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The Implications of the fourth industrial revolution on diplomacy

A Dissertation

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ABSTRACT

Diplomacy has succeeded historical events and industrial revolutions. However, the impacts of the fourth industrial revolution (4IR) threaten to be more wide-spanning and destructive than any other industrial revolution. The study explores the implications of 4IR on the theory and practice of diplomacy. The study is guided by three research questions: how does 4IR impact diplomacy; what technologies trigger a change in diplomacy; and do costs act as a barrier to states? Making use of qualitative methods, through the exploration of primary and secondary data, the study explores 4IR's implications on diplomacy. The implications are categorized into five pillars which are considered integral aspects of diplomatic theory and practice. The pillars are communication, interdependence, domestic and international frameworks, new 'new' diplomacy and diplomatic functions. The study concludes that diplomacy may be impacted by 4IR in all five pillars of diplomacy. 4IR may not diminish the practice of diplomacy but rather complement it. A highly digitized diplomacy with cyber tools may result in a more efficient and effective type of diplomacy. Technologies such as artificial intelligence, big data and information and communication technologies are the key drivers of change in diplomacy. In addition, costs may act as a barrier to states but innovation and skills are equally important. Partnerships and collaborative efforts will be extremely imperative for states to harness the full potential of 4IR.

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DEDICATION

To my mom and dad,

thank you for all the sacrifices you have made throughout my life and for my academic journey. Your sacrifices and unwavering support have brought me thus far. I am forever indebted to you. This is for you.



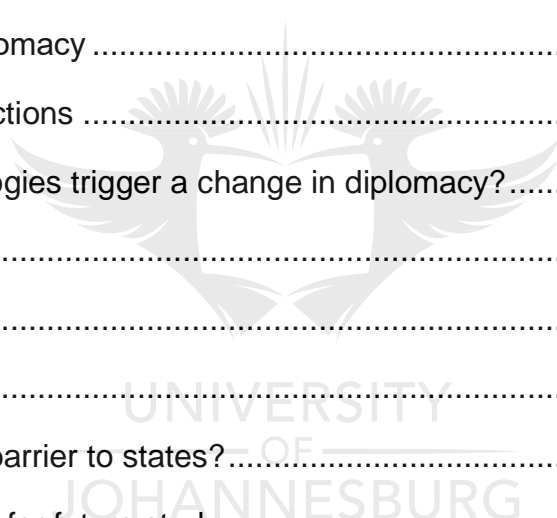
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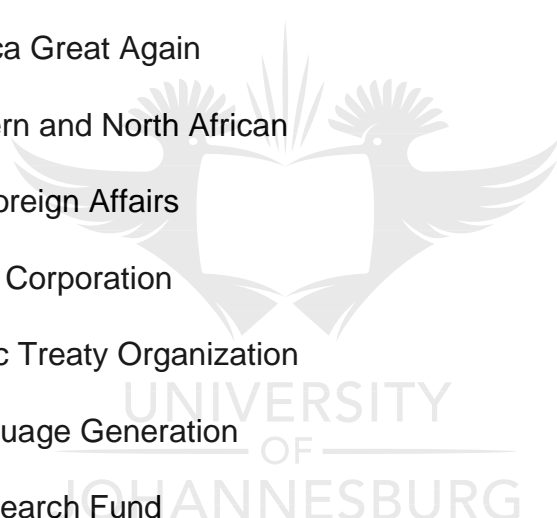
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LIST OF ACRONYMS AND ABBREVIATIONS

4IR	Fourth Industrial Revolution
AAAS	American Association of Advanced Science
AI	Artificial Intelligence
APPI	Act on the Protection of Personal Information
BRI	Belt and Road Initiative
CEO	Chief Executive Officer
CIFAR	Canadian Institute for Advanced Research
CSIR	Council of Scientific Industrial Research
DARPA	Defense Advanced Research Projects Agency
DEFT	Deep Exploration and Filtering of Text
DoD	Department of Defense
DoS	Department of State
DSI	Department of Science and Innovation
EBRD	European Bank for Reconstruction and Development
EU	European Union
FBI	Federal Bureau of Investigation
GGE	Group of Governmental Experts
GIS	Geographical Information Systems
HLEG	High level expert group
ICT	Information and Communication Technologies
ICYMI	In case you missed it
IMF	International Monetary Fund

IO	International organization
IOGAN	Identifying Outputs of General Adversarial Act
IoT	Internet of Things
ISIS	Islamic State of Iraq and Syria
ISP	Internet Service Provider
IT	Information Technology
IUU	Illegal, Unreported and Unregulated
LAWS	Lethal autonomous weapon systems
LDA	Latent Dirichlet Allocation
MAGA	Make America Great Again
MENA	Middle Eastern and North African
MFA	Ministry of Foreign Affairs
MNC	Multinational Corporation
NATO	North Atlantic Treaty Organization
NLP	Natural Language Generation
NRF	National Research Fund
PPP	Public-Private Partnerships
SDG	Sustainable Development Goal
SESAME	Synchrotron-light for Experimental Science and Applications in the Middle East
SONA	State of the Nation Address
UK	United Kingdom
UN	United Nations
US	United States
USSR	Union of Soviet Socialist Republic



VCDR	Vienna Convention on Diplomatic Relations
VPP	Virtual Presence Post
WEF	World Economic Forum
WTO	World Trade Organization



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Chapter 1: Introduction

1.1 Introduction

This dissertation aims to explore the effects of the fourth industrial revolution (4IR) on diplomacy. 4IR is the latest industrial revolution that is geared by highly innovative and breakthrough technologies, threatening to impact all spheres of life (Schwab, 2018). 4IR may be simply understood as 'technological-driven change' which may merge physical, digital and biological spheres into one for the advancement of global human development (World Economic Forum, 2019).

