same as the company changes from a family-held business to a major corporation. In these automated, large-scale factories, the role of the foreman, who works under the engineer, is extremely important. Human labor under the foreman's supervision is needed for the operation and adjustment of machineries.

# 2. With AI:

For this furniture business, AI application would produce the following principal changes:

# a. At Headquarters Level

Work functions that the key management team must cover in the pre-AI environment will remain the same, but the nature and substantive content of each position or job description may change. This requires new criteria for hiring and new training because AI will create a new "digital" work environment. Those managers and technical personnel who cannot adapt to the new training and expectations will be retired.

Further, via mathematical methods, AI would also formalize three principal functions:

- Product concepts and designs: These functions will be computerized to meet specification requirements, optimize the ergonomics for the job of each operator at his/her workstation, and minimize the waste of raw materials. This is accomplished with the same software that designs jets.
- 2. Factory technical management: Similarly, computers will also optimize, memorize, and execute these functions.
- 3. Logistics: These functions will be operated by "supply-chain" software that can design and direct the transportation of the final products to warehouse facilities to achieve maximum time and space savings.

# b. At Factory Level

AI will transform the traditional "product-line" factory into a "digital factory," whereupon the operational system will now require a workforce of

approximately 150 employees instead of 800 employees. As a result of AIapplication in the three management functions identified above, the majority of operational or control tasks at the factory and warehouse, as well as related administrative management, are eliminated. The nine functions at the factory level are still accomplished, but the needs for personnel have been substantially reduced. Support functions such as accounting, finance, sales, and purchasing still remain, but each job description must change to accommodate the new digital environment. AI acts as the nucleus of technical and factory management, interconnecting all functions while streamlining and optimizing the operation.

With AI as an option, the shift of manufacturing to Asia to achieve costsavings is no longer a must for this furniture business. The business can now have the same factory production capacity with the same management team, retrained to fit the "digital factory" concept in order to manage and operate the application of AI. The traditional factory model, which contains 800 employees, is no longer needed. If developing and applying AI will cost less than operating a traditional factory abroad, then the business will be better off investing in AI domestically than opening an operation in Asia.

In fact, this business most likely would not have to directly shoulder the development costs of AI technology. It is possible for AI to be commercially available just like a computer operating system such as Microsoft Windows, although the operating AI will require trained and skilled technicians, in contrast to the common public usage of Windows. This would allow the cost of AI research and development to be a one-time cost, with the resulting technology passed on for commercial use at an affordable fee. This unique feature distinguishes the Knowledge Economy from the old economy of the twentieth century. In the old economy, wealth was built upon ownership of commodities and raw material. Consumer use of commodities and material depleted resources, thereby causing fierce competition for ownership. In contrast, in the Knowledge Economy, AI constitutes intellectual property that is not depleted when used. Market availability and mass consumption may lead to perfection of the property and generation of greater Added Value, thereby stimulating innovation, invention, and more product development.

The economic decision to operate AI in a developed jurisdiction, rather than starting a traditional factory operation in Asia, is further justified because it will remove the cloud of uncertain human rights and/or international tort liabilities faced by FDI investors.<sup>47</sup> The pioneering lawsuits filed in the United States, asserting violations of international law by U.S.-based multinational corporations with respect to their FDI activities in the Third World, have not been successful.<sup>48</sup>

<sup>47.</sup> See Sosa v. Alvarez-Machain, 542 U.S. 692 (2004); Filartiga v. Pena-Irala, 630 F.2d 876 (2d Cir. 1980); Alien Tort Claim Act, 28 U.S.C. § 1350 (2000); Torture Victims Protection Act, 28 U.S.C. § 1350 (2006); Edwin Gorham, *The Alien Torts Statute and the Search for Energy in Difficult Political Environments*, 29 HOUS. J. INT'L L. 289, 307 (2007) (stating, "[t]he Alien Torts Statute, despite its venerable history, is alive and well to serve as a vehicle for aliens to seek redress in the federal courts of the United States for wrongs occurring overseas"); Presbyterian Church of Sudan v. Talisman Energy, Inc., 453 F. Supp. 2d 633, 638 (S.D.N.Y. 2006).

<sup>48.</sup> See, e.g., Sosa, 542 U.S. 692; Filartiga, 630 F.2d 876.

However, despite this lack of success, the U.S. statutes under which these claims were brought, including the Alien Tort Claims Act and the Torture Victims Protection Act,<sup>49</sup> have left the door ajar for the right "international tort" case of the future.<sup>50</sup> In interpreting these statutes, the U.S. Supreme Court has never completely closed such door.

Accordingly, proper corporate risk-management planning will counsel against the multinational corporation's future FDI if there is a better alternative. AI may offer that better alternative. By creating a new streamlined "digital" work environment, AI can change FDI choices and decisions: it can stop the current FDI flow to the Third World.

By now, readers may think that I have set out to prove the obvious, that when machines replace humans, surely the need for Third World cheap human labor is eliminated. The analysis goes on to present a more complex picture of FDI decisions, as illustrated below.

### B. Effect of AI on Investors' FDI Decisions and on the Host Country

# **1.** The Investor's Perspective: Better FDI Choices to Achieve the Highest Profit

Although activists have criticized the "neo-colonialist" nature of investors' behavior, the Third World host country does benefit from FDI through technology transfer, training and employment opportunities for the local workforce, and the flow of hard currencies into the country (e.g., the U.S. dollar, the Euro, or the English pound). Further, FDI also stimulates a flow of services needed to support FDI into the country, thus adding to the transfer of the information to the local economy and workforce. The minute a manufacturer sets foot in the host country, an entourage of professional support services including law, accounting, financing, and banking will accompany the investor. For these reasons, the impact of FDI must be evaluated, not only based on the value of the investment, but also on the aggregate value of the service sector generated by the investment. AI may put a stop to the flow of all of these benefits to the Third World economy if the manufacturer decides to stay home rather than going abroad.

This means that in order to continue attracting FDI and receive the benefits thereof, the developing country must offer the investor some other competitive advantages. These advantages might include: (i) cost savings in distribution, transportation, and delivery of materials and products; and/or (ii) a huge and eager Third World consumer market. To the extent that technology producers may desire to use the "gray matter" offered by the Third World for their AI operation and support services, such local "gray matter" will be cheaper, and can even be of higher potential, constituting one more advantage offered by the Third World. For example, while China is called "the workshop of the world," India has been labeled "the laboratory of the world," the favorite outsourcing destination for technology

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<sup>49.</sup> Alien Tort Claim Act; Torture Victims Protection Act.

<sup>50.</sup> See, e.g., Sosa, 542 U.S. at 729.

producers and information businesses.51

Most likely, it will be more advantageous for our furniture company to take AI to Asia and open a "digital plant" there. If the company applies AI to its existing factory in the Western Hemisphere, the company will reduce the workforce from 800 to 150 employees, thereby facing the liability and public image issues associated with such a substantial layoff. If the business is in Western Europe, layoff can particularly be problematic, with much union sensitivity, because of the "Welfare State" and pro-worker culture there. By taking AI to Asia for a brand-new "digital plant," all those risks associated with workforce reduction<sup>52</sup> in the home country will be eliminated. If this is a U.S. business, the transfer of AI technology can be limited to the dozen of U.S. expatriate employees, thereby eliminating all concerns regarding U.S. export control laws prohibiting the transfer of "dual-use" technology to foreign users in a "suspect" country. Such countries are "suspect" in the sense of the national security interests of the United States.<sup>53</sup>

Accordingly, our hypothetical Western European furniture manufacturer may still want to take its AI operation to Asia, where the raw resources, like wood, may be located. The furniture can be manufactured cheaply yet efficiently in Asia via the use of AI, with minimal capital outlay. Labor costs, liabilities, and management headaches associated with the operation of local facilities and the massive employment of local labor will have been minimized or eliminated. The manufacturer achieves the immediate savings in the transportation and delivery of raw supplies, because manufacturing is done right at the source, where wood is found. The furniture manufactured in Asia can then be sold immediately into the huge consumer markets of Asia, such as the heavily populated countries like China, India, and Vietnam. This represents another layer of cost savings in the distribution, transportation, and delivery of the final products to end-users.

In summary, without AI, manufacturing at home may be too high a cost, while manufacturing abroad, where the raw resources are located, can be a highrisk proposition. Yet, for cost-savings, a business may have no choice but to bring its manufacturing to the Third World, even if the host country or the region does not offer a lucrative consumer market for the products. Once abroad, the business may be left with no choice but to partner with the government of the host country to achieve support and stability for its investment. Economic considerations call for an interest alignment or "de facto cartel" consisting of governments and foreign

<sup>51.</sup> Mark B. Baker, Awakening the Sleeping Giant: India and Foreign Direct Investment in the 21<sup>st</sup> Century, 15 IND. INT'L & COMP. L. REV. 389, 394-98 (2005); c.f. GOLDSCHEIDER, supra note 42, at 1651 (describing the continuing "brain drain" of India's creative scientific minds seeking technical and industrial careers in North America and the United Kingdom).

<sup>52.</sup> Those labor risks may be more discouraging in Europe than in the United States, which is an "employment at will" country.

<sup>53.</sup> Export Administration Act of 1979, 50 U.S.C. app. §§ 2401-2420 (2000)[hereinafter EAA]; Export Administration Regulations, 15 C.F.R. §§ 730-774 (2004)[hereinafter EAR]. "Dual use" is defined as "EAR-controlled items that can be used both in military and other strategic uses . . . and commercial applications." 15 C.F.R. § 730.3.

investors.<sup>54</sup> The outbound FDI flow may then "turn around" and become inbound, with the products being re-exported back to the home country for low-cost consumption there. This has been the economic model and FDI pattern of the past and the present.

Now, with AI, the investor no longer has to go abroad for cost savings just because it cannot afford to manufacture back home. AI maximizes the investor's freedom of choices to take FDI wherever it can envision the highest profit depending on the unique needs of the business. Now, the investor can *choose* to go abroad *only if* other cost benefits and business incentives are present. In other words, AI can eliminate the comparative advantage of the Third World. With AI, the establishment and operation of the "digital factory" abroad will be much easier, more streamlined, more efficient, and perhaps with lower liability exposure because the human factor has been minimized. The investor may also be able to contain trade secrets and proprietary technology to expatriate employees or core management.

Further, without AI, in the past, the investor might have to accede to various national law requirements or contractual demands of the host country or the local partner, including technology licensing, labor, or terms and conditions that do not serve its business objectives, simply to have its operation in the country. With AI, the investor can virtually eliminate such *involuntary* investment decision. Now, the FDI decision, plus any decision to transfer the AI technology to the local partner, will depend entirely on investor's business goals. Thus, from the investor's perspective, the use of AI promotes efficiency and maximizes profit, fitting squarely into Stuart Mill's utilitarianism paradigm.<sup>55</sup>

# 2. The Host Country's Perspective: Loss of Comparative Advantage and the Potential Danger of "Ghetto'ing" the Third World's Workforce

### a. A New Division of Global Labor

In an optimal AI environment, the company no longer needs to hire or train a significant local workforce. The education or sophistication of native personnel no longer matters. Potentially, at optimum operation, AI can produce a magical result without much human labor. The simple pushing of a button can quickly produce the perfectly packed box of do-it-yourself furniture, ready to be shipped (the same process as in the industrialized, automated making of sausages).

<sup>54.</sup> I explored the danger of this "de facto cartel" – the government-investor partnership – in the energy sector in my twin articles. See Wendy N. Duong, Partnerships with Monarchs – Two Case Studies: Case One: Partnerships with Monarchs in the Search for Oil: Unveiling and Reexamining the Patterns of "Third World" Economic Development in the Petroleum Sector, 25 U. PA. J. INT'L ECON. L. 1171 (2004); Wendy N. Duong, Partnerships with Monarchs – Two Case Studies: Case Two: Partnerships with Monarchs in the Development of Energy Resources: Dissecting an Independent Power Project and Re-Evaluating the Role of Multilateral and Project Financing in the International Energy Sector, 26 U. PA. J. INT'L ECON. L. 69 (2005).

<sup>55.</sup> See John Stuart Mill, Utilitarianism, Liberty, and Representative Government (1863).

So what happens to the potential workforce in Asia? The production workforce will substantially be replaced by computers, although not entirely eliminated. In the new system design, the human labor required can be reduced to the bottom level of the "skill sophistication ladder." Only a limited number of workers are now needed, either in top management or for those trivial tasks that

require minimal training or technology transfer. For example, certain human jobs involved in the warehousing of boxes cannot or do not need to be replaced by a computer or robot. Naturally, the manufacturer's payroll will also significantly be reduced.

Phrased differently, optimal AI can literally eliminate the "middle-level" of native labor where training and technology transfer once typically occurred. In the old system, these mid-level foremen or skilled workers were needed to run the manufacturing line or production system. They made and implemented those human decisions needed in a traditional factory environment. Generally speaking, this middle level of workers used to be the recipients of technology transfer and training among the native population. They became the candidates for upward mobility; those natives who would eventually have a chance at running the operation to replace the expatriate manager sent by the corporate employer. Like the middle class in society, these mid-level workers represented the hope of the host country in terms of skill upgrade and management potential, such that they could eventually become future leaders of the native workforce and the essential link or cultural interface between the host country and the foreign investor. Put bluntly, the mid-level native workers can now be discarded and replaced by sophisticated computers that can efficiently simulate the human mind. The embryonic new middle class for the developing economy has literally been wiped out in the age of high-tech invention.

As mentioned earlier, in the new "digital" environment, the transnational investor can limit knowledge of the AI system design and operation to the few expatriate managers, or at most a handful of "the privileged few" in the native population—those who have been chosen by the business to receive the knowledge base that is crucial for the operation of AI. Only these privileged few will be given the opportunity to join the technology-oriented, information-based society, via knowledge. In a less-than-democratic Third World nation plagued with poverty and corruption, with a dictatorship in place and no healthy middle class, these privileged few most likely have come from, or are situated to become, the ruling elites of the country, having collaborated and shared profits with the foreign investor.<sup>56</sup> Thus, optimum AI has helped re-create and perpetuate the "privileged

<sup>56.</sup> U.S. courts have frowned upon transnational corporations who jointly ventured, participated with, or served as partners of dictatorship governments who commit violations of human rights. *See, e.g.*, Doe I v. Unocal Corp., 395 F.3d 932 (9th Cir. 2002). During civil unrest in Myanmar, Unocal took part ownership in a venture with the government to extract natural gas. Unocal used Myanmar's military to provide security for this venture. Villagers of Myanmar claimed that Unocal aided and abetted the military in subjecting villagers to forced labor, murder, rape, and torture during the construction of the natural gas pipeline in Myanmar. The lower court granted Unocal's summary judgment on these claims. Because the case was settled, Unocal's ultimate liability was not judicially determined. The Ninth Circuit, however, did impose a stringent test for determining Unocal's liability, requiring elements such as "knowing practical"

few," "neo-colonialist," "ruling elite" socio-political structure in the Third World. This effect might not have been envisioned at all by those pure-minded scientists or mathematicians when they invented AI in their lab.

Now the danger has fully emerged. AI, in optimum form, not only reduces the Third World workforce or the payroll of the foreign investor, but it can also "ghetto" Third World workers down to that bottom level of skills and tasks, eliminating their upward mobility to middle levels and beyond. AI can push the lesser-educated native workforce to the lowest echelon, while paradoxically creating a very small native ruling class having access to information by virtue of their collaboration and sharing of the powerbase with the boss. This gloomy globalization may witness the creeping return of colonialism. The "ghetto'ing" of the native population, i.e., the denial of training, upward mobility, and access to information, is a concern held by the former chief economist of the World Bank and a Nobel prize winner in economics.<sup>57</sup> In short, the economic model that produces ideas and knowledge can lead to more inequality than that which used to manufacture goods. The propensity to exclude people who do not have ideas and knowledge replaces the propensity to exclude those who did not own raw materials and commodities in the olden days.

### b. The Illusion of Free Trade

Under such a pessimistic view, what good would it do for a Third World country to join the World Trade Organization ("WTO")? What good would it do for the "ghetto" to enjoy free trade? The "freedom to slave" across national borders is no freedom at all. WTO membership will simply allow least-developed Third World economies to export raw materials and agricultural products under the philosophy (and illusion) of "free trade." In other words, the "ghetto'ed" Third World uneducated worker will be doomed to shoulder the supply of raw materials and agricultural products for the rest of the world. Meanwhile, unable to produce technology products (such as AI), these agricultural and raw material producers

assistance or encouragement," "aiding and abetting" or "control" of governmental action. *Id.* at 947.

For a more complete picture of ATCA actions filed as a result of transnational corporations' "entanglement" with oppressive regimes for profit-making in infrastructure development, security arrangements, labor utilization, or environmental-impact projects, see Wiwa v. Royal Dutch Petroleum Co., 226 F.3d 88, 92 (2d Cir. 2000); Doe v. UNOCAL Corp., 248 F.3d 915, 920 (9th Cir. 2001); Doe I v. UNOCAL Corp., 963 F. Supp. 880 (C.D. Cal 1997); Doe I v. UNOCAL Corp., 110 F. Supp. 2d 1294, 1296 (C.D. Cal. 2000); Bowoto v. Chevron, Docket No. C99-2506 (N.D. Cal. 1999); Jota v. Texaco, Inc., 157 F.3d 153, 163 (2d Cir. 1998); Aguinda v. Texaco, Inc., 1994 WL 142006 (S.D.N.Y. Apr. 11, 1994); Aguinda v. Texaco, Inc., 945 F. Supp. 625, 627 (S.D.N.Y. 1996), vacated, Jota v. Texaco, Inc., 157 F.3d 153 (2d Cir. 1998); Aguinda v. Texaco, 2000 WL 122143 (S.D.N.Y. Jan. 31, 2000), aff'd 303 F.3d 470 (2d Cir. 2002); Bennett Freeman, Deputy Assistant Secr'y of State for Democracy, Human Rights, and Labor, Globalization, Human Rights and the Extractive Industries, Remarks to the Third Warwick Corporate 2000), Citizenship Conference (July 10, http://www.state.gov/www/policy\_remarks/2000/000710\_freeman\_warwicku.html.

<sup>57.</sup> See JOSEPH E. STIGLITZ, GLOBALIZATION AND ITS DISCONTENTS (2002).

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will have to purchase and consume technology from the superpowers. The Third World will likely become the "dumping ground" for obsolete technology or lessthan state-of-the-art products. FDI trends and trade patterns will look something like this: the developing nations sell raw material cheaply; the industrialized nations sell high technology expensively. AI can create and perpetuate such imbalance.

# c. So-Called "Neo-Colonialism" in the Information Age and the New Economy

The danger articulated above should not be anything new to economists, who undoubtedly are familiar with the law of comparative advantages advanced by David Ricardo.<sup>58</sup> In Ricardo's theory, a country that is best at making shoes should make and sell shoes, while a country that is best at making cakes should make and sell cakes. Those countries will end up exchanging shoes for cakes, and vice versa, to maximize their comparative advantages, rather than making both shoes and cakes in order to become self-sufficient.<sup>59</sup> In Ricardo's theory, after trading, both countries will end up with more supplies of cakes and shoes—an increase in wealth. Ricardo's theory remains part of the underlying principles, if not to say the backbone, of today's international trade/WTO system.

In fact, the danger is déjà vu, judging from the England-India colonial relationship during the industrialization era of the 19th and 20th centuries. As predicted by Ricardo, industrialization caused England to abandon the growing of agricultural products, as the population of farmers in England dropped from 70% to 25% as of 1840 because of industrialization.<sup>60</sup> England then turned to its colony for the supply of agricultural products. For example, England caused India to grow and export cotton. As a result, India ended up having to import textile from England in order to satisfy India's domestic needs. Additionally, India could not grow rice in order to supply its own people with food, and the country suffered from starvation in hard economic times. England also discovered that India's "comparative advantage" was poppy flowers, so India ended up growing poppies. When China forbade the import of opium into its territory, England brought about the Opium War in China, forcing China to continue receiving this dangerous These were some historical highlights of the early form of commodity. "globalization" and "international trade" in previous centuries.<sup>61</sup>

Now, the same phenomenon can happen in the New Economy of the Information Age, although there is supposedly no more colonialism. In summary,

<sup>58.</sup> See DAVID RICARDO, THE PRINCIPLES OF POLITICAL ECONOMY AND TAXATION (2004).

<sup>59.</sup> See id.

<sup>60.</sup> See DANIEL COHEN, RICHESSE DU MONDE, PAUVRETE DES NATIONS 52 (Jacqueline Lindenfeld trans., MIT Press 1998) (1953).

<sup>61.</sup> DAVID CANNADINE, ORNAMENTALISM: HOW THE BRITISH SAW THEIR EMPIRE (2001); *accord* GENTLEMANLY CAPITALISM AND BRITISH IMPERIALISM: THE NEW DEBATE ON EMPIRE (Raymond E. Dumett ed., Addison Wesley Longman 1999); D. K. FIELDHOUSE, THE WEST AND THE THIRD WORLD: TRADE, COLONIALISM, DEPENDENCE AND DEVELOPMENT (1999); THEORIES OF EMPIRE: 1450-1800 (David Armitage ed., Ashgate 1998).

if my hypothesis proves correct, large-scaled industrial applications of AI may cause the traditional pattern of FDI flow from "rich" to "poor" to stop. The Southern Hemisphere will lose its comparative advantage of cheap labor, yet still be forced to compete in the global market. For FDI to continue to flow south, investors will have to be offered some substitute advantages to resist the reversal of the existing FDI pattern, including the South's potential as a consumer market to absorb Western products. If, or when, FDI continues to flow to the South, this time with AI technology and a new set of investor considerations and advantages, a new division of labor will occur. The poor will become poorer because of the "ghettoing-down" effect upon the Southern Hemisphere's workforce. Accordingly, the new division of labor will widen and deepen the divergence between North and South.

