

AFF

I affirm. Resolved: The member nations of the World Trade Organization ought to reduce intellectual property protections for medicines.

Framework

My value is justice, to each their due. We cannot have a just society if there is not equality among marginalized groups.

Thus, the standard is who best minimizes structural violence. Structural violence is based on moral exclusion, which is fundamentally flawed because the exclusion is based on arbitrarily perceived differences.

Winter and Leighton '01

Deborah DuNann Winter (professor of psychology at Whitman College) and Dana C. Leighton (Assistant Professor of Psychology at Texas A&M University), "Peace, conflict, and violence: Peace psychology in the 21st century," Pg. 4-5, 2001

Finally, **to recognize** the operation of **structural violence forces us to ask questions about** how and **why we tolerate it**, questions **which** often **have painful answers for the privileged elite** who unconsciously support it. A final question of this section is how and why we allow ourselves to be so oblivious to structural violence. Susan Opatow offers an intriguing set of answers, in her article Social Injustice. She argues that **our normal perceptual** cognitive **processes divide people into in-groups and out-groups. Those outside our group lie outside our scope of justice. Injustice** that would be instantaneously confronted if it occurred to someone we love or know **is barely noticed if it occurs to** strangers or **those who are invisible** or irrelevant. We do not seem to be able to open our minds and our hearts to everyone, so we draw conceptual lines between those who are in and out of our moral circle. **Those who fall outside are morally excluded**, and become either invisible, or demeaned in some way so that we do not have to acknowledge the injustice they suffer. Moral exclusion is a human failing, but Opatow argues convincingly that it is an outcome of everyday social cognition. To reduce its nefarious effects, we must be vigilant in noticing and listening to oppressed, invisible, outsiders. Inclusionary thinking can be fostered by relationships, communication, and appreciation of diversity. Like Opatow, all the authors in this section point out that **structural violence is not inevitable if we become aware of its operation, and build systematic ways to mitigate its effects.** Learning about structural violence may be discouraging, overwhelming, or maddening, but these papers encourage us to step beyond guilt and anger, and begin to think about how to reduce structural violence. All the authors in this section note that the same structures (such as global communication and normal social cognition) which feed structural violence, can also be used to empower citizens to reduce it. In the long run, reducing structural violence by reclaiming neighborhoods, demanding social justice and living wages, providing prenatal care, alleviating sexism, and celebrating local cultures, will be our most surefooted path to building lasting peace.

Thus, the value criterion is protecting and upholding the rights of marginalized groups.

CONTENTION 1 - Neo-Colonialism

TRIPS is a form of neocolonialism and was constructed upon white man's burden, Rahmatian '10 says,

Rahmatian, Andreas, Neo-Colonial Aspects of Global Intellectual Property Protection (June 23, 2010). The Journal of World Intellectual Property, Vol. 12, No. 1, pp. 40-74, 2010, Available at SSRN: <https://ssrn.com/abstract=1629228> (A.B.)

An essential instrument in the process of **neo-colonialisation by economic means is** the establishment of a legal framework of international trade which confers legally enforceable rights that support and safeguard economic penetration and control. This includes, as a prerequisite for **the making of an "informal empire" like in colonial times, the creation of property rights** and the guarantee of protection of foreign property rights in dependent regions. However, unlike in the colonial era, the most important property rights, which fulfil this role in the twenty-first century, are intellectual property rights. This is because **intellectual property rights** do not attach to objects of physical substance, like land, raw material or plant and machinery, but **are abstract legal concepts of unlimited flexibility as regards extent and time**. The fairly recent implementation of the Agreement on Trade-related Aspects of Intellectual Property Rights (**TRIPs**) is one major device which **drives economic neo-colonialism** forward, and the process of the making of TRIPs also demonstrates this development. [...] In return for the protection of their own rights, **Western countries could generously agree to recognise Western Type intellectual property rights originating from developing countries, because these rights were unlikely to arise often and would not pose a real competitive threat**. This is a good example of the liberal ideal of two equal contracting parties that is blind to the real imbalance created by political and economic realities. It could also be seen as a **modern version of constructed savagery of the non-developed world which will be overcome by the gift of intellectual property rights from the developed and civilised nations. How Western in nature TRIPs effectively is, can be shown by the fact that Western national legal systems have had to adapt little to TRIPs**,¹⁸ while, for example, Latin American and Caribbean states had to make significant changes in their intellectual property laws to implement the minimum standards

The WTO and TRIPS are framed on Eurocentric standards, further perpetuating piracy and neocolonialism, Aoki '98 states,

Aoki K. Neocolonialism, Anticommons Property, and Biopiracy in the (NotsoBrave) New World Order of International Intellectual Property Protection. *Indiana Journal of Global Legal Studies*. 1998;6(1):11-58. Accessed July 6, 2021. <https://www.jstor.org/stable/20644689> (A.B.)