Nicolson (1969), describes diplomacy as the 'management of international relations' by ambassadors and envoys. Graham (2008:117), states that diplomacy is an 'instrument of foreign policy', assisting diplomats or heads of state in engaging in diplomatic relations which may protect, divert or shape their state's national interests. With time, the actors who conduct diplomacy have vastly evolved and Bjola and Kornprobst (2018), state that the actors involved in diplomacy include those representing states, multinational corporations (MNCs), international organisations and civil society organisations. For the purpose of this dissertation, all three definitions will be utilised and diplomacy may therefore be considered as the management of international relations whereby the representatives of a state, MNC or organisation engage in diplomatic relations to protect, divert or shape the national interest of their states and achieve the foreign policy goals set out by the state.

Diplomatic practice has been a key aspect of international relations since the ancient Greek era. Over time, diplomacy has proved to be extremely diverse and agile in nature. It has endured world wars, industrial revolutions and technological advances. It has not succumbed to any major events throughout history but rather evolved through it. Hare (2016), describes diplomacy as highly adaptable.

Diplomacy evolved from low levels of interaction (Eilers, 2006), to becoming a key tool of foreign policy (Graham, 2008). Later on, diplomacy came to welcome non-state actors following the formation of the League of Nations prompted by Woodrow Wilson (Morgenthau, 1945). Otte (2007), reflects on diplomacy's private setting in previous decades. However, it has become more open over time and technology would soon become a key tool of diplomatic practice. Akokpari (2016), highlights the importance of negotiation and communication within diplomacy. Communication is made highly

advanced and sophisticated due to Information and Communication Technologies (ICT) and other technological advances, this implies that 4IR may have direct and indirect implications on the theory and practice of diplomacy. However, 4IR's implications may not be limited to the communication aspect of diplomacy but also other spheres as Schwab (2018), suggests that 4IR will impact all spheres of public and private life.

The use of technology for diplomatic purposes is not new, as Turekian (2018), explores the developing strands of economic, innovation and science diplomacy since 2001 due to the influence of technology. The integration of technology into diplomatic practice is becoming more prominent and almost unavoidable.

According to Berridge (2015), telephone diplomacy has become increasingly popular as telephone lines become secure and cost-efficient. In addition, modern media has offered direct communication between citizens and states and has since replaced the use of the telegram. Hare (2016), acknowledges that digitisation has diminished the concerns of distance that may have previously hampered diplomatic communication.

Hare (2016), notes that although technology may stimulate international cooperation among state and non-state actors to solve global challenges, such as poverty and terrorism, there is also an area of major concern: diplomacy becomes more vulnerable as the protection and safety of communication technologies and equipment is often beyond a state's control. The accessibility of computer technology is not exclusive to state actors, but it is rather available to anyone and may be used in whatever manner an individual or group feels necessary. The use by such actors may not reflect the same systemic use of the state to positively contribute to a multipolar international society.

As 4IR is relatively new and remains in its infancy, it remains unknown how exactly it may affect diplomacy. Failure to understand the potential implications of 4IR on diplomacy would mean that states may not adequately prepare for a new phase of diplomacy. This dissertation attempts to understand how diplomacy is implicated by 4IR to enable state and non-state actors with the appropriate knowledge and skills to embrace 4IR and be able to deal with the challenges that may arise as a result of the intersection between the two.

Five pillars of diplomacy have been identified to explore the potential implications of 4IR on diplomacy. These pillars are communication, interdependence, domestic and

international frameworks, new 'new' diplomacy and diplomatic functions. The selection of each pillar is based on the following:

Communication is driven by technology and therefore, as technology evolves, diplomatic communication may simultaneously evolve. Interdependence was selected as a pillar as diplomacy has become more multilateral over time and this may be further enhanced as 4IR makes the world the most interconnected that it has ever been. The pillar of domestic and international frameworks attempts to explore the legislation factor that may be required as new technologies are implemented into diplomatic practice. A framework is necessary to guide the use of such technologies to minimise privacy or security breaches. New 'new' diplomacy explores the possibility of a new phase of diplomacy, building on the themes of old and new diplomacy as 4IR may change diplomatic practice. Lastly, the pillar of diplomatic functions attempts to explore the new and diverse functions of diplomatic practice as technology may change performance and the nature of diplomatic activity.

4IR is different to previous industrial revolutions due to its consuming nature. Its breakthrough technologies are interruptive and may affect every field as Hare (2016), highlights that changes in technology and advances are occurring at a rapid pace. Therefore, the research is driven by three central questions. First, the research attempts to understand how 4IR affects diplomacy, in theory and in practice. Second, the study explores the new technologies that may potentially trigger a change in diplomacy. And lastly, the study explores if costs may act as a barrier to states in a new digitised diplomatic environment.

1.2 Conceptualisation of terms

Chapter 2 will provide an in-depth conceptualisation of concepts aligned to the study. However, for an understanding of this section, a brief conceptualisation of terms is provided below but will be dealt with in greater detail in the following chapter.

