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Emerging Technologies and Strategic Stability: A Race towards Ubiquity

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Key Points:

- The technological revolution and revolution in warfare have gone hand in hand over centuries.
- The emerging technologies are also changing the nuclear lexicon known as Cross Domain Deterrence.
- If we take the case that emerging technologies would increase strategic stability both at regional and international levels, then the same technologies would eventually become ubiquitous and part and parcel of our everyday life.
- If we take into account that emerging technologies would adversely affect strategic stability then again it would be an arms race in technology.
- It is evident that no matter if strategic stability would stabilise once and for all or will remain in contested concept of security dilemma, technology will spur a change in the sectors of the society and statecraft equally.

Introduction

The technological revolution and revolution in warfare have gone hand in hand over centuries.¹ However, taking the modern frame of reference for technological advancement, the warfare itself was intertwined with the tech domain during the first Gulf War. Its predecessor was none other than the concept of Star Wars in tandem with Strategic Defence Initiative (SDI) and Revolution in Military Affairs (RMA). After the end of Cold War, a new kind of threats evolved. This was the time when Barry Buzan, a prominent international relations scholar, argued that the future threat perception would revolve around non-traditional

threats, traditional being the military aspect.² While the non-traditional threats account for threats other than military like economic, social, political, and environmental among others, he called these as different sectors of security while also working on the theoretical framework of securitisation.³ What we are witnessing in the contemporary era is non-traditional threats emanating from what can be called digital media, digital space, cyberspace, digital technologies or emerging technologies. This is directly linked with the concept of strategic stability in the Cold War, where nuclear politics acted to avert the war in tandem with maintaining the balance of power as well. Therefore, such emerging technologies question the traditional notions of security, war and peace. As mentioned earlier, SDI might not be known in contemporary times

¹ Warren Chin, "Technology, war and the state: past, present and future," *Oxford Academic*, last modified July 1, 2019, <https://academic.oup.com/ia/article/95/4/765/5513164>.

² David A. Baldwin, "The concept of security," *Review of International Studies* 23 (1997): 5-26.

³ Clara Eroukmanoff, "Securitisation Theory: An Introduction," *E-International Relations*, last modified January 14, 2018, <https://www.e-ir.info/2018/01/14/securitisation-theory-an-introduction/>.

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by the name itself; however, its utility is quite visible in terms of RMA or more comprehensively the revolution in strategic affairs. All this is happening with a single intervening variable of emerging technologies. The fact that the phrase 'emerging' in itself explains that the technological advancement is taking place at such a rapid pace that it cannot be categorically determined that how much would such an exponential advancement effect the notions of war and peace, and how equally would it revolutionise the concept of strategic stability all together. It is due to the fact that the literature, both technical and non-technical is in developing phase as far as these technologies are concerned.⁴ Nonetheless, the void in literature is being filled by interdisciplinary approach which will be discussed later. Therefore, these emerging technologies would directly affect the equation of strategic stability in different domains.

This perspective paper intends to discuss how these emerging technologies have rendered the nuclear domain with a new concept of Cross Domain Deterrence (CDD), with cyber security having first of its digital weapons by the name of Stuxnet, and how Artificial Intelligence (AI) is making ingress into the decision making processes via the Autonomous Weapons and Command and Control System and how would they address the notion of strategic stability in the 21 st century.

Nuclear Politics and Emerging Techs – Cross Domain Deterrence

The Cold War also witnessed a revolution in technology as far as nuclear weapons are concerned. Their development was a great leap in physical sciences as well as the technological advancement to a level where nations would not get annihilated if they acquired nuclear weapons. But their development in itself was such a daunting task that only nine states in the world have managed to acquire such weapons. Now, in contemporary times, the emerging technologies are also changing the nuclear lexicon. Latest is known to us as Cross Domain Deterrence (CDD).⁵ It is defined as the use of threat of one type or a combination of different types, to dissuade an adversary from taking actions of another type to cause changes in status quo.⁶ This means that if war was the continuation of