Connected to questions about our legal construction of the intellectual public domain are additional and **troubling** questions of **cross-cultural appropriations** that **occur with** greater frequency in the not-so-brave new world economic order of **TRIPs** and globalization. We need to be careful about constructing the public domain to avoid **conceiving of the biological and cultural resources of the [developing] World as belonging to the "common heritage of humanity."** ^{thereby} effectively **putting them up for grabs by entrepreneurs from the developed countries eager to turn such public domain items into private intellectual property.** There is a paradoxical need to simultaneously rein in the maximalist impulse in the intellectual laws of the developed countries and to imagine ways to protect the cultural and biological resources of the developing and least developed countries. In particular, **there is a very serious question whether the category "property," or the historically contingent and individualistic notion of "property" that has arisen in the West, is even appropriate when discussing things like agricultural practices, cell lines, seed plasm, and oral narratives that "belong" to communities rather than individuals. If we are not capable of acknowledging the existence of different life-worlds and ways of envisioning human beings' relationship to the natural world in our intellectual property laws, then unfortunately, it may be late in the day for biodiversity and hopes for a genuinely multicultural world**. Vandana Shiva, Ruth L. Gana (Okediji), Rosemary Coombe, James Boyle, Jack Kloppenberg, and others have been writing and working to theorize

and publicize what has been called **the "Great-Seed Rip off"**—international conventions **granting "plant breeder's rights allowing commercial plant breeders to use traditional indigenous varieties of seeds, and 'improve' them via minor genetic alterations and then receive patents in the varieties, eventually selling them back to the communities that produced them initially."** However, their concerns go much further than merely protesting the granting of U.S. patents in seed plasm and biologically-engineered genetic material. Vandana Shiva writes: The freedom that transnational corporations are claiming through intellectual property rights protection in the GATT agreement on Trade Related Intellectual Property Rights is the freedom that European colonizers have claimed since 1492. Columbus set a precedent when he treated the license to conquer non-European peoples as a natural right of European men. The land titles issued by the pope through European kings and queens were the first patents. . . . **Eurocentric notions of property and piracy are the bases on which the IPR laws of the GATT and [WTO] have been framed. When Europeans first colonized the non-European world, they felt it was their duty to "discover and conquer," to "subdue, occupy, and possess," ... [everything, every society, every culture].** The colonies have now been extended to the interior spaces, the "genetic codes" of life-forms from microbes and plants to animals, including humans. . . . The assumption of empty lands, terra nullius, is now being expanded to 'empty life,' seeds and medicinal plants ... [and this] same logic is being used to appropriate biodiversity from the original owners and innovators by defining their seeds, medicinal plants, and medical knowledge as nature, as nonscience, and treating tools of genetic engineering as the yardstick of "improvement."... At the heart of the GATT treaty and its patent laws is the treatment of biopiracy as a natural right of Western corporations, necessary for the "development" of Third World communities. The question of the direction of the flow of valuable resources, whether genetic or indigenous agricultural or medical knowledge, is extremely relevant to constructing the intellectual public domain as well. As Vandana Shiva points out, representing the cultural property of non-European peoples as "natural" or "primitive" equates such properties as "unowned" and up for grabs by erstwhile and entrepreneurial "civilized" proprietors. Any formulation of the intellectual public domain must take account of the culture-bound nature of our concepts of property and how: The model on which protection of creative labor currently [advocated by **TRIPS**] is premised on a unique combination of convictions about what constitutes property, the role of property, and the use of property rights to allocate resources . . . [and] reflects] values of liberty, individualism, and autonomy, which are central to the society of western liberalism. . . . [This **ignores the interests of] developing countries** all over the world ... **[in] retaining]** those **values** that are **core to their identities and that ultimately determine how development occurs** Simply **enacting [western-style] intellectual property laws in a cultural, economic and political vacuum is shortsighted and futile.** . . . Trivializing] the contributions of pre-industrial peoples to the wealth of the world's resources in inventions, literature, music, and the arts, despite the fact that some of this contribution continues to supply the industrialized world with answers to modern plagues.

(IMPACT)

TRIPS prioritize western profit over human rights, Chapman '02 says

Chapman, A. R. (2002). The Human Rights Implications of Intellectual Property Protection. Journal of International Economic Law, 5(4), 861–882. <https://doi.org/10.1093/jiel/5.4.861> (A.B.)

There has also been concern with ways in which TRIPS-related requirements complicate medical research into health-related problems prevalent in poor countries. In theory, intellectual property rights act as an incentive for the innovation of new technology, including pharmaceuticals by providing protection for investors, but a system based on commercial motivation does not necessarily work well in producing medicines appropriate for the needs of poor countries. Using World Health Organization data, the High Commissioner's report points out that **the pharmaceutical industry directs its research first** and foremost **towards 'profitable' diseases in markets where the return is likely to be greatest.** As a result, **diseases that predominantly affect people in poorer countries, even when the numbers are very high, such as tuberculosis and malaria, are considered to be bad investments and therefore remain neglected.** It cites the fact that **of the 1,223 new chemical entities developed between 1975 and 1996, only 11 of them were directed to the treatment of tropical diseases.** Given this situation, the report suggests that states implementing the articles of the Covenant related to the right to health and the right to the benefits of science may need to use alternative mechanisms to relying on patents to provide incentives. The High Commissioner's report discusses several other problems related to the patenting of pharmaceuticals. One is the tendency of **patents to encourage the development of 'me-too' drugs, products that are sufficiently different to be considered novel for the purposes of patent protection but have similar effects as previously patented drugs.** The report is concerned that a reliance on patents may result in a concentration of some kinds of essential products and their dissemination in the hands of a few corporations.⁷⁸ It also mentions that the grant and exercise of intellectual property rights, particularly the practice of granting broad patents, can block future research and

resulting innovations. Here the report comments that this situation could have implications for states' human rights responsibilities to undertake to respect the freedom indispensable for scientific research and creative activity (Article 15.3 of the Covenant).⁷⁹ Yet another issue detailed in the report is the potentially **negative effect of intellectual property protections on the use of traditional medicines within indigenous and local communities**; the report **notes that up to 80% of the world's population still depends on traditional medications for its health care needs.**

(IMPACT)

TRIPS increases poverty and death in developing countries, Kumar '19 says,

Kumar, Daanyaal R. (2019). United States Patents, Biopiracy, and Cultural Imperialism: The Theft of India's Traditional Knowledge. *Inquiries Journal*, 11(10). Retrieved from

<http://www.inquiriesjournal.com/articles/1769/united-states-patents-biopiracy-and-cultural-imperialism-the-theft-of-indias-traditional-knowledge> (A.B.)

