COMMISSION GUIDE

UNCSTD

CCBMUNXVII

United Nations Commission on Science and Technology for Development

Antonio Robles & Ernesto Estela

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Contents

1. Presidents' Letter

Hello delegates,

Welcome to the Commission of UNCSTD. We are extremely honoured that you have decided to enter this Commission. Our names are Ernesto Estela and Antonio Robles, we are both in 10th grade, Ernesto in Colombo Británico and Antonio in the Bolívar. Both of us have been part of numerous models since 7th grade and each of us has won several awards. For one of us, this is the first time being president, an important step in the MUN process. We will do everything that can to make this an exceptional model for you delegates and for us presidents.

As your Presidents, we hope you enjoy this Commission as much as we will. We hope that you will learn a lot from this Commission and see a new perspective on how the world is working nowadays. MUN is a unique experience to see how all of the delegations differ in points of view from each other. These models are a great opportunity for learning outside a normal classroom; they teach participants to have patience, to listen, comprehend problems in our society and come up with innovative solutions to these problems. It also helps develop several skills such as researching skills. For all of the reasons stated above, we are expecting that each one will give your best during the Model.

We expect all of you to be prepared so there can be a great debate in the Commission. All of you have to become experts on your delegation's point of view. We know some of you may be rookies, and we understand that. You may be scared to raise your placard, but don't be, this is the only way to overcome your fear. If you have any questions about the Commission, do not hesitate to ask us. We will try our best to answer all your questions, and to help you in any way possible during the debate.

Once again, we would like to reiterate that we expect that you to come prepared to the simulation. A lot of planning and hard work has gone down to make this a great Commission, so we hope that you have a great Model, and if you are a rookie, we hope that you will like it.

Yours sincerely,

Antonio Robles and Ernesto Estela co-presidents of UNCSTD

2. Commission Information

i. History

The United Nations Commission on Science and Technology for Development was created in April 30, 1992. The UNCSTD was established to provide the General Assembly and the Economic and Social Council with high-level advice on relevant issues regarding science, technology and development; UNCSTD was first established with ECOSOC as its parent organization. Just before 1992, the UN suffered setbacks and a period where the economy and social issues were rarely addressed within sessions. UNCSTD was introduced for 3 main reasons. Firstly, the General Assembly needed advice and counsel on all rapid technological changes that were happening at the time. Secondly, there was a sudden rise of the use of technology in belligerent conflicts and there were no detailed regulations on the dos and don'ts of technological warfare. Lastly, the UN had suffered from a loss in all social and economic programs, and thus the UNCSTD was issued as a subsidiary under ECOSOC in order to help revitalize the lost programs.

ii. Structure

The United Nations Commission on Science and Technology for Development is the hub for everything that's new within the United Nations. Within the United Nations Commission on Science and Technology for Development, every aspect of a situation is discussed specifically: what is new, what matters, what is changing, what the impact is – and how this affects development and a sustainable future for all. "*The CSTD is also an open platform where proposals, ideas, experiences, cases, and intellectual thought can be channeled toward making a policy impact. It facilitates concrete collaborations between member states, NGOs and actors in the science, technology and development space."* (UNCTAD). The Committee has forty-three Member States elected by ECOSOC for a period of four years. Diplomats nominated by their countries have to possess the necessary achievements, technological, scientific, and professional knowledge. As for the process, at each session, UNCSTD elects a new Bureau (a Chairperson and four Vice-Chairpersons) for the next session. The Bureau is responsible for the coming activities during the next period. At the moment, on 14 February 2019, the UNCSTD voted Ecuador for a term beginning on the date of election and expiring on December 31, 2022. The Council also decided to lay back the election of one representative from the African States and one representative from the Latin American and Caribbean States until 31 December 2022. The UNCSTD membership is made up of:

- Eleven members from African States

- Nine members from Asia-Pacific States
- Eight members from Latin American and Caribbean States
- Five members from Eastern European States
- Ten members from Western European and other States

Figure 1: Sustainable Development Goals

3. Simulation: *Rapid Technological Change and its Effects on Employment and SDGs*

i. History/Context

Throughout the last two centuries the world has experienced an extreme social, cultural, and labour revolution due to the rapid technological advancements that have taken place, all of which had never been seen to such an immense magnitude before. In recent years, a massive new labour-related revolution has started to occur worldwide; whereas previously farmers became workers, now workers are becoming machines. The rapid advancement of more human-like and intelligent computing systems has already led to millions of jobs disappearing on a global scale, and millions more will be lost in the following decades.