In other words, at the end of the day, the Northern Hemisphere will produce and export products resulting from the highest "added value" made possible by intellectual property, the "gray matter." The Southern Hemisphere will produce products involving artisan skills, manual labor, and raw materials. In the high-tech global economy, the Northern Hemisphere will produce and export software, while the Southern Hemisphere will produce hardware computers. The Northern Hemisphere will produce the contents for television, while the South will manufacture the television itself. Fashion is another industry that requires both manufacturing and service. Northern France will produce concepts, designs and marketing for fashion apparel and sophisticated sportswear. African, Latin American, and Asian states will produce shoes, baskets, and cheaper, ready-made clothing based on designs and concepts developed and marketed in France and the West.

# d. No Longer a Third World Problem

Broadly considered, the danger is not confined to the Third World. The "ghetto'ing-down" effect of AI upon the population is not just a Third World dilemma. This risk can also occur in developed nations as well. The lesser educated, lesser equipped, and disadvantaged segments of society, including "undocumented aliens," disadvantaged women, and ethnic minorities, might also be left out of the New Economy and pushed down to the bottom of society. Robert Reich has predicted and described this "ghetto'ing" effect right at the heart of the developed economies.<sup>62</sup>

According to Reich, American society has and will continue to fragment into four divisions of labor: 1) manipulators of symbols or producers of ideas, or intellectual products that most benefit from globalization in the Information Age;<sup>63</sup> 2) those working to benefit the welfare state (e.g., professors, health care professionals, etc.); 3) service providers (e.g. restaurants, barbershops, etc.); and 4) workers who handle repetitive service tasks that can easily be replaced, outsourced,

<sup>62.</sup> See ROBERT B. REICH, THE WORK OF NATIONS: PREPARING OURSELVES FOR 21<sup>ST</sup>-CENTURY CAPITALISM (1991).

<sup>63.</sup> For another realistic, more narrow view of labor division, see Loevinger, supra note 5.

or delocalized (e.g., those who feed data into computers, phone operators, customer service operators, etc.).<sup>64</sup> With globalization, the first labor category is the most desirable and privileged, and will come out ahead in market competition; the fourth category is the most disadvantaged and fungible, especially with AI's application to the service sector. The second and third categories, comparable to the middle class, will struggle to become part of the first category, easily becoming torn apart by fierce internal competition and economic conflicts, and ultimately running the risk of being demoted and ghetto'ed down to fungible Category #4. Reich's gloomy vision helps explain the vehement objections to globalization raised by various workers' unions and special interest groups in the United States.<sup>65</sup>

#### V. A REALITY CHECK: THE EMERGING SIGNS

Recent and current business and corporate behavior show signs that lend support to my hypothesis. A few examples, explained in *six* points, are highlighted below.

*First*, the transformation of modern society into the New Economy is evident. Statistics released by the Organization for Economic Cooperation and Development ("OECD") in 2000 show that, as of 1999, total private investment in equipment and software in the information and communications technology sector totaled approximately \$900 billion.<sup>66</sup> In the United States, informational activities have continued to represent approximately one-third of the GDP, and employment in the sector has grown faster than the rest of the economy. As of 1997, approximately 35% of the value added to corporations came from the knowledge-based businesses. Since 1990, approximately one-fourth of corporate investments have been devoted to the production or purchasing of knowledge.<sup>67</sup> Within the OECD, the share of "knowledge-based market" services has continued to rise, accounting for over 20% of aggregate added value as of 2005.

Yet there has also been a recent drop in global FDI, signifying changes in FDI patterns that appropriately call for closer scrutiny of global production chains. According to the World Bank, global FDI was valued at \$202 billion in 1990, peaked in 2000 at \$41.5 trillion, but dropped to \$631 billion in 2002.<sup>68</sup> Nonetheless, the foreign investor retains significant control over the management of entities invested, with cross-border mergers and acquisitions accounting for a good portion of global FDI, demonstrating the tendency for concentrated control at

<sup>64.</sup> *See id.*; REICH, *supra* note 62.

<sup>65.</sup> See, e.g., Smaller Shares, Bigger Slices, THE ECONOMIST, Apr. 4, 2007, at 76; John Micklethwait & Adrian Wooldridge, Globalization: On a TV Near You: Protest Without End, L.A. TIMES, Aug. 20, 2000, at 1; Martha McCluskey, Seattle Protests Brought Together Some Unlikely Allies, BUFFALO NEWS, Dec. 12, 1999, at H5.

<sup>66.</sup> ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, A NEW ECONOMY? THE CHANGING ROLE OF INNOVATION AND INFORMATION TECHNOLOGY IN GROWTH (2000).

<sup>67.</sup> Id.

<sup>68.</sup> THE WORLD BANK GROUP, WORLD DEVELOPMENT INDICATORS 2004 303-304 (2004), *available at* http://go.worldbank.org/110R74XOQ0.

the top.<sup>69</sup> Experts note that the industries in which global production predominates include high technology and labor intensive high-end consumer goods, areas in which U.S. workers have an important piece of the pie.<sup>70</sup>

Meanwhile, a retrospective look at the 1990s shows that where possible, transnational corporations resisted technology transfer to the Third World, even if the transfer was in the form of intra-firm transactions. According to researchers, in the 1990s, the transfer of research and development ("R&D") activities from transnational corporations to foreign subsidiaries in the developing nations (e.g., the private sector's share of R&D costs and investments) was made on a very limited scale, basically relative to adaptive tasks. This meant that those corporations were attracted to build R&D facilities in the developing nations only in exceptional cases where adequate infrastructure and high quality local personnel existed.<sup>71</sup> In the 1990s, the bulk of R&D remained within the industrialized countries.<sup>72</sup> Overall, although world trade has soared, the expansion has remained unevenly distributed<sup>73</sup> and expert reports point to uneven growth patterns in the developing world. For example, in the last two decades, most of the "Least

<sup>69.</sup> See ROGER BLANPAIN, SUSAN BISOM-RAPP, WILLIAM R. CORBETT, HILARY K. JOSEPHS & MICHAEL J. ZIMMER, THE GLOBAL WORKPLACE 4-5 (Cambridge University Press 2007).

<sup>70.</sup> William Milberg, *The Changing Structure of International Trade Linked to Global Production Systems: What are the Policy Implications?* (ILO Working Paper No. 33, 2004), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=908225; Hilary K. Josephs, *Global Trade Issues in the New Millennium: Upstairs, Trade Law; Downstairs, Labor Law,* 33 GEO. WASH. INT'L L. REV. 849, 860 (2001); BLANPAIN, *supra* note 69; *see also* ROBERT BLANPAIN & MICHELE COLUCCI, THE GLOBALIZATION OF LABOUR STANDARDS: THE SOFT LAW TRACK 3 (2004) (noting that 25% of employment in the technological enterprises in Belgium is in the United States' hands).

<sup>71.</sup> Correa, supra note 38.

<sup>72.</sup> Id.

<sup>73.</sup> Susan Hayter, *The Social Dimension of Globalization: Striking the Balance*, 55 BULL. COMP. LAB. REL. 1-10 (2004).

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Developed Countries" ("LDCs") sustained a proportional decline in their share of global markets.<sup>74</sup>

The conclusion seems to be that policy-wise, strong pressures exist to privatize scientific knowledge and technology, but only within the investors' borders or within the developed world. This creates tension among the various forces underlying global policymaking, and demonstrates the ongoing divergence between the Northern and Southern Hemispheres. This is reflected in the encouragement of international scientific cooperation on one hand, and limit of access to the development of science and technology on the other hand.

*Second*, there has been a dire need and willingness for U.S. corporations to absorb foreign information technology ("IT") workers to serve the U.S. demand for technology invention and production. For example, in order to achieve cost-savings, rather than hiring U.S. computer science graduates, U.S. giant corporations and technology producers have been extracting IT professionals from the developing nations (e.g., places like China and India).<sup>75</sup> At the same time, rather than hiring U.S. businesses are saving costs by outsourcing routine technology-related work and menial repetitive service tasks supporting computerized operations to developing nations. Nowadays, customer service representatives of U.S. businesses may actually be sitting somewhere outside of the United States, armed with a standardized script on what to say or what to do if a customer calls in with a problem.

The following OECD statistics released in 2000 confirmed that the United States attracted skilled workers from abroad and U.S. firms went overseas to access required skills. In 1995, 50% of U.S. doctoral degrees in mathematics and computer science were earned by foreign students; about half of the doctoral recipients from China and India decided to stay in the United States. Of all science and engineering doctoral students who had firm plans to stay, about one-third were from Asia, and nearly one-third of the Silicon Valley's workforce was composed of immigrants, with about two thirds of them from Asia. Between 1995 and 1998, Chinese and Indian engineers started approximately 29% of the Silicon Valleys' technological companies, and a quarter of Microsoft's employees were foreign-born. The largest net loss of engineers appeared to be in non-OECD countries, and both India and Israel were home to software development centers for Hewlett-Packard, IBM, Intel, and Microsoft.<sup>76</sup>

<sup>74.</sup> WORLD COMM'N ON THE SOCIAL DIMENSION OF GLOBALIZATION, A FAIR GLOBALIZATION CREATING OPPORTUNITIES FOR ALL 25 (2004), *available at* http://www.ilo.org/public/english/wcsdg/docs/report.pdf.

<sup>75.</sup> Correspondingly, the U.S. Immigration Act of 1990, amending the Immigration and Nationality Act ("INA"), specifies employment-based preferences in immigration and establishes the following categories: persons with extraordinary ability, outstanding researchers and professors, multinational executives and managers, professionals holding advanced degrees or aliens of exceptional ability in sciences, arts or business, and other skilled and unskilled workers. Immigration and Nationality Act § 203, 8 USCS § 1153 (2006); 8 C.F.R. §§ 204.5, 204.6 (2007).

<sup>76.</sup> ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, A NEW ECONOMY? THE CHANGING ROLE OF INNOVATION AND INFORMATION TECHNOLOGY IN GROWTH 44-47 (2000).

*Third*, as already explained, FDI flow from the developed nations may no longer just reflect the type of human labor considerations that render the Third World attractive. Overall, despite improvement in Third World legal environments to encourage FDI to parallel free trade, a substantial portion of FDI has taken place in the wealthy developed nations, where labor is much more expensive.<sup>77</sup>

In particular, technology exporters look at other advantages offered by the host country such as its potential consumer market. The example of Intel Corp.'s 2005 plan to invest in an assembly plant in Asia for its personal computer manufacturing demonstrates this thinking.<sup>78</sup> According to the Associated Press ("AP"), the semiconductor giant considered shifting manufacturing to South and Southeast Asia for cost savings.<sup>79</sup> Intel's CEO was quoted as saying that Vietnam was considered because of its demonstrated consumer potential. Internet usage has soared in the communist country. Vietnam had the fastest growing personal computer market of all Association of Southeast Asian Nations (ASEAN), with computer ownership jumping to 1.3 million units in 2005, compared to just 288,000 at the beginning of the millennium.<sup>80</sup>

*Fourth*, the case of FDI in Vietnam may also demonstrate the emerging changing pattern in FDI. Complex, multi-layered FDI considerations no longer depend solely on the cost of labor or initial overhead. For example, both Intel and Proctor & Gamble considered long-term manufacturing in Vietnam. Yet, Intel went ahead with the plan, while Proctor & Gamble reportedly suffered from large losses and abandoned the project.<sup>81</sup> Apparently, the cheap labor and low cost of doing business in Vietnam do not provide sufficient incentives for Proctor & Gamble to further its investment there. In contrast, Intel's decision to establish manufacturing in Vietnam could result from, *inter alia*: (i) Intel's assessment of Vietnam as the potential consumer market for personal computers; and (ii) the success that Intel has had with the hiring of Vietnamese IT personnel in America, an indication of the "gray matter" potential of Vietnam, at cheaper costs. Obviously, the local "gray matter" potential is more essential to Intel's technology business compared to Proctor & Gamble.

*Fifth*, an examination of FDI statistics shows that today, perhaps big businesses may not be as motivated to take their FDI to the developing nations as they tended to do decades ago. For example, FDI into OECD countries in 2006 reached its highest level since 2000, led by the United States and followed by

<sup>77.</sup> WORLD COMM'N ON THE SOCIAL DIMENSION OF GLOBALIZATION, FACTS AND FIGURES 1 (2002) (citing U.S. as leading global FDI).

<sup>78.</sup> Spencer Chin, Intel adds Vietnam to list of sites for assembly plant, says reports, EETIMES ONLINE, June 5, 2005, http://www.eetimes.com/showArticle.jhtml;jsessionid=K2I5B4CGHFUSQQSNDLPCKHSCJUN N2JVN?articleID=164303466.

<sup>79.</sup> See Valerie Clemen, Note, A Briefing for American Businesses Looking to Invest in Vietnam, 2 HASTINGS BUS. L.J. 507, 512-13 (2006); Jason Folkmanis & Ian King, Intel obtains license for Vietnam Plant, THE INTERNATIONAL HERALD TRIBUNE, Mar. 1, 2006.

<sup>80.</sup> Id.; see also Chin, supra note 78.

<sup>81.</sup> Mark Landler, *Widening Economic Gaps that Keep Vietnam Divided*, N.Y. TIMES, Apr. 21, 2000, *available at* http://www.mishalov.com/Vietnam\_economy.html.

France. The OECD report on Trends and Recent Developments in Foreign Direct Investment forecast inflow of FDI to its 30 member countries to increase by 20% in 2007.<sup>82</sup> This suggests that perhaps the reversal of FDI pattern may already have happened. Let's look at FDI in France as an example. In 2006 it was estimated that 46.2% of French corporate ownership in the France's stock market index, CAC4, was by non-residents.<sup>83</sup> Similarly, in order to service Europe, Toyota has recently set up manufacturing in France rather than in a developing Eastern European nation. These facts indicate that major investors are no longer deterred by the high costs of living and doing business in France or other complex workforce or labor issues unique to France.<sup>84</sup>

It follows that big businesses' decisions to invest in France must have been prompted by considerations other than costs of labor or costs of doing business in a foreign country. The considerations may include the attractiveness of doing business in France that has resulted from its excellent infrastructure, high productivity and skill levels of researchers, technocrats and management personnel,<sup>85</sup> and, last but not least, excellent quality of life. In France, workers enjoy a 35-hour work week, five weeks annual vacation, hefty government-secured social benefits, trendy, first-class cultural lifestyle healthy sports such as bicycling and soccer, gourmet food, beautiful sceneries, and easy access to the cultural centers, world-class tourist attractions, and resorts of Europe.<sup>86</sup>

The apparel fashion industry in France is an example what happens with the FDI trend reversal. The fashion industry, for which France is world famous, is known to have applied AI effectively in the manufacturing side of the business, thereby freeing the human brain for more aesthetic design. A look at this industry suggests that French producers have not been too keen on shifting manufacturing to the Third World. One plausible explanation is advanced technology, such as AI, has kept costs sufficiently down for French producers to retain production and the accompanying know-how within the home country.

84. France Taxation, http://www.nationsencyclopedia.com/Europe/France-TAXATION.html (last visited Nov. 6, 2008); Chiara Bronchi and Flip de Kam, *The Income Taxes People Really Pay*, OECD OBSERVER, Apr. 1999, http://www.oecdobserver.org/news/fullstory.php?aid=77. There is a French history of organized yet turmoiled union system, plus the extraordinary high tax paid by workers to fund France's social benefits. *Id.* 

85. 2006 OECD data show that France ranked in the top five for member countries insofar as the total number of researchers is concerned, although France's gross domestic expenditure on R&D activities is relatively modest. The United States tops the list for the total number of researchers in its workforce and the highest amount of gross domestic expenditure on R&D activities. OECD, MAIN SCIENCE AND TECHNOLOGY INDICATORS, 2008/1, Key Figures, *available at* http://www.oecd.org/dataoecd/49/45/24236156.pdf (last visited Nov. 6, 2008).

86. *See, e.g.*, Orly Lobel, *The Law of Social Time*, 76 TEMP. L. REV. 357, 362 (2003) (reviewing TODD RAKOFF, THE LAW OF SOCIAL TIME A TIME FOR EVERY PURPOSE: LAW AND THE BALANCE OF LIFE (2002)).

<sup>82.</sup> See ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, INTERNATIONAL INVESTMENT PERSPECTIVES: FREEDOM OF INVESTMENT IN A CHANGING WORLD 13-49 (2007), available at http://www.oecd.org/dataoecd/62/43/38818788.pdf.

<sup>83.</sup> La Détention par les Non-résidents des Action des Sociétés Françaises du CAC40 à Fin 2006, in BULLETIN DE LA BANQUE DE FRANCE NO. 161, May 2007.

*Sixth*, expert discussions about China as a typical picture of developing East Asia reflect the same concerns explored in this article. Since 1992, China has become the largest recipient of FDI among all developing economies. In 2002, China's inbound FDI increased to \$52.74 billion, ranking second place worldwide, after Luxemburg.<sup>87</sup> China's Ministry of Commerce reported that in 2004, around 690 research facilities had been set up by multinationals and total FDI stock

reached \$561.1 billion. The government developed technology parks allowing foreign firms to form building blocks with Chinese high-tech industry.<sup>88</sup>

But experts also note that technology transfer from FDI to China is still limited.<sup>89</sup> For example, much of China's FDI technology inflows have come from low-tech Hong Kong and are concentrated in labor-intensive industries. Overall, China has attracted much less FDI from high-tech OECD countries than what should be expected based on China's gross domestic profit ("GDP") and human capital qualities. The "technology gap" between the investing countries and China has been estimated at approximately 20 years.<sup>90</sup> In general, Chinese firms do not have sufficient resources to carry out R&D activities. College graduates go abroad or work for multinational corporations, and the nation's R&D expenditure remains relatively low by international standards.<sup>91</sup>

*Business Week* reported on researchers' concerns about China's strategy of upgrading its technology market via FDI. Price competition based on the comparative advantage of cheap labor might have worked in the past but will not necessarily provide the answer to China's economic woes today. Overall, Chinese enterprises tend to import to upgrade production technology. These equipment purchases prevail over software, patents, and know-hows, resulting in the vicious cycle of "importing, lagging behind, importing again, and lagging behind again."<sup>92</sup>

Experts describe technology trades to and from China as "triangular." For example, parts for electrical devices produced by Japan and other newly industrialized Asian nations are exported to China and other ASEAN countries for

89. Id.

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<sup>87.</sup> Justin Yifu Lin, The China Miracle: How OECD Country Policies Contributed? (May 2004) (unpublished preliminary draft, prepared for the Conference "The Impact and Coherence of OECD Country Policies on Asian Developing Economies," Paris, June 10-11, 2004) *available at* http://www.oecd.org/dataoecd/36/56/31799405.pdf.

<sup>88.</sup> Douglas Zhihua Zeng & Shuilin Wang, *China and the Knowledge Economy: Challenges and Opportunities*, at 6, May 1, 2007 (World Bank, Policy and Research Working Paper No. 4223, 2007), *available at* http://papers.ssrn.com/sol3/Delivery.cfm/ 4223.pdf?abstractid=984124&mirid=1.

<sup>90.</sup> Yasheng Huang, Associate Professor, Harvard Business School, Speech in Mexico City: The Benefits of FDI in a Transitional Economy: The Case of China, OECD Global Forum on International Investment – New Horizons and Policy Challenges for Foreign Direct Investment in the 21<sup>st</sup> Century (Nov. 26-27, 2001).

<sup>91.</sup> *Id.*; *accord* OECD, *supra* note 82, at Key Figures (showing comparatively China's R&D gross expenditure).

<sup>92.</sup> China: Cheap Labor and Foreign Investment Aren't Enough, BUS. WEEK, Nov. 16, 2002, available at http://www.businessweek.com/magazine/content/ 02\_46/c3808158.htm?chan=search.

Then the finished products are exported to Europe and North assembly. America,<sup>93</sup> among these are intra-firm re-exports.<sup>94</sup> Thus, China, and ASEAN countries have been a huge assembly hub and production site for low-tech goods due to the comparative advantage of cheap labor.<sup>95</sup> This triangle has been an important channel for technology transfer and has accounted for China's claim of rapid improvement of the high-tech content of its foreign trade. In his 35-page "Reinventing China," Andy Rothman, a Shanghai-based economist, pointed out that notwithstanding China's seeming burgeoning growth, about 90% of its hightech exports were produced by subsidiaries and joint ventures of foreign multinationals. Chinese workers contribute only a small share to the value added to high-tech products shipped from China. In 2004, Chinese patent applications accounted for only 1.4% of total global patent applications, and mainland China applicants received only .05% of all U.S. patents granted to foreigners. In other words, the technology upgrades of China and other ASEAN countries remain circumscribed to the production and export network of foreign firms and, therefore, are dependent on the multinationals' foreign affiliates.<sup>96</sup> This presents an impediment to the widespread dissemination of technological know-how. Yet, these high-tech imports have been used by China as substitute for local R&D commitments.

In summary, these signs show that the developed nations' technology producers will continue to look at the developing world for cost-savings, and for skilled or unskilled labor supply either via (i) outsourcing or shifting menial production, low-tech production, hardware assembly, or service tasks to the developing nations, and/or (ii) importing migrant technology workers or foreign "gray matter" at lower costs. At the same time, technology producers will also look at the developing world as potential consumer market. These activities help create the "triangular" FDI pattern described above in the example of China. The futuristic optimum application of AI will widen and lend more meaningful nuances to investors' FDI choices, but those same AI-driven choices may hurt the native workforce and jeopardize the national interest of the developing host countries.

#### VI. IN SEARCH OF SOLUTION

Having examined reality as well as the futuristic vision, I identify below three general areas for possible solutions: Law, Education, and Politics.

<sup>93.</sup> Mona Haddad, *Trade Integration in East Asia: The Role of China and Production Networks*, at 10 (Word Bank, Policy Research Working Paper No. 4160, 2007), *available at* http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2007/03/06/000016406\_20070306101249/Rendered/PDF/wps4160.pdf.

