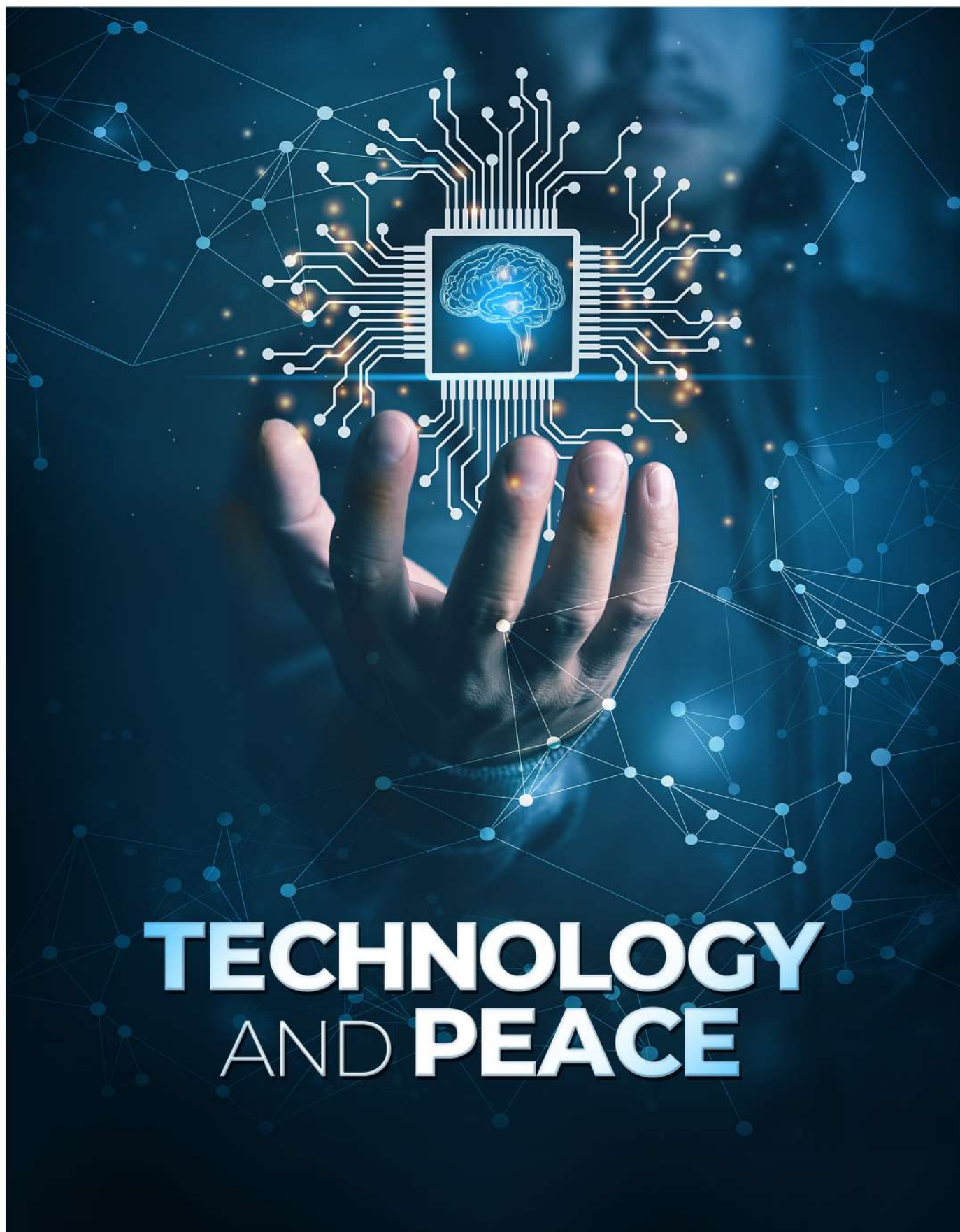


# Pax Lumina

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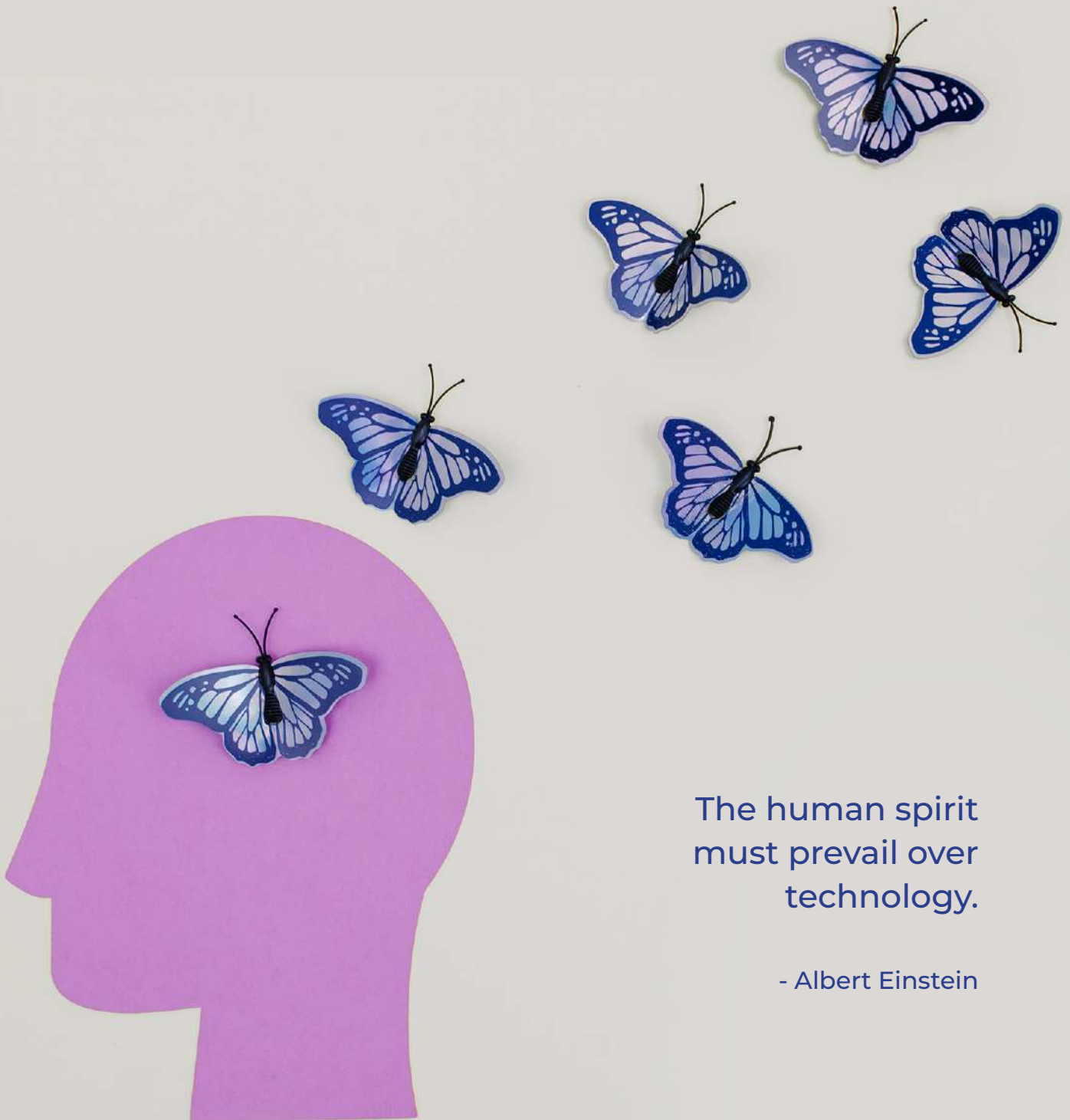
A Quest for Peace and Reconciliation



## TECHNOLOGY AND PEACE

# PaxLumina

A Quest for Peace and Reconciliation



The human spirit  
must prevail over  
technology.

- Albert Einstein

Vol. 04 | No. 01 | January 2023

# Pax Lumina

A Quest for Peace and Reconciliation

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fostering peace with a multi-pronged approach.



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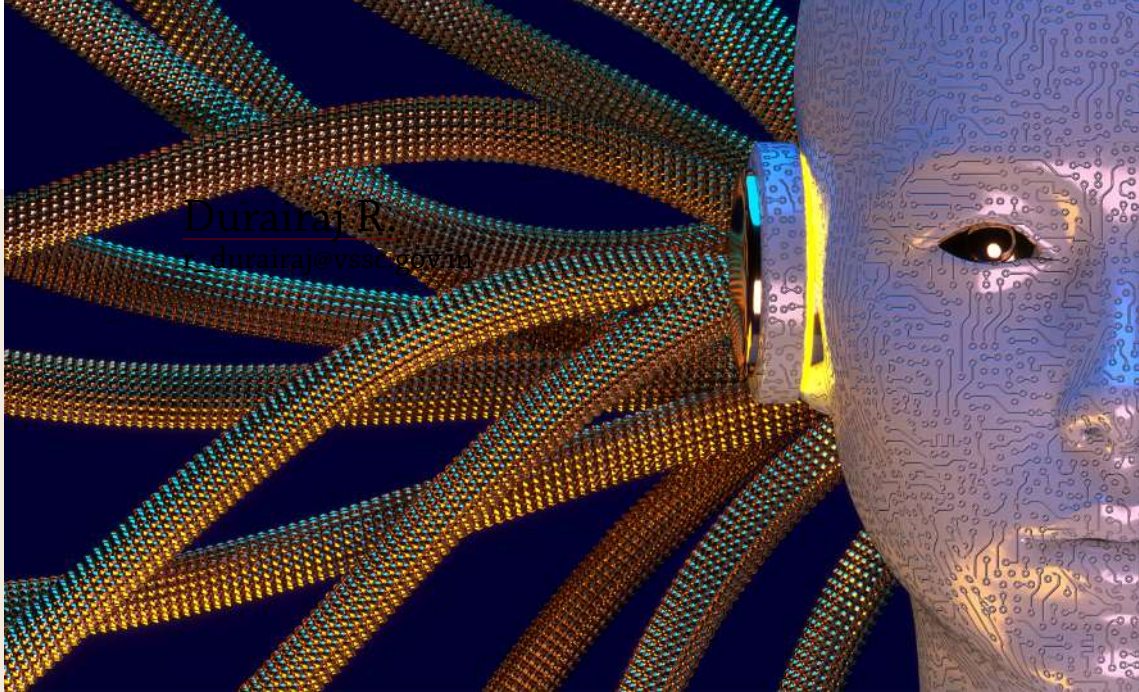


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**Pax Lumina**  
A Quest for Peace and Reconciliation







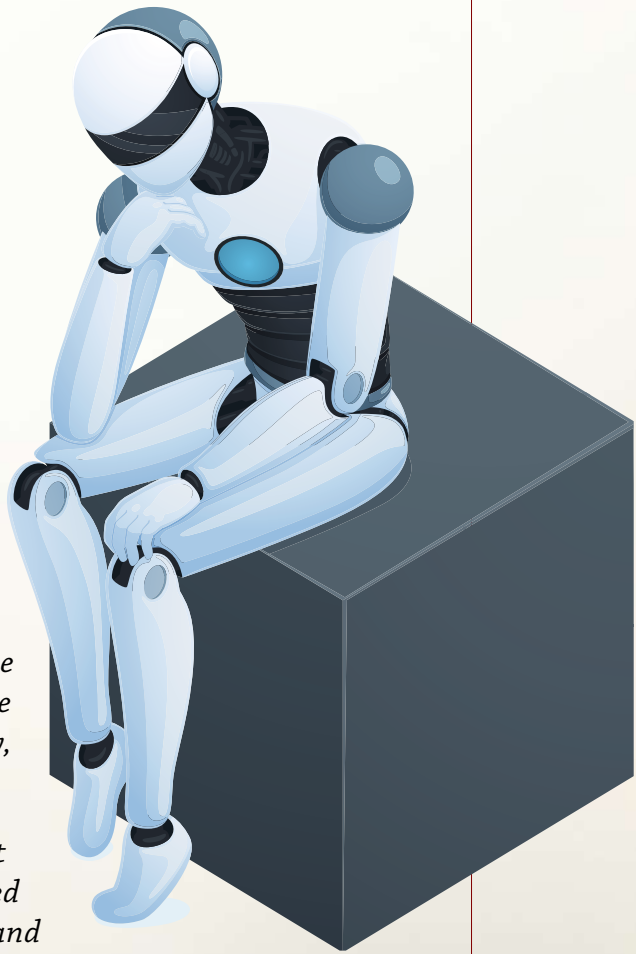
# TECHNOLOGY and PEACE

## Editorial

**J**acob Bronowski, the chronicler of science, says the ability of human beings to oppose the thumb to the forefinger led to the first major step in human evolution. It simply means that the ability to hold and manipulate things led to the creation of tools with flint and iron initially, but later, with all sorts of matter and energy. Even at this stage, humans must have realised that these tools have another potential use, not a peaceful one, in the guise of protecting oneself and others. Initially, animals, then other humans, can be attacked and killed. This narrative continues even today. The tool is technology, the enemy is the other and the aim is the protection of the self and whatever is considered as one's own, including a host of extended identities valuable to oneself, but abominable in others. One now wonders whether what Bronowski considered as the first step in 'The Ascent of Man' viz., the invention of technology contains the seeds of destruction of men and women, animals and plants, rivers and mountains and all other existences. This is the question we hope to explore in this issue of Pax Lumina.

Our authors have differing views and perspectives since the topic is complex. Moreover, we are not at all prescriptive about an agenda for the magazine because we have none, other than peace and tolerance among all. Yet, we discerned a concern amongst our writers that without a moral prerogative chosen by each, out of one's own free will, how this journey will end and where is not known.

Let us take a few 'cutting-edge' technologies and see where they lead us and why such great effort is being deployed to develop them. For example, consider self-driving vehicles. I am writing this from Kochi, Kerala and mostly I stay indoors dreading the traffic outside. Will the situation improve once self-driving cars replace everything else including the pedestrians on the roads? In fact, This is only the first step. The final aim, as I am told, is to develop machines with autonomy and minds of their own. Are the more than seven billion people on this earth not supplying sufficient thinking



*for the planet? I haven't touched on the social trauma of unemployment and the resultant suffering, directly or indirectly, being inflicted on those who get sacked.*

*There are certain attributes concomitant with technology and hence considered desirable-speed, reach, complexity, and incomprehensibility. What one cannot understand generates awe, wonder and even admiration. The next stage is worship and the deification of technology. At this juncture, reason fails humans, and values get replaced by expediency. The primordial fear of the other spreads to all existing identities. And new identities are even created. Unfortunately, this is the new AI, an intelligence devoid of life and all its generative characteristics. There are many supporting factors for this surreal march of technology. Economics may be a major one. There are other social and cultural factors too. One wonders whether technology has finally got divorced from science. Her simple aim is knowledge-seeking and welded now to more practical and tangible results: power, money and violence.*

*There are many other aspects of technology where the inherent sharp edge of violence is apparent. For example, the use of technology to control and subjugate other regions, peoples, cultures and nature itself. Then, there is the untouchability shown by practitioners of dominant (mostly Western) technologies, especially regarding medical practices to indigenous ways of living and healing. Needless to say, all this runs on the engine of money, greed and violence.*

*Our writers have thought and written about these matters with the hope of finding some options, probably more inefficient and slower, but more peaceful. Because what everyone needs is peace.*

*Jacob Thomas*



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*Pax Lumina 4(1) / 2023 / 08-12*

# TECHNOLOGY and PEACE EDUCATION in COLOMBIA



**T**his contribution presents two Colombian experiences of the use of technology in peacebuilding training programmes. First, it briefly describes some relations between science, technology, and peace; then, it shows the relevance of non-violent management of conflicts; finally, it illustrates two cases in which technology has helped overcome distance to share experiences on peace-building between isolated grassroots communities.