In the 12,000 years that have passed since the beginning of the Human Era the world has only been through 2 major labour revolutions, the first being the Agricultural Revolution and the second, the Industrial Revolution. The Agricultural Revolution occurred from 12 to 10 thousand years ago, and revolutionized the human way of life by transforming nomadic hunters and gatherers into farmers and crafters. The more recent Industrial Revolution took place only 200 years ago on the European Continent and led to the transformation of farmers into workers. Prior to the Industrial Revolution, farmers made up over 90% of the working population in the United States; this number shrank dramatically to a mere 2.6% in the early 2000s, and an even smaller 2% nowadays. After the Industrial Revolution, millions of people had to migrate from working as farmers in the country to work as workers in the urban centres. This is the main reason why urban centres have grown exponentially during the last hundred years, and why now over 54.5% of the population lives in cities.

ii. Current Situation

It is evident that the more human civilization progresses, the more specific and complex our jobs and roles get. 20,000 years ago the only requirement to survive and coexist with other humans was to be able to run, hunt and gather, whereas nowadays the modern requirements are much more specific and can vary between culture, class and social status. However, this seemingly recurring pattern of complexity is statistically predicted to come to an end in the coming decades, as automation and the continuous improvement of machines and computers will eventually lead to the loss of millions of jobs, including the already-threatened remaining factory jobs, agricultural jobs, and others such as cashiers, truckers, service jobs such as waiters and cleaners, etc.

The rapid technological innovation in the last two decades has already caused millions of jobs to disappear, one could argue that while the information age and automation kills millions of jobs every year, it creates millions as well, but whilst this is common in a normal industry, it does not happen in the information industry, which creates far fewer jobs than it destroys. This is because a single computer can replace 20 cashiers and requires only 1 person to monitor and control it.

"Robotic process automation (RPA) and artificial intelligence (AI) will create digital workers — software that automates tasks traditionally performed by humans — for more than 40 percent of companies next year, and a full one-tenth of future startups will employ more digital workers than human ones. Moreover, in 2019 roughly 10 percent of U.S. jobs will be eliminated by automation, which will also be responsible for creating the equivalent of 3 percent of today's jobs." (Kyle Wiggers "Forrester: 10% of U.S. jobs will be lost to automation in 2019")

With regard to the Sustainable Development Goals, automation could mean both good and bad news for humankind; when analyzing the information quickly, it can be said that automation will have a positive impact on the SDGs, but when looking at the long-term effects, these could be alarming. When focusing on SDG number 1 (no poverty), 2 (zero hunger) and 8 (decent work and economic growth), it is evident that there will likely be a negative impact. This is because automation will lead to billions of people losing their jobs to machines, thus losing their wages and being forced into poverty, and even starvation. It could also lead to mass economic disruption due to the fact that their purchasing power will decrease tremendously and thus lead to a fall in demand and an excess of supply. Despite this, the loss could be somewhat paid back by the possibility that in the future an Automated Utopia could be created, where only machines work whilst humans can enjoy life, not having to worry about supply and demand; this concept of an automation utopia is explored in Automation and Utopia by John Danasher, in which the author describes a world where machines carry out all of the work and humans can lay back and enjoy their lives with virtually no need to work and "suffer"; obviously this is a very unrealistic scenario, but it is viable.

iii. Key points of the debate

- Regulations to automation
- Changes to social structure and the role of the working class
- Economic recession or depression as a consequence to unemployment
- How the SDGs might change after a mass wave of automation

- Compensations for mass unemployment
- Replacement of lost jobs with new job opportunities

iv. Participating Organisms

- United Nations Sustainable Development Group
- Alibaba (Company)
- Amazon (Company
- Uber (Company)
- Japan
- South Korea

v. Guiding Questions

1. What is your country's standpoint in terms of automation and the mass replacement of jobs?
2. Has your country put into practice any laws regarding automation?
3. If automation were to be put into practice even more than it already is would your country be heavily affected?
4. Has your country's industry has been a victim to the automation of jobs?
5. How can rapid tech change impulse the achievement of SDGs?
6. Is your country doing anything to supply for what has become obsolete amidst the change?
7. Does your country impulse technological development or work against it?
8. What are your country's employment policies?
9. What is the unemployment index in your country?