politics by other means, the said CDD concepts would be categorised as continuation of politics by many means.⁷ Hence, it would not only include the nuclear deterrence as a single source of threat, but intertwining it with cyberspace, information technologies, AI and exploitation of the vulnerabilities of both conventional and non-conventional command and control systems. Hence, CDD involves more than a single variable for coercion at the strategic level or it can be said that nuclear deterrence is amplified by using multiple other tools of coercion, to make it more lethal and assertive. CDD in itself is a product of RMA; starting from the First Offset strategy which accounts for the Cold War era and nuclear politics.⁸ The Second Offset strategy deliberates about the latter part of the Cold War in which advanced weapons system and precision guided munitions played an increasing role for strategic stability at international level.⁹ And finally the Third Offset strategy, where the role of quantum computing and AI has been and would be paving the way for strategic stability.¹⁰ Since CDD is a part of emerging technology, the literature is in its nascent state owing to the fact that inherent sensitivity of nuclear deterrence might get liquidated. It is due to the said reason that research and literature on CDD is very much limited.

Cyberspace as a Warfare Domain

Coming to the concept of cyber security, its first utility as discussed earlier, was witnessed in the first Gulf war, practiced by the United States (US) in fighting against Iraq while they invaded Kuwait. The latest episode, where a cyber-weapon actually affected physical aspect of the world thereby rendering a physical change in geopolitical landscape of Middle East was in the form of Stuxnet. The said virus was a malware which was jointly developed by the US and Israel with the sole purpose to inflict damage to the Iranian nuclear facility at Natanz and it did quite discreetly.¹¹ The time between the Gulf War and Stuxnet was being filled with ever increasing literature on the development of cyberspace as a means of weapon. Such emerging technology has not only

⁷ "Cross-Domain Deterrence: Politics by Many Means," *Kings College London*, last modified September 24, 2018, <https://www.kcl.ac.uk/events/cross-domain-deterrence-politics-by-many-means>.

⁸ Octavian Manea, "The Role of Offset Strategies in Restoring Conventional Deterrence," *Small Wars Journal*, accessed March 28, 2020, <https://smallwarsjournal.com/jrnl/art/role-offset-strategies-restoring-conventional-deterrence>.

⁹ Rebecca Grant, "The Second Offset," *Air Force Magazine*, last modified June 24, 2016, <https://www.airforcemag.com/article/the-second-offset/>.

¹⁰ Jesse Ellman, Lisa Samp and Gabriel Coll, "Assessing the Third Offset Strategy," *Center for Strategic & International Studies*, last modified March 16, 2017, https://csis-prod.s3.amazonaws.com/s3fs-public/publication/170302_Ellman_ThirdOffsetStrategySummary_Web.pdf?EXO1GwjFU22_Bkd5A.nx.fJXTRKDKbVR.

¹¹ Kim Zetter, "An Unprecedented Look at Stuxnet, the World's First Digital Weapon," *Wired*, last modified November 3, 2014, <https://www.wired.com/2014/11/countdown-to-zero-day-stuxnet/>.

⁴ "What is the Definition of Emerging Technology?," *Winston & Strawn LLP*, accessed March 28, 2020, <https://www.winston.com/en/legal-glossary/emerging-technology.html>.

⁵ Syed Ali Hadi, "Cross Domain Deterrence – A Critical Appraisal," *Centre for Strategic and Contemporary Research*, last modified March 6, 2020, <https://cscr.pk/explore/themes/defense-security/cross-domain-deterrence-a-critical-appraisal/>.

⁶ Erik Gartzke and Jon Lindsay, "Cross-Domain Deterrence: Strategy in an Era of Complexity," *University of California*, last modified July 15, 2014, https://quote.ucsd.edu/deterrence/files/2014/12/EGLindsay_CDDOverview_20140715.pdf.

enabled states to inflict or disturb the balance of power with the middle powers or developing powers, but also provides a cushion for the developing powers when they are in asymmetry against a bigger power. Examples can be taken from Iran and North Korea. These countries are giving a tough time to US by engaging through different non-traditional domains of threats, may it be nuclear, cyber, AI or digital media. One thing which is critical to note is that some of the emerging technologies might be categorised as enablers, meaning they would aid in the strategic stability of the region.¹² However, there would be some technologies which would also be considered as destabilisers.¹³ It is up to the utility and purpose behind the use of such emerging technologies, and their intended purpose towards a specific target that would certainly define their role. The Stuxnet definitely affected the equation of strategic stability in Middle Eastern region, where later Iran agreed upon the nuclear deal in the form of Joint Comprehensive Plan of Action (JCPOA).¹⁴ Cyberspace is also a subset of Information space or commonly known as Information Warfare (IW) and Information Operations (IO). So, IW/IO are always complemented with cyber operation, may it be the conventional domain of military among the states or the case of nuclear politics as it was in the Stuxnet episode.