<sup>94.</sup> Martin Schaaper, An Emerging Knowledge-Based Economy in China? Indicators from OECD Databases, at 12, 15-16, 25-26 (STI Working Paper 2004/4, 2004), available at http://www.olis.oecd.org/olis/2004doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2a1a9aff293c3a 05c1256e5f005af275/\$FILE/JT00160520.PDF.

<sup>95.</sup> Haddad, supra note 93, at 10; see Schaaper, supra note 94, at 60-61.

<sup>96.</sup> Haddad, supra note 93, at 16-17.

# A. In the Domain of Law

For purposes of this Article, the lowest level of the global workforce without access to "value-added" information in the New Economy is described herein as "Those at Risk." To protect Those at Risk, the information society must be regulated with the goal to even out the imbalance of access to information, while at all times maintaining protection of individual rights and inventors' intellectual property. The term "regulation" is used herein generically to refer to the prescriptive nature of the rule of law. The term does not mean regulation by government agencies in the administrative or public law system of the United States.

This part of the Article will first outline a general policy framework for regulating the Knowledge Economy. It will then identify some of the obstacles and challenges in the existing legal system that may block the prospect of successful uniform global regulation. The limited scope of this Article precludes (i) the over-ambitious task of proposing a specific new regime of global legislation, as such is a long-term 21<sup>st</sup> century project; or (ii) an exhaustive and detailed summary or critique of current national, supranational, or multilateral legal regimes. This Article will only identify the needed regulatory aspiration, as well as some of the underlying policies, tension, and conflicts in the current legal system that must be overcome for meaningful global regulation to take place. Hopefully, this will set the stage for further scholarly discussions, saved for another day.

## 1. General Policy Framework for Regulating the Knowledge Economy

"Knowledge" is the driving factor of the New Economy,<sup>97</sup> of which AI is one of the most advanced aspects.<sup>98</sup> The widened gap in "Knowledge" among segments of the global workforce is described as the "cognitive divide,"<sup>99</sup> which can occur not only between the Northern and Southern hemispheres, but also within any country.

In the domain of law, this problem calls for regulatory solutions. To accomplish this objective, it is important to understand the nature of "Knowledge" as a strategic resource, and how this resource is managed by corporations.

The Knowledge that is useful for the New Economy does not just consist of scientific knowledge, or the inert knowledge that one can find on the Internet. This "production factor" or strategic resource should combine four types of knowledge:

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<sup>97.</sup> To economists, "Knowledge" is an endogenous production factor.

<sup>98.</sup> Knowledge has always been recognized by early economic philosophers such as Adam Smith, John Stuart Mill, and Karl Marx. However, "Knowledge" was characterized as human ingenuity, and technical progress that resulted from "Knowledge" was considered an exogenous factor, similar to natural resources given by nature. It was only in recent decades that "Knowledge" was acknowledged as an endogenous factor, the result of a production process rather than that which is given by nature.

<sup>99.</sup> On the role of cognitive factors in the process of economic change, see DOUGLAS C. NORTH, UNDERSTANDING THE PROCESS OF ECONOMIC CHANGE (2005) (discussing the role of cognitive factors in the process of economic change); BERNARD PAULRE, INTRODUCTION AU CAPITALISME COGNITIF (2005).

(i) pure scientific and/or technical knowledge and related methodologies, including elements such as software and hardware knowledge; (ii) know-hows, referring to knowledge arising from culture, context, utilization, employment, or tasks, which enables the application of Type I knowledge described above;<sup>100</sup> (iii) factual data and information relating to any topic of discussion or inquiry, such as that which may be contained in a database or an encyclopedia; and (iv) relational knowledge, which helps us locate the source of expertise, information, know-hows, and data. These four types of knowledge form the competence of an individual or an organization, which is also influenced by education, training, working, family and cultural environments. They are intimately mixed in the complex process of learning by doing, usage, and interaction (i.e., working with others or being part of society). Economists call knowledge a "non-rivaled public good.<sup>101</sup> "Public" refers to the fact that the goods can be used simultaneously by several people and can be transferred to others without denying its owner the right to enjoy its benefit (i.e., the foundation of intellectual property rights). "Non-rivaled" means that public use of the goods will not create what economists call a "congestion" or "bulk" condition. To take an example from daily life, the Golden Gate Bridge qualifies as a "public good" shared by many users, but at certain time of the day, usage by too many people will cause a traffic jam. In contrast, massive public use of Microsoft Window, an intellectual property, will not cause such a "congestion" or "bulk" condition. AI or Microsoft Windows software is such a "non-rivaled public good," used by billions of people simultaneously without damage, destruction, depletion, or congestion. In fact, massive use of knowledge-based products will improve the goods via user experience and remarks.

Hence, as an economic production factor, Knowledge can be lasting, selfproduced, and unlimited because it comes from the human mind. Therefore, regulation of the Knowledge Economy must focus on the production factor of Knowledge and must aim at restoring or consolidating its nature as a "non-rivaled public good," including making the necessary adjustment to the way this strategic resource is appropriated and exploited. Such a condition should be based on the total concept of "development" and should be global, sustainable, and equitable. In other words, regulatory policies must focus on the total development of humans.<sup>102</sup> The sustainable development concept has evolved out of environmental law boundaries to enter the domains of international law and global economic development. Development must allow future generations of humans to sustain themselves.

Unfortunately, reality does not conform to the ideals of sustainable development. Although corporate behaviors demonstrate respect for "Knowledge" as a fundamental production factor, corporations also consistently demonstrate goals that are at odds with the concepts of "Development" and "Sustainability." The way corporations manage to appropriate and exploit Knowledge as a strategic

<sup>100.</sup> See supra note 14 and infra, note 211 (for the definition of Know-How).

<sup>101.</sup> EDMOND MALINVAUD, LEÇONS DE THEORIE MICROECONOMIQUE 223-224 (1986); JEAN-JACQUES LAFFONT, FONDEMENTS DE L'ECONOMIE PUBLIQUE 39 (1988); see also DANIEL COHEN, RICHESSE DU MONDE ET PAUVRETES DES NATIONS 61 (1997).

<sup>102.</sup> See infra note 265 (definition of Sustainable Development).

resource can cumulatively induce a "cognitive divide." It is this "cognitive divide" that causes the division of labor identified herein. Hence, effective and equitable global regulation must address the following *three* trends of corporate behaviors:

(1) Since Knowledge cannot be stocked on shelves like commodities, but must be integrated into individuals, corporations design sophisticated recruitment policies to capture the most capable and knowledgeable individuals. The multinationals are financially equipped to do this. These recruitment policies do not necessarily focus on total development, but instead are profit-specific and can be one-dimensional. This is also the source of the "brain migration," the term coined to refer to the problem of the accumulation of cognitive resources where they are already abundant, worsening an already imbalanced global division of labor.

(2) Corporations will also build up cooperative networks between industrialists, research laboratories, universities, and inventors in order to produce the specific type of Knowledge that corporations would need for their profitmaking activities. This is the source of the "selection and competition" problem. The best network attracts the best individuals and rejects those incapable of producing the right cognitive resources. I call this phenomenon "informational or knowledge-based Darwinism."

(3) The only way corporations may share this strategic resource is via the "licensing" mechanism, a legal process that may confer a monopoly upon the marketplace of intellectual property. This may lead to a concentration of cognitive and financial power that can control the entire "key-enabling" sector of the economy.

Global regulatory solutions, therefore, should aim to act on the nature, and at the source of, the production and accumulation of this new strategic resource called Knowledge.

### 2. Overall Deficiency of the Present Regulatory System.

Currently, there is no coordinated system of global regulation to address specifically the potential new labor division or the imbalanced accumulation of Knowledge identified in this Article. While current regional law systems contain some general protection for the workforce and other measures to enable international distribution of technology, such general protection was not created with this new division of labor or concentration of cognitive capitalism as the prime regulatory objective. In other words, in the absence of a contractual agreement, no individual has a "human right," "civil right," or "labor right" not to have his/her job replaced or displaced by a computer, nor is there a global standard telling employers not to do so in making their business decisions. Yet, not everybody has the privilege of acquiring information or Knowledge in order to control, develop, understand, or manipulate such a computer or the network to which it belongs.

Considering the interest of "Those-At-Risk," the current international legal system suffers from *three* main drawbacks.

First, the need for, and success of, uniform global regulation must rest on

worldwide consensus in international policy-making. Despite the rapid rate of economic globalization as a result of market forces, the political differences between the Northern and Southern hemispheres have never completely dissolved. There exists continuing tension between market theory as the foundation for lawmaking (the "Economics" school) and the law-morality nexus as the impetus for lawmaking (the "Morality" school). The need for global regulation of the information society to protect "Those-at-Risk" has its philosophical roots in both Economics and Morality. The law has a moral dimension, to promote human dignity, not just a function of economic competition.<sup>103</sup> At the same time, regulating the information society may contradict the "neo-liberalist" pro-market theory that promises deregulation and champions free trade as the means to provide worldwide growth and development.<sup>104</sup> This is part of the reason why reaching a consensus in global lawmaking has relatively been slow and difficult to achieve.

*Second*, despite globalization, the current legal system still points to the dominance of national sovereignty over the need for uniformity and universality. The continuing use of national borders to determine rights and privileges for humans will create and perpetuate the imbalance and inequity in access to information. Global efforts must continue to harmonize and equalize all variations among national economic laws. Such efforts thus far have been impossible due to divergent (and conflicting) national interests.

*Third*, global regulation seeks to protect technology inventors and producers, not necessarily workers. The current regulation lacks teeth and is not specifically equipped to address the potential "ghetto'ing of the workforce." Ideally, international law-drafting institutions need to review existing international legal regimes with the goal to incorporate specific workers' protection. In other words, the current system, which assumes that free trade serves the interest of the underprivileged, should undergo scrutiny from a different perspective, one that takes into consideration the new division of labor and digital work environments explored in this Article. Such review and formation of new global regulations should encompass, at a minimum, the following areas of law: intellectual property, labor, antitrust/anti-competition, technology transfer, multinational corporate behaviors, and the harmonization of national economic laws.

The following demonstrates the drawbacks of the current legal system identified above.

### **3.** Formation of International Economic Law

Assessment of the current situation will require an understanding of the formation of modern international economic law. Our current international law system allows *two* ways by which global economic regulation can be formed.

(i) The "treaty or convention" format-regulation by consensual international

<sup>103.</sup> BOB HEPPLE, LABOUR LAWS AND GLOBAL TRADE 13 (2005).

<sup>104.</sup> STIGLITZ, supra note 57, at 59.

agreements among nations as signatories, either bilaterally or multilaterally;

(ii)The "private deal/*lex mercatoria*" format—regulation by voluntary code of conduct and by private agreements negotiated among private parties or between governments and the private sector in private deals, as a way of "codifying" or setting norms of commercial practice.

Both methods require consensus building and compromise of interests at "country" level as well as "firm" level. Both can involve unequal bargaining power, thereby making the process, and any equitable result deriving therefrom, quite difficult to attain.

# a. First Method of Forming International Economic Law: International Agreements

Below is a summary discussion of current international agreements addressing the areas of law that must be reviewed and revised to include specific protection for Those at Risk. This summary discussion demonstrates that, except for the success of regional economic groupings, national sovereignty and interests dominate regulatory policies. This leads to the failure of global uniformity or universality, causing tension between the internationalized distribution of technology and the need to stimulate inventions by protecting inventors and capital owners.

# i. Existing global protection of Intellectual Property Rights (IPR)

Global protection of IPR (which includes areas of patent, trademark, and copyright) is addressed in a number of international agreements.<sup>105</sup>

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<sup>105.</sup> See e.g., Patent Cooperation Treaty (PCT), done June 1970, 19. http://www.wipo.int/pct/en/texts/articles/atoc.htm; available at http://www.wipo.int/pct/en/texts/articles/atoc.htm; Convention on the Grant of European Patents (European Patent Convention), Oct. 5, 1973, http://www.epo.org/patents/law/legaltexts/html/epc/1973/e/ma1.html (the only treaty that grants the equivalent of a single international patent valid throughout the EU); Trademark Law Treaty (TLT), adopted Oct. 27, 1994, http://www.wipo.int/treaties/en/ip/tlt/trtdocs\_wo027.html; Trademark Registration Treaty, June 12. 1973.

http://ipmall.info/hosted\_resources/lipa/trademarks/PreLanhamAct\_107\_Trademark\_Treaty.htm; Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, done July 14, 1967, http://untreaty.un.org/unts/1\_60000/24/3/00046115/pdf (addressing international trademark); Paris Convention for the Protection of Industrial Property, Mar. 20. 1883. http://www.wipo.int/clea/docs\_new/en/wo/wo020en.html (addressing both patent and trademark); Madrid Agreement Concerning the International registration of Marks, Apr. 14, 1891, http://www.wipo.int/madrid/en/legal\_texts/trtdocs\_wo015.html; Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks, adopted June 27, 1989, http://www.wipo.int/madrid/en/legal\_texts/trtdocs\_wo016.html; Berne Convention for the Protection of Literary and Artistic Works, 9. Sept. 1886. (addressing copyright); http://www.wipo.int/treaties/en/ip/berne/trtdocs\_wo001.html The Universal Copyright Convention (UCC), Sept. 6, 1952. http://www.ipmall.info/hosted\_resources/lipa/copyrights/The%20Universal%20Copyright%20Co

In general, rather than imposing one set of substantive standards enforced transnationally, the IP international agreements either incorporate "national treatment" (i.e., the first country will grant to the second country's citizens what the first country grants to its own citizens), or "reciprocity" (i.e., the first country will grant to the second country's citizens what the second grants to the first). In other words, these agreements preserve and apply the national standards based on sovereign consent. For example, although TRIPS and NAFTA both set some

Further, not all of these treaties and conventions are self-executing, and, as a common feature of the consensual treaty schemes, signatories can opt out of specific provisions by making declarations or filing reservations.<sup>107</sup> In general, IPR protection remains a matter of national laws and enforcement systems, which vary according to cultural and other sociological considerations unique to a particular society. For example, in certain Eastern cultures, there is no "guilt" attached to the public's use and duplication of IP. This is partly due to the cultural

minimal standards that represent transnational norms on all three areas of IPR,

these agreements also incorporate and honor national treatment.<sup>106</sup>

107. The Summary of Practice of the Secretary-General as Depositary of Multilateral Treaties, United Nations Treaty Collection, U.N. SCOR, ch. VIII, art. 217, -No. 1994/139 (July 21, 1994), contains the following definition of "Declaration":

Declarations, however they may be known (communications, interpretative declarations, understandings, etc.), either made at the time of signature or at the time of deposit of a binding instrument, are to be distinguished from reservations in that they do not purport to exclude or modify the legal effects of the treaty. The purpose of declarations is rather, in principle, to make more explicit the meaning of a particular provision. However, declarations are made in a political context -- for example, to express satisfaction at the adoption of the treaty, or to express regret that a provision has not been included in the treaty and the hope that through an amendment it will be in the future, or to express dismay that a provision has been included which the State concerned finds offensive. While declarations are usually made at the time of the deposit of the corresponding instrument or at the time of signature, they are sometimes made in contemplation of the impending signature of the treaty, after its adoption, and the text of such declarations is then frequently reproduced in the Final Act of the Conference that adopted the treaty.

Chapter VIII of the Summary incorporates verbatim the definition of "reservation" from Paragraph 1 (d) of Article 2 of the Vienna Convention on the Law of Treaties, which restates established customary international treaty law on the matter. The Vienna Convention defines the term "reservation" as follows:

'Reservation' means a unilateral statement, however phrased or named, made by a State, when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that State.

nvention%20\_Geneva%20Text--September.pdf; The Buenos Aires Convention for Latin America, Aug. 11, 1910, http://www.ipmall.info/hosted\_resources/lipa/copyrights/The%20Buenos%20Aires%20Conventi on.pdf (addressing copyright); WIPO Copyright Treaty, *adopted* Dec. 20, 1996, http://www.wipo.int/treaties/en/ip/wct/pdf/trtdocs\_wo033.pdf.

<sup>106.</sup> See General Agreement on Tariffs and Trade – Multilateral Trade Negotiations (The Uruguay Round): Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade In Counterfeit Goods, Apr. 15, 1994, 33 I.L.M. 81, available at http://www.wto.org/english/docs\_e/legal\_e/27-trips.pdf [hereinafter TRIPS]; North American Free Trade Agreement, U.S.-Can.-Mex., Dec. 17, 1992, 32 I.L.M. 605, available at http://www.sice.oas.org/trade/nafta/naftatce.asp [hereinafter NAFTA].

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view that IP is a public utility and treasure for the enjoyment of mankind.<sup>108</sup>

More importantly, these agreements primarily put emphasis on IPR protection, taking into consideration the interest of the creator, inventor, or technology producer, rather than the recipient host country in a technology transaction. One such typical transaction is the "licensing agreement," whereupon the international technology producer will license the invention to the host country or local partner at a cost. An examination of TRIPS will exemplify this producer-protection tendency and its characteristics. It is important to note that NAFTA overlaps substantially with TRIPS with respect to IPR.<sup>109</sup>

TRIPS, perhaps the closest form to global IPR regulation, focuses on the interface between free trade and IPR protection, which previously was the domain of the World Intellectual Property Organization (WIPO). TRIPS is viewed as an international commitment that champions the views of developed nations favoring the international protection of IPR.<sup>110</sup> By way of the Uruguay Round Agreement Acts of 1994, the U.S. was deemed to have ratified and implemented TRIPS, which took effect in 1995, although negotiation began in 1987 with the GATT Uruguay Round. TRIPS was generally considered the externalization of the U.S.' IP standards and, accordingly, required little change in U.S. law.

Major concessions made by TRIPS for the developing economies consist of the following: TRIPS acknowledges a "public order" or "public policy" exception from patentability (*ordre public*), thereby arming developing countries with an "escape clause" out of their patent commitments. The other concession for the developing and least developed economies came in the form of exemptions or giving them grace periods before they became obligated to the terms of TRIPS.<sup>111</sup>

Part III of TRIPS specifically sets out obligations of member states to provide criminal, civil, and administrative procedures and remedies under their domestic laws to ensure that the IPRs of foreign holders and nationals are effectively

<sup>108.</sup> For an example of national protectionism and cultural impediments to the internationalization of patents, see Liwei Wang, *The Current Economic and Legal Problems Behind China's Patent Law*, 12 TEMP. INT'L & COMP. L.J. 1, 34-40 (1998). *See also* WILLIAM P. ALFORD, TO STEAL A BOOK IS AN ELEGANT DEFENSE: INTELLECTUAL PROPERTY LAW IN CHINESE CIVILIZATION (1995) (exploring, *inter alia*, the relationship between law and cultural attitudes in China in the context of IP law).

<sup>109.</sup> TRIPS, developed as the next "IPR protection" generation of NAFTA, imposes mandatory patent coverage in all areas of technology, protects computer programs and databases, and prohibits the discrimination by national laws in compulsory licenses on the basis of whether the patented product is locally produced or imported. TRIPS, *supra* note 107, pt. II, §§ 5, 8; *accord* Correa, *supra* note 38, at 2657; *cf*. R. FOLSOM AND W.D. FOLSOM, UNDERSTANDING NAFTA AND ITS INTERNATIONAL BUSINESS IMPLICATIONS ch. 8 (Matthew Bender & Co. 1996).

<sup>110.</sup> See President Clinton's Submission to Congress of Documents Concerning Uruguay Round Agreements, 58 Fed. Reg. 67263, 67289 (Dec. 15, 1993); Robert J. Pechman, Seeking Multilateral Protection for Intellectual Property: The United States "TRIPs" Over Special 301, 7 MINN. J. GLOBAL TRADE 179 (1998).

<sup>111.</sup> TRIPS, supra note 107, arts. 27(2), 65-66.

enforced.<sup>112</sup> However, part of TRIPS' objective is also to reduce impediments to international trade caused by national IP protection.<sup>113</sup> Because the philosophy behind TRIPS is to encourage and facilitate a free flow of technology transfer by way of free trade, the TRIPS goal may legitimately be construed as aiding all segments of the global workforce to receive and benefit from technological knowhow, while protecting IPR holders. For example, Section 8.2 of TRIPS controls anti-competitive practices in voluntary licensing that "may have adverse effect on trade and may impede the transfer and dissemination of technology."<sup>114</sup>

Specifically, under Section 40.2 of TRIPS, the following types of licensing provisions are considered anti-competitive, restrictive practices to be prohibited:

- i. Provisions that oblige the licensee to transfer locally produced improvements of the invention back to licensor;
- ii. Provisions that prohibit the licensee from challenging the validity of the licensed right; or
- iii. Provisions that oblige the licensee to acquire from the licensor technologies or input that the licensee does not desire (a practice called "coercive package licensing").<sup>115</sup>

Note that, in general, Section 40.2 only enables national laws. It does not create an internationally agreed upon rule of what an anti-competitive practice is. Deference is still given to national standards.

In summary, although stronger and wider national, regional, and global protection of IPR will eventually stimulate local innovation, such innovation will occur only if a certain level of technological development has been achieved in the local economy. It is thought that protecting and strengthening IPR will encourage technology producers to license technology to the local market in order to help build bottom-level technological development for the local population. Yet, even though IPR safeguards are in place, laws governing technology transactions still depend on national sovereignty (except in the E.U., where there is supranational power and consensus).<sup>116</sup> If the recipient country does not have effective

<sup>112.</sup> Id., pt. III at §§ 1-5.

<sup>113.</sup> TRIPS, *supra* note 107, at 1C (Preamble to the Agreement on TRIPS); *accord* Abdul Ghafur Hamid, *The Law of the World Trade Organization: An Analysis from International Law Perspective*, 1 Asian J. Int'l. L. 1, 8 (June 2006).

<sup>114.</sup> TRIPS, *supra* note 107, pt. II, § 8, art. 40.1.

<sup>115.</sup> Id. art. 40.2.