The United States forced India to create stricter patent laws on pharmaceuticals products so they could not out-compete U.S pharmaceutical industries. This was done by pressure and lobbying efforts from U.S. PhRMA on the World Trade Organization. In 1994, the World Trade Organization created the TRIPS (Trade-related Aspects of Intellectual Property Rights) agreement which called for the creation of patent law on pharmaceutical and agricultural products (Tomar, 1999, p. 579). India was forced to sign the TRIPS agreement as a member of the World Trade Organization. A ten year grace period was granted to implement the pharmaceutical and agricultural patent laws, and less time to implement other aspects of the TRIPS agreement. One minor technical aspect of the TRIPS agreement was not implemented by the deadline in India and in response, the United States filed a formal investigation into India for violating the TRIPS agreement (Tomar, 1999, p. 580). **The U.S. put pressure on India to ensure that India implemented its patent system quickly and followed the TRIPS agreement as it led to economic profit and power for U.S PhRMA. The TRIPS agreement helped the United States garner economic power within India's domestic market; it took money out of India's economy and put it into the U.S economy, causing many Indian citizens to lose money and pharmaceutical jobs** that were previously available (Barsh, 2001, p. 159). The full implementation of the **TRIPS agreement in India caused an increase in drug prices and negatively affected impoverished Indian communities** (Tomar, 1999, p. 582). Additionally, the **increase in prices in medicines in India has led to higher mortality rates in the country** (Umamaheswari & Prabu & Puratchikody, 2017, p. 1). As a result of the United States using patent law to subjugate and maintain their power over a weaker country such as India, it indirectly caused the death of many Indian people. **U.S PhRMA chose economic power over the lives of impoverished Indian citizens.**

CONTENTION 2: BIOPIRACY

TRIPS cause Biopiracy, Ismail & Fakir '04

Ismail, Z. and Fakir, T. (2004), "Trademarks or trade barriers? Indigenous knowledge and the flaws in the global IPR system", *International Journal of Social Economics*, Vol. 31 No. 1/2, pp. 173-194. <https://doi.org/10.1108/03068290410515493> (A.B.)

Wholly new mechanisms of accumulation by dispossession have also opened up. The emphasis upon intellectual property rights in the WTO negotiations (the so-called **TRIPS agreement**) **points to ways in which the patenting and licensing** of genetic materials, seed plasmas, and all manner of other products, **can now be used against whole populations whose environmental management practices have played a crucial role in the development of those materials. Biopiracy is**

rampant and the pillaging of the world's stockpile of genetic resources is well under way, **to the benefit of** a few **large multinational companies**. The escalating **depletion of the** global **environmental** Commons (land, air, water) and proliferating habitat degradations that preclude anything but capital-intensive modes of agricultural production have likewise **resulted from the wholesale commodification of nature** in all its forms. The commodification of cultural forms, histories and intellectual creativity entails wholesale disposessions – the music industry is notorious for the appropriation and exploitation of grassroots culture and creativity. **The corporatization and privatization of hitherto public assets** (like universities) to say nothing of the wave of privatization of water and other public utilities that has swept the world, **constitute a new wave of 'enclosing the commons'**. As in the past, the power of the state is frequently used to force such processes through even against the popular will. As also happened in the past, these processes of dispossession are provoking widespread resistance and this now forms the core of what the anti-globalization movement is about.²⁷ The reversion to the private domain of common property rights won through past class struggles (the right to a state pension, to welfare, or to national health care) has been one of the most egregious of all policies of dispossession pursued in the name of neo-liberal orthodoxy. The Bush administration's plan to privatize social security (and make pensions subject to the vagaries of the stock market) is a clear case in point. Small wonder that much of the emphasis within the anti-globalization movement in recent times has been focused on the theme of reclaiming the commons and attacking the joint role of the state and capital in their appropriation.

The commodification of agriculture endangers development of future medicine and crops due to monoculture, Thompson '02

Mushita, Andrew T., and Carol B. Thompson. "Patenting Biodiversity? Rejecting WTO/TRIPS in Southern Africa." *Global Environmental Politics*, vol. 2, no. 1, 1 Feb. 2002, pp. 65–82, direct.mit.edu/glep/article/2/1/65/14146/Patenting-Biodiversity-Rejecting-WTO-TRIPS-in, 10.1162/152638002317261472. Accessed 9 Sept. 2021.(ZW).