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4. Topic 1: *The Use of Genetic Engineering for the Alteration of Physical Traits in Humans*

i. History/Context

Since the dawn of time humans have been unwittingly changing their genetic code, as well as that of organisms around them. Hominids originally tamed wolves and bred them according to their preferred characteristics, whilst more advanced humans grew plants that exclusively gave our species the most fruit. Humans have always used methods to ensure that only the strongest and most useful animals will breed. Selective breeding is considered to be genetic modification because it alters the course of nature.

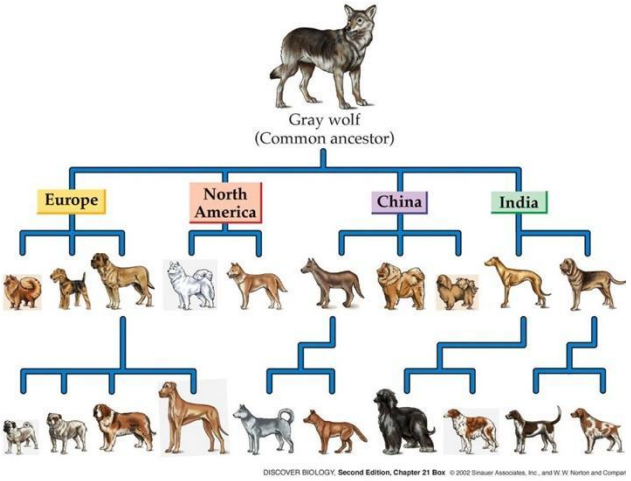

Figure 2: Selective Breeding from Gray Wolf to House Dogs

What we now know as Genetic Engineering (the direct manipulation of an organism's genetic information using certain techniques) is fairly new and began in the 1970s. In 1972, a scientist called Paul Berg used restriction enzymes and DNA ligases to combine DNA from the monkey virus SV40 with that of the lambda virus. This was one of the first cases of Genetic Engineering using biotechnology. Then, in 1974 Rudolf Jaenisch created a transgenic (containing foreign DNA) mouse by introducing a genotype into its embryo, making it the world's first transgenic animal.

Regulations began in 1975, when the Asilomar Conference in California discussed the hazards of biotechnology and recommended a set of guidelines regarding the use of genetic technology and any products resulting from that technology. Then in 1982, the US Office of Science and Technology (OSTP) was created to develop mechanisms to regulate the developing genetic technology. These offices are also responsible for preventing the release of these altered organisms into the wild. However, it wasn't until 1984 that the technology was implemented in medicine, when mice were created with an extra oncogene that predisposed them to cancer cells forming in certain parts of their

body. More recently, in 2007, parasites that commonly cause disease in corn plants were edited and, using MicroRNA, the codon that spread such illnesses was eliminated, resulting in healthy crops without the need to use pesticides.

Genetic engineering soon turned into a business, and commercialization began in 1976, when Genentech was founded by Herbert Boyer and Robert Swanson. Genentech initially altered the E. coli bacteria by inserting the protein somatostatin, but after the US Supreme Court ruled that genetically altered life could be patented (1980), Genentech started manufacturing insulin produced by the edited E. coli bacteria, branded *Humulin*. In 1982, *Humulin* was approved for release by the Food and Drug Administration. In 1987, Advanced Genetic Sciences released a bacterium (*P. syringae*) that was edited to grant frost immunity to plants, and this became the first genetically modified organism to be released into the environment. Genetic modification in food production and consumables was approved in 1988 by the US Food and Drug Administration. The first genetically-altered consumable was cheese that was produced without the enzyme complex rennet found in cows, but with chymosin that was produced in a laboratory. Afterwards came various types of tobacco (1992), tomatoes that had longer shelf-lives and stronger resistance to cold (1994), and potatoes that produced their own herbicide through toxins (1995). *"In 1996 a total of 35 approvals had been granted to commercially grow 8 transgenic crops and one flower crop (carnation), with 8 different traits in 6 countries plus the EU."* (James, Clive {1996}. "Global Review of the Field Testing and Commercialization of Transgenic Plants: 1986 to 1995")

