Manlius Pebble Hill Model United Nations

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Commission on Science and Technology for Development

Chairs:

Nathan Sonnenfeld

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Preface

Welcome to CSTD at MPHMUN 2018! Your chairs for this conference will be Nathan Sonnenfeld and Max Fung. Our committee will be run Resolution style, so delegates should bring copies of their resolutions for all three topics to committee. To be eligible for an award, you must email a resolution for each of the topics and your position papers to cstdmphmun@gmail.com by 11:59 PM on Friday, October 19th. Anything received after this time will not be accepted. This year we are proud to say that we are an eco-friendly committee, which means delegates should double side all papers to produce the least amount of waste as possible however, we ask that you refrain from printing unless absolutely necessary. Please refer to our technology policy for this committee or ask your advisor to find out more on our eco-friendly policy! We're very excited to be chairing this committee and look forward to seeing you at the conference! In the meantime, do not hesitate to email us with any questions you may have via the email above or our personal emails below.

Best,

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Introduction to the Committee

Established in 1992, the Commission for Science and Technology for Development (CSTD) is a subsidiary body of the Economic and Social Council (ECOSOC). It has 43 Member States elected for four-year terms by ECOSOC while considering geographic distribution. Eleven members are from Africa, ten from Western Europe, nine from Asia-Pacific States, eight from Latin American and the Caribbean, and five from Eastern Europe. Its purpose is "to provide the General Assembly and ECOSOC with high-level advice on relevant issues through analysis and appropriate policy recommendations or options in order to enable those organs to guide the future work of the United Nations, develop common policies and agree on appropriate actions." Each year, it meets for a one week session in Geneva, Switzerland.

Development of GMO Standards

Introduction

A genetically modified organism (GMO) is an organism created by a laboratory process in which the genes of one organism are artificially forced into another unrelated organism's DNA, or a method of selective breeding to obtain wanted traits of a certain organism. The result of this process in plants is an organism which is able to resist threats such as weeds, insects, and weather. In addition, some GMOs are higher in nutrients and cost less to produce than their regular counterparts so farmers can collect higher yield from their crops. When other organisms such as bacteria are genetically modified, it can produce many medicines and vaccines. For example, insulin was created by inserting human DNA into a host bacteria cell. While these many benefits are present, GMOs are feared by almost two-thirds of the general public due to apprehensions about health risks. However, no research has found any negative health impact from GMOs, and over 90% of scientists believe that there are no adverse effects. This fear is also fairly new, despite crossbreeding and induced gene mutations having been used for decades before the creation of GMOs.

Since two thirds of the global GMO seed market is held by ten companies, intellectual property regulation plays a significant role in this topic. Intellectual property (IP) refers to "creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce." IP is protected with laws such as patents and trademarks, which enable people to reap financial benefit or receive recognition for their invention or creation. "By striking the right balance between the interests of innovators and the

wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish."

The protection of IP, often in the form of multiple-decade-long patents, allows companies to create artificially high prices in order to reap huge profits. Private companies holding patents often mark prices up from manufacturing cost as much as 500,000%, as in the case of the pharmaceutical Xanax. While these companies do create large markups on their products, this is due to the extraordinary cost of research and development (R&D) that goes into them. This has been a major source of contention between developing and developed nations, as the companies are based in developed nations and many developing nations do not have the means to pay these exorbitant costs. This is why many organizations have stepped in to cover costs or work as a mediator between the two parties to negotiate lower purchase prices. Although these third parties are helpful to developing nations in the short term, their actions can actually hurt them in the long run. Once manufacturers create a facility for developing and manufacturing these products and devote huge amounts of time and money to them, they have very little bargaining power and are forced to sell at lower profit margins than they'd like, and in the future, could potentially decide against developing other products in the future if they cannot make sufficient profit. This puts developed nations, which typically ally themselves with their agribusinesses' interests, and developing nations, which come out adamantly against such protective regulations, at odds with one another. Both parties are reliant on each other, yet are unable to accept each other's conditions. The fierce battle between developed nations, which typically ally themselves with their

agribusinesses' interests, and developing nations, which come out adamantly against such protective regulations, has yet to reach a mutually satisfactory outcome.

History

While genetically modifying organisms is a fairly modern capability, genetic engineering has been around for over 30,000 years. Despite having no knowledge of genetics, early humans bred animals to fit their needs, leading to drastic changes. The earliest example found was from 7800 BCE, where scientists found different varieties of wheat in the same place. These processes, called artificial selection, are still used today. However, genetically modified organisms can now be created using much more advanced processes.