<sup>116.</sup> The focus of EU technology transfer regulation comes principally in anti-competitive laws, including (i) Articles 81, 85 and 86 of the Treaty of Rome (*see* Treaty Establishing the European Economic Community, arts. 81, 85-86, Mar. 25, 1957, 298 U.N.T.S. 11 [hereinafter Treaty of Rome]), and (ii) the Common Market rules of competition, such as the Exclusive Distribution Regulation, the Exclusive Purchasing Regulation, the Block Exemption Regulation relating to Patent Licensing Agreements, the Joint Research and Development Regulation, and the Block Exemption Regulation relating to Know-How Agreements. *See generally*, MARK R. JOELSON, AN INTERNATIONAL ANTITRUST PRIMER, 1, 1-7 (2d ed., Kluwer 2001) (guide to U.S., EU and other key competition laws in the global economy); *see also* Commission Regulation 2790/1999, 1999 O.J. (L 336) 21 (Dec. 29, 1999) (Vertical Restraint Regulation); Commission Regulation (EC) No. 772/2004 of 27 Apr. 2004 on the Application of Article 81(3) of the Treaty to Categories of Technology Transfer Agreements, 2004 O.J. (L 123) 11. These agreements help
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technology transfer laws, then technological development of the host country is still a function of market forces. Thebargaining power of contractual parties to negotiate technology transactions varies from case to case. As demonstrated below, efforts made at achieving a global technology transfer code, which would provide uniformity, and a "Third World" perspective, have failed.

### ii. The unfinished global project: unsuccessful efforts at uniform regulation via global codes

In the 1970s, industrialized and developing countries got together to negotiate an International Code of Conduct for the Transfer of Technology ("TOT").<sup>117</sup> Other negotiations also took place to revise the Paris Convention regarding IPR protection,<sup>118</sup> and to formulate a Restrictive Business Practice ("RBP") code for antitrust.<sup>119</sup>

TOT was prepared within the framework of the United Nations Conference on Trade and Development (UNCTAD), as part of the New International Economic Order ("NIEO").<sup>120</sup> Since NIEO was based on the "universal heritage argument," as stated in TOT's preamble, the draft code put forth the concept of "distributive technology" as a treasure and as collective knowledge that should be shared to further the goal of true "economic equality in the world."<sup>121</sup> This rather romantic notion of technology transfer philosophically dated back to the myth of Prometheus, who stole fire from Olympus and brought it down to man.<sup>122</sup> IPR protection was developed as a matter of economic efficiency and necessity, whereas technology transfer can be regarded as a notion of distributive justice.<sup>123</sup>

delineate the interplay between intellectual property rights and antitrust laws.

<sup>117.</sup> See G. A. Zaphiriou, An International Code of Conduct on Transfers of Technology, 26 INT'L & COMP. L.Q. 210 (1977); Wolfgang Fikentscher, The Draft International Code of Conduct on the Transfer of Technology, in IIC STUDIES IN INDUSTRIAL PROPERTY AND COPYRIGHT LAW, 11 (1980).

<sup>118.</sup> Some eleven technology-supplier countries signed the Paris Convention for the Protection of Intellectual Property in 1883. It serves two functions: (i) protection of inventors; and (ii) establishing guidelines for national patent laws to facilitate the international diffusion of new technology. If a country seeks technology, it must play by suppliers' rules and provide adequate protection of patents under national laws. Proponents for the revision of the Paris Convention argued that the patent system accounted for monopolies that held captive the developing markets. SUSAN K. SELL, POWER AND IDEAS: NORTH-SOUTH POLITICS OF INTELLECTUAL PROPERTY AND ANTITRUST 108-110 (James N. Rosenau ed., State University of N.Y. Press 1998).

<sup>119.</sup> Other related projects at the U.N. level included (i) the U.N. Conference on Science and Technology for Development (the "NCSTD"); and (ii) UNIDO's *Guidelines for the Acquisition of Foreign Technology in Developing Countries with Special Reference to Technology License Agreements.* 

<sup>120.</sup> Discussions that led to the draft TOT took place even prior to the NIEO movement. Fikentscher, *supra* note 119, at 11.

<sup>121.</sup> Id.

<sup>122.</sup> Id. at 22.

<sup>123.</sup> The U.S. approach to IP-conditioning the granting of GSP status to foreign nations upon their national law's adequate protection of IP rights for U.S. businesses (*see infra* Part VI.A(d))-reflects the sentiments of its corporate constituents. "The notion that IP should be

The impetus for TOT actually came from the "Group of 77."<sup>124</sup> who expressed the need to exert greater national control over technology transfer in order to decrease their dependence on foreign suppliers' overpriced technology.<sup>125</sup> Through Group 77, developing nations' voices echoed certain studies done by governmental organizations of the Americas which revealed abuse of Latin American countries. The countries' technological development was made completely dependent upon external decision-making and control as part of what they had to give in technology transfer arrangements.<sup>126</sup> These studies led to a wave of restrictive technology transfer laws enacted by the Latin American states as interventionist mechanisms to regulate severe balance-of-payment crises.<sup>127</sup> But even with these protectionist laws, bargaining powers remained unequal due to the inexperience of the new government technocrats charged with the review and approval of licensing and related agreements. Technology producers ended up knowing much more about the nation's industrial needs than its bureaucrats. Even with the force of national laws, governments might still have to waive, relax, or abolish those legal requirements, depending on how badly the nation needs technology.128

TOT thus recognized national sovereignty and its power to regulate technology transfer contracts and transactions.<sup>129</sup> This feature of TOT has been criticized as ambiguous. It is unclear if the provision is intended to enable just recipient countries, supplier countries, or both.<sup>130</sup> Not only did recipient countries have an interest in enacting technology transfer laws, but the supplier countries also wanted to exercise their sovereign power extraterritorially to control the export of technology. Supplier control was based on national defense, national security, and foreign policy concerns. The draft TOT also addressed restrictive business practices in technology transactions—the interplay between antitrust and technology transfer framework—by giving special treatment to the developing countries under antitrust rules to help them strengthen their bargaining power in

treated as heritage of mankind assaults the basic morality of good business." Larry Evans, *Licensing Disincentives in Brazil, in* LES NOUVELLES, 183 (1986) (quoting Standard Oil Chairman).

<sup>124.</sup> See The Group of 77 Homepage, http://www.g77.org. The Group of 77 (G-77) was established on 15 June 1964 by seventy-seven developing countries signatories of the "Joint Declaration of the Seventy-Seven Countries" issued at the end of the first session of UNCTAD in Geneva. Beginning with the first "Ministerial Meeting of the Group of 77 in Algiers on 10–25 October 1967, which adopted the Charter of Algiers," a permanent institutional structure gradually developed, which led to the creation of Chapters of the Group of 77 with liaison offices in Geneva (UNCTAD), Nairobi (UNEP), Paris (UNESCO), Rome (FAO/IFAD), Vienna (UNIDO), and the Group of 24 (G-24) in Washington, D.C. (IMF and World Bank). Although the members of the G-77 have increased to 130 countries, the original name was retained because of its historic significance.

<sup>125.</sup> SELL, supra note 120, at 66-70.

<sup>126.</sup> See, e.g., Robert J. Radway, Antitrust, Technology Transfers and Joint Ventures in Latin American Development, 15 LAW. AM. 47 (1983).

<sup>127.</sup> Id.

<sup>128.</sup> SELL, *supra* note 120, at 139-40.

<sup>129.</sup> Id. at 159 (Annex I [Draft TOT]).

<sup>130.</sup> Id. at 63-64.

technology transactions.

Against this backdrop, the TOT became the battleground for North-South international politics. The Southern Hemisphere, viewing technology as part of the patrimony of mankind, wanted technological development at a price it could afford to pay. The North treated the value of technology as private property and traditionally has been reluctant to part with "core" or "critical asset" technology.

The TOT project eventually failed. Largely, this was a result of the breakup of Group 77, the initiator of the NIEO movement.<sup>131</sup> Today, only TRIPS serves the function of an international code. Under the current multilateral system, each developing nation is left to design its own FDI, antitrust, and technology transfer laws and policies. Since the failure of TOT, the protection of technology transactions has remained a matter of national border differentiation and stages of development (other than EU's regionalism), with all of the drawbacks inherent in national interventionist mechanisms. In technology transfer, the dialogue remains divergent. The Northern Hemisphere prefers an interventionist role. If economic liberalism prevails, technology transfer in today's global world will continue to be market-led. In such an environment, the danger occasioned by AI will remain unchecked.<sup>132</sup>

The poor record of negotiation between the Northern Hemisphere and the Southern Hemisphere has led to failures of other related global projects. These failures were exacerbated by the South's macroeconomic crises that have lessened its unity and bargaining power throughout the past decades.<sup>133</sup> For example, technology issues can also indirectly be regulated via multinationals' codes of conduct. So far, this ongoing global project of equal complexity and difficulty has not been successful.

Global efforts to regulate multinationals' conduct paralleled the TOT project, starting in 1974 with the formation of the Intergovernmental Commission on Transnational Corporations, an advisory body to the UN Economic and Social Council ("ECOSOC").<sup>134</sup> The ECOSOC was assisted by the Center of Transnational Corporations ("CTC") in New York.<sup>135</sup> The UN Code of Conduct governing multinational corporations came as the second stage of ECOSOC efforts, separate from efforts made by the International Labor Organization ("ILO") in Geneva, the OECD, the European Parliament, or other

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<sup>131.</sup> Id. at 105-06.

<sup>132.</sup> Id. at 76-77.

<sup>133.</sup> Id.

<sup>134.</sup> See generally, Integration of the Commission on Transnational Corporations into the Institutional Machinery of the United Nations Conference on Trade and Development, U.N. Doc. A/RES/49/130 (Feb. 24, 1995).

<sup>135.</sup> See United Nations Conference on Trade and Development, The United Nations Centre on Transnational Corporations, http://unctc.unctad.org/aspx/index.aspx (last visited Nov. 6, 2008).

intergovernmental groups in the Americas.<sup>136</sup> More recent global projects addressing conduct of multinationals have included the United Nations' Global Compact, and more recently, the 2003 adoption by the UN Sub-Commission on the Promotion and Protection of Human Rights of the "Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights."<sup>137</sup>

All of these global projects were closely related to, or arose under the larger context of, the NIEO movement of the past century, which unfortunately has become a cliché. Another unfinished global project where the regulation of technology issues can be shaped and formed is the OECD's proposed Multilateral Agreement on Investment ("MAI").<sup>138</sup> Representing the voice of the industrialized nations within the OECD, the MAI may be the project least influenced by the NIEO movement and its aftermath. The future of all of these projects, specifically the prospect of revitalizing the failed TOT, remains uncertain.

# iii. Lack of universal antitrust and anti-competition laws, other than regional framework

Technology transfer may undermine IPR protection, which in effect grants inventors a monopoly right over their inventions. The relationship between technology transfer and anti-competition policies is therefore evident. The possession of technology creates considerable market power,<sup>139</sup> requiring effective legal measures in order to avoid abuses. In a global regulatory framework, IPRs must be tempered against antitrust and restrictive business practices. Competition policies must respect IPRs, stimulate innovation, and ensure fair dealings in technology transactions.

As with other parts of the law, rules against monopoly and anti-competition activities are generally still a matter of national sovereignty to protect the local market.<sup>140</sup> The local markets' initiative and the sophistication of their laws will depend on their stage of development. In sum, there is no single universal antitrust

<sup>136.</sup> See U.N. Comm'n on Transnat'l Corp., Draft United Nations Code of Conduct on Transnational Corporations, 23 I.L.M. 626 (1984); OECD Guidelines for Multinational Enterprises (Revision 2000), available at http://www.oecd.org/dataoecd/56/36/1922428.pdf; Fitkentscher, supra note 119 (citing efforts made by the Andean Subregional Organization and the Organization of the American States in the 1970s to address multinationals' behaviors).

<sup>137.</sup> The Global Compact Office, *The United Nations Global Compact: Advancing Corporate Citizenship* (June 2005), http://www.unglobalcompact.org/docs/about\_the\_gc/2.0.2.pdf; Michael J. Trebilcock & Robert Howse, *Trade Policy & Labor Standards*, 14 MINN. J. GLOBAL TRADE 261, 275-276 (2005).

<sup>138.</sup> OECD, Multilateral Agreement on Investment, http://www.oecd.org/document/22/0,2340,en\_2649\_201185\_1894819\_1\_1\_1\_1,00.html (last visited Nov. 7, 2008).

<sup>139.</sup> Large cross-border mergers and acquisitions (M&A) in the industrialized economies evidence the trend for concentration of technology ownership. FDI statistics released by the OECD show that in 2006, the level of FDI in OECD countries included a number of large cross border M&As. Hans Christiansen et al., *Trends and Recent Developments in Foreign Direct Investment, in* INTERNATIONAL INVESTMENT PERSPECTIVES: FREEDOM OF INVESTMENT IN A CHANGING WORLD (2007), *available at* http://www.oecd.org/dataoecd/62/43/38818788.pdf.

<sup>140.</sup> See, e.g., JOELSON, supra note 118.

model. (Efforts have been made, first by the WTO predecessor, the International Trade Organization ("ITO"),<sup>141</sup> then by the OECD,<sup>142</sup> and finally by UNCTAD, which adopted a non-biding code to control restrictive anti-competitive practices.<sup>143</sup>) The only exception has been the extent to which regionalism has successfully taken place, as in the case of NAFTA or E.U. regimes. In the case of the E.U., regional merger controls guard against restraining or anti-competitive practices to assure common market protection.<sup>144</sup> NAFTA, on the other hand, commits each country to national enforcement of antitrust law. As a free trade zone and not a common market, NAFTA, unlike the E.U., does not create regional law on anticompetitive practices.<sup>145</sup>

Intense debates have taken place between those who advocate for an international regime and those who wish to maintain national regimes. For example, the E.U. has traditionally favored a global regime, whereas the United States has opposed such an approach.<sup>146</sup> More recently, scholars have tabled a Munich Draft Code,<sup>147</sup> and the WTO has issued mandates for the study of antitrust law and its interaction with trade policies.<sup>148</sup> Both the OECD and the WTO have dropped their respective initiatives. The current ongoing "harmonization" project is that of the International Competition Network ("ICN"), a coalition of nongovernmental advisors and antitrust agencies from the founding sovereignties.<sup>149</sup>

The developed jurisdictions, on the other hand, have set out to give extraterritorial effect to their domestic antitrust laws, a self-help approach to internationalization, with each superpower turning itself into the antitrust enforcer

145. NAFTA, supra note 107, at 663. See also Mark R. Joelson, Antitrust Aspects of NAFTA, 40 FED. B. NEWS & J. 573 (1993).

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<sup>141.</sup> D. Daniel Sokol, Monopolists Without Borders: The Institutional Challenge of International Antitrust in a Global Gilded Age, 4 BERKELEY BUS. L.J. 37, 47-48 (2007).

<sup>142.</sup> Id.

<sup>143.</sup> United Nations Conference on Trade and Development, Geneva, Switz., Apr. 8-22, 1980, *The United Nations Set of Principles and Rules for the Control of Restrictive Business Practices*, U.N. Doc TD/RBP/CONF/10/REV.1, *available at* http://www.unctad.org/en/docs/tdrbpconf10r2.en.pdf.

<sup>144.</sup> Council Regulation (EEC) No. 4064/89, 1989 O.J. (L 235); *see also* Council Regulation (EEC) No. 2157/2001, 2001 O.J. (L 294) 1 (illustrating E.U. streamlining of corporate law); RALPH FOLSOM, EUROPEAN UNION LAW IN A NUTSHELL 298-313 (5th ed. 2007); Michael Reynolds, *The Future of Merger Control in Europe*, 26 INT'L BUS. LAW. 100 (1998); Joseph Gilchrist, *Procedures in Merger Cases*, 26 INT'L BUS. LAW. 113 (1998).

<sup>146.</sup> JOELSON, supra note 117.

<sup>147.</sup> International Antitrust Code, 64 Antitrust & Trade Reg. Rep. (BNA) (Supp. Aug. 19, 1993).

<sup>148.</sup> See e.g., World Trade Organization, Working Group on the Interaction between Trade and Competition Policy, *Draft Report (1997) to the General Council*, WT/WGTCP/W/49 (Nov. 25, 1997).

<sup>149.</sup> Sokol, *supra* note 142, at 15-123 (listing the founding members: Australia, Canada, the EU, France, Germany, Israel, Italy, Japan, Korea, Mexico, South Africa, the U.K., the U.S., and Zambia).

of the world.<sup>150</sup> The United States, for instance, exerted its extraterritorial antitrust law in order to break up an international uranium cartel. The U.S.'s action caused European countries and Canada to enact "blocking statutes," aimed at limiting the United States' long arm in litigation.<sup>151</sup> Similarly, the E.U. gives extraterritorial effect to its antitrust system by applying a jurisdictional threshold "turn-over test" that signifies the impact of mergers upon the common market, applicable to mergers that do not take place in the E.U. or were not initiated by E.U. citizens.<sup>152</sup> Both the E.U. and the United States unilaterally claim an "effect" test for exercising prescriptive antitrust jurisdiction extraterritorially.<sup>153</sup> Once more, these extraterritorial exertions of national laws and the "blocking statutes" they generate prove that national sovereignty continues to prevail over the globalization of antitrust law.

It follows that the sovereign state itself is a major monopolistic actor in the global scene, acting allegedly in the national interest, notwithstanding WTO members' obligation to administer measures affecting trade in "a reasonable, objective, and impartial manner."<sup>154</sup> Sovereign power existing in customary international law and exercised via domestic law generally protects governments who engage in anticompetitive acts. For example, under both U.S. and E.U. laws, foreign governments enjoy immunity from antitrust liability and benefit from the Act of State doctrine. This doctrine precludes judicial inquiry into the validity of governmental actions pertaining to the state's sovereignty.<sup>155</sup> As a result, *ad hoc* bilateral agreements and informal cooperation of governmental agencies, rather than judicial actions, have resolved most antitrust conflict-of-law issues.<sup>156</sup>

155. U.S. Dep't of Justice and Fed. Trade Comm'n, Antitrust Enforcement Guidelines for Int'l Operations (April 2005), http://www.usdoj.gov/atr/public/guidelines/internat.htm (summarizing the immunity of a sovereign nation to antitrust laws); Joined Cases C-395/96 P and 396/96 P, Compagnie Maritime Belge SA and Dafra-Lines A/S v. Commission of the European Communities, 2000 E.C.R. I-01365 (holding that the Central and West African Conference can be fined as an organization for monopolistic activity but that its individual members cannot); *accord* Immunity of a Foreign State from Jurisdiction, 28 U.S.C. § 1604 (2000); RESTATEMENT (THIRD) OF FOREIGN RELATIONS § 443 (1987).

156. See Stephen D. Ramsey, The United States – Australian Antitrust Cooperation Agreement: A Step in the Right Direction, 24 VA. J. INT'L L. 127 (1984) (discussing the Agreement on Cooperation on Antitrust Matters executed between the United States and Australia); Joseph P. Griffin, EC and U.S. Extraterritoriality: Activism and Cooperation, 17 FORDHAM INT'L L.J. 353 (1993) (discussing the measures adopted by the United States and the European Community); Tina J. Khan, The Protection of Trading Interests Act of 1980: Britain's

<sup>150.</sup> Id.

<sup>151.</sup> Id.

<sup>152.</sup> See FOLSOM, supra, note 145, at 298-313; Reynolds, supra note 145; Gilchrist, supra note 145 (discussing EU merger control law); Sokol, supra note 142, at 20-21; Edward T. Swaine, *The Local Law of Global Antitrust*, 43 WM. & MARY L. REV. 627, 641-646 (2001).

<sup>153.</sup> See generally, Joseph Jude Norton, Extraterritorial Jurisdiction of U.S. Antritrust and Securities Laws, 28 INT'L & COMP. L.Q. 575 (1979).

<sup>154.</sup> E.g., General Agreement on Tariffs and Trade – Multilateral Trade Negotiations (The Uruguay Round): General Agreement on Trade in Services (GATS), 33 I.L.M. 44, 52 (1994) (stating that "in sectors where specific commitments are undertaken, each Member shall ensure that all measures of general application affecting trade in services are administered in a reasonable, objective, and impartial manner").

#### REGULATING FOR THE EFFECT OF A.I.

#### iv. The fallacy of international labor protection

Likewise, the current international labor law regime is not equipped to protect worker welfare in the AI revolution that creates digital work environments to streamline production and eliminate humans. Labor and employment law, or workplace regulation, traditionally has been domestic. An "employment at will" model, such as the U.S. system, preserves unfettered employer power and prerogative. Unfortunately, such a system fails to provide protection against downsizing and layoffs or other job displacement in the workplace, except for what is specifically provided for in private contracts, union collective bargaining, and/or employers' internal rules.<sup>157</sup>

At the same time, globalization may have created a "race to the bottom" among nations to relax national labor standards in order to maximize their comparative advantages. One recent study found that U.S. multinationals prefer to operate in countries with decentralized bargaining and few restrictions on layoffs.<sup>158</sup>

As illustrated below, although inspirational international labor legal standards are embodied in both private ("Private Code") and public ("Public Code") international law, there is no enforceable international labor code that can be applied universally.

The Private Code is the product of private actors and/or governments as parties to commercial deals, since private international labor law can be found via negotiated private agreements and voluntary codes of conduct.<sup>159</sup> The Public Code, or public international labor law, consists of: (i) U.N. human rights declaration and covenants; (ii) labor provisions in trade-related international and regional agreements; and (iii) declaration, conventions and recommendations of the International Labor Organization ("ILO"), an organ of the U.N. Not all of these instruments have universal enforcement or otherwise affirmatively secure the economic welfare for workers globally, independent of the national legal systems.