Using the utilitarian argument that patents provide incentive and rewards for innovations, the WTO gives entitlement to ownership. The exploitation of traditional knowledge systems, without due regard to the original innovators, is not new. What is new is that the WTO legalizes privatization of what has been "borrowed" from "natural" reserves. As Correa notes: "The creation of knowledge by indigenous/traditional farmer communities is characterized and compared to knowledge production in the "science" and "technology" systems. Intellectual property rights are currently applicable to downstream activities, while knowledge generated upstream is deemed to be in the public domain, despite its economic value." ¹⁷ Plant breeding, however, cannot exist without access to many diverse varieties; it is a requirement. The so-called "raw materials" are germ plasm, and the narrow genetic composition of improved varieties makes them vulnerable to diseases so the breeder must return to the original parent strain for genetic variability for yet newer strains. However, in promoting adoption of new strains, there is constant danger that the original varieties may be lost, eliminating the essential resource for the new variety.¹⁸ About **75 percent of active ingredients in pharmaceuticals come from plants in Southern countries**. To give just one example from **Africa, the rosy periwinkle of Madagascar provided two cancer drugs developed by Eli Lilly, which has reduced deaths from testicular cancer and childhood leukemia, making hundreds of millions of dollars for the corporation, and none for Madagascar**.¹⁹ Today, Zimbabwe has over 50,000 registered **traditional healers, using over 500 different types of plants for medicinal purposes. This traditional knowledge is so prized that medicinal plants are the objects of theft by pharmaceutical corporations**. Zimbabwe has taken more than one pharmaceutical corporation to court for patenting a local plant and the traditional knowledge of its use, without any reference to Zimbabwe, the source of the plant and the knowledge. The cost to take a corporation to court for stealing traditional knowledge is prohibitive for developing countries, estimated at US\$0.5–1.0 million per case.²⁰ Similarly, traditional cross-breeding of plants has provided seed and germ plasm to agribusiness, saving it millions of dollars. An Ethiopian crossbred barley in the 1950s saved the entire California crop from yellow dwarf virus, providing hundreds of millions of dollars to Californian agribusiness, but nothing for Ethiopia.²¹ A West African berry has a thaumatin plant protein which is 2000 times sweeter than sugar. The gene can already be inserted into fruits and if a sweetener is developed from the protein, it can be produced in genetically modified bacteria, eliminating the need for the berry itself. Not only will the original breeders of the berry not receive any benefit, but the genetically modified bacteria could run the world's sugar cane and beet sugar producers out of business.²² In fact, under the WTO TRIPS law, if extended to plants as planned, the original innovators may be sued by the one who stole the plant if they dare to use their berries as sweeteners. Further, traditional farmers have been innovative breeders for centuries and they classify their seed. Mende farmers in Sierra Leone have long conducted ^aeld trials to test new rice seeds for diverse soil types. In Rwanda farmers choose bean seeds that perform best in poor soils. In Zimbabwe and Mozambique, the consumers resist eating imported yellow maize, even in a drought, because they consider it cattle feed; their white maize varieties are bred for taste, not simply for

yield. In Kenya it is said that the Bukusus people have a plant classification system superior to that of Carl von Linnaeus. Traditional farmers in breeding and classifying plants have sustained biodiversity, which is the foundation for modern pharmaceuticals and food crops.²³ The market for commercial seed is estimated at US\$45 billion, and growing. Only six corporations control the global commercial seed market: Monsanto, Dupont, Dow Elanco, Novartis, AgrEvo, and Zeneca. Investing in the future provided by creation of the WTO in 1995, Monsanto spent US\$6 billion, from 1996–98, to take control of seed and biotechnology companies. Monsanto currently has a research and development (R&D) budget that is more than twice that of the entire worldwide network of public sector tropical research institutes.²⁴ Biotechnology may prove to be the miracle technology of the 21st century, providing cures and prevention for HIV/AIDS or for devising new foods not yet imagined. However, it also poses many dangers, especially if owned and controlled by the very few. **Those criticizing the WTO are not criticizing biotechnology.** They are criticizing the privatization of knowledge, the restriction of free sharing.²⁵ The argument here is that the **WTO legal regime will privatize biotech discoveries, make them available only if large profits are made—and can threaten biodiversity by promoting** (paying for, valuing) **monoculture.** Loss to biodiversity is not readily documented because no one knows how many plant species there are, and species become extinct in the process of evolution. The Green Revolution is perhaps the best example of how local diversity may give way to corporate monoculture. **In India, over 75 percent of total rice production uses less than 10 percent of the 30,000 varieties of rice available.** In Bangladesh, with 22 percent of the rice areas planted to modern varieties, 62 percent of those are from one maternal parent.²⁶ **The current world food supply is highly vulnerable. Loss of diversity is loss of plant resource by which to improve varieties, either in the field or in the laboratory. Specialization threatens the genetic pool and increases instability of the ecological systems.** In Southern Africa professional plant breeders register their varieties and governments follow internationally recognized plant breeders' rights. However, most of the registered plants are for cash crops. As of 1999, Zimbabwe has 31 genera or species protected, with 70 percent of the applications for cash crops.²⁷ When one considers food crops, the majority of seed is saved and informally exchanged, except for maize seed. Nongovernmental organizations (NGOs) are working with small farmers to increase their seed propagation and improve open pollinated varieties of grain and pulses.²⁸ The serious question is—do improved varieties, whether by plant breeders or small farmers, have to be patented? If not patented, what are alternative means of protection of a nation's indigenous plants? The goal of TRIPS of the WTO is to transform Southern Africa's dual exchange—market place and on farm—into only market purchase. Southern Africa proposes alternatives which would protect plant resources and reward innovation, and not only that which occurs in a laboratory.