Genetic engineering was not possible until DNA was discovered by Friedrich Miescher, and it was identified as a double helix by James Watson and Francis Crick. The first instance of genetic engineering was in 1972, when Stanley Cohen and Herbert Boyer created a technique by which strands of DNA could be cut and reconnected in different orders using an enzyme. In 1976 they came together to found the company Genentech, and began to place human genes into bacteria to create insulin. In 1990, this technology began being used for food when a GMO called Rennet, which is used to curdle milk, was approved by the FDA. This became extremely popular, and by 1995 about 67% of cheese was being made by Rennet. Other forms of GMOs, such as bovine growth hormones were created as well, and a DNA molecule that could affect plants called plasmid was discovered. By this time, GMOs have become extremely popular, and most major agricultural countries have begun using genetically modified crops. However, many have been

skeptical about genetically engineered crops due to potential risks associated with them, such as infertility, organ and gastrointestinal malfunctions, and faulty insulin regulation as seen in some animal studies.

The Cartagena Protocol on Biosafety, passed in 2000, has worked to "contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements." It has helped developing countries to build biotechnological infrastructure, along with introduce regulations regarding nations consenting to trade, documentation, and to assist information sharing about such technology between nations. However, given the progress made in the agrochemical industry since the turn of the century, it lacked certain details that are becoming increasingly relevant.

Current Situation

Currently GMOs are grown in 26 nations, 19 of which are still developing. Over 18 million farmers in those countries planted 457 million acres of GMOs in 2016. The most common genetically modified crop grown by far are soy beans, which make up about half of all crops planted. While GMOs are extremely popular in some nations, others have banned farmers from growing GMO crops. However, many of these nations still allow imports of genetically modified crops. In addition, other nations restrict the distribution of genetically modified food, but remove those restrictions once that food passes inspection and regulations. There are various different ways that nations regulate GMOs, but there

are also similarities between policies. Some create regulations helping to ensure consumer health, such as mandatory labeling on products in some stores that include GMOs. Others try to assess and minimize human and environmental health risks. Trade regulations also exist, one such being that all GMOs on the international market must pass a safety assessment from the national authorities from which the GMO came.

There is significant controversy about the safety of GMOs, as there is a lack of evidence about possible adverse effects. Those in favor of genetically modified food state that the process is completely safe, and say that genetically modifying food has benefited growth for thousands of years and can continue to do so. They point to studies such as one headed by bioscientist Chelsea Snell, which states that when tested by animals, the genetically modified food contained similar nutrients to non genetically modified food, making it safe to eat. However, those opposed to GMOs state that there has not been sufficient research done about the effects of GMOs on humans, and therefore no conclusions can be drawn. A statement signed by over 300 researchers stated that it is impossible to track potential effects of GMOs, as not all products containing GMOs are labeled.

The Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, known as the Supplementary Protocol for short, entered into effect in March 2018 to modernize the Cartagena Protocol. According to the Convention on Biological Diversity, it “aims to contribute to the conservation and sustainable use of biodiversity by providing international rules and procedures in the field of liability and redress relating to living modified

organisms." It mandates that response measures are taken if genetic modification results in damage or will likely do so if not addressed in a timely manner, and also contains civil liability provisions. However, only 41 nations are currently party to it (and thus bound by it), which significantly limits its capabilities in effectively modernizing the Cartagena Protocol. Whether the Supplementary Protocol is sufficient modernization of the Cartagena Protocol with its currently limited support is too early to tell, but the fact that it's missing 62 of Cartagena's signatories is concerning.

Since GMO development is hugely expensive, the vast majority of it is done by transnational corporations, a prominent example being US-headquartered Monsanto Company. As these transnational companies ship seeds throughout the world, the likelihood for their products to be receptive to local climates can be relatively slim. These seeds typically are genetically modified one way or another to combat this. Agrotechnology companies and their products, many believe, are insufficiently regulated to the point of being a danger to public health. Roundup, one of Monsanto's chief products, contains an ingredient called glyphosate, which has recently come under heavy scrutiny as although it's not as dangerous by itself, when it encounters with naturally occurring metals in the soil, the mixture becomes incredibly toxic to humans. Thus, it has been linked to thousands of deaths in El Salvador and Sri Lanka, and is presumed to be the cause of similar cases in other developing nations. The World Health Organization called glyphosate "probably carcinogenic," yet there is relatively little regulation holding corporations liable for their roles in cases such as this.