159. See infra pp. 153-58.

*Response to U.S. Extraterritorial Antitrust Enforcement*, 2 NW. J. INT'L L. & BUS. 476 (1980) (discussing U.S.–U.K. conflict on antitrust enforcement); Organization for Economic Cooperation and Development: Council Revised Recommendation C (95) 130/Final Concerning Cooperation Between Member Countries on Anticompetitive Practices Affecting International Trade, 35 I.L.M. 1313 (1996) ("[m]ember countries should cooperate in the implementation of their respective national legislation in order to combat the harmful effects of anticompetitive practices").

<sup>157.</sup> *Contra* TRIPS *supra* note 107, art. 67 (imposing generally upon WTO Member states a duty to provide "technical and financial cooperation in favour of developing and least-developed country Members . . . including the training of personnel." The lack of specificity, however, makes the application of Article 67 difficult).

<sup>158.</sup> Mario F. Bognanno, Michael P. Keane & Donghoon Yang, *The Influence of Wages and Industrial Relations Environments on the Production Location Decisions of U.S. Multinational Corporations*, 58 INDUS. & LAB. REL. REV. 171 (2005).

#### (1) The U.N. human rights documents

Each of the three U.N. human rights documents proclaims that freedom of association is essential to workplace welfare. Only the International Covenant on Economic, Social and Cultural Rights ("ICESCR")<sup>160</sup> specifies workers' protection. ICESCR imposes a positive obligation on the state to take action for the economic welfare of its citizens and provide for workers' basic economic entitlements as human rights.<sup>161</sup> Yet the ICESCR lacks universal adoption and support. For example, the United States has never ratified the ICESCR and, hence, economic and cultural rights have never been part of U.S. human rights protection.<sup>162</sup>

Scholars have long argued, nonetheless, that civil and political rights cannot meaningfully be exercised in the absence of some minimum level of economic security—a "potential" or "capabilities" approach to human welfare. Despite these intense debates, it is not exaggerated to say that realistically, under the current international legal system, no one has a universal "human right" to full-time employment, upward mobility, training, skill upgrading, and overall economic well-being for the purposes of retaining their place in global market competition.

<sup>160.</sup> International Covenant on Economic, Social and Cultural Rights, Dec. 16, 1966, available at http://www.unhchr.ch/html/menu3/b/a\_cescr.htm.

<sup>161.</sup> Id.

<sup>162.</sup> Office of the United Nations High Comm'r for Human Rights, Status of Ratifications of The Principal Int'l Human Rights Treaties, June 9, 2004, http://www.unhchr.ch/pdf/report.pdf.

### (2) ILO documents

The ILO<sup>163</sup> is notoriously known for its weak enforcement, although it has been instrumental in specifying which workers' rights constitute basic human rights (i.e., freedom of association, elimination of forced labor and child labor, and freedom from discrimination).<sup>164</sup> As a result, the ILO "international labor code" remains as "soft law" only. Interestingly, a superpower like the United States has been party to very few ILO conventions, compared to France who has been party to many.

As of October 2006, the ILO with 179 member states had produced 187 conventions (which, after ratification, have the force of treaties binding upon member states), and 198 recommendations (which are advisory in nature).<sup>165</sup> Most ILO conventions are not self-executing, and the standards are enforced principally via two mechanisms: (1) examination of reports, and (2) consideration of complaints.<sup>166</sup> The ILO also makes non-compliance of conventions by member states known via the issuance of "observations," whose effect seems to center upon negative publicity. Although Professor Bhagwati powerfully exclaimed, "God gave us not just teeth but also a tongue,"<sup>167</sup> realistically the ILO has been unable to assure state compliance, as many states ignore their obligations. This is despite the fact that the core labor standards under ILO framework are quite minimal and do not specifically address or apply to the New Economy. (The arguable exception to the minimal standards of the ILO is the ILO Convention on Termination of Employment, which offers the opposite philosophy from the US "employment at will" standard).<sup>168</sup>

Labor protection pertaining to the new division of labor will remain to be developed. In the past, a number of countries have enacted protectionist measures, such as the legal requirement for foreign investors to train local personnel as a condition for investment or admission of expatriates. The country's need for FDI, however, may lower its leverage, causing relaxation, waiver, or ultimately abolition of such laws in favor of liberal investment policies and promotion of free trade. For example, Mexico previously restricted the percentage of foreign

<sup>163.</sup> *See generally*, The Constitution of the International Labour Organisation Instrument of Amendment, *adopted* Oct. 9, 1946, 62 Stat. 3485, 15 U.N.T.S 35 (establishing the ILO as an autonomous body within the League of Nations by the Treaty of Versailles).

<sup>164.</sup> International Labour Conference: ILO Declaration on Fundamental Principles and Rights at Work and Annex, *adopted* June 18, 1998, 37 I.L.M. 1233; Lee Swepston, *Closing the Gap Between International Law and U.S. Labor Law, in* WORKER'S RIGHTS AS HUMAN RIGHTS 53, 59 (James A. Gross ed., 2003).

<sup>165.</sup> Blanpain et al., supra note 13, at 11-12.

<sup>166.</sup> ROGER BLANPAIN & JIM BAKER, COMPARATIVE LABOR LAW AND INDUSTRIAL RELATIONS IN INDUSTRIALIZED MARKET ECONOMIES 159 (Kluwer 2004).

<sup>167.</sup> Jagdish Bhagwati & Jose E. Alvarez, *The Boundaries of the WTO: Afterword: The Question of Linkage*, 96 AM. J. INT'L L. 126, 131 (2002).

<sup>168.</sup> See The General Conference of the International Labour Organisation, June 2-22, 1982, *Convention concerning Termination of Employment at the Initiative of the Employer*, http://www.ilo.org/ilolex/cgi-lex/convde.pl?C158 (June 22, 1982).

ownership in FDI projects to retain local control over the FDI. Additionally, Mexico once had a Technology Transfer law that gave the government veto power over international licensing and franchising agreements.<sup>169</sup> Now contractual parties are free to bargain within the NAFTA framework.

### (3) WTO and Labor Standards under Regionalism

With the WTO deferring to the ILO's jurisdiction, efforts to push for a social clause linking free trade to the maintenance of global labor standards under the GATT-WTO framework have likewise failed. As a result, the ILO's role has been revitalized and boosted, leading to ongoing ILO technical consultations with other multilaterals' working groups.<sup>170</sup> The debate—for or against such trade-labor linkage—goes on, nonetheless,<sup>171</sup> with the WTO advocating its own collaboration with the ILO.<sup>172</sup>

In the absence of a WTO labor standard, the Third World is left to devise its own labor protection or to anticipate the effect of a digital work environment. Under the Agreement on Trade-Related Investment Measures ("TRIMS"), Third World WTO members are prohibited from taking measures under domestic laws that are inconsistent with their "national treatment" obligations under GATT. They are also obligated to eliminate all quantitative restrictions that may give rise to favored treatment of local products over imports.<sup>173</sup> A transitional period up to a number of years is granted to help ease them into compliance with TRIMS.<sup>174</sup> Accordingly, at least in theory, Third World member countries cannot impose any technology transfer or labor requirements that can be interpreted as violating these TRIMS prohibitions.

It is worthwhile to note that, notwithstanding the lack of trade-labor linkage at the WTO level, U.S. trade laws permit the President to determine the existence of

<sup>169.</sup> See Mexico's Law on the Control and Registration of the Transfer of Technology and the Use and Exploitation of Patents and Trademarks (1982). Mexico also enacted the Law for the Promotion and Protection of Industrial Property in 1991, which was construed as the country's effort to remove barriers to foreign investment and technology transfer by broadening protection of patents and according protection to trade secrets. (In the same year, Mexico abandoned its technology transfer control mechanism.) Under this law, however, patentable invention may still be subject to compulsory licensing due to the public interest, although in general, the Law reflected an expressed policy of deregulation); see also John B. McKnight & Carlos Müggenburg, Mexico's Industrial Property and Copyright Laws: Another Step Toward Linkage with a Global Economy, in 1 Doing Business in Mexico Part IV 2-1-2-18 (Michael W. Gordon ed., 1992) (comparing, inter alia, Mexico's new industrial property law to former technology transfer law).

<sup>170.</sup> International Labour Office, A Stronger Social Dimension of Globalization: Followup to the November 2004 Meeting of the Working Party, ILO GB.292/WP/SDG/1 (March 2005), available at http://www.ilo.org/public/english/standards/relm/gb/docs/gb292/pdf/sdg-1.pdf.

<sup>171.</sup> World Trade Organization, Trade and Labor Standards: Subject of Intense Debate, http://www.wto.org/english/theWTO\_e/minist\_e/min99\_e/english/about\_e/18lab\_e.htm (last visited Nov. 7, 2008).

<sup>172.</sup> Id.

<sup>173.</sup> World Trade Organization, Agreement on Trade-Related Investment Measures, art. 2, and Annex, §§ 1-2 [hereinafter TRIMS].

<sup>174.</sup> Id. art. 5.

"internationally recognized workers' rights" before granting tariff or trade benefits to other countries. For example, the United States has unilaterally linked improvement of labor conditions in various countries to the granting of its Generalized System of Preferences ("GSP") and the GSP benefit of duty-free exports into the U.S. market.<sup>175</sup> At a minimum, this GSP system has allowed U.S. advocates to scrutinize alleged labor abuses in foreign countries, thereby exposing international labor practices and multinationals' behaviors overseas to the public. Whether this GSP system will be used to address international labor issues of the

The E.U. has also promoted the observations of labor rights via trade accords and related agreements, although currently there is no E.U. supranational employment law or industrial relations. In Europe, labor market regulation remains a national affair. The E.U., however, maintains its supranational jurisdiction to adjudicate and legislate over some workplace matters, and it has done so, largely in the form of non-self-executing Directives.<sup>176</sup> On the other hand, the guaranteed free movement of labor, capital, and services in the common market remains a key component of E.U. citizenship, despite transitional periods granted to certain member states.<sup>177</sup>

For example, to implement free movement of workers across members' borders, E.U. Council of Ministers' regulations provide for certain safeguards of workers' rights, based on a "national treatment" standard. Cross-border workers have the same access to vocational schools, training centers, housing, and unionization as citizens of the host member state.<sup>178</sup> Other Council Directives deal with unemployment and safeguard the rights of workers when businesses are transferred (i.e., discharged workers are entitled to some protection); but, again, E.U. Directives are not self-executing.<sup>179</sup> Accordingly, scholars have expressed concern that member nations' conflicting national interests may impair the E.U.'s ability to manage worker dislocation challenges caused by globalization.<sup>180</sup> Most supranational involvement in labor matters in the common market has been in the

form of Directives, which require national implementation, rather than legally binding Regulations.<sup>181</sup>

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Information Age remains to be seen.

<sup>175.</sup> Designation of Beneficiary Developing Countries, 19 U.S.C. § 2462(b)(2)(G) (2000).

<sup>176.</sup> See, e.g., Employee Information and Consultation Directive (EC) No. 14/2002, 2002 O.J. (L 80) 29; Transfer of Undertakings Directive (EC) No. 23/2001, 2002 O.J. (L 82) 16; Collective Redundancies Directive (EC) No. 59/1998, 1998 O.J. (L 225) 16; Works Councils Directive (EC) No. 45/1994, 1994 O.J. (L 254) 64.

<sup>177.</sup> Roger Blanplain, *The European Union and Employment Law, in* COMPARATIVE LABOR LAW AND INDUSTRIAL RELATIONS IN INDUSTRIALIZED MARKET ECONOMIES 165 (8th ed. 2004).

<sup>178.</sup> See, e.g., Council Regulation (EC) No. 1612/68, art. 1, 1968 O.J. (L 257) 2; Council Directive (EC) No. 68/360, 1968 O.J. (L 257) 13.

<sup>179.</sup> See Council Directive (EC) No. 01/23, Transfer of Undertakings Directive, 2001 O.J. (L 82) 16.

<sup>180.</sup> Id. at 188.

<sup>181.</sup> Id.

As to NAFTA, the agreement itself does not cover labor. The Clinton Administration negotiated a side agreement on labor to help secure NAFTA's passage through the U.S. Congress. The side agreement, the North American Agreement on Labor Cooperation ("NALC"), does not provide transnational regulation and only establishes a law-enforcement mechanism. By comparison to the E.U., NAFTA labor protection is minimal and starkly streamlined. Notably, NAFTA contains no freedom of movement rights for regional workers. NALC simply commits each country to the creation of labor bodies, National Administrative Offices (the "NAOs"), which monitor compliance with domestic laws and receive complaints via established dispute resolution mechanisms.<sup>182</sup> Much of the NALC's state cooperation obligation centers around education. As expected, it is difficult to measure the impact of these educational programs concretely.

The global labor project that can adequately address the new division of labor envisioned here has not really started.

## v. Challenges in the harmonization of national laws—free trade versus protectionism based on national security and foreign policy concerns

Although the essence of the GATT-WTO free trade philosophy is the eradication of national protectionism, protectionist measures are still intact in national laws because of age-old sovereignty principles. The following discussion uses the United States as an example of this unilateral protectionism.

One important feature of U.S. export laws is the protection of U.S. national defense, national security, and foreign policies. This feature can be enforced unilaterally. Specifically, the U.S. Export Administration Act ("EEA") and implementing Export Administration Regulations ("EAR") impose strict liability and stringent licensing requirements upon U.S. technology exporters. These license requirements center around the types of products shipped, the identity of end-users, and ultimate destinations of shipments. By virtue of EAA/EAR legal definitions of "re-exports" and "deemed exports," these license requirements extend to (i) the release of U.S. technological data to foreigners anywhere in the world, and (ii) the exports of U.S. technology from third countries that are beyond the territorial jurisdiction of the United States.<sup>183</sup> These license requirements aim to implement not only national defense or security concerns but also American foreign policies, including those criticized as a pure product of historical development, with no relationship to economic reality, such as the long-criticized American boycott of Cuba.. These license requirements are separate from U.S.imposed trade embargoes and foreign boycotts of other nations.<sup>184</sup>For example, the

<sup>182.</sup> North American Agreement on Labor Cooperation, U.S.-Can.-Mex., arts. 15-16, Sept. 8, 1993, 32 I.L.M. 1499, 1507 (1993). Such dispute resolution mechanisms address persistent violation of minimum wage, child labor, and occupational health and safety laws, and have the authority to issue monetary penalties in arbitration awards. *Id.* 

<sup>183.</sup> EAA, *supra* note 53, § 2415(5) (defining export); EAR, *supra* note 53, §§ 730.5 (discussing EAR coverage of non-exports), 734.2(b) (defining important EAR terms).

<sup>184.</sup> Compare Cuban Liberty and Democratic Solidarity Act (LIBERTAD, Helms-Burton)

EAA-EAR regime also imposes foreign anti-boycott measures, clearly aimed to implement U.S. foreign policies. Specifically, this EAA-EAR regime prohibits U.S. persons from taking part in foreign boycotts against friends of the United States, a law intended to counter against the Arab boycott of Israel.<sup>185</sup>

Finally, despite the United States' liberal policy toward inbound FDI under a free enterprise rubric, the U.S. also controls the inflow of FDI based on national security concerns. The U.S.' Exon-Florio law gives the President the authority, free from judicial review, to gather and review "credible evidence" in order to block mergers and acquisitions of U.S. companies by foreign entities.<sup>186</sup> This presidential power is delegated to the Committee for Foreign Investment in the United States ("CFIUS"). CFIUS, an ad hoc body without independent agency status, determines what constitutes national security in exercising this inbound FDI screening authority. The Exon-Florio law was the legal apparatus recently used to block China's acquisition of Unocal.<sup>187</sup>

185. EAA, *supra* note 53, § 2407 (foreign boycotts); Restrictive Trade Practices or Boycotts Provisions, 15 C.F.R. § 760.2 (2007).

of 1996, 22 U.S.C. § 6021 (2000), and Cuban Democracy Act of 1992, 22 U.S.C. § 6001 (2000), with Jason S. Bell, Comment, An Analysis of the Cuban Democracy Act, 25 U. MIAMI INTER-AM. L. REV. 77, 127 (1993) (arguing that the United States is inconsistent in its foreign trade policy by preventing U.S. citizens from participating in the Arab Boycott of Israel).

The U.S. boycott of Cuba has prompted "blocking" laws from other developed jurisdictions, namely Canada and the United Kingdom. *See* Order Requiring Persons in Canada to Give Notice of Communications Relating to, and Prohibiting Such Persons From Complying With, An Extraterritorial Measure of The United States That Adversely Affects Trade or Commerce Between Canada and Cuba (Foreign Extraterritorial Measure (United States) Order, 1992, JUS-92-777-01 (SOR/DORS); United Kingdom Protection of Trading Interests Order 1992 (Oct. 14, 1992).

<sup>186.</sup> Defense Production Act of 1950, 50 U.S.C. app. §§ 2061, 2170 (2004) (giving the President of the United States the authority to review certain mergers, acquisitions, and takeovers).

<sup>187.</sup> See S. 1412, 109th Cong. (2005); H.R. Res. 344, 109th Cong. (2005); Press Release, U.S. Rep. Thomas Reynolds, Reynolds Challenges China's Bid for Unocal (June 30, 2005), http://www.reynolds.house.gov/index.php?option=com\_content&task=view&id=61&Itemid=9; National Sec. Dimensions of the Possible Acquisition of UNOCAL by CNOOC and the Role of CFIUS: Hearing before the Comm. on Armed Servs, 109th Cong. (2005) (statement of C. Richard D'Amato, Chairman, U.S.-China Economic and Security Review Comm'n); Kerry Dumbaugh, Report 2005, available CRS for July 4-8, Congress, 8, at at www.fas.org/sgp/crs/rev/1B98014.pdf; U.S.-China Economic and Sec. Review Comm'n: Hearing on China's Capital Markets Strategies, 109th Cong. (2005) (opening statement of Michael R. Wessel, Comm'r and Hearing Chair); Economist, Bogus Fears Send the Chinese Packing, Aug. 2, 2005, http://economist.com/agenda/displaystory.cfm?story\_id=E1\_QNQQVGV (the political environment in the United States deterred the Chinese from further pursuing a bid for UNOCAL); Press Release, Chevron Corp., Chevron Corporation Statement on UNOCAL Transaction (June available at http://www.chevron.com/news/press/Release/?id=2005-06-22 22. 2005). (recognizing that the Chinese UNOOC proposal to purchase UNOCAL would be subject to extensive U.S. regulatory process); Press Release, CNOOC Ltd., CNOOC Limited Proposed Merger with UNOCAL Offering US\$67 per UNOCAL Share in Cash (June 23, 2005), http://www.cnoocltd.com/en/news\_info.aspx?newsid=20070620164150843; Press Release. Chevron Corp., Securities and Exchange Commission Clears Chevron, UNOCAL to Hold Stockholder Vote (June 29, 2005), http://investor.chevron.com/phoenix.zhtml?c=130102&p=irol-

In reality, Exon-Florio has been criticized as a front for anti-hostile takeover tactics by U.S. corporations resisting international acquisitions. Scholars have challenged whether the national security rubric of Exon-Florio is meant to cover: (i) economic impact upon U.S. firms, which may be determined by individual corporate actors, or (ii) U.S. foreign policies, which may change from administration to administration.<sup>188</sup>

Although Exon-Florio is the main gatekeeper of inbound FDI, other federal laws also restrict FDI and foreign control of certain types of U.S. industries and businesses.<sup>189</sup> Similarly, other nations seeking FDI have also used their foreign investment laws either to attract FDI or to serve the same gatekeeper functions as the U.S.' Exon-Florio law. The "national defense" or "national security" rubric remains perhaps the most powerful manifestation of sovereignty and a tool of unilateral protectionism.

Because the national security rubric as symbol of sovereignty is soundly grounded in customary international law, it is no surprise that both the multilateral regime of GATT and the regional regime of NAFTA specifically recognize and carve out national security exceptions from principles of free trade.<sup>190</sup> TRIPS itself contains an exemption from its patent protection based on a member state's need to protect public order.<sup>191</sup> Similarly, under NAFTA, a nation can deny patents when their commercial exploitation might endanger public order or morality.<sup>192</sup> The vast unilateral power of the nation-state under the national security rubric is further intensified in this day and age when nations' concerns justifiably focus on international terrorism, most notably the United States after the atrocities of

188. See, e.g., Jonathan A. Knee, Limiting Abuse of Exon-Florio By Takeover Targets, 23 GEO. WASH. J. INT. L, & ECON. 475 (1989-90); Jose E. Alvarez, Political Protectionism and United States International Investment Obligations in Conflict: The Hazards of Exon-Florio, 30 VA. J. INT'L. L. 1 (1989-90).

190. NAFTA, *supra* note 108, art. 2102; General Agreement on Tariffs and Trade, art. XXI, Oct. 30, 1947, 61 Stat.A-11, 55 U.N.T.S. 194.

191. TRIPS, supra note 108, art. 27.2.

192. R. FOLSOM & W.D. FOLSOM, UNDERSTANDING NAFTA AND ITS INTERNATIONAL BUSINESS IMPLICATIONS, ch. 8 (1985).

newsArticle&ID=725010&highlight=; Press Release, CNOOC Ltd., CNOOC Limited Files CFIUS Notice (July 2005). http://www.cnoocltd.com/en/news\_info.aspx?newsid=20070620163819125 (CNOOC must U.S. Senator Vows to Try to Stop China-UNOCAL Deal, obtain Exon-Florio clearance); REUTERS, July 15, 2005. http://today.reuters.com/news/articlebusiness.aspx?type=tnBusinessNews&storyID=nN15144838 &imageid=&cap=&from=business. See generally Susan W. Liebeler and William H. Lash III, Exon-Florio: Harbinger of Economic Nationalism?, REGULATION: CATO REV. BUS. & GOV'T, (Exon-Florio gives the President of the United States the ability to abate foreign acquisitions of U.S. businesses if there is fear that such transactions could impair national security).