(IMPACT)

Monoculture leads to a litany of impacts, such as child hunger, disease, and EXTINCTION, Grant '07

Grant, S. M. (2007). *The Importance of Biodiversity in Crop Sustainability: A Look at Monoculture.* *Journal of Hunger & Environmental Nutrition*, 1(2), 101–109. doi:10.1300/j477v01n02_07 (ZW)

Monoculture is presently associated with the move towards agricultural production for the market rather than consumption.^{10,19} Its strength, in theory, is that farmers, through production of mass quantities of a few crops that are in demand, can exploit all that this market can offer without having to risk planting other varieties of crops that may not be in demand.⁹ Monoculture and the high-yielding varieties of cash crops released during the Green Revolution have been associated with the increased food production and productivity in South Asian regions during the past few decades. Monoculture has also been connected to the significant growth in the international food market and food assistance during the 1960s.¹³ Between 1970 and 1990, however, almost **half of the world's less developed countries suffered a decline in aggregate food supply and more than a quarter suffered from an increase in child hunger.** In Africa and parts of Asia, **a reduction in traditional agricultural practices has resulted in an increase of food insecurity** at the household level.^{7,14,20} Subsistence farmers and near-subsistence farmers, many of whom previously supplemented their income by working for wealthier landowners, have seen their lands confiscated and their jobs replaced by pesticides,

herbicides, and machines. These practices, implemented to grasp the opportunity provided by monoculture crops, were adopted by the large growers to eliminate the potential threat posed by trade unions and other farmers.^{9,14} The increased use of pesticides became unavoidable after traditional methods of mixed cropping, or intercropping, were replaced by **genetically uniform crops vulnerable to pests and disease.**^{5,14,21} **Adoption of monoculture** and its associated practices are also **linked to** an increase in the female work burdens and **higher incidence of malnutrition and morbidity,** when compared with practices in neighboring, less commercialized, regions. This significant relationship is observed in spite of an increased Gross National Product (GNP) and improved food security on a national level.^{7,20} The loss of dietary diversity has been widely recognized as a cause of vitamin A deficiency in developing countries. This loss of dietary diversity has also been linked to deficiency in other essential vitamins and minerals. Iron deficiency, for example, is estimated to affect one quarter of the world's population.⁷ In rural areas of India, families have diets that are only sufficient in the cereal and grains category. In all regions of India, diets lack diversity in terms of fruits, green vegetables, and nuts with 8 to 30 percent of all families deficient in vitamin A.²² Dietary diversity is also becoming a major concern among the developed countries, as they are beginning to recognize that although their diets are rich in calories, they lack the diversity that is required to prevent a number of vitamin and mineral deficiencies.^{23,24} With the recent move towards environmental awareness in industrialized countries, those involved in food growth and distribution are recognizing that monoculture and its associated practices are not sustainable.^{25,26} Americans are looking for alternatives to the monoculture that has cultivated a surplus of corn fields and that is responsible for eliminating 80 percent of the over 7,000 apple varieties that were once available.^{10,27} **Under a monocultural system, plants have to compete for nutrients at the same time, in the same proportion, and at the same depth. Plants under the monocultural system cannot help retrieve nutrients or water below their roots to benefit the rest of the crops in the field. Therefore, basic nutrients must be supplied artificially and abundantly for a nutritionally adequate yield.**

