SCIREA Journal of Physics
ISSN: 2706-8862
http://www.scirea.org/journal/Physics
June 4, 2022
Volume 7, Issue 3, June 2022
https://doi.org/10.54647/physics14432

What Does the Doomsday Clock Mean for Humanity In The New Normal World?

Dr Parin Somani
Independent Academic Scholar
Corresponding author: drparinsomani@gmail.com

Abstract

In 2022 the Doomsday Day Clock struck one hundred seconds to midnight alerting humanity to the seriousness of global security in contemporary life. This study aims to identify the significance of the doomsday clock in the new normal world. There is an endeavour to provide recommendations to facilitate increased time away from midnight on the Doomsday Clock in the new normal world. A systematic literature review is conducted via a thorough literary search utilising published and grey literature sources. Literature was obtained, extracted, analysed, interpreted, and evaluated. Results have indicated that the doomsday clock is a metaphor and an international symbol that represents the minimal time humanity has before the world is destroyed through manmade technologies. It focuses on how many minutes to midnight humanity has before the world ends. This article addresses the following: doomsday clock over the years, nuclear risk, climate change and disruptive technologies. This study has deduced that the Doomsday Clock is a metaphor that has been devised to alert the world to the seriousness of nuclear risk, climate change and technologies. The covid-19 pandemic has exacerbated existing inequalities but has promoted the use of technology. The Bulletin comprises of individuals that are involved in scientific advancements with colossal information that can be utilised to provide global societies with legitimate facts and dangers of technologies, nuclear risks, and climate change that should be utilised in decision-making

processes. The need for diversity and understanding the political processes within multiple countries and the impact of science on national and international societies is vital in the new normal.

Keywords: Doomsday Clock, New normal, Climate change, Technology, Nuclear risk

Introduction

The Doomsday Clock was founded in 1947 by the Bulletin of the Atomic Scientists which originated in 1945 by "Albert Einstein, J. Robert Oppenheimer, Eugene Rabinowitch and University of Chicago scientists who helped develop the first atomic weapons in the Manhattan Project" (Yue, 2022) . Currently, the Bulletin comprises of leading scientists, policy makers and members of the public who are concerned with "nuclear weapons and disarmament, climate change, growing energy demands, and disruptive technologies" (Taylor & Francis, 2022). It relates to challenges pertaining to increased technological advancements that affect global security and impose negative humanitarian consequences. The Doomsday Clock initially emerged on the front cover of the Bulletin's magazine as it underwent a transition from a newspaper to a magazine and has become an international symbol conveying how close humanity is to destroying itself.

Initially the Doomsday Clock commenced at 11.53pm and has continuously altered with increasing and decreasing times, dependent on the transformation of global occurrences (Brazil, 2020) . Every year the Doomsday Clock is re-set and provides a foundation for global politicians, commentators, and policymakers to amend their strategies. Historically, the Doomsday Clock was initiated due to growing concerns post-second World War, promoted by a community of physicists who were dwelling upon the societal consequences of their work. The physicists and engineers had developed atomic bombs that were utilised in the 1945 bombings of Hiroshima and Nagasaki, hence attaining devastating consequences (Burr, 2020) . Initially the Bulletin of Atomic Scientists was devised to as a platform to engage scientists in discussing political challenges. This further evolved to identifying dangers of modern science which could be discusses and communicated to societies through the Doomsday Clock. The image of seven minutes to midnight was created by a nuclear physicist's wife Martyl Langsdorf, which then altered over time by Rabinowitch who a

biophysicist renowned for the work he carried out in the field of nuclear energy and photosynthesis, after which the Bulletin's security board and board of sponsors assumed responsibility (Board, 2020). It consists of thirteen Nobel laureates comprising of theoretical physicists, astronomers, and particle theorists, in contrast the science and security board consist of nineteen members. Physicists involved in The Bulletin have knowledge relating to nuclear weapons, reactors and individuals in government that have participated in negotiations which has a strong political dimension. The coronavirus (covid-19) pandemic has added another dimension to the Doomsday Clock as it gravitated to one hundred seconds to midnight on January 23rd, 2020, due to the urgent action required to deal with the catastrophic coronavirus (covid-19) pandemic consequences on global civilisations (Somani, Information Technology Challenges Faced during the Covid-19 Pandemic in Higher Education, 2021) . There was an intention to alarm national and international governing bodies to functionally deal with current global threats. The covid-19 pandemic has highlighted the importance of governance in both national and international response to pandemics and the prevention of global health catastrophise. Governing body competence can impact the number of human lives being saved and prevent future crisis, despite being subjected to nuclear, biological or climatic challenges.