- Artificial Intelligence (AI) – Berger (2019,) states that AI aids in finding solutions in a 'human-like manner', with the ability to perform tasks which often a human would do with the ability to reason, generalise, uncover meaning and learn from past mistakes. Berger further explains machine-learning, also an integral aspect of 4IR, which analyses data to reach, almost perfect, conclusions.

- ICT₂ is more commonly known as information technology (IT). It consists of a merging of communications and telecommunications, further consisting of computer software and middleware; and 'storage and audio-visual systems' enabling users to have access to, store, transfer as well as manipulate information (Asafe, 2014:10).
- Internet of Things (IoT) – Chou suggests it introduces a new level of connectivity. An extension of the internet (2019:107). It allows for the inclusion of physical and digital realms.
- Public diplomacy – may be understood as types of government mechanisms utilised by the state to influence public opinion or inform the public or other countries on information regarding the state or its agenda (Dinata, 2014:3).
- Big data – according to Mills (2019:9), is large structured or unstructured datasets and due to technological advances, its size is continuously changing. Hashem et al. (2015) discuss big data as complex, diverse and massive; requiring the appropriate analytical tools and technology to 'capture, process and reveal insights in a timely way'. Lastly, big data has been characterised by the three Vs: velocity, variety and volume (Chandler, 2015).
- Cyberspace – consists of interconnected dimensions and infrastructure systems with the ability of exploiting information, in addition to producing significant changes in the quality of lifestyles as we know it (Bancila, 2018:6).

1.3 Problem statement

4IR is made up of overwhelming advances in technology which infiltrate diplomatic practice. This, however, makes diplomacy vulnerable as Hare (2016), highlights that the security of computational technology and equipment utilised for diplomatic practice may be out of a state's control. The protection and security of ICT and other technology is rather difficult as the internet provides a borderless and interconnected international environment. As highlighted in the introduction, the use of such technologies is not exclusive to states and the intentions of other users (non-state actors) may not necessarily align with that of a state's diplomatic objectives.

4IR may affect diplomatic theory and practice. Diplomacy is known to have two phases, old and new diplomacy. Old diplomacy emerged in ancient Greece and continued to 1819 (Roberts, 2009). The second and last known phase of diplomacy is new diplomacy which

emerged in 1919 and is what is commonly referred to in diplomatic practice today (Geraud, 1945). The primary difference between old and new diplomacy is the degree of openness and the central actors. However, Sending (*et al*, 2011), state that from the 1980s to the 1990s, diplomacy experienced a decline. This decline may be as a result of a wider spread of actors and technological influence. Perhaps this leaves room for a digitised, highly inclusive and diverse phase of diplomacy. However, it remains in question if diplomatic actors are prepared for a new phase. These phases of diplomacy will be dealt with in greater detail in the following chapters.

In addition, the utilisation of new technologies and a digitised diplomatic practice of diplomacy may not be rigidly guided by an international legal framework. While many states may have designed a domestic framework that legislates the use of technologies, as it stands there is no international framework that speaks to diplomacy and technology exclusively. The Vienna Convention on Diplomatic Relations (VCDR) of 1961 was drafted roughly 60 years ago and has not been updated since. This is problematic as diplomatic practice has evolved and evidently integrated new types of diplomacy, such as economic diplomacy, science diplomacy and Twitter diplomacy. The VCDR is yet to include such sub-themes and digitised elements of diplomatic practice as communication technologies may implicate privacy rights of the state, individuals and private corporations.

Stanzel (2018), raises three areas of concern relevant to this study: first, the introduction of new and advanced technologies has the potential to hinder diplomacy or facilitate its development. This is dependent on how states integrate such technologies into diplomatic practice. Second, the rise of new non-state actors and use of social media may affect the legitimacy of the state. This is especially relevant in relation to the discussion of sensitive matters by states on social media platforms. And third, diplomatic actors and the Ministries of Foreign Affairs (MFA) at large ought to be agile and resilient. Such individuals should have the potential to quickly develop the appropriate knowledge and skills geared to harnessing the 4IR in diplomacy. If diplomats fail to equip themselves then it may affect their abilities to appropriately persuade policy outcomes in diplomatic affairs.

In exploring potential future trends for diplomacy, Wallerstein (2011), anticipates tumultuous global economy and hostile geopolitics due to the influence of new technologies and actors. Schwab (2015), warns of the potential widening of inequalities among individuals and states due to the integration of 4IR. This raises concern as to how diplomatic relations may be affected, potentially creating further divisions and blocks

within international relations. The further divide between developed and developing nations may provoke an unequal balance of power as some states may have an unlimited access to financial and technological resources that may influence their power in the international system.

Due to the relative newness of 4IR, the potential outcomes and effects on diplomacy are largely unknown. Therefore, this study comes at the appropriate time.

1.4 Research questions

The research will be guided by one overarching question and two sub-questions which may assist in establishing the overall impact of the 4IR on diplomacy.

1.4.1 Main question:

- How does the 4IR affect diplomacy?

1.4.2 Sub-questions

- What new technologies have been introduced triggering a change in diplomacy?
- Do costs act as a barrier to states?

1.5 Research objectives

- To establish the practical and theoretical implications of 4IR on diplomacy and how states will deal with such implications.
- To investigate the technologies that may impact diplomacy.
- To determine if costs pose a barrier to states in engaging in diplomatic relations in the age of 4IR and how to limit such barriers to avoid a significant imbalance of power among states.