## 1. Science, Technology, and Peace

Relationships between modern science and technology configure a complex interaction that has transformed the lives of many people in the Western world and beyond. Some practical discoveries aim at theoretical reflection to deepen the understanding of reality while several new theories open the space to innovative applications of scientific knowledge. If such interaction improves the quality of human life and promotes other kinds of life on earth, that does not depend merely on science and technology.

Flourishing life in its different shapes needs a peaceful environment. This would be possible if science and technology are oriented in the right direction by wisdom. Both science and technology are necessary for humanity to overcome natural disasters and to control them.

The Greek myth of Prometheus, as told by Protagoras in Plato's eponymous dialogue,

highlights the importance of moral and political virtues to guarantee the appropriate use of instrumental power. The gods have assigned Prometheus the duty to provide mortal beings with some natural qualities to survive and thrive, but he delegated this task to his brother Epimetheus.

As Prometheus figured out that his brother had accomplished the work with all other living species, but had forgotten humankind, he stole the fire and the technical power from the workshop of Athena and Hephaistos and granted them to humans. In such a way, the titan tried to help undefended human beings in the absence of already non-existent natural qualities given to the other species.

Provided with language, food, clothing, and housing humankind solved practical problems but also arrived on the brink of self-destruction as they committed injustice against one another because of their lack of political and moral wisdom. Then Zeus sent Hermes to give them the virtues of shame and justice preventing human extinction.

This ancient Greek narrative evidenced how, beyond technical skills, peace and life on earth depends on the human capacity to maintain accurate relations with other beings and with nature. Conditions for human progress and the flourishing of different kinds of life on earth are moral and political, not scientific, or technological.

## 2. Conflict, Violence, and Peace Education

Conflict is an intrinsic element of human life. Differing interests, inequitable distribution of resources, asymmetry of forces, a rush

**S**cience and technology can help societies in managing conflicts by alternative means. Peaceful resolution of conflicts is possible by considering scientific tools, as well as grassroots communities' knowledge which can be widespread in society through technological mediation.



for recognition, as well as other factors of social interaction generate conflicts. Some of the ways to handle conflicts can result in social changes and renew the values of a society by transforming traditional and indulgent forms that justify exclusion or discrimination. There are other ways to manage conflicts to maintain the status quo or to reinforce the opposite identity of the conflicting groups.

Even though in both cases violence could be a major instrument, not all the ways to handle conflicts imply the use of violence. Science and technology can help societies in managing conflicts by alternative means. Peaceful resolution of conflicts is possible by considering scientific tools as well as grassroots communities' knowledge which can be widespread in society through technological mediation.

Violence can be understood in terms of biological factors, but human violence also has a deliberated origin, related to a particular way to handle conflicts. This violence appears when an individual wants to subdue another, when a group imposes its interests on those of another, or when humans destructively subordinate other natural beings forgetting they are also part of the unique cosmos.

In some societies, intergenerational dynamics have turned some violent behaviours into acceptable practices to fight for some rights or to maintain the subjugation of marginalised sectors and prevent their access to justice.

Violence is acquired through social learning. So, it is very important to reduce it by using the appropriate science and technology to promote life and peace. That is possible through the non-violent handling of conflicts as well as the dissemination of unknown local experiences on peacebuilding.

In Colombian society, some marginalised groups have resorted to violent actions to get what they know is their right to have access to, but wealthy individuals and groups have also used violence to block these affirmative actions. In some isolated territories, where there is no other presence of the State but the military, grassroots communities make significant peacebuilding efforts that remain undisclosed.

### **3. Technology at the service of Peace Education**

Armed conflict has been present throughout Colombian history. Beyond truces, it will only disappear if unsatisfied social sectors can broaden their opportunities to get a

*Pontifical Xavierian University*



higher quality of life and affluent groups see this change as an opportunity to gain peace for all. That is the importance of moving from peace-making among armed groups to peacebuilding with the participation of civil society as a whole.

Frequently social media and the Internet turn violence into a massive consumption product by sensationalism or promote disinformation blaming certain groups as originators of violence and absolving other violent groups. Nevertheless, technology can also help to train people in peacebuilding skills by sharing peace education experiences carried out by grassroots communities.

This is the case of the cooperation between the German government, the Pontifical Xavierian University (Pontificia Universidad Javeriana), the Centre for Research and Popular Education–Peace Program (CINEP-PPP), and the Paulo Freire Institute (Berlin). Throughout 2009 and 2010, they jointly designed a course in peace education for community leaders and popular educators from Colombia and Central America.

The course leaned on the dialogue between scholarly knowledge and grassroots communities' knowledge about peacebuilding. Since December 2010, through a blended learning methodology, approximately 300 people from different regions of Colombia and Central America have strengthened their capabilities in peacebuilding.

The first two groups were composed of participants from Guatemala, El Salvador, Honduras, Nicaragua, and Colombia. Since

2016, the José Simeón Cañas Central American University in El Salvador was in charge of offering the course in Central America, while the Pontifical Xavierian University in Bogota continued doing the same with the CINEP/PPP and the Paulo Freire Institute in Bogota.

The blended learning model combines present sessions with remote sessions using technological tools. Participants from isolated regions share their local experiences in peacebuilding among themselves and with the members of the interinstitutional team.

After some days of a face-to-face starting stage, during approximately seven months, participants develop some virtual activities for about five subjects by using a German technological educational platform.



**T**he blended learning model combines present sessions with remote sessions using technological tools. **Participants from isolated regions share their local experiences in peace-building among themselves and with the members of the interinstitutional team.**



**P**articipants must carry out a 'pedagogical action' in their regions during the remote phase. **This is a peace-building exercise that involves the grassroots communities and organisations with which participants usually work in their regions.**



These subjects include the culture of peace and meaning of life; identities in peace education; communication, conflict transformation, and memory; context for peace in the region; as well as justice, society, and good living.

Participants must carry out a 'pedagogical action' in their regions during the remote phase. This is a peace-building exercise that involves the grassroots communities and organisations with which participants usually work in their regions. The idea is to improve the processes that participants are already developing in their territories using the tools provided by the course as well as the shared experiences of others.

At the end of the course, during a final five-day face-to-face stage, the participants present the results of their pedagogical action to account for the learning achieved during the remote phase and to show the transformation brought about by the course. The greatest achievement is the mutual learning from the participant's experiences on peacebuilding in their distant and isolated territories.

Another experience is taking place now between the Pontifical Xavierian University (Pontificia Universidad Javeriana) and the Institute for Peacebuilding Foundation in Bogotá. In a common effort, these two Colombian institutions have designed a remote course for the members of the Territorial Councils for Peace, Reconciliation, and Coexistence.

This is a training programme aimed at strengthening the capacities of the members of these territorial councils. The starting line

is the dialogue between scholarly knowledge and grassroots communities' knowledge about peace-building. The course was launched during the 35th National Week for Peace in September 2022.

This new training programme is concerned with topics such as the rights of victims of the armed conflict, especially women and people with non-hegemonic sexualities; voluntary crop substitution; environmental peace; alternative methods for conflict management; human rights and international humanitarian law; and regional dialogues for peacebuilding in Colombian territories.

## **Conclusion**

Shame and justice are two virtues that can serve humanity to manage conflicts looking for a peaceful environment. This is helpful to the flourishing of human life and other kinds of life on earth. Despite the generalised use of instrumental tools in communication to promote violence through sensationalism and disinformation, peace education is a field in which technology can serve life and peace by promoting and making visible grassroots communities' experiences in peacebuilding.

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# ARTIFICIAL INTELLIGENCE in EDUCATION

## A Challenging Opportunity



**T**he human mind and the mind of the machine are different. This statement is immediate and obvious. **But, on the other hand, its meaning is profound and has important implications for the relationship between technology and the world of human beings.**



**T**o ask about education today is to ask about what kind of society we desire. In the current complex and fast-paced world, the incorporation of technology is both an opportunity and a challenge. Big Data and Analytics are today redefining almost all areas of human activity, and specifically education.

The key question is this: what scope these technological models have on our forms of interaction and our view of the human being? Artificial Intelligence (AI) in education is an important area of reflection given that it not only shapes the thinking, action and character of individuals throughout their lives but also forms part of the human rights framework.

In educational production, we increasingly encounter metaphors such as ‘the mind as a computer’, ‘knowledge as data’, and ‘learning as data analysis’. I have chosen three scenarios where these metaphors allow us to discern what we seek and what direction we want to take.

### **Algorithmic Intelligence**

With other colleagues, I have recently carried out research on algorithmic thinking in the field of mathematics education with university

students. The aim was to describe this type of algorithmic thinking in its connection to mathematical thinking, without reducing it in learning situations to a computational understanding.

An interesting question that arises is the following: which aspects of mathematical activity can computers duplicate and which cannot be duplicated by machines?

Success in isolating some of these features is important because of its implications for other questions such as whether intelligence is algorithmic. What is creativity and what is its relationship to deductive thinking? And even, what is the nature of the mind?

This view of intelligence is not limited to the way we proceed in the context of artificial intelligence, but is common throughout the field of cognitive science, becoming operational in the way we study the mind and human learning.

The human mind and the mind of the machine are different. This statement is immediate and obvious. But, on the other hand, its meaning is profound and has important implications for the relationship between technology and the world of human beings.

The challenge in the educational space is what counts as intelligence, learning and creativity and their simulations. In this search, we will encounter the limits of machine intelligence, thus preserving a place for what is irreducibly human.

Our current expectations of computers and algorithmic thinking arise from elements, such as formalism, and the ancient 'dream of reason'. This is a pillar of our cultural heritage since the time of the ancient Greeks.

As a society, we are reluctant to give up this dream thinking that all our problems can be eliminated by computer technology. The dream expressed by formalism has been transformed into today's dreams of AI. These dreams have in common the faith that it is possible to eliminate ambiguity and, therefore, a certain form of the living complexity inherent in human life.

### **Personal Trust in the Educational Relationship**

To approach AI in education is not only to see it as a design science in which materials and interventions are developed to improve educational outcomes, but as a form of applied philosophy in which challenges are identified and situated in a broader human context, and fundamental theories are developed.

Along these lines, it seems pertinent to ask questions: what do we want to automate, accelerate, and optimise in education? What are we willing to eliminate from current practices? How do the purposes we promote in education work individually and collectively?

In doing so, we draw attention to the fact that the way we design and deploy AI in education and the ethical questions we ask in this context are not separate from the questions about values and moral principles. So, an underlying conception of the human being that we must ask in the education system itself is to know how AI can serve these systems.

In thinking about current evaluation systems in university classrooms, I have been particularly concerned about plagiarism detection software; because of the scope of its instrumental use and its neglect of broader ethical or educational arguments.

While it may seem obvious to accept that the Internet has changed how knowledge and text can be managed, we have perhaps been less aware of how this kind of online software has positioned itself to change the relationships between students, teachers, and common assessment practices.

This software presents itself, in its advertising, as the leader to 'empower students to do their best, original work. Superpower your assessment. Give instructors tools that streamline manual grading processes, so they can spend more time teaching' (Turnitin®, 2022).

Some authors such as McArthur (2018) have questioned these companies' use of student work and consideration of intellectual property, but, for the case at hand, I would like to highlight how it affects teacher-student interaction based on confidence.

consider the pedagogical situation as a social reality based on confidence, and mutual trust between persons, their activities and instruments. **Yet, with these uses, it seems that distrust is installed on an industrialised scale, and the lack of confidence is integrated into the culture surrounding educational interaction.**





I consider the pedagogical situation as a social reality based on confidence, and mutual trust between persons, their activities and instruments. Yet, with these uses, it seems that distrust is installed on an industrialised scale, and the lack of confidence is integrated into the culture surrounding educational interaction.

It is not that I naively believe that there are no students who copy or use inappropriate methods to gain an advantage over others, but how the detection and avoidance of plagiarism have become an instrumentalised industry which affects the relationship between teacher, student and academic training.

Confidence is undermined in two ways. First, it seems clear that teachers do not trust students and, second, it breaks the foundation of an honest relationship because it creates a false appreciation that these are the practices of good academic writing.

The assessment offers us a propitious moment of developing students' self-confidence through their assessed work. Choosing an easy, technocratic solution to the problem of not developing academic work well, ignores the nature and importance of the relationships we build with students in our teaching-learning interactions.

## **The Truth is in the Algorithms**

A critical approach to mass data management is given by Mathematician Cathy O'Neil in her book, 'Weapons of Math Destruction'. In it, she describes how algorithms rule our lives (and tend to underestimate the underprivileged). She emphasises how we live in the age of algorithms, where increasingly, the decisions that affect our lives - where to go to school, whether or not we can get a loan or how much we pay for our health insurance - are made not by humans, but by mathematical models.

One of the most concerning issues is how they evaluate or classify us – something that is not visible to us. These hidden models run our lives from the time we start primary school until we retire. The models are present in countless aspects of our personal and professional lives. They control students' academic results, rank curricula vitae, evaluate workers, determine voters, monitor our health, and so on.

These algorithms do not describe reality as it is, but modify it, expanding or limiting our opportunities in life. "These algorithms are destructive and undermine their original purpose, such as improving the education system, for example, under quality systems," she said.

**A**lthough there is a continuous call for the ethical dimension of the people in charge of modelling and building these algorithms to take more responsibility for how these models are being used, the current circumstances make it clear that it is our responsibility to ask the right questions, to be better informed to understand how the mathematical models work.



Although there is a continuous call for the ethical dimension of the people in charge of modelling and building these algorithms to take more responsibility for how these models are being used, the current circumstances make it clear that it is our responsibility to ask the right questions, to be better informed to understand how the mathematical models work.

It seems pertinent to consider critically what a model is and what can turn a model into a weapon of mathematical destruction. As Dani Rodrik explains in his book, 'Economics Rules', a simple way to describe models is to say that they are like fables. That is, little stories inhabited by a few characters whose behaviour and interaction allow us to derive a lesson (moral) that social scientists often use because:

- 1) They allow us to refine our intuitions.
- 2) They allow us to accumulate knowledge.
- 3) They allow us to generate knowledge based on shared knowledge standards.

O'Neil's book reviews this dark side of Big Data in different fields like education, justice, marketing, and advertising.

The three distinctive features with which O'Neil characterises weapons of mathematical

destruction are: opacity (a model that works like a black box); scale (a model can be perfectly innocuous on a small scale, but very harmful when we increase its size); the third property is that it causes damage and this tends to be disproportionately concentrated in the most vulnerable sectors of the population.