If the supply of such nutrients is not sufficient, there is a decreased mineral content in foods cultivated in monoculture, which adds to consumers' risk for mineral deficiencies.²⁸ There has been longstanding concern that modern plant breeding and cultivation reduces genetic and/or species diversity. Such reduction has been linked to an increased vulnerability of crops to changes in pests and diseases and a decrease in their ability to respond to changes in climate and agricultural practices.⁵ Hurricanes in Central America have shown that traditional land management systems are more resilient in the face of natural disasters. In October, 1998, Hurricane Mitch devastated Honduras, Nicaragua, and Guatemala. Conventional farms using the industrial model of chemical-intensive monoculture had 60 to 80 percent more soil erosion, crop damage, and water loss, than those that practiced traditional methods such as crop mixing, biological pest control, and water conservation.¹⁵ For countries with little money for social safety nets, it is essential to give priority to this kind of resilience, protecting people from the loss of their livelihood.^{15,21} Definitions of productivity have been shifting. Recent studies have been measuring the overall farm productivity, rather than the yields of monocrops. Counting the benefits that diverse farm systems offer in terms of nutritional output and sustainability is being stressed.¹⁵ Diverse farm systems may not see the same yield levels that monocultured, high yield crops treated with fertilizers and pesticides can, if you compare crop to crop. Overall productivity, nevertheless, is much greater in the long term and the yield of the land increases significantly with less intensive, diverse cropping.¹⁵ The extensive cultivation of scientifically developed crop varieties has contributed immensely to the world's food production.¹³ Yet, this practice has also led to "genetic erosion" and in turn has hindered efforts to further improve crop varieties.⁹ It is estimated that the introgression of new genes or the incorporation of new gene complexes into some breeding programs will be necessary to overcome the possible inability to further improve crops, to avoid genetic vulnerability to biotic stresses, and to widen crop adaptation to new environments.¹⁸ In spite of impressive achievements in yield and disease resistance, concern about narrowing of the oat gene pool is warranted. Cultivar development in Canada since 1930 has been largely based on a genetic foundation of fewer than ten parental lines.¹⁸ This situation may also be true for the oat breeding programs in the United States, as most oat germplasm used for cultivar development before 1970 traced back to only seven varieties, which originated in Europe.¹⁸ Fu et al.¹⁸ confirmed the narrowness of the Canadian oat gene pool during analysis of data compiled on allelic diversity in 96 cultivars released from 1886 to 2001. The data revealed that the average number of alleles per cultivar was 1.29 for the 1930s, 1.27 for the 1940s, 0.92 for the 1950s, 0.60 for the 1960s, 0.53 for the 1970s, 0.62 for the 1980s and 0.64 for the 1990s. These results indicate that cultivars released before 1960 had more alleles than those released after 1960. Fu et al.¹⁸ reported that the reason the number of alleles increased from 1970 to 1980, was that a number of new alleles were added. These new varieties are attributed to modern selective breeding techniques. Over the past 30 years there has been an increase in the practice of monoculture and the use of growth fertilizer on Asian rice crops. This increase is attributed to the intense competition for survival among farmers unable to afford the high-yielding, pest-resistant "miracle seeds" introduced during the Green Revolution.^{9,14} The annual growth of fertilizer use on Asian rice has been up to 40 times faster than the growth of rice yields.¹⁴ Recently, however, rice farmers have been introduced to the practice of rice-fish farming, where the rice paddy can double as a fish-breeding ground. This cultivation alternative gives farmers access to fish protein without increasing their land holdings.^{9,15} The introduction of fish into the paddy fields has been shown to reduce the need for pesticides, increase the farm household income, and diversify agriculture production. Thus, it is believed that integrating farming systems can help farmers increase their farm incomes and enhance agricultural and rural development.^{9,29} Most farmers recognize that modern agricultural practices have contributed tremendously to the loss of traditional varieties from agroecosystems and that more sustainable alternatives exist. Many, however, feel that they are unable to adopt more sustainable growing techniques due to economic demands.^{15,29} In modern agricultural systems, farmers' decisions are influenced to a large extent by market demand, changes in government policies, and other socioeconomic factors. Furthermore, considerations such as culture, religion, labor, technological skills, and dietary preferences also come into play.^{9,29} Zhu et al.⁹ reported great success among farmers who made use of mixed planting practices (intercropping) of traditional and hybrid rice varieties in Vietnam. Those who adopted these alternative methods recognized them as an ecologically sensitive approach to disease control, due to an apparent yield increase and decrease in fertilizer use. The data displayed that the number of traditional rice varieties in cultivation has increased dramatically, following the adoption of intercropping, and now includes some varieties that were formerly close to extinction. Among farmers, rare and endangered species have become more popular, where over the past decades farmers have reluctantly abandoned many of these varieties. This abandonment was based on their inability to grow them in monoculture, due to susceptibility to rice blast and other diseases.³⁰ Conservation of crop diversity brings substantial economic benefits to farmers. Cultivation techniques associated with conservation, decrease the need for fertilizer, pesticides, and energy input, and produce high outputs.^{9,30} They also meet the demand of the market for some high quality and culturally important traditional rice varieties and improve agricultural ecosystems by significantly reducing pesticide use. Mixed planting of various combinations of crop species, such as wheat and fava beans, potato and maize, and oil rape and fava bean promise conservation and sustainability as well.⁹ Crop diversity management practices, however, are not a perfect solution to all of the world's agricultural problems. It is not effective as a preventative measure for disease for which resistance is species nonspecific, for example.⁹ In addition, this method is easily adopted and popularized only in agricultural systems where manpower operation is still predominant. It would be difficult, at present, to apply the method in agricultural systems that employ industrial equipment.¹⁴ If crop diversity management proves to be practical for pest control, maintenance of high yields, and environmental protection, industrial equipment suitable for its application would have to be designed. An example of a circumstance where this has already been implemented would be the celery and leek intercropping system in Switzerland.⁹ It is

recognized that a threat to the future survival of mankind is loss of biodiversity.³⁻⁵ **Monoculture is a term that can be applied to any instance where a single practice, species or behavior is favored by a population and exploited to the point where other practices, species or behaviors are at the risk of extinction.**

^{2,6-9} Monoculture and its associated practices, therefore, run counter to biodiversity. Numerous ecological, agricultural, and economic studies have concluded that loss of variety and diversity makes a system vulnerable to its surrounding environment.^{4-5,12,14,18,21} Recent studies have also reported the negative repercussions of extensive pesticide and fertilizer use on the environment.^{9,14,29} Modern agriculture techniques and technologies are available to support more diverse and sustainable agriculture and only a select few have been presented in this short account. If we as a global community are to move towards a more resilient and viable agricultural economy, the following must be made a reality for future generations: A balance of power among the members of the food chain, open-mindedness to time-tested and new cultivation techniques, an appreciation of the natural diversity that exists, and recognition of ourselves as a small part of a larger ecosystem.

CONTENTION 3: INNOVATION

IP stifles innovation with unnecessary expenses and IP violations.

University of Notre Dame 19

[(University of Notre Dame, One of America's leading undergraduate teaching institutions, Notre Dame also has been at the forefront in research and scholarship.) "Intellectual Property Rights: The Good, The Bad, and China" University of Notre Dame, Law and Entrepreneurship, 2/25/19.