1.6 Limitations of the study

This dissertation explores the implications of 4IR on diplomacy, exclusively. Therefore, the study will explore the theoretical nature of diplomacy as influenced by recent technological advancements, in addition to practical diplomatic relations.

The research aims to answer three research questions. The first and main question explores how 4IR affects diplomacy. Five pillars of diplomacy are explored to understand the implications of 4IR. The pillars are communication, interdependence, domestic and international legal frameworks, new 'new' diplomacy and diplomatic functions. Due to the wide-spanning nature of the study in the exploration of five pillars of diplomacy, the study is extremely comprehensive in the respective pillars, but each pillar may not consist of

significant depth. However, this may be built on at doctoral level. In addition, as the study focuses on five pillars of diplomacy, it may not include other areas that may also be implicated in diplomacy such as economic diplomacy or the weaponisation of diplomacy as such topics may be a stand-alone study due to its extensive nature.

The second question explores the technologies that may trigger a change in diplomacy and the research explores the central technologies of 4IR, such as AI, big data and ICTs. These technologies have acted as the central focus of 4IR and therefore, the research fails to consider the implications of other technologies such as augmented reality, autonomous robotics, simulation and cloud computing. However, at the time of writing, there is very little evidence that any of the excluded technologies have made a significant impact on diplomacy thus far.

The third and final question explores if costs act as a barrier to states. The question is dealt with by exploring the potential of a new global order as Schwab (2016a) has suggested that 4IR may offer development opportunities in politics, economics and in one's personal life. To answer this question, the study explores literature by respected economists, leading financial institutions and international organisations like the World Economic Fund (WEF) and United Nations (UN). However, the study does not explore specific case studies to deal with this question for two reasons: 1) it is too soon to see physical evidence that 4IR allows countries to skip stages of development and industrialisation; and 2) there is a lack of literature on the topic in reference to specific case studies. Therefore, the study exclusively explores future predictions.

The study encompasses reviewing the historical evolution of diplomacy to establish how it has evolved over time due to various global influences at the time, making reference to old diplomacy, new diplomacy and now a newer phase of diplomacy. Furthermore, the study then explores how the concept of diplomacy has changed from what it is traditionally known for and what the scope of a diplomat now consists of. In addition, the research attempts to understand if there is any legislation that guides this newer phase of diplomacy. After critically exploring the theoretical aspect of diplomacy, this being the five pillars, the research then continues by exploring the practical implications by exploring real-life examples. Practical application of the aforementioned pillars is not widely illustrated in current diplomatic relations or in the international society. However,

some states have highlighted some suggestion that it is progressing in the projected directions.

Due to the nature of this study, the research exclusively explores the relationship between 4IR and diplomacy and therefore, the scope of this research does not explore other areas of international relations which may potentially be impacted by the 4IR. Other areas of impact are believed to be economic development; migration management; and national security. The study will not focus on any of the aforementioned areas as each area may be an exclusive study on its own and may drive this dissertation away from its original purpose of study and therefore fail to answer the stated research questions.

Lastly, the topic is relatively new and therefore does not consist of a large array of academic literature. While there are plenty of academic sources that speak to modern diplomacy and 4IR independently, there are limited sources that speak on the topic in relation to one another. Therefore, the dissertation consists of a vast array of different resources such as academic journals, books, news articles, conference proceedings and organisational reports.

1.7 Significance of the research

4IR threatens to impact all aspects of public and private life (Schwab, 2018:13). While most fields (banking and industries) thought to be impacted have begun exploration on just how their sector or field may be affected by 4IR, the implications of diplomacy are yet to be explored. The best way to prepare for an industrial revolution is to know exactly what it entails and analyse how it may affect a specific field or sector ahead of time. This is precisely what this study aims to do. By exploring the possible implications of 4IR on diplomacy, diplomatic thinkers; heads of states; and MFAs;; they may be adequately equipped with the knowledge and technical capacity to deal with possible challenges of 4IR and how to improve the nature of diplomacy and diplomatic relations to keep up with the international world and technological advances.

1.8 Literature review

The literature review aims to explore any existing research on the study at hand. By exploring the existing bodies of knowledge relevant to the topic, it may be established how this study fills a gap in research. Literature from notable authors, in the respective fields of diplomacy, 4IR and science and technology, are explored.

4IR has entered with somewhat of a bang. Xu et al., (2018), describe 4IR as the movement of citizens between physical and cyber domains through highly advanced and connective technologies gearing and influencing human interaction. Levin (2018), highlights that 4IR affects multiple fields and virtually all public and private spheres of life. It is a transformative process in governments, businesses, society and production.

Schwab (2017:6), states that revolution means 'radical change', highlighting that this is not the first revolution that the international society has experienced but clarifies that this particular revolution is much larger and more radical than ever before. The author further notes that digital technology is not new – computer software, hardware and networks have been around since the third revolution – it is only now that such technologies are so trailblazing and interconnected, resulting not only in transforming societies, but also that of the global economy at large.

Griffiths and Ooi (2018), state that IoT has endless possibilities, comprising of physical objects in conjunction with embedded technology to sense, interact and communicate. The application of IoT offers a range of benefits across all fields and sectors, such as: time consumption; enhanced and increased learning opportunities; and will be beneficial to existing infrastructures.

Philbeck and Davis (2019), state that the use of low-cost sensors, powerful machine-learning algorithms and advanced actuators, allow for the seamless convergence of the latest technologies and the physical environment; further arguing that 4IR is a driver of transformation and transition across all industries.