In other words, the distribution of damage is not very wide. The distribution of damage is disproportionate: the distribution of harm is inequitable (she gives the example of crime analysis, which does not focus on individuals but analyses geographical patterns of crime).

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# PEACE, SCIENCE and TECHNOLOGY



**P**ace and science are complicated terms. Peace in international situations gets strait-jacketed between safety, security, surveillance and sustainability. **Yet, none of these terms spells peace in an ordinary language dichotomy.**



**T**he world of peace, in ordinary language terms, is a polysemic one, embodying a festival of many meanings. It evokes both the poetics of non-violence and the phenomenology of everydayness. However, peace as a technical term is fraught with contradiction. One sees it in the repeated encounter between the philosopher and the storyteller. The latter's narrative often turns from parable to riddle.

This storyteller begins to think of three scientists. The first was a scientist, a venerable man, I met in Hiroshima. He bowed low before me and the audience in deep apology. He then said that as a student he worked in Enrico Fermi's laboratory. A piece of his work eventually completed the bomb that was dropped on Hiroshima. Since then, he has been atoning for his mistake.

Second, think of Fritz Haber, the German scientist who synthesised ammonia to manufacture synthetic fertilisers to improve the productivity of agriculture. Ironically, ammonia did more to help the defence establishment, accelerating the pace of World War 1. Haber committed suicide in distress.

The third story is about Robert Oppenheimer, Director of the Los Alamos laboratories. When the bomb was tested, Oppenheimer, citing the Gita, proclaimed that he had sinned. A few months later, during the Congressional investigation, he discussed the atom bomb as a technical answer to a technical question. Can the technological imperative explain away motives in science? Does it imply an ought or are they filters to this process?

The storyteller looked ironically and added to other fragments.



*Ramuindo Pannikar*

*Norman Borlaug*

Kissinger got the Nobel for Peace yet this man advocated the elimination of Africa through triage claiming that African States were failed States. The problems become more acute when you think of Norman Borlaug. He got the Nobel for peace for his research on the Green revolution. Yet, the Green revolution is today a monstrosity of monoculture. Can technology which creates a monoculture of the mind be a peace-generating mechanism?

Peace and science are complicated terms. Peace in international situations gets strait-jacketed between safety, security, surveillance and sustainability. Yet, none of these terms spells peace in an ordinary language dichotomy. Today, science is integrated into technology creating both 'BIG science' and the military-industrial corporate complex. Yet, there is a naiveté about technology which is seen as a cornucopia for peace. How does one correct this?

One begins by examining the basic civics of technology, the innovation chain. The innovation chain links science and technology and scales up an invention into a technological product. Reading the innovation chain, one realises science improves itself as a form of violence both epistemically as a method and metaphysics and as a political economy.

**T**he logic of violence built into the technological imperative needs peace as part of a new knowledge system. **This anticipates violence and its seductive power, and creates alternative epistemologies and cosmologies.**



First, science with its roots in Judeo-Christian cosmology is hostile to nature. Nature has lost the sense of the sacred and taboo and is read as a mere commodity. Second, as C.V. Seshadri, the scientist points out, the entrogenic law of science shows that modern economics and technology have no concept of waste.

Third, science as an anthropocentric domain has no sense of the non-human which one desperately needs to create a sense of the Anthropocene. Science today is seen as a part of the national security State creating a literal panopticon around it.

But the violence of science goes further than merely triggering war. Science creates obsolescence and the triage valorising the dispensability of defeated technologies and people. To violence and triage, one can add genocide and extinction. When one species of life as flora, fauna or language disappears every fortnight, one is confronting an insidiousness of violence that goes beyond war.

Violence in that sense almost becomes a self-fulfilling prophecy within. In the current dynamics of science, the end of war does not guarantee the peace we are looking for. As Catholic theologian Ramuindo Pannikar noted, the cold war which was a lukewarm end of peace still triggered 300 wars and eliminated 300 million people.

### **How does one redo the civics of science, technology and peace?**

Of course, one needs the simple ethics of the objector, and the power of the Pugwash movement to control war. But conscientious objection has to be built into epistemic sensitivity.

A science which uses six million animals for experimentation every year in America is not a harbinger of peace. The very use of prisoners for experiments shows the need for more extensive ethics.

I remember a sad and ironic story of a cousin of mine who wanted to pursue science, but not experiments on animals. His only alternative was to pursue astronomy.

The logic of violence built into the technological imperative needs peace as part of a new knowledge system. This anticipates violence and its seductive power, and creates alternative epistemologies and cosmologies.

The challenge of the Anthropocene heralds this as man is looking for a science which treats nature as sacred. More as the Norwegian philosopher Arne Naess once suggested one has to build postulates of impotency into a source where every 'can' does not become an 'ought'.

The challenges of peace are more complex now. It has to philosophically, ethically, and sociologically control the new illness of technology. A peace which colonises technology is a counterfeit peace. One needs a dialogue between Gandhi, Linus Pauling, and J.C. Bose to create a new technology of science for peace.

Till then, one is busy in a genocidal era. Science needs new ethics and new epistemologies to proclaim the possibility of peace. In the meanwhile, as a procrastinating attempt, a howling wall should be built next to every IC to remind the world of some of the fables of technology.

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# ETHICS and SUSTAINABLE TECHNOLOGY



**W**e are witnessing incredible, mind-boggling technological growth. Our technology may be traced to modern science, which is just 400 years old and to the industrial revolution, which is less than 300 years old.

The last 100 years have brought incredible progress to science in terms of the theory of relativity and quantum mechanics. Further, the last 100 years have seen enormous technological revolutions, such as the radio, the aeroplane, the disposable razor, the air conditioner, and the vacuum cleaner.

Still more, in the last 30 years, we have experienced exponential technological growth, including the internet, smartphone, 3D printing, and self-driving cars. Thus came the fourth industrial revolution and the convergence of nanotechnology, biotechnology, information technology, and cognitive science technologies, which brought unimaginable comfort to human beings.

The latest in technological growth is Artificial Intelligence. This will affect everything in and around us. The next ten years will see its growth at warp speed. Then, in the coming 20 years, we will experience further development in biological sciences, altering the way we understand life itself.



The next 30 years will, most probably, see radical changes in neurosciences, including our self-understanding and self-identity. In short, we are experiencing incredible technological growth, which humanity could never have dreamt of, when they migrated out of Africa, about 80,000 years ago!

Till now, technology has been a great tool which humans can use to their advantage. They could use it for good or bad. But there are lurking dangers that technology will slowly become our master and dominate us. It recalls the warning of the 18-year-old Mary Shelley, who wrote her classic novel, 'Frankenstein', about 200 years ago.

In this fascinating and frightening novel, the great scientist created an unnamed monster, who took revenge on his master and killed his wife and dear ones!

## Moral and Spiritual Progress

The German philosopher Karl Jaspers refers to the axial period. This refers to broad changes in religious and philosophical thought that occurred in a variety of locations from about the 8th to the 3rd century BC. He acknowledged the revolutionary changes in the spiritual and moral consciousness of humankind.

Again, when we look at our moral side in the last 400 years, we do realise that we have made

some significant progress. Abolition of slavery, acknowledging human rights and respecting the dignity of women and LGBT communities are some of them.

Though we have been successful in focusing on the moral development of children (Piaget, Kohlberg), as a group, humans have not sufficiently grown in moral consciousness. We do not need to dwell on the harm that we do to ourselves to convince ourselves that our moral progress is not in keeping with our technological progress.

It is here that we are confronted with the dilemma posed by the great scientist Albert Einstein. "Our technological progress is like an axe in the hands of a pathological criminal," he said.

Despite our limited moral growth, as humanity, we remain pathological criminals. But the axe in our hands has been becoming more and more powerful. Thus, our ability to harm ourselves has increased manifold. Technology provides us with far-fetched power. Unless we guide this power and harness it for our well-being, we are doomed. Unless humanity behaves as morally developed adults, we are capable of destroying ourselves.



*Karl Jaspers*



*Teilhard de Chardin*

**D**espite our limited moral growth, as humanity, we remain pathological criminals. But the axe in our hands has been becoming more and more powerful. **Thus, our ability to harm ourselves has increased manifold. Technology provides us with far-fetched power. Unless we guide this power and harness it for our well-being, we are doomed.**



## **Sustainable Technology**

Addressing the 18th General Assembly of the United Nations on September 20, 1963, the then President of the USA, John F. Kennedy made a prophetic warning. “We have the power to make this the best generation of mankind in the history of the world - or make it the last,” he said. Unfortunately, this prophecy is being fulfilled, but for the worse.

Today, we do have the technology to feed everyone, provide basic health to all, to make life comfortable and convenient for every individual. We do have the means to provide the people with education, information and resources. We have incredibly fast communication techniques, unimaginable even twenty years ago. We could make ourselves the best generation, in terms of sharing resources, information, health facilities and educational capacities.

This can come out of the wisdom that human beings have gathered in the course of their long history. As *Homo sapiens* (‘wise men’) we are challenged to live in harmony and equity. We are challenged to share and grow. This comes out of maturity and wisdom, attained from practical knowledge and good judgement.

## **Wisdom Embracing Our Brothers and Sisters**

Such a life of wisdom and understanding emerges from ethical living, after achieving a higher level of moral consciousness (both individually and collectively). For this, we need secular ethics and a secular spirituality. This will inform one another and teach us to live truly as brothers and sisters in need of one another.

Such an ethic urges us to respect one another, despite our differences. It urges us to listen to each other genuinely and resolve conflicts amicably. Only then will we possess that enormous spiritual and moral power to harness the incredible power of technology at our hands.

The French palaeontologist Teilhard de Chardin is right.

“Someday, after mastering the winds, the waves, the tides and gravity, we shall harness the energies of love, and then, for the second time in the history of the world, man will have discovered fire,” he said.

The harnessing of the energy of love is a moral and spiritual accomplishment of humanity, without which we would be living the last generation.

The final warning comes from Martin Luther King Jr., the leader of the non-violent civil rights movement. “We must learn to live together as brothers (and sisters) or perish together as fools.” Or as Pope Francis will say, we are all brothers and sisters (“*Fratelli tutti*”). Our destiny, progress and humanity are based on this awareness. So, sustainable and robust technology demands a mature morality.

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# **TECHNOLOGY and PEACE in AFRICA**

## **A Paradox of Progress**



**W**ith some exceptions, African countries are doing great in technological advancement through research, development and deployment of their scientific findings. **Even though the advancement is slower as compared to other parts of the world, probably due to relatively little attention given to science on the continent, it is still promoting peace at different levels.**



## **W**hat constitutes peace in the African context?

'Peace' in Africa goes beyond the absence of wars and conflicts as would be the case in the other parts of the world. In the African context, peace should entail the eradication of poverty, the accomplishment of the fight against corruption and the unhygienic politics in African governments.

It also means the absence of social injustice towards women and children, the improvement of healthcare for all, the provision of high-quality education for children and many other issues, which affect different countries of the continent.

There cannot be peace when these factors are active at extremely high levels, as is the situation in some African countries. Peace in Africa is holistic. As a huge and diversified continent with many cultures, languages, and ways of life, the absence of a lot of concerns should be considered peace.

This is not to deny that there are parts of the continent which are experiencing physical wars, conflicts and terrorism. The Institute for Economics and Peace, in its 'Global Peace Index 2022' indicated that five of the ten least-peaceful countries globally were in the central African region: the Central African Republic, the Democratic Republic of Congo, Somalia, South Sudan and Sudan.

Additionally, countries such as Burkina Faso, Mali, Niger, Nigeria and Somalia are ranked among the top ten countries worldwide most impacted by terrorism. Among other reasons for these wars and terrorism are political instability and authoritarianism.

As much as people are suffering due to wars in the Democratic Republic of Congo or South Sudan, people on the other side of the continent are also facing significant misery brought on by poverty and different forms of social injustice, such as lack of food, health care and quality education.

Over the past few decades, Africa has, undoubtedly, undergone many changes, including advancement in communication technology, swift economic growth fuelled by a growing market for the continent's commodities, and an increase in the number of young people who are energetically and wholeheartedly willing to innovate.

However, to some extent, our ability to turn these changes into stable peace and development for Africans is constrained by issues, such as corruption, poverty and the ongoing threat of terrorism, conflicts and wars.

Ever since its development and practice, technology has helped overcome obstacles and find solutions to issues in societies. This is true worldwide, and even in Africa, where the oldest technological findings of stone tools were discovered in the eastern areas of Turkana, Kenya, and Olduvai Gorge, Tanzania.

With some exceptions, African countries are doing great in technological advancement through research, development and deployment of their scientific findings. Even though the

**T**herefore, so long as technology is used for the common good, it is the key to much-needed development. **It leads to the eradication of the main enemies of progress: poverty, corruption and political instability.**



advancement is slower as compared to other parts of the world, probably due to relatively little attention given to science on the continent, it is still promoting peace at different levels.

This is not to overlook that the same technology has caused harm in African societies by helping in conflicts and wars, human trafficking and image-tarnishing, the spread of misinformation and even improper disposal of electronic waste. This has negative consequences on the environment.

However, these are due to a few individuals who misuse technology for their interests and not for the common good.

For example, as other countries use weaponised drones on the battlefields, Rwanda uses drones to deliver blood supplies for transfusion in remote areas thereby saving and improving the lives and health care of the people. This reduces the number of deaths caused by delayed services.

In South Africa, the '#NotInMyName' campaign used social media platforms to mobilise people against gender-based violence and xenophobic attacks. It helped in building understanding and reducing tensions between locals and foreigners. As a result, there was peace and tranquillity.

In Kenya, the 'Ushahidi' ('bearing witness' in Swahili) open-source software has been used to monitor and prevent violence in the country and beyond since the 2008 post-electoral violence. It allows users to report incidents of violence and abuse through text messages, emails, and other online channels.



Its effectiveness has been witnessed beyond Africa as some European countries have used it during conflicts, natural disasters, and election violence.

These are just a few examples. African countries also use technology to improve education, industrialisation, agribusiness, economics and many more. Undoubtedly, technology has improved the standard of living in African countries. They are doing well compared to those who are lagging. Through these seemingly basic technological applications, Africa shows how it fosters a condition of peace and harmony in which people and communities work to combat tension.

Therefore, so long as technology is used for the common good, it is the key to much-needed development. It leads to the eradication of the main enemies of progress: poverty, corruption and political instability.