There have been cases of seed banks, such as the aforementioned, selling defective seeds to developing countries (unbeknownst to them) at a lower cost. Additionally, instances of corporate-federal alliances violating developing nations' rights to food sovereignty. For example, in 2014, El Salvador was pressured by the United States to purchase GM seeds from an American agrochemical company or they'd risk losing $277 million aid from the US. "We are threatened because the U.S. is pressuring the government of El Salvador so that its seed is not purchased from local families struggling to escape poverty, but transnational businesses," says the Salvadorian Confederation of Federations of Salvadoran Agrarian Reform (COFRAS).

Questions to Consider

- Should individual nations or a global body regulate GMO standards? If global, should GM food labelling be a set global protocol or determined by individual parties?
- What are sustainable alternatives to GMOs for farmers in developing nations reliant on genetically modified crops?
- How do GMOs impact the increasing global technology gap, both positively and negatively?
- Can GM crop be considered a viable method of achieving food security and agricultural sustainability?
- Do we need to a complete restriction on GM crops or employ the technology with more comprehensive policies?
- How can the issue of intellectual property be improved in a way that is beneficial to both developed and developing nations?

Further Reading

1. A look at policies in different nations in regards to GMOs. https://www.sourcewatch.org/index.php/GMO_Policies_by_Country
2. An article on how large corporations have used GMOs in developing nations for profit. https://www.globalresearch.ca/genetically-modified-organisms-gmo-profit-power-and-geopolitics/5419873
3. An article about health risks of genetically modified livestock. https://fas.org/biosecurity/education/dualuse-agriculture/2.-agricultural-biotechnology/risks-associated-with-gm-farm-animals.html

Topic 2: Accessible Digital Development

Introduction

Digital development is the ability to "fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact across society in a strategic and prioritized way, with present and future shifts in mind." While average income has been observed increasing in almost every country and the world trade growing fivefold since 1980, national income inequality has grown as well. In large part, the increasing technology gap is responsible. Developing countries having the ability for digital development would be a huge step in the attempt to alleviate extreme poverty in these regions. As labor is becoming increasingly automated, labor costs are less important to companies who favor access to technological infrastructure when determining where to locate manufacturing facilities. According to an estimate by the Brookings Institute, if developing nations were to become digitized they could see a GDP increase of up to $4.1 trillion USD. While WiFi is generally agreed upon to be a huge focus of digital development, there are many other aspects to the issue the world is currently looking at that are less focused on in the media that are just as important, such as ICT infrastructure and modern financial services, as well as the new possibilities that are associated with this increasing connectedness in undeveloped nations.

Information Communications Technology, or ICT, is defined as "all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions." While many view it

to by synonymous with Information Technology (IT), ICT includes much more into its spectrum. IT typically refers only to technology that would be used in a professional setting, such as computers or software programs, while ICT is used more in education to utilize computers to aid people or organizations in finding, using, or handling information, including all means of technological communications such as wireless networks, internet, and mobile phones.

The access to digital development is essential to creating a worldwide economic growth balance, and mitigating the effects of the industrial, agricultural, and technological revolutions. There are two prominent ways nations have attempted to fix their lagging in the technology sector: through adjusting policies favorable to Foreign Direct Investment (FDI) and through autonomic strategies, both exhibited through the policies of various East Asian countries. FDI is "when an investor establishes foreign business operations or acquires foreign business assets, including establishing ownership or controlling interest in a foreign company." Examples of this are abundant, with virtually all large corporations (McDonalds, for example) establishing subsidiary or associate companies in other nations. FDI can take other forms than corporate expansion, such as corporate or personal investment of foreign companies' stocks. China's economy has been fueled by an influx of FDI targeting the nation's high-tech manufacturing and services, which according to the nation's Ministry of Commerce, grew 11.1% and 20.4% respectively in the first half of 2017. Autonomic strategies, such as human capital development (HCD) and international technology transfers (ITTs), enable the countries to keep abreast of new

technologies and allowed domestic enterprises to become global players in international markets.

History

Before the industrial revolution, the wealth gap was relatively modest, with the wealth per capita of the ten richest nations being only six times greater than the ten poorest. When the revolution came in western Europe and America the region's incomes quickly grew; thus the global income inequality grew as well. England's Gini coefficient, a measurement of national income or wealth distribution with 0 meaning complete economic equality, and 1 being complete inequality, shot up from 0.4 in 1823 to 0.63 in 1871, a study suggests. Ultimately, these rapidly forming economic imbalances resulted in the reactionary rise of communism by eastern nations and many western policies to protect the lower class. As a response to the increasing socioeconomic polarity emerging, nations such as the United States and Britain introduced taxation as a method of wealth redistribution. Additionally, in the early 1900s, the US invested heavily in public high schools in pursuit of universal secondary education. Harvard economists Claudia Goldin and Larry Katz see this dramatic boost to education as the main cause of the narrowing of inequality and increased social mobility in America in the mid-20th century. In the western world following World War II, income inequality decreased heavily, forming an era known as the Great Compression. However, they quickly began to grow again. Deng Xiaoping's 1978 reforms marked yet another reversal in global trends. The Economist states that "by the 2000s the large majority of emerging economies were growing consistently faster than rich countries, so much so that global inequality

at last started to fall even as the gaps within many countries increased."