Waslo et al., (2017), examine the cyber challenges prompted by 4IR, such as costs of maintenance, system complexity and single vendor dependency. The authors further highlight that the extreme use and high reliance of the cyber domain may result in cyber threats and attacks, suggesting that cybersecurity should become a priority for all.

According to Buch et al., (2018), there are various advantages to cybersecurity such as: the improved response time to cyber threats, improved security in the cyber dimension and the protection of systems and networks. Such advantages may prove to be extremely beneficial to states in the matter of international relations. However, the study exclusively discusses firms and individuals and fails to discuss the benefits states may experience.

Diplomacy is believed to be one of the many areas impacted by 4IR. Nicolson (1963:4), explains that diplomacy is the 'management of international relations' through the method of negotiation by ambassadors, envoys or diplomats. Sandre (2015:5), states that in the last few centuries, communication has changed tremendously; implying that the traditional manner in which conducting diplomacy was previously utilised, terming it the 'wax seal' formal era of communication, should now evolve to remain relevant just as intelligence and the military has evolved, too.

Hare (2016), describes the diplomatic communication that occurs, between societies and actors, as constant. In addition, it takes place in different forms and in some instances, it may be difficult to identify.

Berridge (2015), explores how the method of communication has changed since the initiation of diplomacy, further emphasising the security risks which ought to be ensured with the latest telecommunication developments, although crediting that the latest communications have often been to the benefit of diplomacy.

Graham (2008:119) provides a brief hint at the change in diplomacy due to the rise in technology, coining this as digital diplomacy, also as a result of the extensive growth of the use of the internet across the world over the last few decades.

Manor (2017), redefines digital diplomacy as the overall impact of ICT on the practice of diplomacy with the use of mobile applications and emails. This may be further prompted by the developments in 4IR. According to Riordan (2016), governments have an obsession with social media when referring to digital diplomacy. This obsession may hinder foreign ministries from focusing on and developing other digital tools that can promote a more effective digital diplomacy.

Bjola and Holmes (2015), highlight that digital diplomacy attempts to achieve a state's foreign policy goals utilising digital tools. However, due to continuous breakthrough technologies constantly emerging and the strides made in social media, it is relatively difficult for diplomats to strike a balance on the appropriate tools to achieve its diplomatic objectives. Bronk (2010:43) explores the implications of digital diplomacy, stating that there are unavoidable issues, for instance, the difficulty in transforming digital diplomacy into an effective system for policymaking.

According to Kai (2019), industrial revolutions have continuously changed the political and economic landscapes, changing the way humans 'perceive, live and act'. The first industrial revolution in the 18th century introduced a wave of capitalism, beginning in Britain. The electronic age of the 19th century was an age of imperialism. After World War II, the information age arose. It was an era led by the birth of computing technology, IT and biotechnology. Kai's sentiments illustrate how industrial revolutions and technological innovations have spillover effects on international relations and the global economy. Kai's study falls short as although it explores the international political and economic implications of 4IR, it fails to discuss diplomacy.

Pilegaard (2016), also highlights the interconnected relationship between societal practice and technological innovations that evolve simultaneously. Hutchings and Suri (2020), describe the rapid evolution of technological innovations as an indefinite driver of change regarding the traditional notions of power, influence and communication.

Behringer (2006) discusses the communications revolution (1760 onwards) as a separate entity from industrial revolutions and as a predecessor of the first industrial revolution, stating that from 1760 communications infrastructure rose significantly in the United States (US). It encompassed the railroad, airplanes, telegraph, radio, and telephones. The developments of the communications revolution resulted in a global environment that was much more connected than ever before.

Wriston (1997), explores the technological impact during the third industrial revolution, stating that military capabilities, state sovereignty, and the global economy are all areas that were implicated, affecting not only how daily jobs are performed but also what those jobs entailed. Wriston (1997:174), believes that the 'information revolution has increased the power of individuals and outmoded old hierarchies' – suggesting how information and technology may change the dynamics of international and diplomatic relations at large. Ifantis (2011:441), states that the information age expanded propaganda, enhancing the mobility and movement of information.

Faye (2000), predicted the significant influence that advanced technologies would have on diplomatic practice, stating that it would provide developing states the opportunity to 'skip the industrialization stage' and have the ability to transform their economies, allowing them to make vast contributions to the global economy.

According to Seth (2019), 4IR continues to change diplomatic discourse as science and technology transform every corner of society. Nguru (2020), shares similar sentiments, stating that the latest industrial revolution has brought the world to a technological turning point. The author further emphasises that at this turning point, it is imperative for Africa to forge new relations and embrace new opportunities as digital diplomacy becomes more of a reality in Africa.

Scott, Heumann and Lorenz (2018:5), discuss the incorporation of AI in foreign policy, stating that the inclusion of technology into diplomatic practice has been a complex process yielding mixed results. However, the authors suggest that incorporating digital technologies into diplomacy has led to differing results in comparison to the inclusion of digital technologies into society at large, therefore there is a need for a smoother 'process of adaptation'. Scott *et al.*, (2018:7) highlight that the newly found transformations of AI will indefinitely intersect with traditional foreign policy.

McCarthy (2015), states that the internet is an integral aspect of America's foreign policy as it is a form of 'institutional power' and aids in promoting the foreign policy of the open-door position that the United States of America (USA) has taken.