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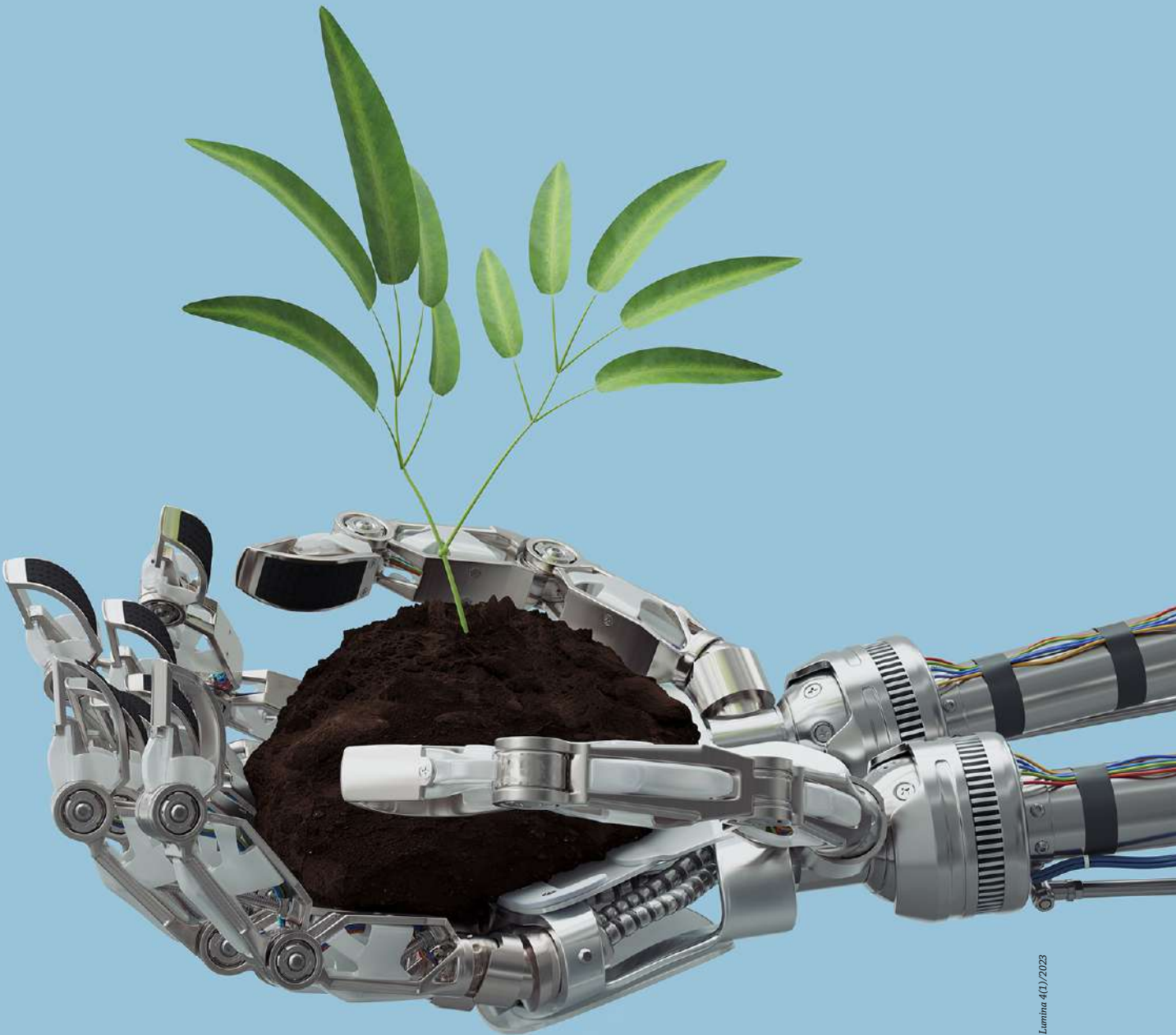
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# SMART FARMING



**T**he challenge being faced by the primary sector today is to increase food production by 70 percent in the forthcoming 40 years to feed the growing population. **The challenge is further aggravated by the shrinking land area suitable for cropping, the shortage of water, and above all, the big menace of climate change.**



**A**griculture is as old as the history of mankind. The development of human beings is closely knit with agriculture. It played a very significant role in the development of other sectors of the economy also. Over the years, we acquired a lot of knowledge by doing, seeing and experiencing many things in farming and allied sectors. The current agricultural practices are framed on the sound knowledge we acquired over the years across different agro-climatic conditions in different parts of the world.

The challenge being faced by the primary sector today is to increase food production by 70 percent in the forthcoming 40 years to feed the growing population. The challenge is further aggravated by the shrinking land area suitable for cropping, the shortage of water, and above all, the big menace of climate change.

Under these conditions, the strategy to increase food production should focus on producing more from a lower resource base, ensuring the quality of the produce and faster movement of the produce to the market. Artificial Intelligence (AI), the technology which is booming high in the present, is capable of taking up these challenges in a smart way.

Smart farming (SF), the technology where the potential of AI is integrated with mechanisation, sensors and many other areas of information and communication technologies (ICT) is all set to revolutionise the food sector with another green revolution.

### **What is Smart Farming?**

Smart farming is precision farming.

It is done with the help of modern information and communication technologies (ICT). It is based on the incorporation of ICT into machinery, equipment, and sensors in agricultural production systems.

Data plays a very important role in modern agriculture. A large volume of data needs to be collected from the field as well as from other sources. Data on weather, soil, pests and diseases, marketing, production, processing, livestock, and fisheries are to be collected for taking timely and proper decisions.

These data are very important. The nature and volume of data vary with the sector and context. Collection and analysis of this data with the help of ICT technologies are the basis of smart farming.

Sustainable use of natural resources for increasing production, and, at the same time, protecting the environment are the major objectives. The use of smart devices and sensors for data collection are one of the major factors of its success. The data collected is processed immediately.

After processing, the system takes a decision on what action to be performed. If the action decided is to switch on the fertigation device, the message to switch it on may be sent to the mobile of the farmer or it will automatically switch on the device.

**In contrast to the biological crop, its electronic version i.e. e-Crop computes the quantity of food produced and stored in its storage organs by its biological counterpart. The biological processes involved in food production are simulated in the e-Crop with the help of mathematical formulae.**



The process, from data collection to action, happens automatically. This way resource utilisation becomes more efficient. Production increases. The components of smart farming are:

1. IoT devices
2. Software for mapping and data analysis
3. Sensors
4. Internet
5. Machinery for various activities like production and processing.

Devices under the category Internet of Things (IoT) is the most important component. Many smart farming devices include at least one or the other of the other four components.

The components of IoT devices are connected through the Internet. The sensors collect data and through the Internet, it goes for processing. After processing the data, the device decides the action to be performed. The decision may be to do fertigation, spray pesticides using drones, or send messages to farmers.

These actions will be performed through actuators or any other means. IoT devices play a very important role in implementing AI for

precision farming by which farming reaches new heights.

## **Importance of Smart Farming**

Smart farming helps to achieve rich dividends by solving some pressing problems in farming. It is based on IoT devices like e-Crop, which helps to do precision farming in a very smart way. This way, conservation of resources and the natural ecosystem become possible and at the same time, better yield at lower input application is also achieved.

Farmers get correct information from the field regularly even if he is away from the field. The inclusion of auto fertigation and drone-based input applications adds to precise and timely interventions which are essential for any crop.

Image analysis has a lot of applications in agriculture. Predictions about pest and disease occurrence and yield can be done well in advance and very accurately with the help of image analysis. The pace at which new highly precise algorithms of image analysis are being developed is exemplary.

By applying these algorithms, farmers will be able to get predictions about pests and diseases in their crops well in advance and thus will be able to take precautionary measures to avert the threat.

Marketing is another important area of importance. Fluctuations in market price are a very serious matter. AI can make accurate forecasts on the demand, supply, and the price. Another area of AI application in marketing is the efficient sorting and grading of products based on different quality parameters.

A lot of work is yet to be done before AI-based technologies come into practice. But it is always better to tap the potential of this great technology to create a better scenario in the agricultural sector.

## **Electronic Crop (e-CROP)**

This is an important technology developed by the Indian Council of Agricultural Research-

**This is an excellent device for precision farming which collects the data in real-time from the field and generates an advisory and informs the farmer about the present and future status of the crops as well as the strategies to manage the crop to get better results.**



Central Tuber Crops Research Institute for smart farming. Biological crops produce food through photosynthesis using solar radiation and carbon dioxide in the presence of sunlight and water.

The food produced will be stored in its storage organs after utilising a portion of it for performing its life processes like respiration and growth. The food stored in its storage organs is used by human beings and animals as their food.

In contrast to the biological crop, its electronic version i.e. e-Crop computes the quantity of food produced and stored in its storage organs by its biological counterpart. The biological processes involved in food production are simulated in the e-Crop with the help of mathematical formulae.

This is a weather-proof electronic device which works directly in the field. Sensors in the device are used for collecting data on weather and soil parameters. The data collected by the sensors are sent to the control unit for processing from where it is sent to the cloud. Sensors are positioned on the exterior of the box. This system simulates crop growth in real-time, in response to weather and soil parameter data collected from the field and generates agro advisory and sends it to the farmer's mobile as an SMS.

This device can be used for giving real-time agro advisory of any crop to reduce the yield gap and to achieve the targeted yield. Weather parameters of the day, the potential yield that can be achieved by the crop after its stipulated duration as per its present crop condition and anticipated weather scenarios, N, P, K and moisture required to be applied to achieve this targeted yield are part of the advisory received in the mobile phone. The farmer can follow these strategies to increase the yield to the desired level.

Such appropriate diagnostic tools that help in the application of fertilisers at the time of demand, and in smaller and frequent doses, can help reduce the losses while maintaining or increasing the yield from the crops.

This is an excellent device for precision farming which collects the data in real-time from the field and generates an advisory and informs the farmer about the present and future status of the crops as well as the strategies to manage the crop to get better results.

The data collected by the devices installed in different fields give a very realistic overall status of the crop at present and in future. This information will be useful to the policymakers and planners as well as for averting the market risk. This usually emanates from an unexpected boom in production/supply, and a fall in prices. If information about the production is known well in advance, sufficient precautions can be taken to avoid such risks.

A web interface is used to manage smart farming with e-Crop. This web interface resides in the cloud and communicates with the control unit. The main functions are to add users and their privileges, and inputting various values of crops, fertiliser, soil type, and locations, and add new devices, according to the privileges assigned to different users.

### **Problems Solved by e-Crop**

The e-Crop helps achieve higher productivity by reducing the yield gap:

**S**mart farming is ultimately precision farming which helps extract maximum genetic potential without adding any pressure on natural resources. **The reduced use of natural resources results in their conservation and reduction in environmental pollution.**



This product daily calculates plot-by-plot yield gap and quantifies, N, P, K and water requirements to reduce it

This information is sent to the owner of the plots daily as an SMS.

Through the daily/frequent application of nutrients and water, its total requirement for the entire season is less (about 25-50 percent reduction) whereas, yield increases at least by 100 percent.

Reduced application of chemicals and water, save resources and minimises damage to the environment

Farmers' profit is multiplied by the increase in yield as well as by the lowering of the cost of cultivation. Crop yield as well as pest and disease forecasting and agro advisories in many countries are done more or less at a macro level. Crop-cutting experiments which are being practised in many countries like India for crop forecasting are elaborate, tedious, costly and less accurate.

### **Applications of the Device**

Forecasting of the yield of the crop can be done more accurately at the local, regional and national levels.

The forecasts sent by the e-Crop devices installed in different fields to the centralised database can be pooled and a national/state/regional level crop yield/status can be obtained by just compiling that information at the desired level for different times in future.

The device gives information to the farmer in the form of an SMS about what is happening to the crop even if he is far away from the field.

For more information about e-Crop, log on to <https://youtu.be/KJ0r-cZg7PM>

### **Initiatives of ICAR-CTCRI**

Self-learning crop models are being developed and validated to make e-Crop intelligent. Through this method, the device will be able to develop the model of the crop from the field and thus the device will be able to help with smart farming of any crop

e-Crop based smart fertigation system has been developed. The mobile app 'Krishi Krithya' has been developed for managing e-Crop-based smart farming.

### **Success Story of e-Crop based Smart Farming**

e-Crop based smart farming is being demonstrated in five panchayats of Nedumangad Block in Thiruvananthapuram District, Kerala with the support of the State Horticulture Mission: Kerala. As part of the project, farmers are trained to follow e-Crop based smart farming practices and it was compared with normal farmer's practices.

When the sweet potato was harvested, it was observed that smart farming plots recorded higher yields compared to that of normal practice. The number of nutrients applied was also lower in smart farming plots as compared to farmer's normal practices.

The data recorded from the plots are shown in (Table 1).

**Table 1. Data on Yield and Nutrient Application in the Smart Farming trials on Sweet potato.**

SL. No.	Name of the Farmer	Panchayat	Yield (Kg)		Nutrients applied					
			Smart farming	Farmers practice	Smart farming			Farmers practice		
					N	P	K	N	P	K
1	Sasidharan Pillai	Vembayam	30	15.6	0.154	0.091	0.1291	0.37	0.12	0.36
2	Sudheer	Aruvikkara	9.657	3.475	0.115	0.098	0.135	0.2	0.1	0.2
3	Arunkumar	Aruvikkara	12.29	5.905	0.113	0.095	0.131	0.3	0.15	0.3
4	Sreekumar	Panavoor	35.7	15.32	0.101	0.068	0.139	0.25	0.12	0.25
5	Thankaraj	Panavoor	18.5	10.25	0.134	0.07	0.166	0.2	0.1	0.2

## Smart Farming: Features

The main feature of smart farming is to minimise the input application and at the same time increase productivity many times. Smart farming is ultimately precision farming which helps extract maximum genetic potential without adding any pressure on natural resources. The reduced use of natural resources results in their conservation and reduction in environmental pollution.

Many are apprehensive about the cost of smart farming technology. There is a belief that small and marginal farmers cannot afford to adopt this technology. Another apprehension is that it leads to unemployment in the farm sector.

Though the initial cost of setting up smart farming is high, its benefits are innumerable. Once set up, it can be maintained for years with meagre maintenance costs. In States like Kerala where collective efforts like group farming are already in practice, adoption of this technology is a feasible option.

Smart farming is not a new concept. It is getting enriched day by day with the developments in ICT and AI. Developed countries have already jumped into smart farming to realise another green revolution with this technology. Why should we wait for so long to adopt it for the benefit of our people and environment?

This is the right time. Another green revolution through smart farming will restructure our entire



*eCrop based Smart farming unit*

economy. Let us show the world how to do it and become a world leader in smart farming.

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# SOCIAL TECHNOLOGIES, DISCOURSES of DOMINANCE and GOVERNANCE in INDIA



**T**he objective is to draw attention to non-physical or mental technologies. These are used to subdue, conquer, rule, dominate, and govern people. **Here again, it is a well-known fact that colonists have not only used a variety of physical technologies, such as horses, guns, and other modern weapons but also social technologies.**



**I**f we look at India from a historic perspective, it is well-known that the British came to India as traders, and then stayed on as rulers. How did this change happen and what kind of social technologies did the British use to dominate and govern India?

## I

Anthropologists with some humour have compared a human being to an amoeba with material acquisitions. These acquisitions are different types of technologies. Furthermore, anything that a person uses extrasomatically, for instance, the use of a simple stick for multifarious functions is also technology.

The Stone Age man used cleavers of all kinds, and thereafter bones. Homo sapiens at different stages have used diverse technologies at different points in time. Anthropologists thus, classify human societies based on technology: food gatherers, hunters, peasants, and industrial.

They also analyse societies with different ecologies such as deserts, forests, coastal, plains, and hills where different technologies are used by humans to cope with life. The artefacts used in these environments vary. For instance, if we look at the housing in coastal areas, it is very different to what we will find in desert or mountainous areas.

Popularly, one associates technology with physical, and visible objects. But one must pay attention to technologies that are not visible, or seen as objects, but are in effect projects.