Objectives

This study aims to identify the significance of the doomsday clock in the new normal world. There is an endeavour to provide recommendations to facilitate increased time away from midnight on the Doomsday Clock in the new normal world.

Materials and Methods

A systematic literature review is conducted via a thorough literary search utilising published and grey literature sources. Literature was obtained, extracted, analysed, interpreted, and evaluated. Electronic and manual databases are searched using the following keywords: 'Doomsday Clock', 'New normal world' 'Climate change' 'Technology' 'Nuclear risk'. Several literature sources have been identified resulting in the development of the following exclusion criteria was devised:

- Literature unrelated to the Doomsday Clock are omitted
- Literature in languages other than English are not used
- Literature providing insufficient information within their approach have been

excluded

A total of twenty-two literature sources arere identified. Upon further analysis two literature sources are duplicated and as a result were omitted from the study. After reading the abstracts and introductions two literature sources are disregarded. This has left eighteen literary sources for further investigation. Upon completion of full literature analysis, two have a lack of implementation details hence excluded from the study. Therefore, a total of sixteen literary sources met the overall criteria and were used as primary sources within this study.

Results and Discussion

The doomsday clock has become an international symbol of the world's vulnerability to catastrophe. This encompasses nuclear weapons, climate change and disruptive technologies (Yue, 2022) . The Doomsday Clock is a symbol of danger, of hope, of caution, and of our responsibility to one another. Results have indicated that the doomsday clock is a metaphor and an international symbol that represents the minimal time humanity has before the world is destroyed through manmade technologies. It focuses on how many minutes to midnight humanity has before the world ends. This article focuses on the doomsday clock over the years, nuclear risk, climate change and disruptive technologies.

Doomsday clock over the years

The Doomsday Clock was initiated in 1947 after two nuclear attacks on Hiroshima and Nagasaki where it was set at 11.53. This changed to 11.58 in 1952 after the United States of America and the Soviet Union tested Hydrogen bombs. In 1991, after the Soviet Union collapsed and the Strategic Arms Reduction Treaty was signed the Doomsday Clock was set seventeen minutes to midnight, which was the furthest the clock had been set for years. In contrast 1953 saw the closest time set to doomsday as` two minutes to midnight. Similarly in 2018 there was a "breakdown in the international order of nuclear actors" and minimal efforts by humanity to reduce the effects of climate change (Board, 2020) . This was exceeded by 2020 when the clock was moved to one-hundred seconds to midnight which was the closest to midnight in approximately seventy-five years and is currently one-hundred seconds to midnight in 2022. The reasons for such change included increased nuclear threats, reduced humanitarian action against climate change, an increase in misinformation promoted through technological advancements and the inability of society to act (Board, 2020) . The world is still at risk of nuclear threats; however, the bulletin's current risk assessment was shaped by

the 13900 nuclear warheads, contemporary arsenals, unsuccessful arms control treaties and the Iran's nuclear weapons.

Figure 1 (Brazil, 2020) illustrates the time on the Doomsday clock from the year 1947 which was set at 11.43pm and the alternations through the years in accordance with the nuclear proliferation until the year 2020, however in 2022 the time is still one-hundred seconds to midnight.