A recent conference held by the Diplo Foundation (2019,) emphasised that AI will aid diplomacy in two ways: a) supporting the work of diplomats; and b) highlights the impact of AI on human rights. While the Diplo Foundation acknowledges the power of AI in diplomacy, it fails to go into greater detail about how AI may support the work of diplomats and does not further unpack the types of implications that AI will have on human rights. Lastly, the foundation fails to offer suggestions for this potential challenge.

According to Manor (2018:3), the use of digital technologies in diplomacy has become increasingly popular, citing a number of examples such as the Palestine government making use of Facebook for engagement with Israeli citizens; state ambassadors utilising Skype to have online discussions with students; and even the Indian government creating mobile application games for children in the diaspora. Furthermore, Manor (2018:5) suggests that not only do digital technologies introduce new or updated functionalities, but also encourage the promotion of new norms and expedite new behaviour.

Cucos (2012:1), critically examines virtual diplomacy, stating that a large number of 'embassies, consulates, and other types of foreign representation' have been closing

down due to staggering effects of economic recessions affecting countries across the globe that diplomats are not immune to, irrespective of diplomatic immunities. This has led to an increase in the use of virtual diplomacy which may be understood as governments making use of IT to achieve their foreign policy goals or objectives. Cull (2013:124) also explores the emergence of public diplomacy, stating that its rise is due to the influence of public opinion stemming from the increasing use of technology which Cull describes as the 'communications revolution'. The new rising public diplomacy made room for a larger and more open dialogue and exchange of information.

With the costs tied to the use of the latest technologies, it poses a major concern as to whether this may act as a possible barrier for some states and creating an exclusive environment in international relations. According to Poro (2017), the response of countries will be imperative as it may either lead to opportunity or crisis, sharing the sentiments of the WEF which stated that the 4IR may lead to distinguishing between states who are 'innovative-rich' and 'innovative-poor' in a time where natural resources will come to mean very little. However, Brynjolfsson et al., (2014), suggest that the states that will reap the most from the 4IR will be those who can produce innovative ideas; rather than previously when cheap labour, mass production and financial resources were imperative to a country's economic success and position in a global political economy. Chitaba (2018), also states that the innovators will reap the most in the era of 4IR and there is a dire need for those with intellectual capacity and those with financial capital to come together.

According to Veihmeyer (2016), individual strategies designed by states to integrate 4IR will increase the possibility of friction in global competitiveness and instead, states should work in a collaborative effort to stimulate economic growth for all. Despite what the author offers as an ideal way forward, the research does not explore case studies between developed and developing actors or non-state actors to establish if the proposed solution is viable.

Galvan (2016), has stated that the rapid change brought by 4IR to the way we live, work and communicate will require fresh policies by governments to ensure that it is not only existing players who benefit but that the new technological advancements serve the citizens. According to Schwab (2016a), 4IR has the ability to empower individuals and communities at large due to 'new opportunities for economic, social and personal

development' but warns that 4IR could also lead to the increased marginalisation of some groups and may intensify inequality. Such inequalities may not only exist at an individual level but also in states, which the study aims to explore.

Following the exploration of the above literature, it may be stated that there is literature available that discusses technological influences on diplomacy, but these discussions do not focus on the specific influence of 4IR and the technologies that drive the latest industrial revolution. As highlighted from the above authors, the internet and communication technologies and infrastructure have had a significant influence on diplomacy becoming somewhat digitised. Some authors have reflected on the potential of AI in diplomacy and foreign policy but do not go into great detail or rather choose to focus on one area of diplomacy, like communication or decision-making. Therefore, it may be stated that this particular study fills a large gap in knowledge as it explores a wide spectrum of diplomacy, reviewing the implications of 4IR on communication, interdependence, domestic and international legal frameworks, new 'new' diplomacy and diplomatic functions. In addition, instead of focusing on one technology of 4IR, it explores different types of technologies within 4IR to establish the wholesome implications of 4IR on diplomacy.

1.9 Research methodology

This research study is qualitative and exploratory in nature. Qualitative research provides the 'why' and the goal of it is to have a deeper and more comprehensive understanding of a specific subject matter (Domheldt, 1993). According to Haradhan (2018), qualitative research allows researchers to understand and interpret issues and from there, generate new concepts and theories. Furthermore, the strengths of qualitative research are that it is rich and detailed offering deeper insights and with the advantages of being flexible and the researcher has a clear vision of the outcomes. However, the weaknesses are its time-consuming and costly nature.

Research may be exploratory, explanatory or descriptive. According to Babbie and Mouton (2003), exploratory research explores a particular research topic or subject matter to provide a basic understanding and familiarity with the topic as it is most likely relatively new. Explanatory research attempts to explain something and descriptive research describes events or phenomena. For the purpose of this study, exploratory

research is appropriate due to the relative newness of 4IR, especially in relation to diplomacy.

The study is made up of a desktop research approach. It explores primary and secondary resources such as books, journal articles, conference papers and newspaper articles to reach a conclusion which should assist in answering the three research questions. Although this approach has often been critiqued for being time-consuming, it provides advantages as one ought to review various sources which may bring a researcher to real-life and plausible conclusions through the identification of common factors, verifying the hypothesis or assisting the researcher in reaching the answers to the research questions (Yin,1984:13). In addition, Yin (2011), describes 'surfing the web' as a useful tactic in research as it may lead to the findings of new or related sources, albeit a time-consuming process. However, this is suitable for the topic as the internet possesses most of the relevant information pertaining to the research as it is a new topic that is discussed daily. The internet therefore retrieves new information daily.