The objective is to draw attention to non-physical or mental technologies. These are used

to subdue, conquer, rule, dominate, and govern people. Here again, it is a well-known fact that colonists have not only used a variety of physical technologies, such as horses, guns, and other modern weapons but also social technologies. These were used to create violence, injustice, discrimination, and atrocities to destroy peace.

Peace-building is based on justice and equality. Peace is an important factor to maintain harmony, justice and equality among people. However, peace is disturbed by the use of such technologies by different regimes. This needs our attention. Cornering resources and unequal distribution or deprivation of the same results in privation and inequality leading to disharmony and conflict in society.

## II

The British came as traders through the East India Company. They treated Indians as equals during that period. But this attitude changed remarkably when they became rulers, and their posture vis-a-vis Indians was one of condescension and disdain. Moreover, they employed different technologies and techniques to govern and control the people they ruled.

The colonisation of a vast empire was both a political as well as an epistemological challenge. The British extended and maintained their tenuous rule over India by using a mixed methodology of coercion, dominance and exploratory knowledge about this vast region and its people.

If we look at the different colonies possessed by the British during those times, we will notice that they were people with simple technologies in different continents, such as Australia, Africa, and America, whom they termed as tribals or primitives, less civilised and so on. **However, in India, they found something different and admirable from what they knew on other continents, especially in the field of philosophy and ancient traditions.**



Technologies, such as ethnographic surveys, proficiency in native languages, attempts at unravelling the social structural principles such as caste and power hierarchies, establishing historical kinship with the people, racial analogies and anthropological measurements, along with typologies, cartography and museum collections were all used in various ways and in a multitude of contexts to establish dominance and control over the people and also to extract maximum possible labour and revenue from them.

The technologies of colonisation were being experimented with. One finds a mixed bag of admiration, derogation and paternalism from those holding positions of power and responsibility, including some elite Indians.

The historian Thomas Trautmann identifies two phases in British rule: Indo-mania and Indophobia. During the first phase, they showed the romanticisation of India as a great civilisation, with high philosophies and justified it by linking it to the Aryans, to which they belonged racially.

This phase is named Indo-mania. In this phase, the British were traders under the East India Company. Max Muller, William Jones and others applied themselves to studying Indology and Hindu philosophy.

If we look at the different colonies possessed by the British during those times, we will notice that they were people with simple technologies in different continents, such as Australia, Africa, and America, whom they termed as tribals or primitives, less civilised and so on. However, in India, they found something different and

admirable from what they had known on other continents, especially in the field of philosophy and ancient traditions.

This attitude of admiration changed to Indophobia once they became rulers. While they admired and also enlisted the help of the elite, their attitude towards the masses was one of total indifference if not scorn. From their entry into India and from the very outset, the British knew that they could not uproot this highly evolved society with its intricate social mechanisms and multiple centres of power to form a settler colony.

Therefore, the task of the actual ruling was often left to the existing local rulers or was delegated to someone who would act as a proxy for British control. However, they soon realised that to rule they needed to educate themselves about the society they were to control and for this an understanding of the jati/varna system was essential.

The British administrators turned to scholars in anthropology like Herbert Hope Risley, E. Thurston and Reginald Edward Enthoven, and gave them the task of classification of people into races, castes, Jatis, and tribes and to enumerate their strength through the decennial census from 1871 onwards.

They engaged in anthropometry to identify racial strains and classified people into Negrito, Australoid, Mongoloid, Dravidian and Aryan. They saw Indian society as hierarchical. Further, they studied different castes and tribes through ethnographies, collecting cultural details, customs, and traditions.

Subsequently, it also highlighted some institutions prevailing at that time, like the prevalence of sati, widow burning, self-immolation, and child marriage. **This led to the second phase of what Trautmann calls Indo-phobia, viz., looking down and ridiculing things Indian.**



This also included studying languages and religions. They introduced a legal system and many other systems of governance and control. To raise their revenues they began surveys and settlements of land and began revenue systems. Cartography and mapping exercises went hand in hand.

These exercises brought different kinds of typologies – literate, illiterate, backwards and forward, primitive and civilised. Subsequently,

it also highlighted some institutions prevailing at that time, like the prevalence of sati, widow burning, self-immolation, and child marriage. This led to the second phase of what Trautmann calls Indo-phobia, viz., looking down and ridiculing things Indian.

The British also felt that Indians needed to be educated and that their languages were not enough. And so began an education system which they thought would bring Indians closer to their civilised standards. Through the famous Macaulayism of Thomas Babington Macaulay, education in a foreign tongue would effectively erase Indian culture and eventually the Indians would be shaped as 'Brown sahibs' but lower than the British themselves. Later, a country that was rich in resources was eventually denuded and robbed off, and its people were left with famines, plagues, death and disease.

### III

The post-independence period was a period of reconstruction. This saw the rise of literacy, increase in scientific temper, growth of industries and urbanisation, growth of democratic institutions, the spread of secularism, and the primordial ties of caste, creed, language, and religion pushed out to uphold the concept of citizenship as the primary identity in India.

However, since the 1990s both globalisation and Hindu nationalistic ideology have been changing the definitions of everything held sacred by the Constitution of India. In place of inclusivism came exclusivism, majoritarianism and minoritarianism, free play of illiberal ideologies, the dismantling of democracy, and primordial identities being brought into operation. Polarisation between the majority





*Congress leader Rahul Gandhi during 'Bharat Jodo' (unite India) movement*

and the minorities, and populism in governance created newer discriminations and inequalities.

One can cite that new social technologies and epistemologies were used by the regime in enacting Policies, Bills, Laws and Acts in the last few years.

The Citizen's Amendment Act, National Register for Citizens (NPR), National Register for Citizens (NRC), Triple Talaq, Abolition of Article 370, anti-conversion laws and non-renewal of Foreign Contribution Regulation Act to non-governmental organisations are all evidence of forming social technologies to create turbulence in the country.

Demonetisation, Goods and Services Tax, Electoral bonds, and relegating cooperative federalism are some of the other technologies that have been used. The abuse of autonomous institutions like the Central Bureau of Investigation, Enforcement Directorate, and the Income Tax Department to harass the opposition parties and those who are against the regime are seen as the new normal.

The media technology, print, electronic and social media have been bought by the regime to spread hatred and to change perceptions against minorities, women, Dalits and tribals.

Polarisation between Hindus and Muslims has been made into a focal point in elections. Elections are fought on polarising communities

and through stereotyping minorities. TV channels inflame the viewers rather than give authentic information.

Most mainstream media show victimisers as victims and victims as victimisers. Media is functioning as a wing of the government. It deals with frivolous issues and no longer with grave issues, such as unemployment, price rise, and hunger index. It hardly represents people's questions. It questions the opposition parties, but not the ruling party.

One must pay attention to the mind control games played by the regime in India through the use of technologies like media, legal enactments, and the debilitation of democratic institutions. This has given legitimacy to unrest in the country.

The issues of employment, livelihood, literacy and health are relegated to the background. Peace will return once the regime delivers the essential needs and human rights of its citizens. The mass movement 'Bharat Jodo' (unite India) led by Congress leader Rahul Gandhi has been fairly successful in bringing awareness to the people.

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# Technology & Peace



**T**echnology and peace, then, may not be on the same wavelength, since both are strictly immune to moral judgement. **It is only when technology - which is always good or, rather, a good like any other that can be put to bad use - is studied from a moral point of view, it will be found to be strictly amoral. Immorality dwells wholly in the one who abuses or misuses it.**



**T**echnology belongs to the field of physics and peace to that of metaphysics. The relationship between the two is difficult to fathom. That is, in college what is tackled in the science sections is different from what is studied in the arts. Journalists work under this principle that 'facts are sacred but the interpretation is free'.

It is possible to detail the works of technology with perfect accuracy, but what exactly is peace is difficult to explain, for one person's peace is another's suffocation. Technology is transmitted by phrases which have words that do not need to be qualified, and there is no uncertainty as to what they mean.

If a drinking vessel is claimed by one to be made of plastic and by another to be made of glass, the dispute can be easily settled by taking it to a lab whose findings must be accepted, not only by the disputants but by everybody else. But if one claims that the vessel is beautiful to look at and another finds it to be the acme of ugliness, they and others can argue about it till doomsday and not come to any agreement.

Facts may be difficult to arrive at because of a lack of information or tools. If experiments and other methods do not establish them, one has to remain agnostic about them. But, if established, what do the facts mean?

What's happening in Ukraine or the Middle East or at the US-Mexico border? Is it good or bad? As Hamlet states what ought to be obvious: "There is nothing good or bad, but thinking makes it so." It must be stated at the

beginning that there is no direct connection between technology and peace concerning morality and their goals.

Even before the invention of the wheel technology was steadily developed and, say, in the Roman period engineers built excellent roads and aqueducts respectively for better flow of traffic and water, but its speed took off with the Age of Enlightenment and the Industrial Revolution.

Because more agricultural products had a geographically wider market, machinery production increased by leaps and bounds, using coal-caused steam to run ships and railway engines, and its impetus has never diminished.

New inventions brought in a lot of comfort and ease for people in general and the operators of new machinery. But they made tradesmen and coachmen of horse carriages to be out of jobs, like in our time handymen or fixers have been edged out by robots which, from another perspective, are to be appreciated for taking away from workers' menial and monotonous jobs.

Technology, then, inevitably involved in maintaining and also improving communication or transportation or manufacture or production of hardware and software, is out of the purview of morals. Not a single invention has been able to escape criticism.

Not very long ago, writing was made possible only with nib and ink.

Ink pens were frowned upon because they appeared to spoil calligraphy and, likewise, when ballpoint pens first came out onto the scene they were objected to for the same reason. We no longer bother what we write with. All that matters is that there is something to write with.



Meeting certain pre-notified criteria, peace can be said to exist somewhere and established as a fact. But science cannot judge whether that peace is of the living or the dead. God and Jesus are to be studied scientifically to prove that they exist.

But what the meaning of God or Jesus for us is dealt with only in a metaphysical way, only in what can be called the way of faith.

Faith in God or Jesus has no meaning if their existence is not proven scientifically. Once proven as such, questions arise: is God loving or is He unconcerned? Is Jesus divine or is He a human?

Out of an individual's personal decision, the answer could be positive or negative or agnostic or atheistic. Existence depends on proof, a proof that is universally accepted.

The meaning, however, is a matter of personal decision, deepened by further reflection or by dialogue with another. Peace can be claimed for any situation or place, but its connotation or significance can be disputed based on circumstances.

Technology and peace, then, may not be on the same wavelength, since both are strictly immune to moral judgement. It is only when technology – which is always good or, rather, a good like any other that can be put to bad use – is studied from a moral point of view, it will be found to be strictly amoral. Immorality dwells wholly in the one who abuses or misuses it.

Likewise, a peace that is on another wavelength is amoral too. It exists only in the insight and decision of the one who seeks it. Like the 'good' and 'beautiful' and all the other positive Kantian metaphysical a priori, it can be used for bad purposes, for evil against others or one's self.

If there is immorality, it is located only in the will or decision of a person. Access to the Internet and social media through relatively cheap devices like computers, tablets, and smartphones does appear to lead users to innumerable problems and dangers.

It is observed that many travelling together or merely congregated in a place have their eyes and other senses not on others but on their smartphones, not communicating with others around but with others in different parts of the world, not affected by body language but only by script and screen images.

Missed out are the sunrises and sunsets, the scenery and the infinite varieties of direct human contact, the moments to be oneself and reflect and learn from personal experience.

It is not surprising that researchers find greater evidence of psychological problems – insomnia, loneliness, depression, anxiety, and stress – among those who live in the virtual world rather than in the real one.

Those problems are blamed on technology when there is a failure to realise that they are due to people using the provisions of technology, so also of alcohol and drugs, as crutches to get on in life, and not discovering within themselves the means to make their lives exciting and fulfilling.

Technology cannot be restricted from increasing its potential to develop in any quantity or any direction. Peace will only be achieved when it is independent of technology and dependent on creating it only by the decisions of a free and independent will.

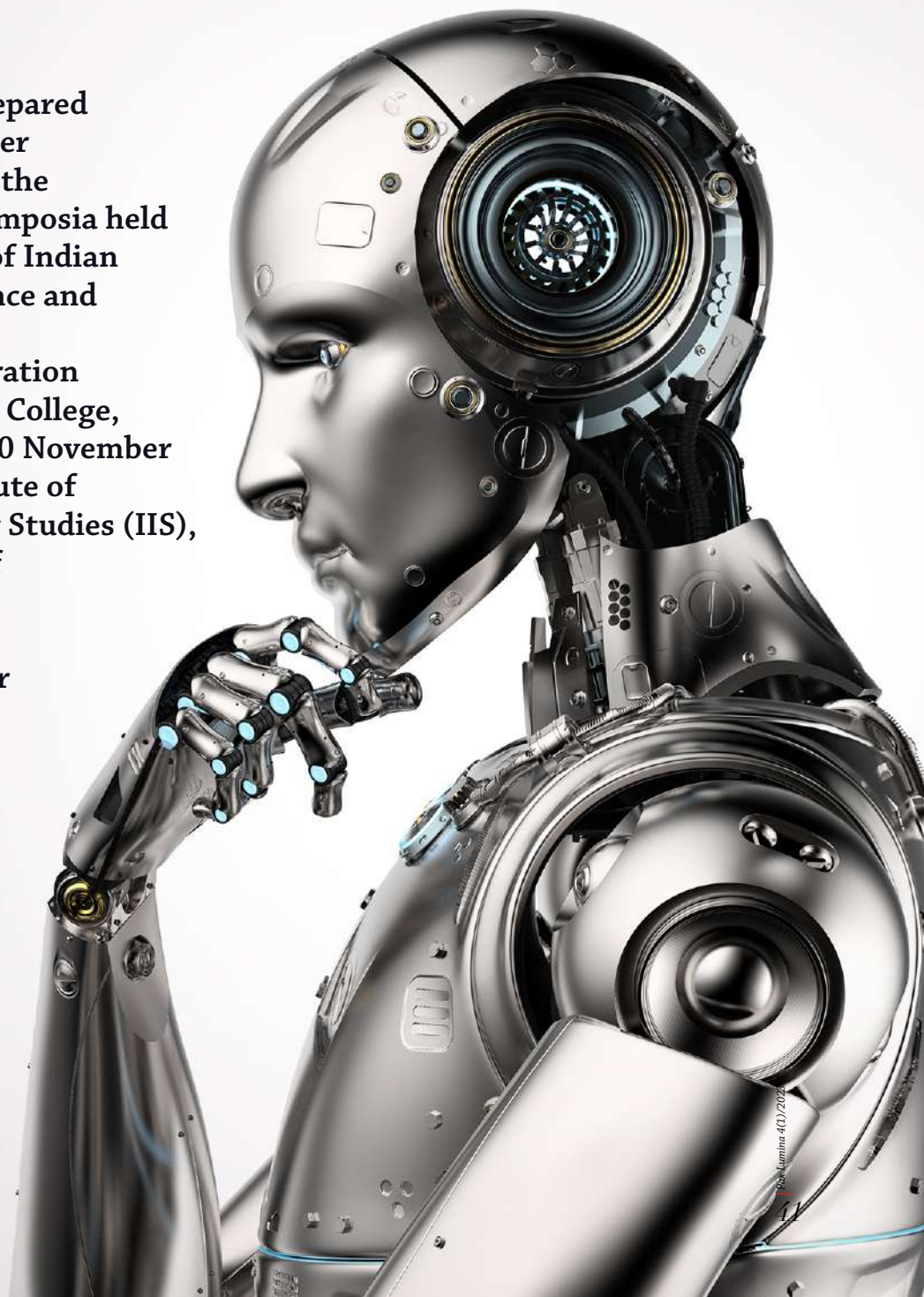
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# ARTIFICIAL INTELLIGENCE and FUTURE of SOCIETY

The feature is prepared based on the paper presentations at the International Symposia held under the aegis of Indian Institute of Science and Religion (IISR), Delhi, in collaboration with St. Aloysius College, Mangalore (18-20 November 2022) and Institute of Interdisciplinary Studies (IIS), Loyola College of Social Sciences, Trivandrum (25-26 November 2022).