CRISPR

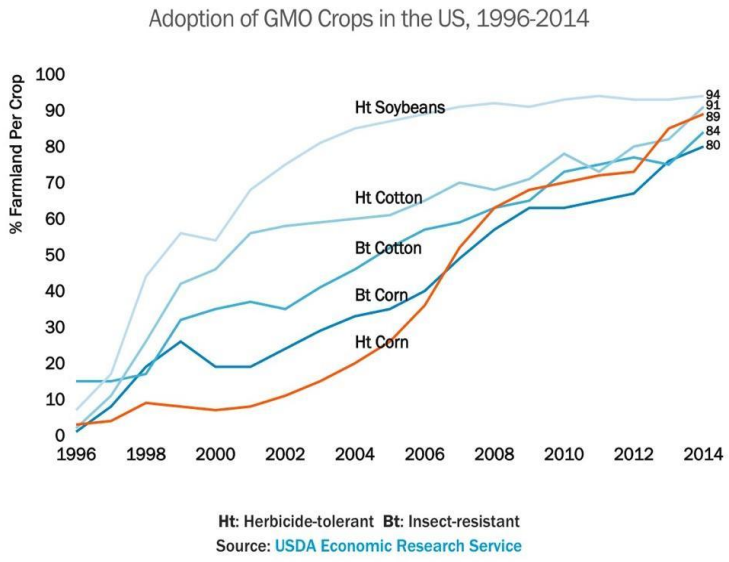

Figure 3: GMO growth in the US 1996-2014

ii. Current Situation

As of today, two types of genetic modification have been identified by experts, those being, “somatic genetic modification” and “germline genetic modification.” Both of these consist of the physical manipulation of the human genome, but otherwise are very different. Somatic genetic modification changes the genes in some of the cells of an existing, already developed, person, typically to end or diminish a medical condition. These gene therapy techniques are now being implemented in clinical practice and are available, but only for a few conditions, and at a very high cost. On the other hand, germline genetic modification would change the genes in early embryos and gametes. Often referred to as “gene editing for reproduction,” these alterations would appear in every cell of the person who developed from that gamete or embryo, and also in all coming generations. Germline editing is regarded by many experts as unethical, unsafe, and socially unacceptable and is strictly regulated or prohibited in most countries. *“Using germline editing for reproduction is prohibited by law in more than 40 countries and by a binding international treaty of the Council of Europe.”* (Center for Genetics and Society).

China is one of the few countries that has loose policies regarding germline editing and overall genetic tampering. Due to this, in November 2018, a scientist named He Jiankui announced he had edited the genes of twin baby girls who had then been brought to term. The experiment of Dr. Jiankui caused a huge debate in many nations, and he was condemned for his actions by many groups and individuals. The debate about Dr. Jiankui’s experiment and overall germline editing is still ongoing; one side believes that it is correct to try to develop disease-free humans, whilst the other opinion is that genetic engineering could turn humanity into a market-based form of eugenics (the science of improving a population by controlled breeding to increase the occurrence of desirable heritable characteristics) where the wealthiest are fitter for our environment. This means that if only the wealthy have access to creating perfect humans then, over the course of time, those “perfect humans” might outlive normal humans and create a society where only the rich are not only economically superior, but also anatomically superior.

Figure 4: Dr. He Jiankui

Recent genetically edited organisms that have been made accessible to the public are: the AquAdvantage salmon in 2015, which is transformed with a growth hormone-regulating gene, enabling it to grow year-round instead of only during spring and summer; the GloFish, a Zebra fish with a fluorescent gene

added that allows it to glow in the dark under ultraviolet light for recreational purposes; mosquitoes created by Oxitec that carry a “self-limiting gene” that prevents males from reaching adulthood and reproducing; cows in Argentina, which have successfully been edited to produce proteins lacking in cow’s milk and thus make cow’s milk a replacement for mother’s milk consumed by infants.