The study takes on a multiple case study approach where a number of countries are explored. The advantages of this approach is that with a wider lens, exploring multiple case studies, it may be established how widespread the implications of 4IR are around the world. In addition, it highlights how far the implications extend despite a country's development, economic status or resources. The downside to this approach rests in the fact that the analysis may lack depth as it explores factors at surface level but does not provide a more detailed analysis. However, Greene and David (1984), outline that a multiple case study approach may allow a researcher to reach plausible conclusions, rather than looking at a single case study where inaccurate generalizations may be made.

1.10 Chapter layout

Chapter 1: Introduction to the study outlines the study and the reason for the study. This chapter includes the background of the research, one main research question, two sub-questions and objectives. In addition, the problem statement and limitations of the study are explored. A literature review that explores brief background of content on the same or similar matters which has previously been researched is provided. This is followed by the research methodology which explains the methods set out to conduct the research and lastly the structure of the dissertation is provided.

Chapter 2: Conceptual framework deeply unpacks the concepts at the heart of the study including that of diplomacy at large and the 4IR, providing readers with a clear understanding of the subject matter. The chapter traces back the historical evolution of diplomacy, providing critical understanding of how diplomacy has continuously been influenced over time. Furthermore, industrial revolutions are discussed, providing detail as to why 4IR differs from any other previous industrial revolution. The chapter then critically explores the subset technologies of 4IR which may have an effect on diplomacy.

Chapter 3: The pillars of diplomacy affected by 4IR explores the theoretical implications that 4IR may have on the concept of diplomacy. The chapter explores five pillars of diplomacy which are: communication, interdependence, domestic and international legal frameworks, new 'new' diplomacy and diplomatic functions.

Chapter 4: 4IR impact in application explores the practical implications of 4IR on diplomacy, reviewing various examples of diplomatic practice influenced by 4IR in relation to the aforementioned pillars of diplomacy. In addition, chapter four deals with the potential of a new global order that attempts to answer the third research question, 'do costs act as a barrier to states?'

Chapter 5: Findings and conclusion: a concluding chapter which may tie any possible loose ends together and ensure that the research questions have been thoroughly dealt with. If it is found that 4IR has theoretical and/or practical implications for diplomacy, key recommendations may be made on the essence and practice of diplomacy which may remain relevant in the age of 4IR. In addition, recommendations for future study will be made.

Chapter 2: Conceptual Framework

2.1 Introduction

The key concepts utilised as a lens for this study are: a) diplomacy, and b) industrial revolutions, but more specifically the concept of the 4IR. These concepts are imperative for the understanding of the study and will therefore be discussed. First, a historical account for each concept will be provided. For diplomacy, this will then allow one to understand the evolution of diplomacy and where it currently stands. For the 4IR, the first three industrial revolutions will be explored for a clear understanding of how the current industrial revolution differs from prior ones and how it may possibly impact the field of diplomacy.

2.2 Diplomacy

As aforementioned, diplomacy may be easily understood as interaction between states (Eilers, 2006). According to Bjola and Kornprobst (2018), communication forms an integral aspect of diplomacy and when it is institutionalised it forms the very basic foundation of diplomacy where state representatives are able to push their state's national interests in international relations. Spies (2016:39), defines diplomacy as an instrument or tool of foreign policy with the purpose of representing, communicating and intermediating. Additional elements of diplomacy include negotiation and reconciliation.

According to Berridge (2015:1), diplomacy is an imperative political activity where states are able to direct and secure their foreign policy objectives without resorting to coercion or propaganda. Berridge (2015:5) further explains that most states have a special ministry dedicated specifically to foreign affairs, this is often known as the MFA. However, the work of the staff that forms a part of MFA and diplomats working abroad, on special missions, is mostly very different. In addition, it is worth noting that the MFA has to work in conjunction with other departments or ministries and government actors to make foreign policy decisions and carry out such decisions (Berridge, 2015:19).

Kelley (2010: 286-287) describes diplomacy as the ability of states to positively engage in diplomatic relations with one another. Sharing a clear understanding of the rules of the game, both states ought to willingly recognise the sovereignty of the other state, then have the ability to achieve political ends.

Adler-Nissen (2015:27) states that the scope of diplomacy extends far beyond maintaining the international system and overseeing international relations but also

includes governance which covers the legislation that guides the interaction between diplomats, heads of states and other relative entities. The work of a diplomat is not to merely act as a messenger on behalf of their state but diplomats are also responsible for positioning their state in alignment with its policies and objectives in the international society. The role of diplomats also extend to conflict prevention and mediation and establishing stronger economic, political and cultural relations with states.

2.2.1 Historical evolution of diplomacy

Throughout history, we have witnessed two phases of diplomacy, old and new. Old diplomacy began in the ancient Greek era until 1914 and new diplomacy emerged in 1919 and continues until the present.

2.2.1.1 Old diplomacy

Black (2011:43), a key author on literature of old diplomacy, stated that the central features of diplomacy at the time were: state systems; centralised governments; and sovereign states, all of which emphasise the role of the state. Niccolo Machiavelli who was a key player in spearheading old diplomacy in the 15th and 16th centuries, stated that the *raison d'état* for diplomacy was for states to pursue their national interests and increase their power in the international society (Zondi, 2016:25-26). Henry Kissinger also emphasised the centrality of a state's national interest in old diplomacy (Black, 2010: 149). Old diplomacy began in roughly 700 BC and concluded in 1914 (Eilers, 2006).