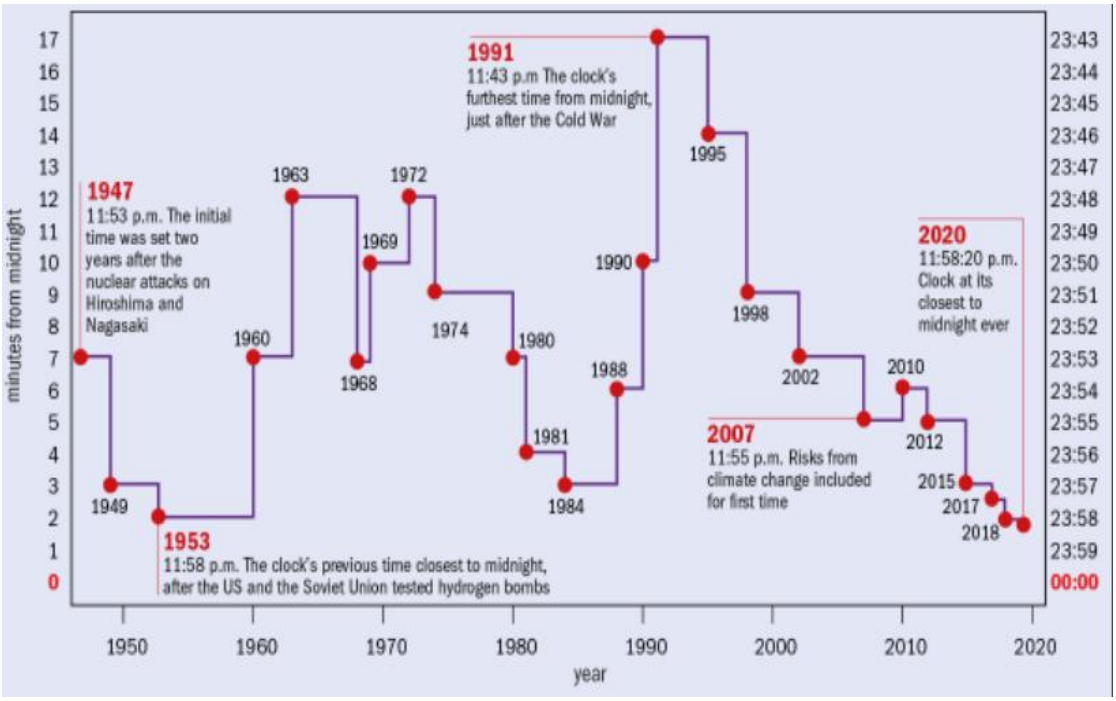


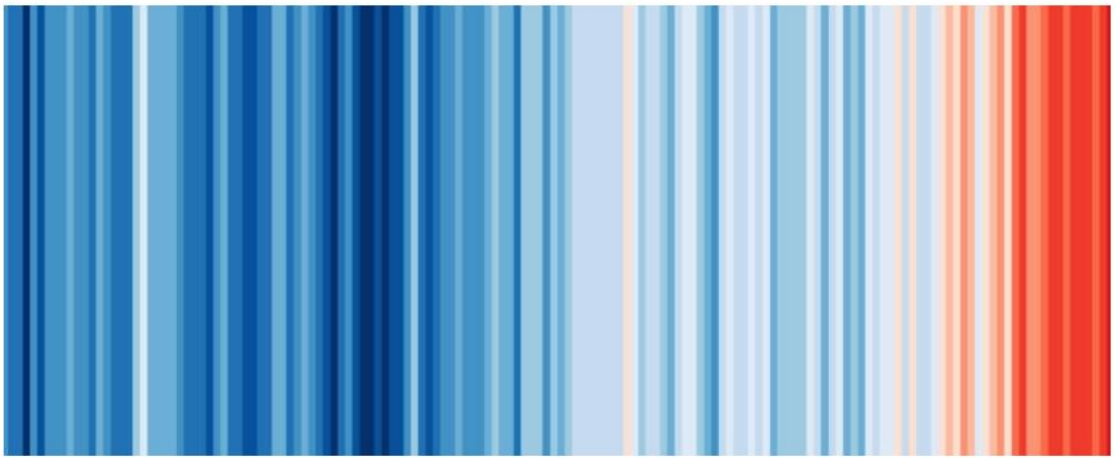
Figure 1 (Brazil, 2020)

The Doomsday Clock has changed over the years resulting from rates of climate change, disruptive technologies, and nuclear risk.

Climate change

In contemporary life human activity contributes to climate change during which the average climate over time is viewed to shift. The Earth's average temperature since the industrial revolution has increased by one degree Celsius and over the last ten years where the Earth has reached a record high. This has contributed towards the warming of ocean and atmosphere, a rise in sea levels and gradual disappearance of ice and snow in parts of the world. Over the past one-hundred and fifty years there have been changes in global temperatures which is illustrated through warming strips by Ed Hawkins in figure 2. Annual global temperatures from the year 1850 to 2017 are recorded, representing temperatures covering 1.35°C (Hawkins, 2018). Every stripe present is the representation of a year, and the colour

is an average representation of the temperature of the year. The blue colour is a representation of colder years while the red stripes are an indication of years that are warmer. Therefore, it is evident how temperatures globally have altered over a time duration.