Many dystopias (an undesirable or frightening society) are the result of humans “playing god” whether on machinery, businesses or on themselves. The risk of “playing god” is one of the strongest arguments used today to counter genetic editing. The argument is based on the idea of natural human ambition and of people’s desire to always want more. It makes allusion to the Greek myth of Daedalus and Icarus, where both were flying with wings made of wax and Icarus flew too high, and close to the sun, so his wings melted, and he fell to his death. The analogy is that if we tamper too much with genetics and nature, at some point we are bound to mistake a codon which could lead to the creation of a pathogen so perilous that it could result in the Earth’s sixth mass extinction.

In recent years, designer babies have become a widely-discussed subject. Designer babies are based on the alteration of physical human traits while in the embryonic stage, according to the parent’s choice. If a mother and father wish to have a baby with blue eyes and brown hair, through germline editing it can theoretically be achieved; many people today, against experts’ warnings about editing, are willing to pay in order to create a perfect child. If the possibility to edit your offspring is made accessible to the public, we have to keep in mind that it will be a very expensive process and thus only the wealthy would have the chance to create better offspring.

Currently, CRISPR technology (gene editing) in humans is targeting removing dangerous genomes and replacing them with one unaffected codon. It is extremely hard to locate a gene on a human genome and if as much as one extra nitrogenous base is cut off the human genome, it could create a chain reaction and spark anatomic malfunctions that could range from unknown diseases, to blindness or even spontaneous death of the embryo. Not only this, but if embryos predisposed to cancer are treated with CRISPR, then all would have the same anti-cancer codon in their gene, making them weaker towards other illnesses because of their shared DNA.

Darwin defined evolution as survival of the fittest, if human germline modification is made available, we might encounter ourselves in a world where humans play god.

iii. Key points of the debate

- Changes to social hierarchy when CRISPR is made available
- Environmental consequences of the use of CRISPR
- Impact of the use of genetic engineering on a global sustainable development
- Unbalance in natural order
- World functioning under Eugenics
- Guaranteeing germline therapy to all or prohibiting genetic procedures to all
- Regulating usage of Genetic Engineering on another organism
- Global legislation on genetic modification
- If it is implemented should genetic engineering be private or public?

iv. Participating Organisms

- China
- CRISPR Therapeutics
- United Kingdom
- Southern University of Science and Technology (China)
- He Jiankui

v. Guiding Questions

1. How is genetic engineering being used in your country at the moment (such as GMOs, animal cloning, human genetic engineering)?
2. What is your country's position on the moral implications of genetic engineering being able to alter physical traits?
3. What genetic engineering is being developed in your country, if any?
4. How can we assure that this will not create a discrepancy between social classes in your country? Will a regulation be imposed?
5. Will there be limitations of permitted Genetic Modification?

6. What are the potential problems of biological procedures that change the genetic makeup of humans?

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5. Topic 2: *Global Regulations of Artificial Intelligence in the Armed Forces*

i. History/Context:

Ever since the first civilizations, artificial intelligence (AI) has been a concept that has interested people, although not in the way that many think of it; the Ancient Greek myths described the Golden Statues of Hephaestus, which were metallic statues who would come alive and think and act like humans. In Greek mythology, Hephaestus was the craftsman god, a being so powerful in the arts and crafts that he was able to create live machines which would come to life and experience consciousness.

Recently, humans have obtained similar status to Hephaestus, since we are now capable of artificially creating an intelligent conscious being, with the capability of making decisions by itself, as well as interacting with other beings. The first true concepts of artificial intelligence came into being in the post-war period of the 1950s, when multiple gifted scientists, from many different backgrounds, got together to discuss the creation of an artificial brain through computers and electronic devices. This meeting came to be called the Dartmouth Workshop (notice, this was prior to the invention of the transistor, a revolutionary electronic component which would scale down electronic devices by magnitudes).