The emergence of ICTs in the latter half of the 20th century both helped and harmed wealth equality. They facilitated cross-border trade interaction, and fueled the integration of the global capital market. These resources allowed emerging economies to increasingly become sources of innovation. ICTs reduced the use of assembly lines for automated systems, and increased cognitive technological jobs, which are typically much less conducive to labor unionization than their manual counterparts. Since 1980, world trade has grown 500% and "its share of world output has risen from 36 percent to 55 percent." Continuing into the 1990s, former communist countries entered the global market, which further increased world trade. In countries in areas such as Asia, Europe, and Latin America have used "newly available income" which has caused wealth there to increase.

Current Situation

As shown by the MGI Connectedness Index, the technology gap is not narrowing quickly enough. If these lagging nations increased their participation in global digital information circulation as much at the same rate as the top quarter of this index over the past ten years would've resulted in a 13% global GDP increase, or $10 trillion. A McKinsey Global Institute study showed that between 1980 and 2014 the data flow increased by 4500%, with trade and finance pale in comparison. 10% of the global GDP is from that flow of data, services, goods, and finances, with data alone accounting for a whopping 36% of that figure. If trends of technological development are not corrected, the global income inequality will grow exponentially

and threaten the wellbeing of hundreds of millions of people.

There are more groups struggling than just developing nations, but among groups such as ethnic minorities, the uneducated, and rural dwellers – in developed and developing nations alike, these issues persist. For example, Romania held nine of the world's fifteen cities with the fastest broadband internet as of 2016 yet 39% of the nation's population has never used the internet, compared to the EU's 18%. This is largely due to the fact that household penetration in rural areas of Romania is only 55%. According to a Stanford University study, "The difference in computer usage in the United States grew by 39.2% between White and Black households and by 42.6% between White and Hispanic households in the period between 1994 and 1998. Hispanic households are roughly half as likely to own computers as White households. Schools with a higher percentage of minorities have fewer computers whereas those with a lower percentage of minorities have a greater number of computers." This difference is particularly significant in Chile, where 87% of well-educated people use the internet, compared with 18% of those with less than a secondary degree.

However, despite these statistics, there have been improvements. Along with the development of ICT comes the creation of technological and innovative hubs throughout developing countries that bring all types of people together: investors, innovators, entrepreneurs, and experienced ICT staffers. These hubs provides businesses with tools vital to businesses such as high-speed internet, reliable power sources, office facilities, and training/mentorship programs. As of June 2016, there were 173 such hubs in Africa. As these hubs continue

to be developed, they absorb increased portions of the global economy, and provide resources for innovation that wouldn't have been possible otherwise. From 2009 to 2014 Kenya increased internet usage increased over 40%, foreign investors have been attracted and ICT now accounts for 14% of the nation's GDP.

Questions to Consider

- How can the rural-urban technology gap in a financially viable way? Who should take the economic burden it entails?
- In which ways can the economic burden of technology access on lower-income demographics be reduced or even eliminated?
- While it has been identified that education will be a primary area to target in bridging the digital divide, how might governments improve access to education for especially marginalized youth populations?

Further Reading

1. An IMF report about the impacts of technology on the wage gap. http://www.imf.org/en/News/Articles/2015/09/28/04/53/sores1010a
2. A study on the global wealth distribution. https://www.theguardian.com/inequality/2017/nov/14/worlds-richest-wealth-credit-suisse
3. A country comparison of family income distribution via the Gini coefficient. https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html

Topic 3: The Use and Regulation of Emergent Smart Technologies

Introduction

Stanford University defines artificial intelligence (AI) as "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." As AI continues to develop, it plays an increasing role in everyday life. AI's collect information, optimize infrastructure, and improve public safety. Throughout many cities, cameras and sensors are being placed on every street corner and block. These cameras work 24/7 and collect large amounts of data. As there is so much information, it is impossible for people to analyze this data. This is where AI is greatly utilized. "It can count vehicles and pedestrians. It can read license plates and recognize faces. It can track the speed and movements of millions of vehicles to establish patterns. It can process the huge volume of satellite data to count cars in a parking lot or track road use." However, because these technologies are so involved in everyday life, regulatory oversight is currently nowhere to be found. Currently, though, there is disagreement whether this is the right time to develop regulation. Elon Musk and Stephen Hawking were among the early advocates for AI regulations while others feel artificial intelligence is too new to effectively regulate and that there isn't enough political consensus on the issue yet to allow for it to occur without a huge waste of time and resources.