## HOW HUMAN are the HUMANOIDS?

**H**ow can science make machines conscious? More profoundly, can science make them conscious at all? At the root of it all, lurks the fundamental question: what is consciousness? Once again, we have only a phenomenological understanding of consciousness. We have only certain reliable criteria or indicators to reveal that the being in question is conscious. The real nature or ontology of this phenomenon remains an enigma.

Another area of concern is the impact of AI-powered robots and humanoids on society. What are some of the consequences accompanying them? How is the present society going to deal with them creatively and responsibly? Can we consider these new beings like us humans? If so, can we take them as moral agents capable of knowing and freely choosing their preferences?

To be considered a human being must have at least the basic characteristics of a human person. More specifically, the humanoid should have the complexity of the human brain. Humanoids to date have only some of the requirements and more will have to be achieved. Even if all these requirements are met in course of time, we need to consider the promises and perils the humanoid age brings. And even if all the required features are satisfied, one thing will still be missing – a humanoid will lack what we intuitively know to be humanness which still defies all attempts at duplication.

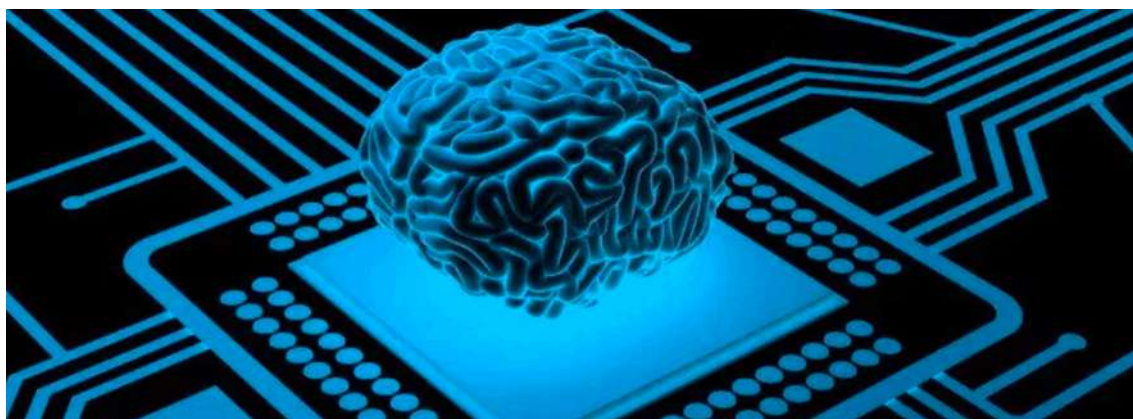
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# AI: PROSPECTS and CHALLENGES



**A**I is a very useful tool in a large variety of fields such as agriculture, art, business, communication, data science, education, games, governance, healthcare, industry, planning, research, psephology and so on. Such applications come under the category of weak AI which constitutes 99.9 percent of its applications today.

The creation of robots or humanoids with consciousness, let alone awareness, is perhaps a distant dream. There are no humanoids possessing emotions like friendliness, love, empathy, compassion and values. Ethics seems to be beyond its purview. Consciousness and allied phenomena remain the uncharted domain of strong or general AI.

Among the popular uses of weak AI are pattern recognition, face recognition, music synthesis, drawing, painting, graphics, animation, speech delivery, translation, driverless cars, forensics, hospital services, telemedicine, computer vision, astrophysics and several others.

Artificial neural networks are the principal tool employed in AI work. They involve a preliminary training stage before the problem is presented for solution. Prediction is a task usually taken up. Weather or stock market forecasting is an example. Machine learning is a restricted form

of AI, in that it handles a single problem or a specific class of problems using a common strategy.

It is worth noting that modern machine learning is heading towards Artificial General Intelligence (AGI) or strong AI, following advances made in what is known as neuromorphic computing.

The major difference between the PC and the human brain is that while the PC uses binary logic, the human brain is driven by asynchronous spikes and their interpretations. INTEL and several other companies are now focusing on populating their chips with massively parallel spike-processing neurons that operate asynchronously. Let us hope that we are slowly but steadily approaching the great goal of strong AI.

Although AI is of great usefulness in various fields, it has some dangerous implications too. For example, a study of criminal tendencies in a population based on face recognition technology might lead to vast numbers of innocent people to internment by the State.

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# MATHEMATICS, AI, ROBOTS and HUMANOIDS



## Can humanoids possess the cognitive functions of human beings?

This has been a fierce debate since the 1930s, especially when the British scientist Alan Turing proposed that human thoughts can be reproduced by machines. The issue is addressed and implemented, to a great extent, with tremendous advances in AI such as Big Data and Humanoids.

## Are there humanoids same as that of a person?

Machines do not have the capacity for self-reflection, a basic function of consciousness. Decisions are executed in machines based on certain predefined algorithms. Algorithms do not describe reality as it is.

However, innumerable kinds of research are going on in AI for the perfect imitations of human thought and human decisions. Perfection and accuracy depend on the mathematisation of systems.

We find that classical mechanics and quantum mechanics are extraordinarily mathematisable. However, 'complete' formalisation is not possible

even within mathematical systems. It is all the more complex in other areas such as economics and psychology which are highly influenced by socio-cultural and historical conditions.

Hence, humanoids, as of now, exhibit a model, an imitation, and a representation of humans, but lack substantial aspects of being human. Are there means for humanoids to mathematicise human conditions and draw meaning out of human experiences? Fuzzy mathematics/fuzzy logic is a tool to address the issue to some extent.

For example, when Big Data makes use of statistical analysis (Bayes' theorem) to draw conclusions, that need not be accurate due to the randomness of analysis.

Randomness involves uncertainty in the occurrence of the event. It does not address 'fuzziness' which involves uncertainty in the meaning of the event. Most human decisions rely on the meaning of the event. If AI makes use of 'fuzzy random variables' and algorithms that combine both randomness and fuzziness, the system may be more human-like.

Even then, some of our cherished notions like values, meaning, and subjecthood (agency) are not fully quantifiable. Despite these, AI will make tremendous progress. It may not understand or even explain what intelligence is. Still, it will challenge the way human beings interact with the world and among themselves.

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# ARTIFICIAL INTELLIGENCE in SPACE 4.0



**AI** is everywhere and evolving. There are seemingly endless ways in which AI is touching our lives. With contributions from AI and machine learning, space activities are also expected to undergo a radical transformation in the space industry - from launch to constellation control, satellite performance analysis and space robotics both in the global scenario and in the Indian context.

The Indian Space Research Organisation has taken various AI and machine learning-oriented initiatives covering technologies, applications, and the new ecosystem of collaboration with private industry and academia to significantly enhance the growth of the space economy.

AI-enabled space robotics is one of the most promising areas in the emerging space 4.0 era. Since the environment of space is extremely challenging, sending robots rather than astronauts

for performing tasks like on-orbit servicing and planetary exploration is a lucrative choice.

One of the important aspects is to build intelligence and dexterity in such space robots so that the robots can perform autonomously beyond the capabilities of a human being in space.

A recent example is the half-humanoid AI space robot 'Vyommitra', being developed by IISU in collaboration with other centres, academia and industry for ISRO's prestigious 'Gaganyaan' human space mission. Several AI-enabled space robotics projects are being spearheaded by IISU and ISRO.

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## 3D VISION: EXPANDING THE HORIZONS of AI

Computer vision researchers have effectively used 2D images for a ton of applications. However, the lack of depth information has limited their utility in specific problems where geometric information is important.

The availability of low-cost 3D sensors and the development of advanced techniques to generate 3D data from 2D images have resulted in a sudden surge in AI applications that employ 3D data.

The 3D data is used across a wide variety of domains like industrial quality inspections,

autonomous vehicles, remote sensing, retail industry, 3D printing, reverse engineering, robotic vision, construction and real estate, medical imaging, archiving of historical articles, remote repair and so on. For example, the point cloud representation of 3D data is used for different vision applications.

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## AI, EMOTIONS and CONSCIOUSNESS

Emotional machines will be a major step in the development of human-like artificial intelligence or General Artificial Intelligence. However, there has been only limited progress. No machines today are capable of emotional experience.

Machines made for emotion recognition and expression are limited in many ways. This limited progress invites us to reconsider our current conceptualisation of human emotions. To this, we need to critically look at the dominant models of human emotion. Perhaps more sophisticated models may work in the future or perhaps

human emotions tap into something uniquely human. An alternative theoretical perspective on emotion points to an interactive process at the root of human consciousness. Emulating this interrelationship may remain elusive to a machine.

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# AFFECTIVE COMPUTING



**A**ffective Computing (AC) is an emerging technology in AI and robotics. AC aims to create computers and artificial agents such as smart assistants (Alexa, and Siri), sex robots, companion robots, and smart teachers, which can sense, recognise, express and in some cases 'have' emotions/affect.

Affective computing manipulates the physiological modulations felt during emotional experiences to infer the supposed corresponding 'affective states' in human beings. The empirical approach to affective computing emphasises the physical and cognitive aspects of affective experiences. However, it lacks discrimination in the treatment of affectivity.

Furthermore, affective computational models consider emotion as 'information' that can be extracted from the human 'body' in isolation from the complex relations that human beings share with others and the world against a backdrop of an overall network of interpersonal emotions and moods.

An empirical approach to affective computing misses the existential significance of emotions because it considers 'emotion' derivative rather than constitutive of human existence.

Whereas, a phenomenological account of 'emotion' inspired by the accounts of Martin Heidegger, Jean-Paul Sartre and Edward Casey can complement the computational models of emotion to develop a multi-level account of 'affectivity.'

A dialogue between phenomenology and philosophy can help computational scientists to define specific affective experiences that they are investigating. A cross-disciplinary dialogue will allow us to integrate 'ethics' not as an afterthought but as the guiding force in the development of novel technologies such as AC.

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## AI: SCEPTICISM and HOPE

"Data is not information, information is not knowledge, knowledge is not understanding, understanding is not wisdom."

Computers are only dealing with data. They are a long way from wisdom. But even if machines do someday become self-aware and develop the

traits of the human soul-intelligence and free will-that makes them no better and no worse than any other soul, human or other. They will be capable of sin, and love.

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## SIKH SCRIPTURE (SGGS) in the MODERN SCIENTIFIC ERA

Science and technology have impacted global society in the modern scientific era immensely. Given the vast domain of influence of the AI-robotic revolution, its reverberations will be felt in the area of religion as well. It is claimed that these intelligent machines will be more efficient than humans and create human-like or better-than-human species artificially and to 'play God' will become a reality. What will be the role of consciousness, spirituality and religion in the modern scientific era? Sikh Scripture, Sri Guru Granth Sahib (SGGS), opens with the first Sloka about the nature of Reality (God) as follows: 'True in the Primal Beginning; True throughout the Ages, True in the Present era; O Nanak, God will be True Forever in the Future'

There is no dichotomy between scientific truth and spiritual truth in the Sikh scripture. The

purpose of human life is to find reality in its manifestation in nature. Blind faith and rituals have no place in the Sikh scripture. Intelligence and discriminating intellect are gifts of God but all humans are not bestowed with this gift of spiritual intelligence, known as 'bibek buddhi':

Consciousness (Surat) is a unique gift of God reserved for humans only. It is an enigma how AI-based robots and humanoids will be more efficient and creative than human beings. SGGS does not sanction such prototype machines which act as superhumans. The consequences of machines controlling human behaviour will be disastrous.

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# HUMAN BEING in the IMAGE and LIKENESS of GOD or BECOMING DIGITISED?



Christian theology has always emphasised the unique place of human beings in creation and salvation history. God created human beings in His image and likeness (*Gen 1:26-27; 5:1; 9:6; 1 Cor 11:7; Jas 3:9; cf. Rom 8:29; 2 Cor 3:18; Eph 4:24; Col 3:10*).

The creation of human beings in the image and likeness of God expresses a foundational relationship between God and man. The ‘*imago Dei*’ in human beings is understood as an intrinsic relation between God’s nature and human nature. The biblical concept of the ‘image of God’ helps us understand our being in interactive relation with God.

To be created in the image of God is to receive one’s being from God and to have his existence,

meaning, dignity, and worth in God. Thus, the ‘*imago Dei*’ doctrine concerns the relationality of human beings to illuminate their uniqueness in the entire created world.

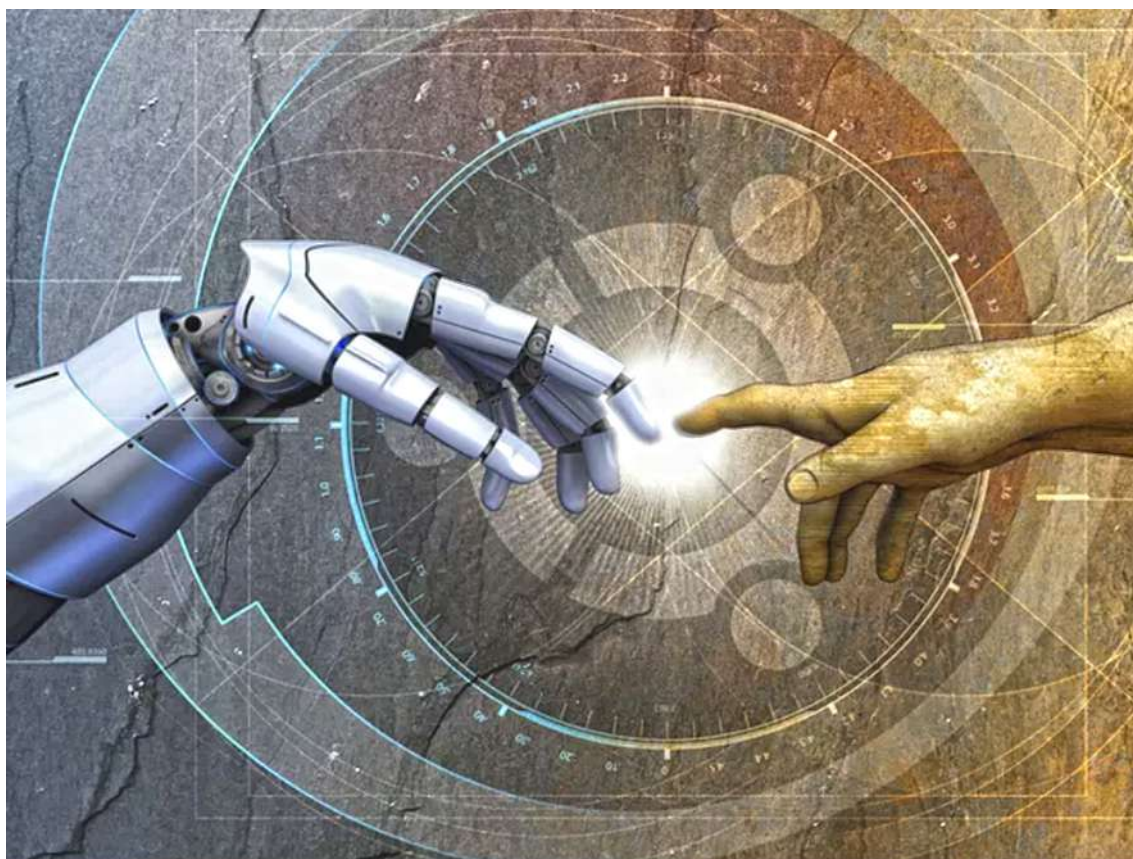
The digital transformation, backed by artificial intelligence, in the contemporary world disfigures and shadows the beauty and dignity of human beings created in the image and likeness of God.