1850 Year 2017

Figure 2 (Hawkins, 2018)

The cause of increased global temperatures is due to "human emission of greenhouse gases into the atmosphere" which commenced during the industrial revolution in the 1800s when fossil fuels were originally burnt for heat and electricity. In addition, they were utilised in agriculture and cement production. The inability to eradicate greenhouse gases has been further affected by deforestation (Science, 2020). The consequences of climate risks can have devastating consequences, thus highlighting the importance of timely action. A delay in acting will constitute towards rapid, hasty, and ineffective costly energy transitions, uncontrollable climate impacts in the form of tropical monsoons affecting food production feeding a colossal number of humans. In addition, forest fires, droughts and floods are becoming more frequent which can have an impact upon human health. Particularly as climate change has an impact upon the economy, infrastructure, food security, health, and the biosphere, it is vital that humanity works collectively to implement strategies to reduce the effects of droughts, tropical rainstorms, floods, coastal inundation, or in contrast heatwaves, water shortage. There is a need for a "rapid and deep and in most cases immediate GHG (greenhouse gas) emission reductions in all sectors" (McKenzie, 2022).

During the covid-19 pandemic there has been mandatory use of personal protective equipment (PPE) like masks, gloves and gowns made of plastic. In addition, the lateral flow and Polymerase chain reaction (PCR) tests have been implemented to detect positive covid-

19 cases. They were used to comply with appropriate national governing body regulations all of which are viewed to constitute towards a future global threat to humanity. Consequences of the pandemic has highlighted the need to re-evaluate confidence levels in human ability to manage the intensification of climate change and devise legislations to reduce current and future effects.

Disruptive technologies

The covid-19 pandemic has exacerbated the amount of misinformation, information distortion and manipulation available through technological platforms. In some cases, this has resorted to a reduction in governing body and civic responding to international threats. Facts have been deemed devalued and an irrational approach taken due to inaccurate information. It has become increasingly difficult for individuals to identify information sources that are trustworthy and provide reliable guidance pertaining to the covid-19. This can have a detrimental impact upon human health and survival, particularly when misinformation is endorsed by national governing bodies. Daily events have contributed towards the generation of false nuclear alerts. This has been in the form of telephone switch failures, technological computer chips, the rising moon, and solar storms (Taylor & Francis, 2022). Scientists have been concerned about the effects of technological innovation and threat increase despite improving some human life and safety. It is the secondary effects of these novel technologies that can exacerbate pre-existing challenges constituting towards instability. Nuclear arsenals have been a source of major concern particularly as hypersonic missiles holding nuclear warheads have been developed, despite being devised to deter nuclear force at the outset (Burr, 2020).

Technological developments have improved the quality of life facilitating the management of governmental and business works particularly during the pandemic as lockdown regulations were implemented. Governing body regulations enforced to keep humanity safe resorted to the closure of non-essential businesses, hence individuals used technological platforms to work from remote locations (Somani, 2022). Despite the positive aspects, the adverse effects of technological advancements can be observed through instability in cyberspace and potential businesses emerging from spyware (Sarkar, 2022). In 2020 it has been revealed that "Russian hackers gained access to approximately 18,000 private and government users, acquiring sensitive information from the state, Justice and Defence departments" (Bohen-Meissner, 2021). Technology is also being utilised to create nuclear weapons; therefore, it is necessary to utilised technology for peaceful means.

Without support and justification from reliable internal and external scientific sources, governing bodies cannot make informed decisions with positive effects. This can be highlighted through the covid-19 pandemic outbreak when information was supressed by the Chinese local officials resulting in the infuriation of central governing bodies, slowing down responses to the pandemic and untimely resulting in an increasing number of cases and deaths (Board, 2020). The covid-19 pandemic has provided numerous lessons through which future existential challenges can be overcome providing humanity with the security. Action taken prior to disasters can reduce challenges of nuclear risks and the detrimental consequences. To ensure sustainability in the future there is a need for leadership globally to be decisive, proactive, think ahead and utilise their critical thinking skills and imagination to prepare for challenges. However, this can be facilitated through scientific analysis administered through a systematic format and global collaboration.