Artificial Intelligence as an Emerging Technology

Furthering the debate, comes the concept of AI as another emerging technology which is being employed both by the developed states and somewhat by the developing states as well. There is a dilemma being faced by the policy-makers and academicians that how far AI can play its role in the development of autonomous weapons and their subsequent employment as independent decision making weaponry arsenal.¹⁵ One aspect is that no matter how much AI driven autonomous weapons become efficient in decision making process, a human element should always remain in its place so as to deescalate the situation. Conversely, the proponents of the other side vouch that machines based on automated decision making would eventually have to be employed

¹² Syed Ali Hadi, "Role of Emerging Technologies and Influence of Revolution in Military Affairs in Strategic Stability: Future Possible Scenarios at Global and Regional Level," *Strategic Foresight for Asia*, last modified February 1, 2020, <https://strafasia.com/role-of-emerging-technologies-and-influence-of-revolution-in-military-affairs-in-strategic-stability-future-possible-scenarios-at-global-and-regional-level/>.

¹³ Op. cit. 12.

¹⁴ Kelsey Davenport, "The Joint Comprehensive Plan of Action (JCPOA) at a Glance," *Arms Control Association*, last modified May 2018, <https://www.armscontrol.org/factsheets/JCPOA-at-a-glance>.

¹⁵ Michael T. Klare, "Autonomous Weapons Systems and the Laws of War," *Arms Control Association*, last modified March 2019, <https://www.armscontrol.org/act/2019-03/features/autonomous-weapons-systems-laws-war>.

for decision making process and to avoid or deter any irrational behaviour from any of the political actors, may it be an individual leader of a state or the state itself. This comes in cases where the decisions are to be carried in fractions of the second like in hypersonic weapons or ballistic or cruise missile.

Conclusion

All of the aforesaid debate about the emergence of technologies, which have direct bearing on geopolitical landscape of the world, equates with one question. How would strategic stability be affected or not affected? The next logical question would be towards its ubiquity. If we take the case that emerging technologies would increase strategic stability both at regional and international levels, then the same technologies would eventually become ubiquitous and part and parcel of our everyday life. Although same can be said when we see the role of digital technologies in our day to day routine from Facebook to Snapchat and now towards a crisis situation where COVID-19 has rendered humanity from social networking towards social distancing.¹⁶ However, one thing which has remained constant is the efficacy of going digital all around the world. Surely, this transition period would pass and this point in time would become a case study as to how world can literally work online even in post-COVID-19 era. On the other side of the equation, if we take into account that emerging technologies would adversely affect strategic stability then again it would be an arms race in technology. The more a state would be advanced and developed in such technologies, the more it would have an edge in the balance of power and inflict the opponent as desired. In either of the cases, it is evident that no matter if strategic stability would stabilise once and for all or will remain in contested concept of security dilemma, technology will spur a change in the sectors of the society and statecraft equally. Nuclear politics are at a juncture where Iran and North Korea are giving hard time to global actors as a result of multiplicity of coercion tools coupled with emerging technologies. How their acquiring of nuclear weapons would eventually affect the strategic stability? Globalisation, on the other hand, has also facilitated a role where the technology from one part of world is being 'globalised' towards other parts of the world. In modern era, almost every major political actor (states) now possesses a minimum capability in cyberspace.

Recommendations

Therefore, following recommendations would definitely conclude how such an exponential rise in emerging

¹⁶ Anne Fisher, "4 ways to keep networking while social distancing," *Fortune*, last modified March 25, 2020, <https://fortune.com/2020/03/25/coronavirus-social-distancing-networking-career-advice-jobs-covid-19/>.

technologies would affect the strategic stability both at international and regional levels.

- Nation states would be likely to pursue emerging technologies and their role in the employment towards war and peace would enhance.
- The nations who would lead this race towards ubiquity would eventually have an edge over their adversaries.
- The strategic stability would only be maintained keeping in mind the intervening variable of emerging technologies.
- Just like the balance of power was maintained throughout the Cold War by conventional or strategic weapons, now it would also be maintained by racing towards emerging technologies.
- The 21st century warfare concepts would be aided by advancements in science and technology thereby enhancing non-traditional security paradigms.