<sup>189.</sup> For example, the Federal Communication Act prohibits issuance of a federal communications license to non-citizens. 47 U.S.C. § 310(b) (2000). Unless specially authorized by the Comptroller of Currency, foreigners may not serve as bank directors. 12 U.S.C. § 72 (2000). Foreigners may not obtain international insurance or financial guarantees from the U.S. Overseas Private Investment Corporation. OPIC HANDBOOK 22 (2006), *available at* http://www.opic.gov/pdf/OPIC\_Handbook.pdf. Foreigners may not own more than 25% of an air carrier or vessel engaged in coastal shipping. 49 U.S.C. § 40102(a)(15)(c) (2000).

September 11.

U.S. international trade law, which controls imports, is another example to demonstrate the tremendous leverage held by a superpower and how its domestic law may protect domestic producers and national interests. Under Special Section 301 of the U.S. Trade Act of 1974, the United States can impose trade sanctions upon another country if that country is deemed to have "unfairly restricted the U.S. foreign trade."<sup>193</sup> Even when the foreign state is in full compliance with an international agreement such as TRIPS, under Special Section 301, the United States reserves its right to impose penalties upon the foreign country if the United States views the foreign country as not providing "adequate and effective" intellectual property protection.<sup>194</sup> The U.S. Trade Representative can create a "watch list" naming countries who are particularly lax in their protection of IPR or who have imposed barriers to market access.<sup>195</sup> This means that if a developing nation imposes measures to protect its own workforce by mandating a certain level of technology transfer as a condition for FDI, the U.S. territory in protection of U.S. corporate citizens.

Special Section 301, an example of the omnipotent exercise of national sovereignty by a superpower, has raised concerns whether the United States itself has violated the equal protection spirit of the only multilateral IPR free trade regime available, TRIPS.<sup>196</sup> Unlike the United States, whose economic and political muscle affords it the ability to act unilaterally, Third World countries are unable to do the same for fear that they may lose FDI or invoke trade retaliation by the developed countries.

# vi. Other cutting-edge areas of law that must be developed, reviewed, and harmonized globally

Uniform global regulation must also target the present jungle of Internet usage, e-commerce, and trans-border data flows.<sup>197</sup> Due to the newness and

<sup>193.</sup> Trade Act of 1974, 19 U.S.C. § 2411(a)(1)(B)(ii) (2006); see also The Omnibus Trade and Competitiveness Act of 1988 (§ 301 of the U.S. Trade Act was adopted to deal with unfair foreign practices); Judith H. Bello & Alan F. Holmer, "Special 301": Its Requirements, Implementation, and Significance, 13 FORDHAM INT'L L.J. 259 (1989-90) (discussing "Special 301" jurisprudence); Trade Act of 1974, 19 U.S.C. § 2411(a)(1)(B)(ii) (2000) (providing for trade sanctions in similar situations).

<sup>194.</sup> Trade Act of 1974, supra note 199, § 2411(d)(3)(B)(i)(II).

<sup>195.</sup> Bello & Holmer, supra note 199.

<sup>196.</sup> Lina M. Monten, Comment, *The Inconsistency Between Section 301 and TRIPS: Counterproductive with Respect to the Future of International Protection of Intellectual Property Rights?*, 9 MARQ. INTELL. PROP. L. REV. 387, 397-415 (2005).

<sup>197.</sup> For example, in 1980, the OECD approved 14 Guidelines on the Protection of Privacy and Transborder Flow of Personal Data. OECD Guidelines on the Protection of Privacy and

evolving nature of these areas of the law and the limit of this Article, discussion on these issues is reserved for separate treatment.

The following *three* premises, however, must be noted. *First*, the Internet has necessitated legal protection of digital work as a form of intellectual property. The Internet offers an ever-changing medium, thereby creating new legal challenges, including: (i) jurisdiction to police the Internet; (ii) the scope of legal protection; and (iii) the use of anti-circumvention measures dealing with digital rights management tools such as encryption, virtual containers, and watermarks.<sup>198</sup> For example, the U.S. Digital Millennium Copyright Act of 1998,<sup>199</sup> which implemented the 1996 WIPO Copyright Treaty, established a legal framework for Internet copyright issues, after a controversial battle between Hollywood and Silicon Valley in Congress about anti-circumvention provisions.<sup>200</sup> Specifically, Hollywood sought to protect IPR holders, while Silicon Valley sought to engage in reverse engineering, computer security testing and encryption research.<sup>201</sup> These anti-circumvention measures were described as the "third legal regime," because they offered "legal protection of technological protection of copyright protection."<sup>202</sup>

*Second*, from a policy-making perspective, global data flow and information exchange will help improve international distribution of knowledge, a positive result of economic globalization that must be encouraged as a freedom of speech. Tension exists, however, between protected freedom of speech and (i) national security concerns (from the state's perspective) or (ii) privacy concerns (from the individual's perspective).<sup>203</sup> This tension should be of concern to policy- and

198. These are tools created by technology to protect digital works against online infringements.

199. Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified in scattered sections of 17 U.S.C. and 28 U.S.C.).

200. See Terri B. Cohen, Comment, Anti-Circumvention: Has Technology's Child Turned Against Its Mother?, 36 VAND. J. TRANSNAT'L L. 961 (2003) (discussing the battle between Hollywood and Silicon Valley—on one side, Hollywood wanted stronger protection for owners of original works; on the other side, Silicon Valley opposed the protection as potentially impeding electronic research and testing).

201. Id.

202. Id. at 975 (citing P. Bernt Hugenholtz, Copyright, Contract, and Code: What Will Remain of the Public Domain?, 26 BROOK. J. INT'L L. 77, 89 (2000)).

203. This tension is apparent in the disparity between the on-line availability of encryption technology and the U.S. Department of Commerce's specialized regulations requiring licensing and government scrutiny of encryption technology exports. *Compare* Philip Zimmermann, *The Early Roots of PGP* [Pretty Good Privacy], *available at* http://philzimmermann.com/EN/background/index-peace.html (*last visited* Feb. 6, 2008)

Transborder Flow of Personal Data 1980), available (Sept. 23. at http://www.oecd.org/document/18/0,3343.en 2649 201185 1815186 1 1 1 1,00.html. In 1995, Europe finalized a data privacy directive, Council Directive (EC) No. 95/46 1995 O.J. (L 281) 31. In response, an E.U.-US "safe-harbor" agreement has been executed for the benefit of those US firms who are willing to abide by E.U. standards. Commission Decision 2000/520 pursuant to Directive (EC) No. 95/46, 2000 O.J. (L 215) 7. This agreement gives the E.U. directive the de facto status of a global guideline. See Council Directive (EC) No. 2000/31, 2000 O.J. (L 178) 1 (regulating electronic commerce in the common market and recognizing econtracts).

Third, from a legal perspective, the issues raised by electronic or digital communication are not new. Rather, these are existing legal issues arising in a new context—a new method of engaging in communication. For example, a contract signed by email is still a contract, with all legal elements and implications of the governing contract law. The new method of contract execution creates a legal twist—whether signatures of the contracting parties can properly be authenticated to avoid mistaken identity, fraud, or lack of meeting of the minds. In other words, when global regulation of e-commerce comes into play, the law of contract does not have to be rewritten. Rather, the legal challenge is to fit the new method of contract execution into the existing law of contracts. Take another example from tort law: when internet defamation is committed, the law of defamation and the law of privacy do not have to be rewritten. Rather, it is the question of how to apply the legal standards governing the tort of defamation under existing law when the tort is committed via the striking of a computer keyboard.

Again, none of the Internet legal protections mentioned above specifically addresses Those At Risk, the new division of labor, or the lack of equal access to information brought about by AI.

In sum, the idiosyncrasies of nationalism, the native languages used and nuances of legal text translations, and differences in cultures all add to the impossibility of total global equalization of legal standards and principles. While shared principles do exist (a legal phenomenon called "convergence"), overall, law-making has been a creature of national sovereignty. The least-developed economies are still left out of the national regulation race-to-the-top. They either have no law, law with little enforcement, or are still struggling to develop or test their embryonic law against a myriad of models borrowed from the developed jurisdictions, which are based on totally different economic concerns or national interests. Writers have criticized this as "legal imperialism," another dimension of

<sup>(</sup>detailing the federal criminal investigation of the first modern online encryption software made readily accessible on USENET), with 69 Fed. Reg. 71356 (Dec. 9, 2004) (current encryption regulations promulgated by the Department of Commerce).

Scientists have challenged the regulation of encryption technology on First Amendment grounds. Bernstein v. U.S. Dep't of State, 922 F. Supp. 1426 (N.D. Cal. 1996); Bernstein v. U.S. Dep't of Justice, 176 F.3d 1132, 1136 (9th Cir. 1999), vacated, 192 F.3d. 1308 (9th Cir. 1999) (en banc hearing never took place); Bernstein v. U.S. Dept. of State, 945 F. Supp. 1279 (N.D. Cal. 1996); Junger v. Daley, 8 F. Supp.2d 708, 714 (N.D. Ohio 1998), rev'd, 209 F.2d 481, 484 (6th Cir. 2000); Karn v. U.S. Dept. of State, 924 F. Supp. 1 (D.D.C. 1996), rev'd, 107 F.3d 923 (D.C. Cir. 1997)(per curiam)(slip copy).

Encryption technology can be used to secure or decode the confidentiality of electronically or digitally transmitted data. See 15 C.F.R. § 742.15 (2007) ("[e]ncryption items can be used to maintain the secrecy of information, and thereby may be used by persons abroad to harm U.S. national security, foreign policy, and law enforcement interests").

the North-South debate."204

# b. Second Method of Forming International Economic Law: Private Deals and Voluntary Codes of Conduct

# i. Formation of *lex mercatoria* via privately negotiated agreements

International economic law can also be formed as norms of practice via negotiated agreements in deals among private actors or between private actors and governments. In private international economic law, the pattern of technology transfer can occur at two levels: country level, whereupon the host country is a contractual party; or firm level, where a foreign investor may transfer technology to local partners, personnel, subsidiaries, and/or affiliates.<sup>205</sup>

Thus, the formation of practice norms that help produce *lex mercatoria* in the technology market is the work of governments, inventors, businesses, and lawyers. Lawyers, who provide the legal human capital, play an essential part in this second method of forming international economic law, especially in complex contractual relationships that involve negotiated risk-management mechanisms.<sup>206</sup> Therefore, the form of practice norms depends on the training, accumulation, and distribution of this legal human capital.<sup>207</sup> This further depends on the system of national law governing lawyers' conduct and the transactional costs (i.e., complex regulatory systems increase the costs of legal human capital to society). Accordingly, while lawyers help shape private international economic law, the formation of *lex mercatoria* also depends on who has more money to pay for legal services of lawyers and which party has the more developed legal training systems. The integral role of legal human capital in the formation of private international economic law can intensify the discordance between North and South and directly affect bargaining power and leverage.

# ii. Some observations on the patterns of technology transfer based on private agreements

Both FDI contracts<sup>208</sup> and technology licensing agreements (and, to a less

<sup>204.</sup> See, e.g., JAMES A. GARDNER, LEGAL IMPERIALISM: AMERICAN LAWYERS AND FOREIGN AID IN LATIN AMERICA (1980); F. Hoffman-LaRoche, Ltd. v. Empagran S.A., 542 U.S. 155, 169 (2004) (Congress's attempt to impose America's antitrust policies in the international marketplace was an act of "legal imperialism").

<sup>205.</sup> Correa, supra note 38.

<sup>206.</sup> Gillian K. Hadfield, *Don't Forget the Lawyers: The Role of Lawyers in Promoting the Rule of Law in Emerging Market Democracies*, 56 DEPAUL L. REV. 401 (2007) (analyzing capacity of lawyers to influence and enforce contractual bargains).

<sup>207.</sup> Id.

<sup>208.</sup> Correa, *supra* note 38 at 2645. In the 1990s, for example, FDI was the dominant transfer channel to "second tier" Asian countries such as Malaysia, Thailand, and the Philippines; *see* Sanjaya Lall, *The Interrelationship Between Investment Flows and Technology Transfer: An Overview of the Main Issues*, UNCTAD/ITD/TEC/1, Geneva (1992), *available at* http://www.diversitas.org/db/x.php?dbcode=re&go=e&id=13525150.

direct extent, franchise agreements)<sup>209</sup> serve as means for the import-export of patent rights across borders.<sup>210</sup>

Overall, technology can be transferred by the importation and licensing of patents, know-how,<sup>211</sup> and turnkey projects via arms-length transactions and not just ownership arrangements.<sup>212</sup> Not all relevant or critical knowledge or know-how can be transferable via licensing. Therefore, the training and data-sharing component of an investment is crucial to the skill and knowledge development of local partners and personnel. A data-sharing arrangement is typically accompanied by a confidentiality undertaking, which, though difficult to enforce, brings a sense of comfort to the business executive in charge. Licensing is a less expensive and less intrusive means to take a technology-based business abroad than FDI or equity ventures. Licensing can also occur in conjunction with, or as a part of, FDI, equity ventures, strategic alliances, or data exchange arrangements. Relying on licensing alone to obtain technologies may limit access to state-of-the art inventions, "critical assets," or core knowledge. Unfortunately, lack of capital investment or leverage may leave the developing nations with no other alternatives.

It should be noted that in the 1990s, strategic alliances were the legal and business cooperative form that enabled technology or research and development partnerships. This form of cooperation, however, was largely limited to partners from the industrialized nations.<sup>213</sup> This model limits the plurality of sources in the technology market and can easily lead to technology cartels among the multinationals of the developed world. Yet, it can also serve as a good example of fair play, arms-length bargaining in negotiation, and skilled contract drafting by technology producers. Strategic alliances in technology can also stimulate and perfect inventions. Yet, the benefit of R&D strategic alliances in the private sector has rarely been made available to developing nations.

To avoid competitive threats, large firms going abroad have typically avoided transnational transfers and licensing agreements to the developing nations.

<sup>209.</sup> Franchise is a method of doing business that permits rapid and flexible penetration of a market in which the franchisor typically does not manufacture the products sold. Franchise has been popular with fast-food establishments and may implicate antitrust issues. *See, e.g., P. Zeidman, Memorandum to Foreign Counsel: An Introduction to International Franchising* (1970); G. Glickman, *Typical Franchise Agreements (Fast Food Franchise),* § 11.08 (1983).

<sup>210.</sup> Due to the limit of this Article, this discussion omits franchises and focuses on licensing agreements as the more popular, direct, and specific method of technology transfer. I note, however, that a combination of international technology licensing and "business format" franchising can effectively lift an AI-operated production and relocate it abroad.

<sup>211.</sup> Aspects of technology not encompassed in a patent may be contained in the legal definition of "Know-How" in a technology licensing agreement. Ethan Horwitz, *Patent and High Technology Licensing, in* PRACTICING LAW INSTITUTE (June 2005). "Know-How" refers to specific commercially valuable knowledge that may or may not constitute trade secrets, and may or may not be patentable. *Id.* The protection of Know-How is mostly a function of tort, contract and trade secret laws.

<sup>212.</sup> Id.

<sup>213.</sup> Correa, *supra* note 38, at 2641 (citing Mylteka, L, Technology Transfer Trends: An Overview of Strategic Partnering (paper prepared for the Technology Development and Promotion Division, UNIDO (1992)).

Instead, large firms have relied exclusively on wholly-owned subsidiaries to receive knowledge from their parents.<sup>214</sup> Similarly, large software producers prefer distribution agreements that do not entail the transfer of source programs or trade secrets.<sup>215</sup> These internalized forms of technology transfer (i.e., those taking place intra-firm) typify private technology protectionism against the internationalization of technology. Furthermore, transfer of technology to the developing nations usually occurs in the "maturity" stage of the products. During the maturity stage, the licensor receives royalty as a source of income and is reasponsible for some form of support,<sup>216</sup> but provides only limited training and knowledge transfer to the licensee. These restrictive methods actually impede the formation of *lex mercatoria* that contributes to the international distribution of knowledge.

The licensee, therefore, must be sophisticated enough to safeguard itself against the following:

- Excessive royalty charges that drain the licensee's resources and hard currency reserve;
- The chance that the technology licensed may be obsolete, or of second-class status, which is quite difficult to evaluate or decipher if the licensee is less technologically competent;
- The chance that rights to the technology licensed may be subject to challenges, and the licensor may not financially be prepared and willing to guarantee against any such risk;
- The chance that the transfer contract contains restrictive features that may unduly and oppressively burden the licensee and thus hamper its road to technological independence; and
- The chance that the transfer of the technology may not meaningfully encompass adequate transfer of knowledge to enable the licensee to maximize its economic benefit of the licensing arrangement.

# iii. Relationship between national regulation and the formation of lex mercatoria in private deals

The matters enumerated above can become subjects of regulation by the licensee's nation, which can take the form of an FDI law, a technology transfer law, a government-approved FDI or licensing model contract, or even parliamentary approval of an FDI or licensing project.<sup>217</sup> While liberal national FDI laws will reduce the costs of internationalization for businesses and encourage FDI as an instrument for technology transfer, wise policy choices call for an FDI regime that must take into consideration the interests of Those At Risk.

More specifically, from the licensee's perspective, meaningful technology

<sup>214.</sup> SELL, *supra* note 119, at 56.

<sup>215.</sup> Correa, supra note 38, at 2641.

<sup>216.</sup> SELL, supra note 119, at 47.

<sup>217.</sup> Influential multinationals as contracting parties have been known to seek specific sovereign guarantees, and/or parliamentary or presidential approval of their contracts as a form of ad hoc legislation.

transfer must encompass a complete transfer of *three* elements that may overlap or may be difficult to segregate: material, design, and capacity. In a "material transfer," the artifact is transferred itself. "Design transfer" encompasses items such as blueprints, formulas, books, manuals and other information relating to the process of design. For nations seeking technological independence, "capacity transfer" is most desirable because it involves the transfer of scientific knowledge and technical expertise. Only with capacity transfer can a recipient nation inherit the knowledge to produce locally adapted technology from foreign prototypes and become self-sustaining.

According to at least one historical researcher, the past experiences of the United States, Japan, and Russia demonstrate the importance of design and capacity transfer.<sup>218</sup> The United States acquired technological capacity first by buying British technology and then adaptingit to local needs with innovation boosted by the skills of émigrés from Europe.<sup>219</sup>

In contrast, in the cases of Japan and Russia, the state played an active role in developing the countries' technology capacity.<sup>220</sup> The Japanese emphasized "people exchange" by sending students abroad and importing foreign technicians, enabling Japan to adapt and then invent its own technology.<sup>221</sup> The Japanese experience reflected conscious government policies to prevent undue dependence on foreign technology. Taiwan and South Korea followed this example and supported local firms in producing technology exports.<sup>222</sup> According to experts, South Korea and Japan both deliberately restricted FDI during their early stages of industrialization in order to enhance and encourage the development of local technological capabilities.<sup>223</sup> Experts have also noted that the growth of East Asia has been due to Japan's and South Korea's abilities to master existing foreign technology and translate it into efficient production and innovation. Conscious As to Russia, following the government policies facilitated these results. Bolshevik Revolution, Russia politically condemned the imperial West, but economically, the country welcomed Western technology and actively sought out Western acquisitions.<sup>224</sup>

In contrast to the Russian or Japanese experience, other late-coming developing nations have practiced import-substitute industrialization, with foreign corporations remaining "virtually the sole source of capital, technology, and managerial expertise."<sup>225</sup> In the 1970s, UNCTAD revealed that nearly eighty percent of licensing agreements in the Andean Pact "forbade local companies [from using] technology of the foreign parent to produce higher value-added

<sup>218.</sup> SELL, *supra* note 119, at 47.

<sup>219.</sup> Id. at 50.

<sup>220.</sup> Id. at 48.

<sup>221.</sup> Id. at 65.

<sup>222.</sup> Correa, supra 38 at 2646, 2678 n. 21.

<sup>223.</sup> Id.

<sup>224.</sup> SELL, supra note 119, at 49.

<sup>225.</sup> Id. at 55.

exports."<sup>226</sup> The prevailing method of technology transfer in Latin America was material transfer (i.e., imports of finished goods or technology-embodied products) and FDI in wholly-owned subsidiaries or foreign acquisition of local firms.<sup>227</sup> True design or capacity transfer was nearly absent. The only exceptions were the extractive industries, where the host country was able to achieve some bargaining power due to its control over land and natural resources.<sup>228</sup>

A developing country's policy, therefore, should focus on the creation of conditions to improve the bargaining power of local technology recipients. More specifically to technology transactions, policy should aim to increase local bargaining power while reducing and stabilizing technology licensing royalty rates.

Strengthening bargaining power, however, will also depend on the knowledge of the recipient party with respect to international business transaction laws and norms. Here, again, "legal imperialism" may have had an impact. The U.S. legal model has always occupied an elitist place on the world map—armies of U.S. economic and legal experts have long globe-trotted to provide assistance to multinationals entering the emerging markets.<sup>229</sup> The domination of the U.S. legal system in the global scene, in which transactional lawyers are viewed as dealmakers who zealously represent their clients' interests rather than officers of the rule-of-law or justice, tends to increase and perpetuate the unequal distribution of bargaining power.

It follows, therefore, that sovereign policy-making and rule-making can and should shape contract provisions arising from private deals. As already mentioned, impediments to international technology transfer also exist due to national FDI and export control laws grounded in the national security and foreign policy interests of the technology producers' country of origin. These national sovereignty restrictions find their way into private deals not only via government licensing requirements controlling exports, but also by way of special provisions in private contracts. For example, if the relevant technology was developed in whole or in part with U.S. federal funds, the United States may demand (i) a "march-in" right allowing the government to select another vendor to produce the products; (ii) a covenant by the licensor to manufacture only in the United States; or (iii) a right for the government to force the licensor to grant further licenses only to selected third parties upon government-specified conditions.<sup>230</sup>

Foreign technology licensing may trigger other legal issues. *Two* examples are discussed here for illustration. *First*, contracts may be executed in multiple languages of equal validity, leading to problems of interpretation.<sup>231</sup> This is even

<sup>226.</sup> Id. at 56 (citing C. FRED BERGSTEN ET AL., AMERICAN MULTINATIONALS AND AMERICAN INTERESTS 372, n. 30 (1978)). See also UNCTAD, Report of the Second U.N. Conference to Review All Aspects of the Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices 1,  $\P$  3, U.N. Doc. TD/RBP/CONF .3/9 (1991).