Nuclear risk

The increasing nuclear risk identified through the current war between Russia and the Ukraine, coupled with the covid-19 has highlighted a global catastrophe which requires the need for a robust infrastructure pertaining to crisis management (Budjeryn, 2022). The vast amount of misinformation has led to inaccurate decisions being made by national governing bodies (Somani, Progressing Organisational Behaviour towards a New Normal, Journal of Economics, Finance and Management Studies), hence global commitment and cooperation are needed to ensure misinformation is not exacerbated. Governing bodies can learn from occurrences encountered during the covid-19 pandemic to improve their performance and address international existential threats resulting from nuclear weapons and climate change. The leadership collaboration between China, United States of America, and Russia to control arms to attain strategic stability will facilitate future upheaval post-pandemic (Board, 2020). A global nuclear crisis will have rapid detrimental consequences resulting in immense uncertainty with a devastating outcome (Brazil, 2020). The technological infrastructure that is regularly utilised in daily life within transportation, communications and logistics would be demolished within a nuclear exchange creating a grave impact on the decision-making processes. Nations need to understand the uncontrollable and unpredictable effects on humanity and the world due to the outbreak of a nuclear war, hence all risks are required to be eliminated. A recent example of nuclear risk is evident through the Russian invasion of the Ukraine which highlights the dangers that are very genuine in contemporary life (Kuta, 2022).

Conclusion

This study has deduced that the Doomsday Clock is a metaphor that has been devised to alert the world to the seriousness of nuclear risk, climate change and technologies. The covid-19 pandemic has exacerbated existing inequalities but has promoted the use of technology. The Bulletin comprises of individuals that are involved in scientific advancements with colossal information that can be utilised to provide global societies with legitimate facts and dangers of technologies, nuclear risks, and climate change. They comprise of the individuals that helped to make the threats initially and ultimately understand the risks and consequences of inappropriate or no action. Hence, the Doomsday Clock provides leaders with a visualisation of the global situation and the urgent need to address dangers and threats in a proper manner and implement suitable strategies than can be implemented through effective policies. The need for diversity and understanding the political processes within multiple countries and the impact of science on national and international societies is vital in the new normal.

The impact of the covid-19 pandemic on human societies has vastly contributed to increasing the Doomsday Clock to one-hundred seconds to midnight. The possibility of a global pandemic was present prior to the covid-19 pandemic, however governing bodies did not invest in preventing, preparing or surveillance. Numerous events occurring in contemporary life due to the pandemic was predicted during Crimson Contagion in December 2019 which was three months prior to action taken by governing bodies (FOIA, 2020). There is a need to create awareness and identify smaller issues that constitute to larger societal challenges and the reduction of risks to global humanity. It has been urged by WHO for countries to become committed and start to invest in global health preparedness towards future global upheavals that will contribute towards reducing the time reaching midnight on the Doomsday Clock. To reduce the risks of infection the need for lifestyle changes is necessary. This includes changing threats to climate change by altering energy systems and human sacrifices to reduce greenhouse gas emissions. In addition, policies to eradicate nuclear weapons to secure the world. The covid-19 pandemic can invite national and international governing bodies to observe and act upon current challenges leading towards improved international collaboration and cooperation in managing threats presented on a global scale. It has stressed the importance of human connection and the disparities present which require attention through global cooperative responses in the interest of the nation, opposed to political gains at a domestic level. Science has served as a pivotal role in the identification of humanitarian

threats and providing solutions. A science based decision-making process will continue to create a safe global abode for humanity.

Recommendations

There is a need to restore the global infrastructure associated with crisis management particularly as national leaders dismissed the approaches linked to law and science that highlighted the urgency to address the global situation to avoid catastrophic outcomes. The covid-19 pandemic has highlighted numerous disparities and governmental dysfunction that were then heightened by inadequate resources available to deal with the crisis through a robust action plan. This can include the utilisation of energy efficient vehicles and appliances in building to reduced greenhouse gas emission constituting towards climate change.