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# ROBOTHEOLOGY



Developments in AI and robotics have opened up fresh areas of debate on some of the traditional concepts of theological anthropology, such as ‘imago Dei’, personhood, human freedom, and human corporeality.

Broadly conceived, this is a debate between bio-conservatism and transhumanism. This reflects the extreme polarities between the rejection of any technological intervention with human nature and the radical technological enhancement of human beings.

The debate, to some extent, is hijacked by traditional theological positions on the one hand and the utopian technocratic hype on the other. But certain philosophical assumptions driving the transhumanist projects through AI and humanoid robotics can be an opportunity

for theological anthropology to widen its rationally deterministic understanding of ‘imago Dei’ and personhood to cosmic and mystical horizons as well.

Based on the speculative metaphysical ideas of the proximity between matter and spirit, and the natural and the supernatural that is present in the transhumanist debate on AI and robotics, one can highlight certain directions for theological anthropology to reconceive some of its fundamental themes in a manner compatible with the evolving dynamics of divine revelation.

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# BIOSCIENCE INTERFACE to ARTIFICIAL INTELLIGENCE

**T**he life sciences have positively welcomed AI, robotics and humanoids to their advantage to save a life, but they cannot turn away from the questions that they raise.

The life sciences investigate living entities as their distinguishing feature. Curiously enough, thus far viruses (the SARS CoV virus as a concrete example) stand at the barrier of life and non-life. Notwithstanding the devastation and havoc that the Covid-19 virus has inflicted on the lives of humans, it is considered by the majority of biologists as a non-living entity. Based on several criteria, various characteristics of life forms have been identified to consider an entity as living.

As the AI-robotics-humanoid combines mirror life forms, questions about how alive they are is being posed. The most fundamental one would be: should we redefine life in the wake of the AI-robotics-humanoids? Such questions have implications for society and religion.

When applied to the AI-robotics-humanoid combine, does this triad pass the Quality Control tests of the attributes mentioned above? If they do, to what extent would they qualify to be considered living-conscious entities? Affirmations and claims in this direction are being made and have raised controversies and fears on platforms of society and religion.

Memory, imagination and consciousness are three highly significant attributes of living beings. A lifeless object, say a precious pearl has no memory. If it could remember (memory) whose ring or necklace it had adorned, we can perhaps make a case to consider it a living entity.



If it went further and created designs (imagination) for the jewellery it adorned, now it has a stronger case. Go a step further and allow the pearl to relate its experience of being an adornment, it then has (consciousness) which bestows on the pearl the third of the three vitally significant elements of the human life form, and the pearl would then also qualify as a being with a soul.

Ultimately, we have to ask the question, with AI, do robots and humanoids arrive at having souls? If they do, then society and religion have to face practical consequences in dealing with them. Would it not be an ultimate irony, if naturally intelligent humans were ultimately displaced (toppled) by AI in a future hierarchy of life?

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# TECHNOLOGY and HUMANITY: An INTEGRAL APPROACH



**T**he human being is only a little above the animal state, but unique in aspiring to evolve towards the God-like state. Man-made machines may be programmed to grow, but it is only 'man' who aspires to 'evolve'.

Sri Aurobindo considers man to be a transitional being, a bridge between heaven and earth, a potential instrument through which the divine can act in the world. Humanoids are a product of human intelligence whereas, a human being is a product, although a work-in-progress of divine intelligence. A human being can not only connect with the divine consciousness but also make himself/herself a channel for the divine consciousness to act through him/her.

Sri Aurobindo's vision is that of divine life on earth through progressive evolution, in which human beings participate as active collaborators of nature. The future that Sri Aurobindo has envisioned is not a humanoid, but technological developments, including humanoids, might make unforeseen and unintended contributions to future evolution. Some hints of that already happening are visible as products of technological developments that preceded and ushered in artificial intelligence and humanoids.

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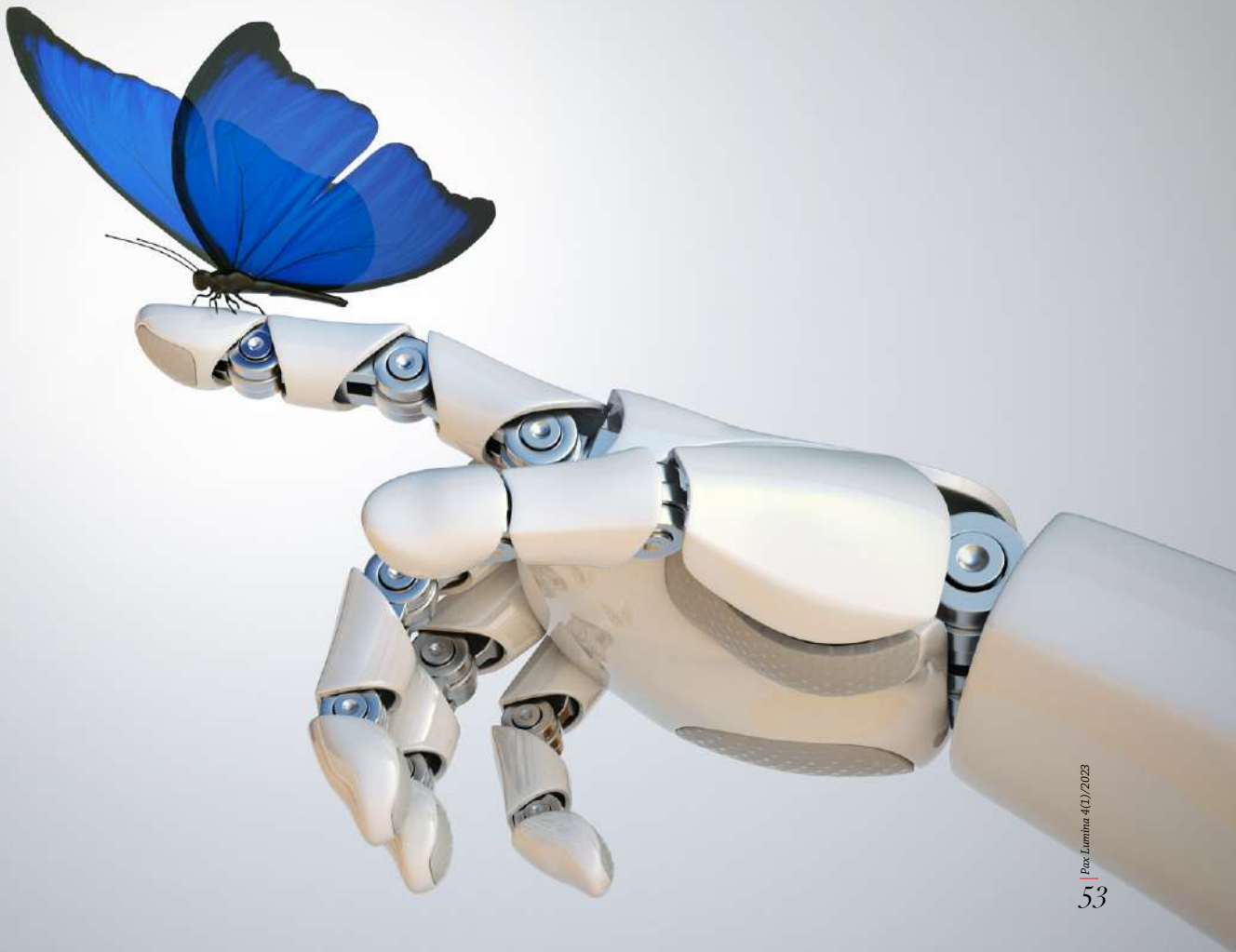
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# AI, TECHNOLOGY and COMPASSION



**A** dystopia is in the making as we buy into the hegemony of the technocratic narrative, seduced by all the awesome conveniences. **We increasingly surrender our collective political and ethical control and governance.**



**I** see the value of technology, but I am not an enthusiast of 'runway technology or technologies'. I do not see technology as a solution to the human or spiritual problems we face today (many of which are created by over-rating 'human intelligence'). And I do not think AI is the pinnacle of our technological achievement. Every generation likes to think the technology they had was the pinnacle. Why even the community we call 'tribal' had great technologies.

My thoughts about it are that it is still at a 'primitive' stage. It is nowhere near what it is to be human, or, more accurately, eco-human. While we are all excited by such things as 'driverless taxis', we are undermining our preparedness for the dangers of our limitedness and collective stupidities.

Let me share five critical orientational concerns:

- (a) The seductive narrative of a technological utopia
- (b) The falseness of the belief that AI is the pinnacle of our intelligence (to assume that we can invent a compassionate machine)
- (c) The hiding from view of our collective stupidity
- (d) The fallacy that compassion is an algorithm
- (e) The challenge of controlling technology, including AI

We are all sold the idea of the future as the child of technology. We believe that we will come to live in a nurturing socio-technocratic womb. All problems will be resolved by technology, even the issues produced by human-induced climate or health or social emergencies. All ailments will be treated, even at a genetic level. Food will be plenty with AI-supported technologies.

Technology will annihilate poverty. Humanoid robots, animated by AI, will be compassionate. People will live beyond want and need in unalloyed happiness. A happy, rosy story. A technological utopia built on technocracy and technocratic governance.

Most of us know that this is more wishful thinking than truth. The future can be dark and dangerous when we surrender society and humanity to technology, and to the machines we produce.

A dystopia is in the making as we buy into the hegemony of the technocratic narrative, seduced by all the awesome conveniences. We increasingly surrender our collective political and ethical control and governance. The start of this is when, in our everyday encounters with digital technology, a machine asks us to prove that we are humans.

More dangers ahead: the explosive mix of expanding global fascism today strengthened by a technocratic agenda will give birth to a technocratic fascist society. This is a danger before all of us. It is a pathway to a future, aggressively sold to us, as the only path to our common future. This is part of the TINA ('there is no alternative') culture of late capitalism.

The human community needs to keep technology under its collective political and ethical governance. We need to understand and encourage the many eco-humanistic cultures, movements

**We need to understand and encourage the many eco-humanistic cultures, movements and pathways to the future that do not neglect technology but are not technocratic. A cursory examination of our rich and diverse cultures will show that we have the imagination of many futures. The AI-inspired future, as the only one, motivated by hegemonic powers, shows the poverty of our imagination.**



and pathways to the future that do not neglect technology but are not technocratic. A cursory examination of our rich and diverse cultures will show that we have the imagination of many futures. The AI-inspired future, as the only one, motivated by hegemonic powers, shows the poverty of our imagination.

Historically speaking, I don't think AI, as of now, is the pinnacle of our intelligence. It has not even scratched the surface. Take for instance, the notion of intelligence. Popular construction and dominant narrative suggest 'g-intelligence' i.e generic intelligence solely based on cognitive intelligence.

This is giving one dimension to the human being. This is how AI and robotics (the human behind these) view and use intelligence. But our present knowledge of intelligence suggests multiplicity: linguistic, logical/mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalist. To this were added later, three more: spiritual, existential and moral intelligence.

Are we not at the beginning of thinking about AI-machines as merely a cognitive intelligence? We have ten other bits of intelligence according to one contribution. But we also have such critical intelligence as emotional, social and ecological. So, what makes us accept the arrogant claim that we are at the pinnacle of our creative intelligence in relation to AI?

Historically, we are nowhere near what we are capable of, and certainly, nowhere close to being human or creating a humanised, compassionate machine.

The claims to connect AI to compassion largely depend on algorithms. In the present state of the digital technology culture, algorithms are a big thing. It does not take much time to creatively produce algorithms of compassion. So, we have efforts to develop compassion delivered through AI.

This would eventually help us with creating compassionate robots to live among us. Compassionate robotics could become a new field of study, economic investment and a huge market. Though this excitement is to be considered and mindfully nurtured, we need to get out of thinking that humans are just a bundle of algorithms. It is a fallacy. They are not.

Nature cannot be captured by the finite mind through algorithms. Algorithms are certainly a great discovery and tool today, but we will



**T**he effort needs to reach a popular level of critical and compassionate civic engagement. People in all their diversity have to be alert and be involved in deciding how to handle AI technology. **There is much need for moral and ethical control of technology and the way it is to be developed and used so that no one is left behind and all are taken care of.**



go much beyond this to understand creation and the nature of life and humanity before we create that authentic compassion-driven robot or trans-human. Underlying this thinking, we need to keep in mind our habit of over-rating certain realities. Human intelligence is overrated and we tend to make invisible human stupidity.

The interest, literature and scholarly work on stupidity is a growing intellectual and practical enterprise and important contributions have been done. This is not popular and not convenient for many. We need to be open to seeing how much all these AI-inspired seductions to technology are animated by human stupidity - individual as well as collective.

Because of its individual, collective and structural stupidity, humanity is on the path of self-destruction. Just look at what's happening to the nine planetary limits or the earth overshoot day every year. These are the results of human stupidity. AI-inspired technologies in the hands of stupid humans are a recipe for major disasters.

AI-inspired technologies, robotics, geo-engineered Earth or what else may come out with this

hegemonic infatuation with technology and AI, we cannot leave them in the hands of technocrats, academics, businessmen or politicians. It cannot be in the hands of the so-called 'experts'.

The effort needs to reach a popular level of critical and compassionate civic engagement. People in all their diversity have to be alert and be involved in deciding how to handle AI technology. There is much need for moral and ethical control of technology and the way it is to be developed and used so that no one is left behind and all are taken care of. That is the reality of a compassionate society and future.

A uni-dimensional compassionate algorithm will not achieve that. We need to be patient and practise great humility in trying to imitate Nature.

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# CARING CITIES

## Rethinking Urban Agenda to Combat the Pandemic of Inequalities



**T**he Covid-19 pandemic, which had devastated people across the world for two years, is threatening to come back with a vengeance once again as over 37 million people in China were infected by the virus in a single day.

Until the end of 2022, worldwide, 6.6 million lives had been lost. The impact on the economy and livelihoods had also been severe. The World Bank estimated that 90 million people had fallen below the global extreme poverty line measured at \$2.15 per day.

In addition to causing widespread loss of lives and livelihood, Covid-19 has also exposed stark socio-economic inequalities among people. The Gini index, the measure of inequality, has increased by 0.7 points globally, according to the World Bank.