A writer named Isaac Asimov came up with three laws of robotics in 1942: 1) A robot may not injure a human or through

inaction allow harm to befall a human, 2) a robot must obey the rules given by a human except when doing so would violate the previous law, and 3) a robot must protect its existence so long as it doesn't conflict with the two previous laws. While these laws are from a time that was largely without relevant technologies, and lack huge amounts of detail, they provide good general rules for artificial intelligence.

In relatively rudimentary AI technologies, inaccuracies and biases have been noticed. For example, an algorithm used to sort applicants at St. George's Hospital Medical School was found to be biased against women and people with non-European sounding names. Another example is an algorithm causing a veteran American Airlines pilot to be detained at least 80 times because it confused him with an IRA leader.

There is question whether nations with limited public works funding should invest in smart infrastructure, but, from the point of view of technology firms at least, not only is it the best way to reduce further pollution and increase sustainability, but it can also develop demand for labor and supplies, stimulating the economy. These smart infrastructures being implemented in developing nations will help digital development within the nations, as an integral part of smart cities is ICT. The increased market for smart technologies will increase competitiveness in these industries, forcing prices down and causing companies to further increase efficiencies in their production. Whether or not these benefits are worth the financial burden of development is a point of contention.

History

The idea of artificial intelligence and robots that could think for themselves dates

back to the first half of the 20th century, when the Tin Man from the Wizard of Oz entered the scene. Science fiction continued to explore this idea, with Isaac Asimov a leader in writing about AI. In addition, a man named Alan Turing developed ideas about the mathematical possibility of AI, stating that if humans could use reason and information to solve problems, machines could do the same as well. In his 1950 paper, he talked about the way to possibly build machines with intelligence, and how to test that intelligence.

The development of AI began when the term was first coined at a 1958 conference in Dartmouth College. Many were optimistic about AI following the conference, but 16 years later in 1974 a lack of funding and interest temporarily ended research. This period, called the "AI Winter," ended in 1980 when the British started funding in order to compete with the Japanese. However, there was another winter from 1987 to 1993, when there was another stoppage of funding and a market collapse. After the second winter, research began to pick up at a tremendous pace, and in 1997 IBM's Deep Blue became the first AI to defeat a chess master in a game of chess.

Current Situation

The European Union and Britain, in 2018, enacted the General Data Protection Regulation (GDPR) designed to increase transparency and accountability for artificial intelligence in legal cases. Previously, if someone were to sue an AI developer for such grievances, very little information would likely be provided. A general explanation may be given, but no explanation for a specific decision would be provided. For example, "a person turned down for a credit card might be told that the algorithm took their credit history, age, and

postcode into account, but not learn why their application was rejected." This law would attempt to change that. However, the success of it depends heavily on interpretation by the courts, as the 'right to an explanation' is not legally binding. The professor of robot ethics at the University of the West of England, Alan Winfield, and many others believe an organization to oversee artificial intelligence (or "watchdog") is a necessary step to regulating AI in the present times as it may be too early to pass solid regulations on AI. However, opposition believes this would result in this overseeing body hugely violating existing privacy laws. "A watchdog is a very good proposal. This is not a future problem, it's here and now," says Winfield.

Questions to Consider

- Is the investment of funds worth the potential gains of developing smart infrastructure?
- What are some regulations that can be put into place to ensure the positive use of smart technology?
- How can smart technology, including artificial intelligence, be sustainably spread to developing nations?

Further Reading

1. An article discussing the development and creation of smart cities. http://www.information-age.com/ibm-cisco-and-the-business-of-smart-cities-2087993/
2. A hub of news articles from different regions regarding smart cities.

https://smartcitiescouncil.com/article/global-news

3. Former US Secretary of State Henry Kissinger articulating the potential dangers of artificial intelligence. https://www.theatlantic.com/magazine/archive/2018/06/henry-kissinger-ai-could-mean-the-end-of-human-history/559124/
4. An article further explaining the idea for an artificial intelligence watchdog entity. https://www.theguardian.com/technology/2017/jan/27/ai-artificial-intelligence-watchdog-needed-to-prevent-discriminatory-automated-decisions