During this period (1950-1976), many prototypes for AI were able to solve algebra and geometry problems, as well as to learn different languages; at this point it was believed that a full AI would be developed by 1970 because many government agencies, such as DARPA (Defense Advanced Research Projects Agency), poured thousands of dollars into this new technology. By 1960, AI was advancing at an incredible rate, where the computer systems were able to simulate small worlds and entities, learn concepts such as “doors” and “houses”, and apply the “rule of thumb” when solving mathematical problems.

Through 1976 to 1980, AI progress came to a relative halt, due to the fact that major agencies cut funding for these programs after being heavily disappointed with the results. From 1980 to recent years, AI has been progressing at a fairly quick rate, but at this point many trials of creating a fully independent artificial consciousness have been executed, but so far all have failed.

ii. Current Situation

Up to now, many prototypes for artificial intelligence have been developed. We now encounter ourselves in a new age of AI, an age in which prototypes have already been

developed and full completion is on its way. For many global figures and ordinary people around the world this poses a major threat to human civilization; they worry that AI will be put in control of weapons of mass destruction or sensitive personal data. Such a powerful entity, with virtually no restrictions, and access to a vast range of information has been said to be highly risky for the entire human race.

"The development of full artificial intelligence could spell the end of the human race."

"Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded."

-Professor Stephen Hawking, 2014

Professor Stephen Hawking addressing a possible global threat to the human species due to artificial intelligence.

Issues.org states that many well-respected global figures believe AI will open the door to a new type of warfare, capable of targeting particular individuals and groups of people autonomously.

Historically speaking, humans have always tried to weaponize any new type of technology available to them, from aircrafts to submarines, and AI is no exception. Already many governments, such as the United States, have openly admitted to implementing AI in their arsenal and training grounds. Prominent global figures, such as Elon Musk, have already signed a letter urging the United Nations to impose regulations on AI; this is because of the threat they see in an autonomous killing machine, capable of targeting individuals or masses of civilians. If the development of AI continues to advance at its current rate with no regulations, there is no doubt that eventually these machines will be created, and the ability to force a nation under submission or to execute a mass genocide will be available to a much larger number of governments. The idea of playing god by creating a being which can decide who lives and who doesn't is an idea that has concerned thousands worldwide, and this is no surprise, since a weapon system of this scale and with this much power could easily be more deadly than any other weapon system in history, deadlier even than nuclear and biological weapons.

Similar to the Treaty on the Non-Proliferation of Nuclear Weapons and a ban on biological and chemical weapons, a Treaty on the Non-Proliferation of Weaponized Artificial Intelligence is an idea that has been proposed by many on the global stage. Treaties such as the previously mentioned have already proven to be effective, taking into consideration that over 3 states including, South Africa, Argentina and Brazil all dropped their nuclear programs after the Treaty on the Non-Proliferation of Nuclear Weapons was signed. A treaty such as the one being proposed would greatly reduce the risk of a major arms race and a military standoff between two nations as seen in the Cold

War, when the USA and Russia raced to produce the most lethal nuclear weapons of mass destruction.

Despite a possible treaty banning some sort of autonomy in weapons, it should be clear that it is very difficult to clearly define autonomy; some autonomous weapons will remain in military circulation, since currently multiple weapons already have AI embedded in their systems. These include military drones, which autonomously detect patterns of movement deciding when, where, and how to fire, and other military devices which have algorithms encoded in them to assist military personnel in combat. Currently, all of these semi-autonomous weapons require supervision and orders from military personnel, which means they do not have the power to decide who lives and who dies.

Figure 5: Unmanned Air Vehicle, Military Drone

iii. Key points of the debate

- Putting trust in machinery for complex tasks
- The new market of Artificial Intelligence
- Creation of a power gap between those that employ AI and those who don't
- Super Robots and machinery that could surpass humans
- Possible Restrictions for AI
- Mitigate power gaps between nations

iv. Participating Organisms

- AI Now (Group)
- Amazon (Company)
- Microsoft (Company)
- Foundation for Responsible Robotics (Group)

- Intel (Company)
- Facebook (Company)

v. Guiding Questions

1. In what way is artificial intelligence being used in your country?
2. How might private information be at risk when exposed to AI?
3. Should AI be allowed to make decisions over human life in times of conflict?
4. How will the military gap between developed and developing countries be affected by AI?
5. Who should be in charge of regulating the use of AI in the military?

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