<sup>227.</sup> SELL, supra note 119, at 56.

<sup>228.</sup> Id. at 60-63.

<sup>229.</sup> Hadfield, *supra* note 207, at 401.

<sup>230.</sup> Ethan Horwitz, *Patent and High Technology Licensing*, 831 PRACTISING L. INST. PAT. & HIGH TECH. LICENSING 57, 70 (2005).

<sup>231.</sup> Id. at 76.

more nightmarish for drafters and negotiators when the host country is technologically primitive, such that there is no word in the local language to describe a concept. This problem can be solved with a clause specifying the governing language to be used in international dispute resolution proceedings. This type of "language" clause, however, can be in itself indicative of legal imperialism. The use of English in contract interpretation for dispute resolution will bring with it the cultural biases associated with the "English" method of thinking (i.e., Western thought processes and cultural contexts). Second, the licensor may have to pay patent registration costs in the host country, occasioning the common lament by bewildered technology executives that while their companies are licensing technology to the local partner as a good deed, they end up having to pay a high fee for such licensing just to protect their proprietary interests.<sup>232</sup> The cost of such patentability will naturally be passed on to the host country, through the royalties charged to the licensee and ultimately borne by Third World inhabitants.

Last but not least, norms of practice can also be formed as *de facto* private rulemaking in individual employment contracts, collective bargaining contracts, or equity venture agreements. The terms of these agreements may impose or incorporate labor standards, trade secret or non-compete covenants, training commitments, or workforce downsizing protection. These privately negotiated contracts may also be made to conform to specific national legal requirements on FDI, technology transfer, labor, employment, or business structure.<sup>233</sup> In this regard, another reality check on the Third World is in order: favorable laws on the books are not necessarily conducive to meaningful protection for workers, nor a means to promote transnational labor solidarity. Indeed, the gap between legal doctrines and actual enforcement can be a dilemma in all parts of the world, including the United States.234

### iv. Formation of lex mercatoria via corporate self-compliance

Legal pluralism advocates that law be formed by non-state sources. Accordingly, among the sources of lex mercatoria are the multinational corporations' ("MNC") internal rules and their voluntary codes of conduct. These voluntary codes are MNCs' effort at self-compliance to improve public relations, and to monitor their own contractors and suppliers.<sup>235</sup> These codes may set norms

<sup>232.</sup> Id.

<sup>233.</sup> See, e.g., Donald C. Dowling, Jr., The Practice of International Labor & Employment Law: Escort your Labor/Employment Clients into the Global Millennium, 17 LAB. LAW. 1, 17 (2001); Katherine V. W. Stone, The New Psychological Contract: Implications of the Changing Workplace for Labor and Employment Law, 48 UCLA L. REV. 519, 576-92 (2001).

<sup>234.</sup> Compare Carlos de Buen Unna, Mexican Trade Unionism in a Time of Transition, in LABOUR LAW IN AN ERA OF GLOBALIZATION 401, 409 (Joanne Conaghan et al. eds., 2002) with LANCE COMPA, BLOOD, SWEAT AND FEAR: WORKERS' RIGHTS IN U.S. MEAT AND POULTRY PLANTS (2005) available at http://www.hrw.org/reports/2005/usa0105/usa0105.pdf (examining sectoral labor conditions in the U.S.); accord James Atleson, The Voyage of the Neptune Jade: The Perils and Promises of Transnational Labor Solidarity, 52 BUFF. L. REV. 85, 87 (2004).

<sup>235.</sup> See, e.g., WAL-MART STORES, INC., 2005 REPORT ON ETHICAL SOURCING 28-29

of best practices for the industry, or may even be found legally binding as an incorporated part of enforceable contracts.<sup>236</sup>

Scholars have classified these voluntary codes into four groups: (i) firstgeneration codes, developed without input from NGOs, unions, or industry—a closed-loop compliance system monitored against the MNCs' internal standards by the MNCs' own staff or independent contractors; (ii) second-generation codes, designed by industry groups or trade associations (such as the American Apparel Manufacturing Association); (iii) third-generation codes, designed by external parties such as NGOs in consultation with trade unions, stakeholders, and others; and (iv) fourth-generation codes that are the products of government representatives such as the OECD or U.N. organs.<sup>237</sup>

Problems with all four kinds of code lie in the degree of independence, impartiality, transparency, and effectiveness of the monitoring process and the voluntary or coercive nature of the guidelines (i.e., some voluntary codes are more coercive than others). In addition, the motivation of MNCs may be to use the voluntary guidelines as a litigation defense strategy or as a public relations campaign in response to public pressure, rather than bona fide efforts at selfcompliance.<sup>238</sup> The debates about the value and effect of these voluntary codes are ongoing.<sup>239</sup> It should be noted, however, that even if MNCs show their good faith by adopting self-imposed codes of conduct, their efforts can still severely be curtailed or rendered moot by national legal systems that exercise government control over citizens' freedom of association, such as China and Vietnam. In these countries, worker unionization does not always mean freedom of association or the betterment of the membership's economic welfare. In other words, an employer's code may respect unions, but the government will mute the workers' voice. Ultimately, the government is the norm-setter for the local workforce. When all factors are considered, the transformation of these voluntary codes into norms of practice having the force and recognition of customary private international law or lex mercatoria is indeed a difficult, long-term process.

238. Id. at 211-18.

<sup>(2005)</sup> *available at* http://walmartstores.com/Files/05\_ethical\_source.pdf (version dated January 10, 2005 was topic of litigation in Doe v. Wal-Mart Stores, Inc., C.A., Case No. CV 05-7307 GPS, (CA D.Ct. Sept. 13, 2005), filed on behalf of Wal-Mart workers in China and Bangladesh).

<sup>236.</sup> See Doe v. Wal-Mart Stores, Inc., Case No. CV 05-7307 GPS; see also Harry Arthurs, *Private Ordering and Workers' Rights in the Global Economy: Corporate Codes of Conduct as a Regime of Labour Market Regulation*, in LABOUR LAW IN AN ERA OF GLOBALIZATION 484 (Joanne Conaghan et al. eds., 2002).

<sup>237.</sup> Michael Posner & Justine Nolan, *Can Codes of Conduct Play a Role in Promoting Workers' Rights?*, *in* INTERNATIONAL LABOR STANDARDS: GLOBALIZATION, TRADE AND PUBLIC POLICY 207, 210-211 (Robert J. Flanagan & William B. Gould IV eds., 2003).

<sup>239.</sup> See, e.g., Arthurs, supra note 242, at 487; Adele Blackett, Global Governance, Legal Pluralism and the Decentered State: A Labor Law Critique of Codes of Corporate Conduct, 8 IND. J. GLOBAL LEGAL STUD. 401, 418-20 (2001); Michael R. Triplett, SOX Compliance, Corporate Codes of Conduct Create Challenges for Advising Firms Abroad, DAILY LAB. REP. Mar. 20, 2006, at C-1; Cynthia Estlund, Rebuilding the Law of the Workplace in an Era of Self-Regulation, 105 COLUM. L. REV. 319, 324-5 (2005); Clare Moore Dickerson, Transnational Codes of Conduct through Dialogue: Leveling the Playing Field for Developing Country Workers, 53 FLA. L. REV. 611 (2001).

In summary, the bird's eye view of the current international legal regime and its deficiencies points to *five* conclusions:

- 1. The prospect of a coordinated system of global regulation that can adequately address the New Economy and Those at Risk looks rather bleak;
- 2. Despite the popularity of the buzzword "globalization,"<sup>240</sup> national sovereignty and local governments remain the dominant force of law, making the success of global law-making even less likely. This was the reality of the twentieth century, and this reality will continue, especially considering the international terrorism crisis that elevates unilateral national security measures to the highest priority for any nation;
- 3. Economic globalization and technological advancement have always developed much faster than the protective rule of law, such that the rule of law often lags behind reality;
- 4. Third World firms and host countries must therefore resort to selfhelp within the current multilateral system, rather than waiting for future global regulation to protect them; and
- 5. As discussed below, long-term investment in workforce education is one such self-help to close the "cognitive divide" and achieve technological independence. Consequently, Third World countries must design their national laws with this educational perspective.

# B. In the Domain of Education: Training and Development of "Gray Matter" in the Host Country Workforce

### 1. The Role of the Host Country: Government and the Private Sector

Focusing on education as a long-term investment will bring about the preventative solution. Third World countries must develop technological competence for their workforce, especially in software development, and invest human-capital for local invention. The natives—both governments and private actors—must become more sophisticated and proficient at selecting and negotiating with foreign technology partners, and must insist on the local training components in the FDI or technology licensing process. These objectives necessitate government subsidy programs and grass-root partnerships between the public and private sectors.

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<sup>240.</sup> International labor textbook authors Roger Blanpain, Susan Bison-Rapp, William R. Corbett, Hilary K. Josephs, and Michael J. Zimmer categorize the buzzword "globalization" into four definitional concepts: geographical globalization (global ease of communization and travels), economic globalization (cross-border economic integration), business management globalization (multinational management of economic activities), and sociological globalization (global cultural exchange, global consumption patterns, and multiculturalism). BLANPAIN ET AL., *supra* note 13, at 3-7.

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At the beginning of this millennium, OECD data confirmed that: (i) in the New Economy, human capital is a key enabler in innovation; (ii) skilled technology workers and researchers have become more mobile globally, as seen in immigration trends and corporate behaviors; and (iii) skill needs are currently met by national education systems as well as by businesses.<sup>241</sup> Notably, in the developing nations, various forms of privately funded higher education have emerged in competition with public education (which, in many single-party Third World states, is still being used as a tool of propaganda and political indoctrination). Undoubtedly, a well-educated workforce is a key enabler in the Knowledge Economy, and private higher education can become an essential part of that enabler. But the following questions should be noted: (i) how far can the private education sector push its agenda of free access to information against the government control apparatus in places where freedom of information and association is restricted as a matter of national or party policy?; and (ii) is private education itself a privilege reserved for those natives affiliated with Third World ruling elites?

Let's return to China as an example. The case of China—a hybrid between a superpower and a developing country—deserves more elaboration. Although Shanghai-based economist Andy Rothman<sup>242</sup> has noted that Chinese leadership has shown an appetite for making radical changes to the nation's economic and social structure, the authoritarian single-party regime does not foster genuine innovation; instead, it embarks on changes so long as those changes do not thwart the party's control.<sup>243</sup> World Bank experts agree with Rothman: they assert that despite China's impressive economic growth, its path to full development is hindered by its low overall educational attainment, meager indigenous innovation capacity, poor linkages between R&D and domestic industries, and weak legal institutions.<sup>244</sup>

Likewise, recent scholarly research portrays education in China as paradoxical. Despite China's increasing expansionist dominance in the global scene, only a very small portion of China's population has a tertiary education.<sup>245</sup> Yet, because of the enormous labor base, this small percentage of the population amounts to a substantial number of people. Compared to OCED countries, the number of Chinese citizens holding doctorate degrees is still considerably low.<sup>246</sup> Economists have identified education and law as the two main culprits that retard China's development.<sup>247</sup> China's rigid education system impedes ideas, creativity,

<sup>241.</sup> OECD, A NEW ECONOMY? THE CHANGING ROLE OF INNOVATION AND INFORMATION TECHNOLOGY IN GROWTH 44-46 (2000).

<sup>242.</sup> See ANDY ROTHMAN, REINVENTING CHINA: IN SEARCH OF AN INNOVATIVE ECONOMY (2006), available at http://www.waterland.net/showdownload.cfm?objecttype=mark.hive.contentobjects.download.pd f&objectid=4CF2ACFE-D5F3-03C0-D602424960F7AAF1.

<sup>243.</sup> Chandler, *supra* note 32.

<sup>244.</sup> Zeng & Wang, *supra* note 88 at 16-23.

<sup>245.</sup> ROTHMAN, supra note 243, at 26.

<sup>246.</sup> Schaaper, supra note 94, at 61.

<sup>247.</sup> ROTHMAN, supra note 243, at 26.

and innovation, and its legal system is arbitrary.<sup>248</sup> Among the areas that need improvement are the quality of education, assessment, qualifications, and accreditation.<sup>249</sup>

According to the World Bank, China needs a major breakthrough in closing gaps such as the "knowledge divide," the "access divide," the "digital divide," "educational inequality," "income disparity," and "discrepancies in health and medical care" between urban and rural areas. In addition, unemployment, lack of mobility in the labor market, and underperformance of the state sector are other issues that need to be addressed. In the Western view, China needs to establish and enforce its regulatory framework, strengthen its rule of law, monitor and enhance government accountability, and unleash its human potential in order to boost innovation.<sup>250</sup> Even if China may object to these reports as a form of "imperialism," these conclusions confirm my general hypothesis—that national FDI and technology policies must incorporate the improvement of tertiary education and workforce knowledge. In the end, only educational opportunities can prevent the gloomy picture of an "international ghetto of unskilled workers" without a middle class.

On the other hand, a couple of country examples that contrast China deserve attention. South Korea and Singapore have experienced authoritarian political regimes in recent history, but both have succeeded to reverse the accumulative process of brain migration described above.<sup>251</sup> This success could be linked to (i) a national educational systems, including an emphasis on specialization in computer science and technology; (ii) their rule-of-law system that respects fundamental civil rights; and (iii) their national policy that enables expatriates who are scientific and managerial elites to return home to handle new economic and technological challenges.<sup>252</sup>

252. To be motivated to return home, expatriates must see the attraction of a civil society

<sup>248.</sup> Id., at 3; Chandler, supra note 32.

<sup>249.</sup> Zeng & Wang, supra note 88, at 21.

<sup>250.</sup> Id. at 24-28.

<sup>251.</sup> South Korea and Singapore have each experienced an authoritarian political system. However, neither has been a totalitarian state where the entire society is ruled according to an ideological model that is a pure mental construction disconnected from reality: fundamental civil rights are suppressed; the civil society can be abolished according to party philosophy; economic, cultural, and educational activities are handled according to one single set of ideological standard; mass repression is used as predilection and means of "regulation;" and all three branches of government are under the control of one single party. See JEAN-FRANÇOIS REVEL, THE TOTALITARIAN TEMPTATION (David Hapgood trans., Doubleday & Company, Inc. 1977); HANNAH ARENDT, THE ORIGINS OF TOTALITARIANISM (Schocken 2004). In both South Korea and Singapore, the economy receives a certain level of autonomy. Both countries claim to be democracies where fundamental civil rights are respected and the market economy is not under party control. Their political structure contrasts vividly from Vietnam, for example, where the Communist Party is constitutionally proclaimed to be the "leading force of society" in control of all branches of government and the economy, although as a matter of party policy, the people are allowed certain degree of economic "laissez faire" to generate wealth and increase production. See CONSTITUTION OF THE SOCIALIST REPUBLIC OF VIETNAM (adopted by the Eighth National Assembly, in the 11<sup>th</sup> Session on Apr. 14, 1992).

The case of India is a little different. The country has suffered from a huge brain migration of its scientific elites to the United States and Great Britain. Nonetheless, India has also developed a very strong university system. Despite the brain migration problem, the country has managed to keep a benchmark for excellence and a good R&D system very well connected to international research networks filled with Indian scientific expatriates. These expatriate networks do facilitate the gradual reversal of the cumulative "brain migration" process.

From the experience of these Asian countries, one can see the importance of a thoughtful national policy that creates, trains, and retains new classes of scientists, engineers, and management professionals, including generalists who can integrate and disseminate knowledge. That same policy should also cultivate local innovative projects, enable the return of foreign-trained expatriates, and create a strong international culture for the local community, a community with the widest global network where talents, in their multi-dimensional exposure to ideas, can blossom to their fullest potential.

### 2. The Role of the Multilateral Institutions—The Era of Change

Articulating the motto "*Working for a World Free of Poverty*,"<sup>253</sup> the World Bank has long funded educational projects. Examples include the recent "Second Higher Education Projects" in Vietnam, Nepal, and Mozambique, to the "Third Programmatic Educational Sector Development Support Credit" in Bangladesh and "Reformed Management and Universal Teacher Upgrading" in Indonesia.<sup>254</sup> Education, however, has never been included in the definition of "infrastructure development," a prime function of the Bank.<sup>255</sup> Nonetheless, the Bank recognizes that using infrastructure development to reduce poverty can be "indirectly" accomplished by "access to other key resources such as schools, hospitals, and markets."<sup>256</sup> Under this concept, infrastructure should legitimately encompass

with good infrastructure and high standards of living, where the rule of law secures both economic freedom and civil liberty.

<sup>253.</sup> The World Bank, About Us - Challenge, http://web.worldbank.org/WBSITE/

EXTERNAL/EXTABOUTUS/0,,contentMDK:20040565~menuPK:1696892~pagePK:51123644 ~piPK:329829~theSitePK:29708,00.html (last visited Feb. 6, 2008). The mission of the World Bank is "to help developing countries and their people reach the [Millennium Development] goals by working with our partners to alleviate poverty. To do that we concentrate on building the climate for investment, jobs and sustainable growth . . . ." *Id.* 

<sup>254.</sup> The World Bank, News & Broadcast - Loans & Credits,

http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,menuPK:34470~pagePK:117705~piPK:64255752~theSitePK:4607~topic:473881~topicMDK:473881,00.html (last visited Fed. 6, 2007).

<sup>255.</sup> The World Bank's lending for infrastructure projects amounted to approximately US \$8.1 billion during 2006. The World Bank, News & Broadcast – Infrastructure,

http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20127296~menuPK:34 480~pagePK:34370~theSitePK:4607,00.html (last visited Feb. 6, 2008).

non-physical elements such as education, health care, and capital market structuring.

In addition to conventional infrastructure projects in energy, transportation, water supply and sanitation, urban services, power generation, and even oil, gas, and mining, World Bank funding has also been specifically extended to high-tech telecommunications<sup>257</sup> and more expressly to information and computer technology projects.<sup>258</sup> Examples in recent years include e-projects in Rwanda and Ghana; a "Knowledge Economy" project in Romania; and other information, telecommunications infrastructure, and technology development projects in

Mongolia, Nicaragua, Samoa, Vietnam, Kenya, Ethiopia, Tunisia, and the Eastern Caribbean states.<sup>259</sup>

The Bank has also established the Global Information and Communication Technologies Department ("GICT"), a joint effort of the Bank and the International Finance Corporation ("IFC").<sup>260</sup> Bringing together the IFC's experience in private sector investment and the Bank's expertise in policy and regulatory matters, GICT considers as its mission the "promot[ion of] access to information and communication technologies in developing countries."<sup>261</sup> The GICT provides governments, private companies, and civic organizations with the expertise and capital needed to reduce poverty and foster development.<sup>262</sup> It also maintains close working relationships with other donors, NGOs, and a number of regional telecommunications Union.<sup>263</sup> Activities of the GICT demonstrate the importance of technology on the Bank's agenda for the Third World.<sup>264</sup> The

<sup>257.</sup> Id.

<sup>258.</sup> The World Bank, News & Broadcast – Loans & Credits, http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,menuPK:34470~pagePK:117705~piP K:64255752~theSitePK:4607~topic:784298~topicMDK:784298,00.html (last visited Feb. 6, 2008); The World Bank, News & Broadcast – Loans & Credits on Information & Communication Technologies.

http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,menuPK:34470~pagePK:117705~piPK:64255752~theSitePK:4607~topic:473895~topicMDK:473895,00.html (last visited Nov. 6, 2008).

<sup>259.</sup> *Id.* The World Bank, About GICT, http://www.worldbank.org/ (follow "Topics" hyperlink; then follow "Information & Communication Technologies" hyperlink; then follow "About GICT" hyperlink) (last visited Feb. 6, 2008).

<sup>260.</sup> Id.

<sup>261.</sup> The World Bank, Emerging Technologies in Emerging Markets, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMU NICATIONANDTECHNOLOGIES/0,,contentMDK:20192160~menuPK:2644022~pagePK:6402 0865~piPK:51164185~theSitePK:282823,00.html (last visited Feb. 6, 2008).

<sup>262.</sup> The World Bank, About GICT, http://www.worldbank.org/ (follow "Topics" hyperlink; then follow "Information & Communication Technologies" hyperlink; then follow "About GICT" hyperlink) (last visited Feb. 6, 2008).

<sup>263.</sup> Id.

<sup>264.</sup> Id.

focus on human capital and the development of the labor workforce are also the impetus behind the sustainable development movement that has crossed the realm of environmental law and entered the broader international law and economic development discourse. Now, sustainable development is also addressed specifically by the World Bank.<sup>265</sup>

According to the World Bank,

(i) information, communication, and technology ("ICT") is one of the best performing sectors in the World Bank group's portfolio, both in terms of returns and development impact;

(ii) to date, the Bank has supported reforms in over eighty governments and provided approximately \$750 million in loans for ICT projects, in addition to loans and credits extended to sectors such as health, education, trade, and finance, which have ICT components (bringing the total to approximately \$1-1.5 billion);

(iii) trust funds administered by the International Bank for Reconstruction and Development (the "development bank" arm of the World Bank group) have contributed an additional \$50 million to the ICT sector in the past five years;

(iv) the IFC has provided approximately \$1.5 billion in financing to ICT companies in developing countries and another \$1 billion in IFC-supported private banks' loans made to this sector; and

(v) The Multilateral Investment Guarantee Agency ("MIGA"), the insurance arm of the World Bank group, has supplied an additional \$700 million to the ICT sector through private investment guarantees and political risk insurance to support FDI in the Third World.<sup>266</sup>

With the prospect of the new division of labor articulated in this Article, perhaps leaving the GITC as a department and the ICT sector as one aspect of multi-lateral assistance may not be enough. Now is the time, perhaps long overdue, for the World Bank (and its progeny—the regional development banks and support organs) to formally and officially modify their role and mission to boost local R&D and tertiary education in the developing countries. The World Bank group's post-World War reconstruction and infrastructure building mission

<sup>265.</sup> The World Bank, Sustainable Development, http://www.worldbank.org/sustainabledevelopment. "Sustainable Development" evolves from European forestry law and thus becomes part of international environmental law. However, international legal scholars have expanded the meaning of Sustainable Development to a broader dimension, focusing on human development by integrating social, environmental, cultural and economic development so that future generations of humans can meet their own needs (i.e., development is therefore sustained). SUSTAINABLE DEVELOPMENT IN WORLD TRADE LAW 1-30 (Markus W. Ghering et al. eds., Kluwer 2005); SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW (Winfried Lang, ed., 1994); MARIE CLAIRE CORDONIER SEGGER & ASHFAQ KHALFAN, SUSTAINABLE DEVELOPMENT LAW: PRINCIPLES, PRACTICES AND PROSPECTS (Oxford University Press 2004).