There is a need for international collaboration and cooperation to increase commitment to decrease the time currently present on the Doomsday clock. Previously, leaders in positions of power and influence have degraded solutions and effective methods of combating challenging threats including robust international agreements and verification of mandates to safeguard personal vested interests and national political gains. It is evident that the advice of preparing for the covid-19 pandemic offered by the World Health Organization (WHO) published in September 2019 was not followed, the covid-19 failures have been attributed to inequalities, inaction, and the geopolitical division. There is a need to devise frameworks and treaties for future challenges in the new normal world with the help of scientists involved in the Bulletin. Alone, technical communities fail to impact and secure the mandate necessary to overcome future challenges. In addition, leaders should seek to understand what is best for international societies opposed to only benefit individual nations. Misinformation can be ceased through obtaining accurate information from trusted and reliable sources. It is important to learn the lessons provided through the covid-19 pandemic to ensure future preparedness and amend existing processes to engage with communities and political constraints to re-shape the future and facilitate increased time away from midnight on the Doomsday Clock in contemporary life.

References

[1] Board, B. S. (2020, 04 15). COVID-19 and the Doomsday Clock: Observations on

managing global risk. Retrieved from Bulletin of the Atomic Scientists: https://thebulletin.org/2020/04/covid-19-and-the-doomsday-clock-observations-on-managing-global-risk/

[2] Bohen-Meissner, L. (2021, 02 09). Technological innovation may be a ‘threat multiplier’ for Doomsday Clock. Retrieved from Medill reports: https://news.medill.northwestern.edu/chicago/technological-innovation-may-be-a-threat-multiplier-for-doomsday-clock/

[3] Brazil, R. (2020, 09 02). Doomsday Clock ticks closer to disaster. Retrieved from physicsworld.com: https://physicsworld.com/a/doomsday-clock-ticks-closer-to-disaster/

[4] Budjeryn, M. (2022, 04 17). If Ukraine chooses neutrality, what could that look like? Retrieved from Thebulletin.org: https://thebulletin.org/2022/04/if-ukraine-chooses-neutrality-what-could-that-look-like/

[5] Burr, W. (2020). The Atomic Bomb and the End of World War II. Washington: National Security Archive.

[6] FOIA. (2020). CRIMSON CONTAGION 2019 FUNCTIONAL EXERCISE AFTER-ACTION REPORT. Washington D. C.: DEPARTMENT OF HEAL TH & HUMAN SERVICES.

[7] Hawkins, E. (2018, 05 22). Warming stripes. Retrieved from Climate Lab Book: https://www.climate-lab-book.ac.uk/2018/warming-stripes/

[8] Kuta, S. (2022, 03 23). With Russia invading Ukraine, what’s the threat of nuclear war right now? Retrieved from colorado.edu: https://www.colorado.edu/today/2022/03/23/russia-invading-ukraine-whats-threat-nuclear-war-right-now

[9] McKenzie, J. (2022, 04 06). IPCC report calls for rapid, deep, and immediate emissions reductions. Retrieved from Thebulletin.org: https://thebulletin.org/2022/04/ipcc-report-calls-for-rapid-deep-and-immediate-emissions-reductions/

[10] Sarkar, U. (2022, 04 04). Israel has long exported arms to India. Now it’s selling spyware too. Retrieved from Thebulletin.org: https://thebulletin.org/2022/04/israel-long-exported-arms-to-india-now-its-selling-spyware-too/

[11] Science, N. C. (2020). What is climate change? Leeds: Natural Environment Research Council.

[12] Somani, P. (2021). Information Technology Challenges Faced during the Covid-19 Pandemic in Higher Education. International Journal of Latest Research in Engineering and Technology, 106.

[13] Somani, P. (2022). IMPROVING BUSINESS ETHICS IN THE NEW NORMAL. International Journal of Social Sciences and Management Review, 182-194.

[14] Somani, P. (Journal of Economics, Finance and Management Studies). Progressing Organisational Behaviour towards a New Normal. 2021, 1628-1633.

[15] Taylor, & Francis. (2022). Bulletin of the Atomic Scientists . Taylor and Francis Online.

[16] Yue, L. (2022, 01 20). PRESS RELEASE—At doom's doorstep: It is 100 seconds to midnight. Retrieved from Thebulletin.org: https://thebulletin.org/2022/01/press-release-at-dooms-doorstep-it-is-100-seconds-to-midnight/