<http://sites.nd.edu/entrepreneurlaw/2019/02/25/intellectual-property-rights-the-good-the-bad-and-china/> ¶

Safeguarding a company's intellectual property (IP) can be crucial to developing and maintaining a successful business In a New York Times Magazine article "Z-Burger Case Shows Value of Trademark Protection," Payam Tabbian, the original owner and creator of the successful Z-Burger fast-food chain, was able to protect his creation precisely because he had registered his trademarks at the outset of creating his business. IP rights not only help preserve an entrepreneur's business, however, they are also crucial for encouraging innovation protecting small businesses, and helping to establish brand trust and awareness. Additionally, IP rights can assist in securing secondary revenue streams and can also be used as leverage if an entrepreneur is in possession of a valuable patent they want to use as collateral when financing their startup. Although the United States has relatively strong IP rights the legal landscape may not protect all IP equally. As Forbes article in Today's Market, Do Patents Even Matter? points out, a patent does not protect your IP rights from being infringed upon it simply provides the patent holder a means of legal recourse in the event they are infringed. Even if an entrepreneur decides to sue, most litigation lasts between three to five years and costs millions Novice entrepreneurs and small startups are not financially equipped to fight in the IP battles that routinely occur between heavy-hitters such as Apple and Samsung. Another issue is larger firms using the IP laws to register patents and then never actually use them, consequently stifling innovation. To make matters worse, around 97% of all patents never even recoup the costs of filing making them an unnecessary expense in many circumstances. Regardless of the argument whether IP rights are essential for new businesses and entrepreneurs, the facts illustrate that they nevertheless play a vital role in America's economy. An article in The Economist, America Can't Control the Global Flow of Ideas, underscores how the desire among businesses for strong IP laws is high because so much is at stake, with American businesses deriving 80% of their market value from intangible assets and own half of the world's IP. These same businesses rely on selling their products across borders where IP protection is not nearly as a secure, specifically in China. The White House itself published a report accusing China of IP violations which included accusations of "outright theft and forced transfer of IP to joint-venture partners in China." As cited in a Forbes article, Feeding the Fire of Genius: Intellectual Property And America's High-Tech Future, the United States Trade Representative stated that "Chinese theft of American IP currently costs between \$225 billion and \$600 billion annually." With China being listed as "the world's principal IP infringer," startups and large firms alike are advocating for the Trump administration to tighten its grip over China's unfair trade practices regarding IP. Whether the current administration will be able to successfully curtail such trade violations is still up for debate, with entrepreneurs waiting on the sidelines hoping that the legal system will prevail in protecting their IP rights.

IP is worse for innovation— it favors developed countries and prevents innovation through imitation or innovation in places outside the wealthy nations,

Chao and Mody 15 [(Tiffany E, Department of Surgery, Massachusetts General Hospital, Boston, Massachusetts, USA) (Gita N, Program in Global Surgery and Social Change, Harvard Medical School, Boston, Massachusetts, USA) "The impact of intellectual property regulation on global medical technology innovation," BMJ Journals, 3/5/15. <https://innovations.bmj.com/content/1/2/49>] ¶

Technology innovation has the potential to expand equitable healthcare to underserved populations in global health. At the same time, device patents and their legislation can be barriers to innovation for developing countries. For example, the WHO has developed a "Compendium of innovative health technologies for low-resource settings".¹ Most of these technologies are inexpensive to develop, inexpensive to manufacture and relatively easy to use. Nevertheless, the WHO clearly states that inclusion in their Compendium does not necessarily mean "the use of the technologies is... in accordance with the national laws and regulations of any country, including... patent laws." Of course, it would be a challenge to innovate in the absence of legislation on trademark laws and trade secrets. Since the profitability of devices depends on leveraging existing pathways for device development, manufacturing and distribution, intellectual property (IP) protection is a major aspect of commercialisation of technologies. Certainly investors in new start-ups look for IP protection as a high priority. Regulation of IP, therefore, is necessary to stimulate invention and new technologies. However, for technologies in low-resource settings, IP protection has historically been sparse. The World Intellectual Property Organisation reports that in 2012, high-income countries shared 64.5% of the world's total number of patents while lower-middle-income countries held only 2.9%, with low-income countries owning only 0.4%.² **This disparity**

clearly demonstrates limited IP support for frugal innovation emerging from developing countries.