<sup>266.</sup> The World Bank, About GICT, http://www.worldbank.org/ (follow "Topics" hyperlink; then follow "Information & Communication Technologies" hyperlink; then follow "About GICT" hyperlink) (last visited Feb. 6, 2008).

must be revisited the same way the international legal system must be revisited.<sup>267</sup> While the original reconstruction mission is still applicable for nation-building in places more recently devastated by wars (i.e., Afghanistan and Iraq), the new mission and role of the multilaterals should be recast to focus concretely on education and informational infrastructure as top priorities. For example, in order to build a better partnership between the public and private sectors in multilaterally financed projects, loan packages should include terms and conditions for fair and equitable technology transfers, local training, and research strategic alliances. These terms and conditions should be required of technology producers and service providers who earn their fees and profit from loan proceeds, the same way environmental impact studies have been made a condition for World Bankfinanced infrastructure projects for decades.

Most of all, some correlation must be established between the FDI-assisted programs by the World Bank Group in the ICT sector and the data evidencing the current economic and human conditions of the Third World. Such correlation will shed more light onto the changing role and impact of the multilateral institutions in the New Economy, and will hopefully point observers to the heart of the Third World development dilemma, that which lies within the Third World's borders. Below are some observations on the politics of the Third World as a possible cause for the "cognitive divide."

### C. In the Domain of Politics: The Need for Reform

### 1. National integration of long-term educational policies into FDI and technology transfer policies.

Support from multilateral institutions such as the World Bank's activities described above will not be enough. Third World host countries must turn both multilateral assistance<sup>268</sup> and FDI into educational opportunities for the host country's workforce.<sup>269</sup> Specifically, national FDI laws and investment policies must be coordinated and integrated with technology transfer, franchise, and licensing regulations. Third World governments, in their relationships with foreign investors, should intelligently negotiate the exchange of FDI situs for workforce education via training and technology transfer. However, complex commercial

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<sup>267.</sup> Id.

<sup>268.</sup> There is evidence that the international institutions and multilateral agencies realize the growing need and the problem – the World Bank has supported computer technology and educational projects as well. The World Bank, Global Information and Communication Technologies Department,

http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMU NICATIONANDTECHNOLOGIES/0,,menuPK:282828~pagePK:149018~piPK:149093~theSite PK:282823,00.html (last visited July 5, 2007); see also Afshin Molavi, Supporting the Private DEVELOPMENT Fall Sector. OUTREACH. 2001. http://www1.worldbank.org/devoutreach/fall01/article.asp?id=130.

<sup>269.</sup> Zeng & Wang, supra note 88 (noting China's progress in upgrading its educational system, improving R&D expenditures, increasing patented outputs and information infrastructure such as ICT access).

negotiations of the *quid pro quo* between the rich and the poor can lend themselves to unequal bargaining power.

Third World governmental policies should also foster and facilitate innovation from all angles. Input into the innovation process must include not only labor training, but also local R&D expenditures and activities.<sup>270</sup> The internationalization of R&D activities can happen in either profit-making projects with foreign firms, or in non-profit research joint ventures or strategic alliances with foreign parties (leading to co-invention of patents).<sup>271</sup>

As already mentioned, India has implemented this policy. To take another example, more recently, Cisco Systems, armed with the educational mission of assisting and investing in the Vietnamese "gray matter," opened a consulting office in Vietnam, in affiliation with Hanoi University.<sup>272</sup> The company sent a Vietnamese American engineering manager from its headquarters in San Jose, California, to head the consulting office, in hopes of training Vietnamese technocrats to meet Cisco's needs and to provide hands-on experience to Vietnamese students.<sup>273</sup> Between its inception in June 2006 and summer 2007, the consulting office trained about a hundred computer science lecturers and sent ten outstanding Vietnamese students to study abroad so that "educational opportunities will not be limited to just the ruling elites."<sup>274</sup> The Cisco representative described the company's goal as training Vietnamese in a work culture modeled after the innovative United States.<sup>275</sup> According to the representative, the company wants to make a long-term commitment to produce the "gray matter" for Vietnam and to encourage local innovation. The ultimate corporate goal is to encourage local innovation while allowing the Vietnamese "gray matter" to develop institutional loyalty to Cisco.<sup>276</sup>

Cisco's decision should be examined in light of its experience with Vietnamese-American IT personnel in the United States. The end of the Vietnam War in 1975 occasioned the influx of Vietnamese into U.S. society.<sup>277</sup> Many of these immigrants settled in the Silicon Valley, got an education, and went to work for high tech businesses, including Cisco. These Vietnamese-Americans serve as the "catalyst" that connects Cisco management to the workforce of Vietnam, thereby facilitating the long-term corporate vision of what Vietnam's "gray matter" can offer (so long as the country's goals and corporate goals can be chartered to coincide via the "catalyst"). In the case of Vietnam, the "catalyst" resulted uniquely from history. The lesson learned is that somehow, Third World countries must design and implement national policies that give themselves the benefit of

<sup>270.</sup> Schaaper, supra note 94, at 61.

<sup>271.</sup> *Id.* at 58 (noting this trend in non-OECD economies).

<sup>272.</sup> Do Dzung, *Ph.D. Holder Christopher Pham Brings Gray Matter to Vietnam*, Nguoi-Viet [Vietnamese People], Online Newsletter, Aug. 2, 2007, www.nguoi-viet.com.

<sup>273.</sup> Id.

<sup>274.</sup> Id.

<sup>275.</sup> Id.

<sup>276.</sup> Id.

<sup>277.</sup> E. D. HIRSCH, JR. ET AL., THE DICTIONARY OF CULTURAL LITERACY 302 (2d ed. Houghton Mifflin Co. 1993) (defining Vietnamese "boat people" as part of world politics).

such "catalyst."

Because methods of technology transfer, workforce educational opportunities, and development of the "catalyst" network are within the policy-making and lawmaking power of the host country, the achievement of these goals will ultimately depend on the insight and foresight of Third World leaders. College exchange programs, careful screening of technology producers-licensors, and FDI requirements such as mandatory joint research and R&D strategic alliances will help build long-term partnerships and provide opportunities that strengthen the bargaining know-hows, skills, and innovation of local firms. The success of these alternative models in the New Economy will depend on Third World leadership.

### 2. The Role of Government and Prospect of A Rule-of-Law Society

The role played by Third World governments in the New Economy must also include the development of a rule-of-law system for their respective societies. Another challenge lies here for a number of reasons. First, the political unrest and currency crises commonly observed in Third World countries can render the prospect of a stable rule-of-law system a utopia rather than a reality. Second, certain Third World cultures are simply not rule-based. Third, many Third World governments do not embrace a rule of law system that fosters freedom of ideas—it is perceived to be a threat to the ruling regime to allow populace the freedom of access to information.

One specific problem with the present state of many Third World societies is the lack of transparency, governmental accountability, and a publicly available system of law reporting. A meaningful rule-of-law system must be consistently applied, uniformly documented, widely published, and logically interpreted. In this sense, WTO membership does help create transparency, at least with respect to trade matters. Member countries are required to make trade rules as clear and public as possible, and many WTO agreements specifically require governments to disclose their policies and practices publicly.<sup>278</sup> On the other hand, what good does it do to have these transparency requirements in trade rules if the general public does not have the sufficient knowledge to understand the rules and the consequences thereof?

Further, there is the obvious problem of a relationship-based culture where corruption is still prevalent. The Third World is commonly known for its wide gap between the law on the book and the enforcement reality. More often than not, in the least-developed economies, relationships, connections, and the economic power of foreign investors govern the terms of business deals. Where national economic and commercial law exists, it may be at odds with more universally observed legal concepts found in the developed jurisdictions, creating a situation

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<sup>278.</sup> Hamid, *supra* note 114, at 6. At least one writer-specialist on Asian economies (e.g. China) has argued that the benefit of WTO membership lies in the government's self-imposed efforts to review its development strategy, eliminate local protectionism, gain access to international markets, and institute administrative reforms, including the reform of the State-owned sector. *See, e.g.,* Lin, *supra* note 87.

where Western legal imperialism is a reality that cannot be avoided.<sup>279</sup> These legal gaps contribute to the further isolation of the disadvantaged.

<sup>279.</sup> Take the most fundamental example: the law of contract in Vietnam rests on principles that do not always parallel contract common law as we know it in the U.S. Nor is the contract law of Vietnam purely based on a civil-code system like many European countries. Vietnamese contract law is somewhat a hybrid creature – somewhere between a code of morality, social flexibility and remnants of a communist economic and political system. Dao Nguyen, Vietnam: Update on Vietnamese Contract Law, Nov. 25, 2005, http://www.jsmlaw.com/live/Portal?xml=legal\_update/article&content\_id=2401. See also Vietnam's Ordinance on Economic Contracts (Sept. 25, 1989); Ordinance on Civil Contracts (April 29, 1991). Uniform commercial law and systems of commercial papers are still being formed but not all developed. The stock market and securities laws are at best embryonic. See also John McMillan & Christopher Woodruff, Courts and Relational Contracts, 18 J.L. ECON. & ORG. 221 (2002); John McMillan & Christopher Woodruff, Dispute Prevention Without Courts in Vietnam, 15 J.L. ECON. & ORG. 637 (1999); John McMillan & Christopher Woodruff, Interfirm Relationships and Informal Credit in Vietnam, 114 Q.J. ECON. 1285 (1999); John McMillan & Christopher Woodruff, Private Order under Dysfunctional Public Order, 98 MICH. L. REV. 2421 (2000) (discussing and comparing contractual issues).

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Yet, crowded Third World cities may misleadingly bear the appearance of affluence created by (i) the flow of FDI into these societies, and (ii) the superficial social infrastructure needed to support the spending and lifestyles of the exorbitantly wealthy "privileged few" in those urban centers. The appearance of affluence camouflages the living conditions of the lower echelon of the population, which ultimately reveal themselves in other social ills-from pervasive corruption in oil-producing Nigeria to the widespread trafficking of poor women and children from the countryside of Southeast Asia.280

## 3. The Root Cause: Change in the Political System of the Third World— Market Economy versus Political Democracy

In sum, many "Third World" economies may lack the efficiency based on a rule-of-law foundation necessary for the design and implementation of thoughtful educational and technology policies. I call this the "Law Gap." Questions must be asked whether this Law Gap bears direct relationship to the cultural, political, and power structure that shapes the way of life in those countries. Places such as China, Vietnam, Laos, and Myanmar are either single-party or police states.<sup>281</sup> More specifically, Southeast Asian history has proved that during the past century, Vietnam, the Philippines, Indonesia, and Myanmar all suffered enormous economic setbacks due to their respective political structure. Vietnam suffered from Stalinist communism between 1975 and 1985;<sup>282</sup> the Philippines was under the Marcos regime;<sup>283</sup> Indonesia was under family-based political regimes that eventually led to political unrest;<sup>284</sup> and Myanmar became devastatingly poor under a military dictatorial regime.<sup>285</sup> The Philippines and Indonesia, in particular, have become the sites for terrorist cells that feed on the poor's dissatisfaction with their society.<sup>286</sup>

In the case of China and Vietnam, two heavily populated countries, the "Law Gap" has been a major impediment to the development path. In these two countries, lack of IPR enforcement, infringement of trade secrets, and a poor record of contract enforcement all hold back innovation and product or market development by both foreign firms and local talents. Another consequence of the Law Gap is the lack of private financing and venture capital to fund technology

<sup>280.</sup> See, e.g., Abigail Schwartz, Sex Trafficking in Cambodia, 17 COLUM. J. ASIAN L. 371, 388-40 (2004).

<sup>281.</sup> Randall Peerenboom, Beyond Universalism and Relativism: The Evolving Debates About "Values in Asia," 14 IND. INT'L & COMP. L. REV. 1, 49-72 (2003).

<sup>282.</sup> See generally, Communism – Vietnam, in ENCLYOPEDIA OF MODERN ASIA, available at http://www.bookrags.com/research/communismvietnam-ema-02/ (last visited Feb. 9, 2008).

<sup>283.</sup> Peerenboom, supra note 282, at 46

<sup>284.</sup> Robert Goldscheider, Expanding Role of Licensing in World, in THE LAW AND BUSINESS OF LICENSING, LICENSING IN THE 1990S 1650 (Jay Simon & Larry W. Evans eds., West 1999).

<sup>285.</sup> Peerenboom, supra note 282, at 33.

<sup>286.</sup> Id. at 7

projects at the local level.<sup>287</sup> At the same time, a paradox exists in concepts of the rule of law in these two societies. In the enforcement of criminal law, government power is iron-clad. Death sentences are carried out and there are enormous governmental powers for searches and arrests, all as part of governmental efforts to silence oppositions, maintain public order, and exert party control. Yet, law enforcement in civil relations and commercial matters in these two societies remains questionable and undermines financiers' and investors' confidence. In contrast, Singapore and South Korea, which have an efficient rule of law system and long-term educational policies, have achieved social order, high standards of living for their people, and macro-economic success.<sup>288</sup>

The distinction between the Singapore/South Korea success and the China/Vietnam socio-political slowness raises questions about the development of the law. In many poverty-plagued Third World nations, will leaving the rule of law to politics disintegrate a society already made worse by cultural and historical factors after years of civil liberty oppression? If people are "tamed" not to think, but, instead, to obey blindly because there is no rule of law to protect them, how can true innovation foster? Can the fruit trees of today's economic globalization be seeded on a ground that lacks fundamental political and civil rights secured by the rule of law, among which are freedom of speech and freedom of association..<sup>289</sup> If national sovereignty can justify the unequal endowment of political and personal freedom for the people, can there be equal opportunities in economic life?<sup>290</sup> The Third World must somehow join the global society by acceding to, and enforcing, a rule-of-law (rather than rule-of-man) system that represents "general principles common to the major legal systems of the world."<sup>291</sup> This is a reality that world leaders, international law policymakers, and "globalization" economic gurus cannot deny.

### VII. CONCLUSION

AI applications may be new, but their effect on labor division may not be a novelty. Any time society encounters technological changes that act upon productivity, an effect on the labor force, wealth distribution, and societal power structure will be felt. This technological change can lead to economic and political unrest. This was experienced during the industrialization of the 19<sup>th</sup> and 20<sup>th</sup> centuries. The development of the protective rule of law will typically develop

<sup>287.</sup> Zeng & Wang, supra note 88.

<sup>288.</sup> Both countries claim to be democracies and not autocracies.

<sup>289.</sup> See generally JUAN J. LINZ & ALFRED STEPAN, PROBLEMS OF DEMOCRATIC TRANSITION AND CONSOLIDATION 7 (1996); THE GLOBAL RESURGENCE OF DEMOCRACY (Larry Diamond et al. eds., 1996).

<sup>290.</sup> See James L. Cavallaro & Emily J. Schaffer, Less as More: Rethinking Supranational Litigation of Economic and Social Rights in the Americas, 56 HASTINGS L.J. 217 (2004); Karen Engle, Culture and Human Rights: The Asian Values Debate in Context, 32 N.Y.U. J. INT'L L. & POL. 291 (2000); Berta Esperanza Hernandez-Truyol & Shelbi D. Day, Property, Wealth, Inequality and Human Rights; A Formula for Reform, 34 IND. L. REV. 1213, 1227-33 (2001); Daniel Warner, An Ethics of Human Rights, 24 DENV. J. INT'L L. & POL'Y 395 (1996).

<sup>291.</sup> RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES  $\$  102 (1987).
*after* the fact, in response to these changes. For example, the present labor law system, including aspects of collective bargaining law such as in the United States, came into being long after the inception of the industrial revolution.

In sum, the power and wonder of AI has already changed and can further revolutionize our world. In the FDI domain, AI can stop the shifting of manufacturing to the developing economies by eliminating their "cheap labor" comparative advantage. Where such shifting of manufacturing still occurs due to other cost savings, investment strategies, or business goals, foreign investors' use of AI in the Third World may "ghetto" the native work force while fortifying the host country's "privileged few"—those who are chosen to share in the knowledge base of foreign technology producers.

To avoid this gloomy picture, Third World leaders must take into account the reality of the New Economy and the aspirations of their people in devising and implementing significant structural changes (assuming Third World governments will act in the best interest of the people). In many Third World environments, the power to change rests with the ruling elites. Yet, quite often, it is the Third World's ruling elites that create exclusivity of access and perpetuate the "ghetto'ing" of their fellow citizens. Now, it is clear that the problem with the Third World is a "Catch 22"; those who have the power to create change will lose their power if there is change. Perhaps this is the only idealistic justification for the superpowers' interventionist foreign policies, which at heart contradict and undermine principles of self-determination.<sup>292</sup> Can this mean that there will be no preventive solution unless political democracy is rooted in the Third World? After all, freedom of information, freedom of education, freedom of ideas and innovation, and a rule-of-law system are all products of democracy.

Perhaps it is not cliché to say that in the dark places of the Third World, where poverty, corruption, and dictatorship continue to define the lives of people, the seeds of the problem lie not with science, technology, AI, or FDI trends. The hopelessness lies with the political and cultural fabric of the developing nations, and with law- or policymakers who do not act in the interest of their people. Accordingly, political reform must first take place before hopes can be born.

In those dark places, hope means that the pendulum of power must eventually revert back to the people. The people must be allowed to select their government, the kind of fiduciary government that can intelligently invest national resources in the education, liberty, creativity, and productivity of its people. Otherwise, the people cannot earn their place in the Knowledge Economy. Changes must take place from within. Without political changes within the Third World, the future for a sophisticated AI-based civilization can just be more of a doomed fate for the poor and uneducated Third World inhabitants.

<sup>292.</sup> See generally IVAN ELAND, THE EMPIRE HAS NO CLOTHES: U.S. FOREIGN POLICY EXPOSED (2004); BEYOND WESTPHALIA? STATE SOVEREIGNTY AND INTERNATIONAL INTERVENTION (Gene M. Lyons et al. eds. 1995); Jennifer Insley-Pruitt, Book Annotation, 39 N.Y.U. J. INT'L L. & POL. 729, 761-82 (2007); Kenneth D. Heath, Could We Have Armed the Kosovo Liberation Army? The New Norms Governing Intervention in Civil War, 4 UCLA J. INT'L L. & FOR. AFF. 251, 282-305 (2000).

Furthermore, the problem is not limited only to the Third World. The poetphilosopher Paul Valery has exclaimed that the human race now lives under a "regime of surprise."<sup>293</sup> To one of my former law students, such a "regime of surprise" can mean the following, "[t]omorrow's society will consist solely of the extremely rich and robots . . . . The rest of us will all have perished in the dark alleys of the global economy!"

Her gloomy vision is exactly the reason why any regulatory solutions for the future must be based on the individual and humanism as the foundation of law, just as Paul Valery has stated: "The value of the person remains ultimately the essential foundation of every material creation and organization."<sup>294</sup>

<sup>293. &</sup>quot;Nous vivons sous le régime de la surprise...." Paul Valery (1871-1945). Valery was a French poet, essayist, and philosopher. His interests were sufficiently broad that he can be classified by contemporary researchers as a polymath. In addition to his fiction (poetry, drama and dialogues), he also wrote many essays and aphorisms on art, history, letters, music, and current events.

<sup>294.</sup> Translation from Paul Avery's "A look at our Present World" ("Regards Sur Le Monde Actuel"): "...[L]a valeur de l'individu sera toujours en dernière analyse le support essential des valeurs de toutes créations ou organisations matérielles."

VIII. CHARTS AND DIAGRAMS

### Changes in FDI decisions

# Good news for multinationals and investors!!!

#### WITHOUT ARTIFICIAL INTELLIGENCE

All things being equal: ⇒ Manufacturing at home: too high a cost! ⇒ Duainage must as shread to

 ⇒ Business must go abroad to places where costs are low, in face of political risks or lack of regional consumer base.
 ⇒ Third World keeps its comparative advantage.

# *NOW,* WITH ARTIFICIAL INTELLIGENCE

FDI decisions are easier:
⇒ Investor can stay home.
⇒ Or, investor will go only if foreign direct investment offers the highest profit: lowest costs and largest potential regional consumer base.
⇒ Third World loses its comparative advantage.

Chart 1: Changes in FDI decisions

# Al impact on the developing economies



<u>Chart 2</u>: AI Impact on the developing economies

## Artificial Intelligence -- changes to FDI choices and environments

♦ Al eliminates much of human intervention by creating digital plants

♦ Al replaces much of human production, manufacturing system design and implementation

♦ AI can alter outbound FDI trend, may stop capital outlay, technology transfer, and localization of training to the developing economies

> ☆ Al widens knowledge gap between ruling elites and bottom-level workforce

Chart 3: Artificial Intelligence -- changes to FDI choices and environments

# Al impact on the native workforce



Chart 4: Al impact on the native workforce

### Free trade and WTO membership for the Third World

#### What good does it do for the "ghetto" to join the WTO?

#### The perpetual imbalance:



Chart 5: Free trade and WTO membership for the Third World