António Guterres, UN Secretary-General, termed Covid-19 as a "pandemic of inequality" as the

health and economic impact of the coronavirus spread and called for "a new social contract for a new era" to deal with its health and economic fallouts.

The need for a new social contract requires an urban strategy. The world is steadily moving towards an urban future, as the global urbanisation level is projected to reach 68 percent by 2050 from 56 percent in 2018 according to the United Nations.

The global urban turn is associated with hopes and growth. Cities generate 80 percent of the global GDP and their economic footprints affect rural communities as well. But the cities are also most vulnerable as they function as hubs of transportation grids, supply chain logistics, and population movements.

Over 90 percent of global Covid cases were concentrated in urban areas. Metro cities are more at risk, as they act as gateways of international trade, commerce, and passenger flow networks.

The urban strategy to cope with epidemics and pandemics also needs to focus on growing social divides. Healthcare disasters are also

**T**he urban strategy to cope with epidemics and pandemics also needs to focus on growing social divides. Healthcare disasters are also inherently dis-equalising. **The urban poor, living in congested slums in big cities and dependent upon informal sector livelihoods, are most acutely vulnerable.**



**B**angalore and a few other cities deployed Smart City technologies by repurposing their Integrated Command and Control Centres for Covid management through real-time GPS-enabled dashboards, contact tracing, community surveillance, and monitoring of quarantine facilities.



inherently dis-equalising. The urban poor, living in congested slums in big cities and dependent upon informal sector livelihoods, are most acutely vulnerable.

The Covid-crisis had exposed deep social divides in our city systems regarding shelter, piped water, sanitation, and public healthcare that we had glossed over for a long time. For one billion people, or 24 percent of the global urban population, living in densely packed slums struggling to meet basic hygiene norms like hand washing and physical distancing are almost impossible.

The issue of urban vulnerability is particularly relevant for India, as the country is going through a process of rapid urban transformation. Between 2022 and 2045, India's urbanisation level is projected to increase from 35.9 percent to 49.6 percent.

In the process, the number of urban residents is projected to go up from 483 million to 812 million – a net addition of 329 million. This is equivalent to the entire population of the United States.

As the migrant crisis that erupted following the lockdown in March 2020 brought out,



most Indian cities are ill-equipped to handle healthcare emergencies. With 65 million living in slums (as per Census 2011 estimates), one out of every six urban households resides in slums. Vulnerabilities of the urban poor are further compounded by gender, age, caste, and various other factors.

The pandemic had also brought out humane and caring dimensions of Indian cities. As the migrant crisis started, Local-Self governments in Kerala quickly mobilised Kudumbasree to set up food kitchens and arranged emergency medical aid.

Red Volunteers in Kolkata played critical auxiliary medical support by delivering oxygen, food, and medicines to needy patients. Timely interventions by the Brihanmumbai Municipal Corporation prevented a community outbreak in the Dharavi slums.

Bangalore and a few other cities deployed Smart City technologies by repurposing their Integrated Command and Control Centres for covid management through real-time GPS-enabled dashboards, contact tracing, community surveillance, and monitoring of quarantine facilities.

The epidemic shows how Local-Self governments must lead crisis response. However, the good practices that emerged require to be institutionalised to address future challenges more effectively. Until now, social sustainability concerns had not received adequate attention in urban governance systems. As we move towards an urban future, we need a new social contract

**C**ompassionate and caring cities are places where the well-being and needs of all residents, including marginalised and vulnerable groups, are actively considered and prioritised in the planning and decision-making processes. **These cities strive to create a culture of compassion, empathy, and kindness, and to foster a sense of community and belonging for all residents.**



for our cities to become more compassionate and caring.

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In a compassionate and caring city, services and infrastructure are designed to meet the needs of all residents, and there is a focus on inclusion, diversity, and equity. This can include initiatives, such as affordable housing, accessible public transportation, and support for vulnerable populations, for the homeless or those living with disabilities.

These cities place a strong emphasis on fostering a sense of connection and belonging among residents, and work to create policies and programmes that promote social cohesion, mental health, and physical health.



However, a key challenge is that the values of compassion are abstract, and therefore, difficult to monitor through government policies and programmes.

One way to address these difficulties would be to align urban planning, management, and governance systems with the Sustainable Development Goals (SDG) framework of the United Nations. Taking into account the growing importance of cities, the SDGs had designated urban sustainability (SDG 11) as a key priority.

SDG 11 focuses on the vulnerabilities of the urban poor by easing access to cheap housing, safe drinking water, and public transport. The 2016 New Urban Agenda of the UN has widened the possibilities for a new social contract in cities by emphasising inclusive and participatory urban planning and governance.

Government of India has placed the attainment of the SDGs as a key policy priority, and also signed the New Urban Agenda. However, to make tangible progress in the everyday lives of people, to make our cities more caring, compassionate, and resilient to meet future challenges, it would be necessary to align these broad global and national level policy goals with the plans and policies of urban local governments.

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BOOK  
REVIEW

*Pax Lumina 4(1) / 2023 / 61-63*

# EYES in THE SKY

**A review of Michael J. Boyle's  
'The Drone Age: How Drone Technology  
Will Change War and Peace'**



**M**ichael J. Boyle's latest book, 'The Drone Age: How Drone Technology Will Change War and Peace', explores, in nine chapters, how the advancement of drone technology plays an important role on and off the battlefield.

Like his previous books, 'Violence after War: Explaining Instability in Post-Conflict States', 'Legal and Ethical Implications of Drone Warfare', and 'Non-Western Responses to Terrorism', the present one too talks about the patterns of war and peace in future in the new context of drones.

This well-researched and carefully articulated book is nothing but an encyclopaedia of the drone age, talking about the history, new security and privacy risks created by drones, how drones are slowly changing the ways of wars, aggravating humanitarian crises and affecting peace-keeping missions.

While some are empowered others are made more vulnerable and susceptible to danger and death. Michael J. Boyle, an Associate Professor and Chair of Political Science at La Salle University and a Senior Fellow at the Foreign Policy Research Institute in Philadelphia, poses this nonfiction narrative engagingly with the use of 16 never-before-published interviews, some of them with drone pilots and leaders in the field of drone technology.

*Michael J. Boyle*

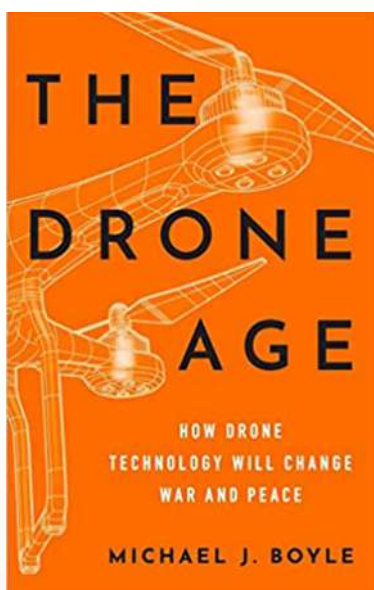


**T**his well-researched and carefully articulated book is nothing but an encyclopaedia of the drone age, **talking about the history, new security and privacy risks created by drones, how drones are slowly changing the ways of wars, aggravating humanitarian crises and affecting peace-keeping missions.**

Published in 2020 by Oxford University Press, 'The Drone Age' covers a plethora of topics associated with the subject never moving away from the central focus, such as peacekeeping, humanitarian use, human rights advocacy, and surveillance. The first chapter elaborates on the origin of drones, from armed drones to unarmed drones. "Drone technology was incubated over decades by the military-industrial establishment and was used for secret military operations for years before appearing in the public domain and broadening their capabilities," said Boyle.

In 2000, only the US had an armed drone. But quickly, the picture changed. By 2020 over 90 countries possess armed or unarmed drones. Because of the low financial cost, it is used not only in militaries but also in private companies, peacekeeping forces like the UN, human rights groups, and humanitarian NGOs.

Boyle's bold attempt serves as the first lengthy treatment of how terrorist groups and other fringe elements take hold of drones. He explains how the easy access to drone technology allows non-State actors such as rebels and terrorist groups to "level the playing field with powerful governments".



From large surveillance drones to micro drones, drone technology is revolutionising the way that governments and non-State actors compete with each other. It is also providing game-changing benefits to those who can most easily adapt the technology to their own goals.

Generally, the governments had the resources to defeat their non-State opponents. But the low marginal cost and easy availability of drones help non-State actors to catch military groups and civilians through surveillance. This shows how drones create new security and privacy risks. The mastery of drone technology will become a game-changer for governments and non-State actors to gain power and influence in the coming centuries.

Halfway through the book, Boyle makes the most remarkable argument about the use of drones for imagery and surveillance. He claimed that drone technology has led certain nations to strive for an ambitious label or position of “all-knowing and all-seeing”.

Boyle says that the question of whether drones are good or bad doesn’t hold any more significance. He claims that, like all technology, drones are an asset of human weaponry, subject to human discretion. The sustainability of the high moral ground continues to be a topic of debate eluding concrete answers.

Coming to the devastating side of the drones, he makes it vivid. The US adopted drones alongside targeted killing to minimise and control risks. He signals an alarm bell highlighting the dangers of relying too much on images and data from drones on the battlefield. “Military may underestimate the risks that they face on the battlefield due to overconfidence based on superior information coming from drone imagery,” he argued.

The book has a place in the twenty-first century. It brings together information regarding the origin of drones and reflects details on how drone technology has changed the strategic choices of its users. There is an underlying truth that drone technology or unmanned technology will become a game-changer in the next few decades. At the end of the day, the question that remains unanswered is whether the use of drones brings forth a more stable world or will it lead to more conflict and sustained tensions.

Chapter nine poignantly titled ‘The Future’ leaves some endearing and long-lasting questions to be answered by future historians such as whether drones will gradually replace humans on the battlefield or will they empower soldiers to act more precisely, and humanely, in crises. How will drones change surveillance around the world and at home? In short, the book offers a compelling reading with an engaging presentation of the historical data and an easy-to-understand depiction of the scientific nuances of technological development in the field of drones.

Combining well with the topic and providing a non-linear narrative the interviews and statistics make the reading interesting. The weight of the moral questions raised and the craftiness of the dispassionate analysis of the subject matter coupled with the readers’ excitement about the future ensures a gripping reading.

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*Jency James is Assistant Professor, Department of English and Media Studies, St Xavier’s College Trivandrum.*

## LETTERS TO THE EDITOR

Pax Lumina 4(1) / 2023 / 64

Dear Editor

*This is to congratulate the Editor and all the learned contributors of the November 2022 issue of Pax Lumina. Let your work serve also as an important advocacy for mental health.*

*As you know, mental health is one of the most neglected areas, and it is a very low priority matter in most of the Low and Middle Income (LAMI) Countries. The theme for the World Mental Health Day 2022 was "Making mental health and well-being for all, a Global Priority".*

*Requesting your support for this cause and wishing your work all success,*

*Yours sincerely,*

**Dr Roy Abraham Kallivayalil,**  
Former Secretary General,  
World Psychiatric Association, Geneva  
(2014-2020)

Dear Editor,

*Superb editorial(Pax Lumina November 2022). Well balanced and studded with references to Foucault. Vincent Van Gogh and Yevtushenko. The first two challenged the boundaries of rationality constantly. However, in every society, only the merely mediocre hold sway. Look no further than governance to see the obvious. Compromise and acquiescence are the hallmarks of every institution. In such an environment, to expect a fresh creative understanding of issues like mental illness is heart warming but futile.*

*May I end with a quote from Shakespeare which is contrarian but somehow leapt into my mind: "Tis the times' plague, when madmen lead the blind " King Lear, Act 4 scene 1.*

*Best regards*

**Jagan Mathews,** Kochi



Dear Editor,

*Congratulations to Pax Lumina. Excellent editorial and content. Michel Foucault's book on madness which reflects his deep understanding and empathy for the mentally challenged, is a masterpiece in its own right.*

*Regards,*

**Velayutham Venkatachalam,** Chennai.

Dear Editor,

*Congratulations for the wonderful issue on Mental Health by authors from different parts of the globe. It is an intellectual delight to go through the wonderful issue of Pax Lumina.*

*Best wishes,*

**Denzil Fernandes,** Indian Social Institute,  
Delhi

Dear Editor,

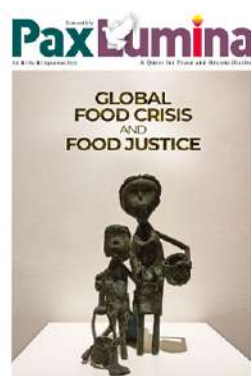
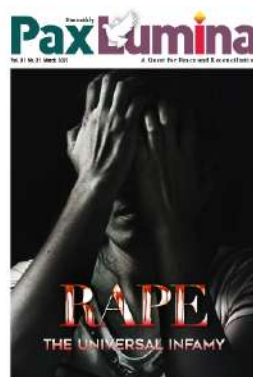
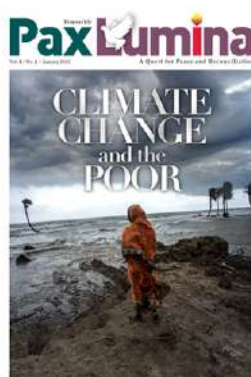
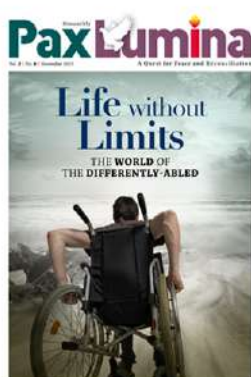
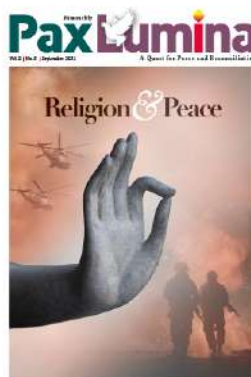
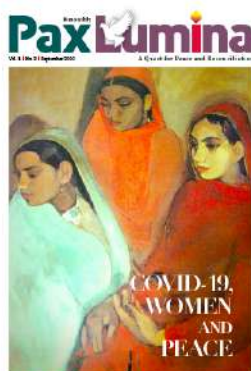
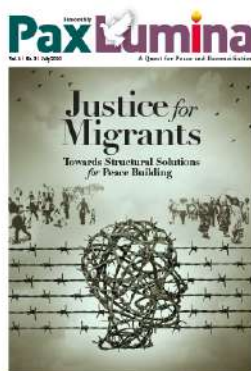
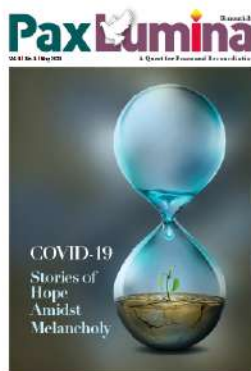
*All the articles in this November issue are great and insightful.*

**Jacqueline Anundo,** Nairobi, Kenya

Dear Editor,

*Thanks for the November issue of Pax Lumina. As usual, it is filled with lot of information on an important subject. Keep it up. All the best.*

**Ignacimuthu, S.J.,** Thirunelveli.





Humanity is acquiring all  
the right technology  
for all the wrong reasons.

- R. Buckminster Fuller

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