Ironically, inventors in low-resource settings are presented with an abundance of important clinical needs and fewer established infrastructure constraints, so that there is a vast untapped potential for innovations to originate in these settings and move to the more developed world (known as reverse innovation).³ Inventors of healthcare devices for the developing world have varying interest in pursuing patent protection of their devices.ⁱ High cost, time and logistics are oft-cited reasons for not pursuing patents. Factors influencing the cost include not just the expense of filing (which can be thousands of dollars) but also fees for legal counsel and maintenance of the patent. These costs are a barrier in their own right, and they can also lead to increases in the price of the end product, which can be significant in a highly cost-sensitive market. An additional barrier is limited knowledge of complicated international patent laws with inadequate access to qualified IP lawyers. ^{In cases where out-of-country universities are involved in patenting the technologies, the bureaucracy involved in dealing with the technology transfer office and their inexperience in executing foreign filings is a barrier (though there are counterexamples of very significant university partnerships in developing bottom-of-the-pyramid technologies).} Another major reason for limited IP protection of technology for low-resource settings is the spirit behind the innovation in the first place; inventors designing for low-resource settings are often interested in keeping their device design open source, to maximise spread and impact. Also, consumers of the technologies are highly focused on affordability. Prosecution of infringement of IP laws in low-resource settings is limited, and violating IP laws is a pragmatic way for ‘copycats’ to reduce their investment costs in research and development, and quickly sell products, getting healthcare technology to those who need it. Most countries do operate under patent laws compliant with the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, a framework that requires IP laws to resemble those of developed areas. This agreement applies to all WTO member countries. Therefore, unless a developing country wishes to withdraw from the WTO, its IP laws are required to resemble those in the USA or Europe, leaving little flexibility to tailor to local needs.⁴ This means that international IP laws are often in the economic interests of developed countries rather than in the innovation interests of other countries.⁵ As a result of these issues, the most prevalent strategy among global health technologies has often been to develop without regard for IP protection. A major advantage of this approach is that it can allow for open-source innovation, permitting technological learning through imitation. This approach can also eliminate the many costs of foreign protection or patent enforcement, allowing for a frugal approach to the initial development of the technology itself. Furthermore, this approach is most in line with the collaborative spirit of global health innovation. Nevertheless, there do exist some opportunities for frugal approaches to IP. Simplified legislation or pro bono opportunities for counsel allow an effective system of justice for inventors to take full advantage of legislation to promote innovation.⁶ Grants and other forms of non-dilutive funding enable inventors to develop global health technologies without being overly concerned about licensing or investment opportunities. Some potential legislative changes also could be made, such as creation of public-private partnerships that could facilitate government-funded research to be protected and disseminated at affordable cost in such countries.⁷ Other existing exemptions in international agreements could be implemented, including research exemptions for experimental uses of IP or government imposed non-exclusive or compulsory licensing.⁸ While there remains potential for more imaginative IP legislation in developing countries, original technologies continue to be developed in these settings. On the international stage, forums such as the WHO Global Forum on Medical Devices highlight emerging technologies that impact the continuum of care ranging from screening to diagnosis, treatment and rehabilitation under the Universal Health Coverage Strategy.⁹ These platforms demonstrate that despite the hurdles faced by developing economies in capturing the benefits of IP laws, global health technologies can be and will continue to be developed outside of these limitations.

Decline in medical innovation risks extinction,

Sachs 8/17/14—Professor of Sustainable Development, Health Policy and Management @ Columbia University [Jeffrey D. Sachs (Director of the Earth Institute @ Columbia University and Special adviser to the United Nations Secretary-General on the Millennium Development Goals) “Important lessons from Ebola outbreak,” Business World Online, August 17, 2014, <http://tinyurl.com/kjgyvvo>

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Ebola is the latest of many recent epidemics, also including AIDS, SARS, H1N1 flu, H7N9 flu, and others. AIDS is the deadliest of these killers, claiming nearly 36 million lives since 1981.

Of course, even **larger and more sudden epidemics are possible, such as the 1918 influenza** during World War I, **which claimed 50-100 million lives** (far more than the war itself). And, though the 2003 SARS outbreak was contained, causing fewer than 1,000 deaths, the disease was on the verge of deeply disrupting several East Asian economies including China’s.

There are four crucial facts to understand about Ebola and the other epidemics. First, most emerging infectious diseases are zoonoses, meaning that they start in animal populations, sometimes with a genetic mutation that enables the jump to humans. Ebola may have been transmitted from bats; HIV/AIDS emerged from chimpanzees; SARS most likely came from civets traded in animal markets in southern China; and influenza

strains such as H1N1 and H7N9 arose from genetic re-combinations of viruses among wild and farm animals. **New zoonotic diseases are inevitable** as humanity pushes into new ecosystems (such as formerly remote forest regions); the food industry creates more conditions for genetic recombination; and climate change scrambles natural habitats and species interactions.

Second, **once a new infectious disease appears, its spread** through airlines, ships, megacities, and trade in animal products **is likely to be extremely rapid.** These epidemic diseases are new markers of globalization, revealing through their chain of death how vulnerable the world has become from the pervasive movement of people and goods.

Third, **the poor are the first to suffer and the worst affected.** The rural poor live closest to the infected animals that first transmit the disease. They often hunt and eat bushmeat, leaving them vulnerable to infection. Poor, often illiterate, individuals are generally unaware of how infectious diseases -- especially unfamiliar diseases -- are transmitted, making them much more likely to become infected and to infect others. Moreover, **given poor nutrition and lack of access to basic health services, their weakened immune systems are easily overcome by infections** that better nourished and treated individuals can survive. And “de-medicalized” conditions -- with few if any professional health workers to ensure an appropriate public-health response to an epidemic (such as isolation of infected individuals, tracing of contacts, surveillance, and so forth) -- make initial outbreaks more severe.

Finally, **the required medical** responses, including diagnostic tools and effective medications and vaccines, inevitably lag behind the emerging diseases. In any event, such tools **must be continually replenished. This requires cutting-edge biotechnology, immunology, and** ultimately **bioengineering to create large-scale industrial responses** (such as millions of doses of vaccines or medicines in the case of large epidemics).

The AIDS crisis, for example, called forth tens of billions of dollars for research and development -- and similarly substantial commitments by the pharmaceutical industry -- to produce lifesaving antiretroviral drugs at global scale. Yet each breakthrough inevitably leads to the pathogen's mutation, rendering previous treatments less effective. **There is no ultimate victory, only a constant arms race between humanity and disease-causing agents.**