According to Geraud (1945), alliances were a key feature of old diplomacy and such alliances were mostly bilateral in nature. Eilers (2006), describes the relations between city-states or states as merely 'low levels of interaction' which did not specifically focus on trade, economic or political relations. Otte (2007), refers to old diplomacy as 'secret diplomacy' as it was primarily conducted in a private setting, behind closed doors and deemed as highly classified.

Leguey-Feilleux (2009:25), provides an in-depth analysis of diplomacy and diplomatic practices in the ancient world since 3000 B.C.E in Sumer (Mesopotamia), today known as Iraq and Kuwait. Sumer consisted of the first known and actively bilaterally engaging communities which consisted of complex and integrated political, social and economic structures. Diplomacy was regarded as an instrument of the gods or goddesses. The city-states of Sumer collectively selected one powerful city-state to oversee and maintain

interstate relations¹. In addition, chosen city-states had the obligation of mediating conflict which often occurred. Legueuy-Feilleux highlights that the 'supervisory function' was then considered the bulk of diplomatic practices but further processes of diplomacy remain unknown due to minimal recorded documentation.

Legueuy-Feilleux (2009: 26-33), accounts for a number of other examples of ancient diplomacy including: Akkad, China, Assyria and the Hittite empire. All states maintained diplomatic relations with their neighbours, most city-states relied on diplomatic missions to maintain such relations and employed diplomatic envoys. Key commonalities which are noted in historical diplomatic practices are diplomatic representation, communication through the use of envoys and conflict management (Bjola and Kornprobst, 2018:14).

The most significant historical contribution to diplomacy occurred in ancient Greece with interstate relations, merely for peaceful coexistence (Roberts, 2009:6). The author further states that diplomatic immunity was not an integral aspect of interstate relations. Diplomatic immunity would only later become such an imperative factor in diplomatic relations that it has an exclusive clause in the VCDR of 1961, which will be explored later in the chapter in line with the evolution. Furthermore, in the era of ancient Greece (700BC), there was the formation of alliances leading to the Peloponnesian League and later, the Delian League. Lastly, political-military alliances were formed which was essential in the maintenance of a peaceful existence between city-states (Mammadova, 2017:4).

According to Bjola and Kornprobst (2018:17), ancient Greece consisted of a highly sophisticated diplomatic system, comprising of frequent diplomatic missions, respect for diplomatic immunities and privileges, in addition to respect for treaties and alliances that were formed; and lastly, the system had maintained a quality calibre of public debate. The reflection of the Grecian diplomatic system, which may act as a mirrored reflection of diplomacy today, highlights the significant role that Greece played in contributing to diplomacy. It indefinitely cemented the foundation of traditional diplomacy. Furthermore, the diplomatic system comprised of the institutions that exclusively dealt with diplomacy, such as the *angelos*, *proxenos* and *keryx* which were different types of diplomatic representation. Political-military alliances were also a crucial element in ensuring a

¹ According to Longley (2019), a city-state may be deemed as a small and independent country that 'consists of a single city'. The size of the city-state is relatively small and it consists of a self-governing body.

peaceful existence which greatly contributed to Sparta and Athens merging into one (Mammadova, 2017:4).

According to Nicolson (1969:25), the diplomatic traditions established by the Greeks were later passed on to the Romans but suggest that the Romans did not make a significant contribution to diplomacy but rather to international law. The Roman empire had minimal efforts in attempting to establish a body of trained experts dealing with negotiations. Legueuy-Feilleux (2009:33), shares Nicolson's sentiments and highlights that Rome's contribution to diplomacy was 'less than expected'. The empire utilised the methods of temporary missions but did not deploy a skilful negotiator but rather a prominent citizen who was regarded as prestigious by the Roman Senate. Rome engaged heavily in alliances and international treaties, often with its neighbours. However, it is notable that Rome did not use diplomacy as a mode of maintaining supremacy but rather for global business transactions and legal relations which cemented a new space for international relations.

Zondi (2016: 26), emphasises the significance of 1648 for diplomacy when the Peace Treaty of Westphalia was signed. The reason for its significance, diplomatically speaking, was because of the negotiations that occurred between states to achieve an international society which consists of a balance of power, territorial integrity and sovereign states. According to Geraud (1945), the introduction of a balance of power into the international system was an attempt to ensure that no single state, or group of states, may possess large amounts of power and undue influence that it becomes a law in itself.

The era of old diplomacy concluded roughly four years after the Congress of Vienna took place in 1815 with the hope of reducing the possible risks of imperialism, prompting the structure of a new world order through restructured alliances (Roberts, 2009:12). The Quadruple Alliance of Great Britain, Prussia, Austria and Russia was a substantial document of the Congress and proved to be symbolic to diplomacy.

2.2.1.2 New diplomacy

Geraud (1945), describes new diplomacy as the 'universal association of compliance', symbolising multilateralism and openness. Black (2010), refers to the introduction of non-state actors into diplomatic relations as a central feature of new diplomacy. Initially, non-state actors spoke mostly of international organisations such as the UN but over time it has evolved into MNCs and interest groups.

Bjola and Kornprobst (2018:37), state that the introduction of new diplomacy was prompted by three major factors. First, there was a strong desire for colonial expansion by the great powers which would greatly impact foreign policy and more significantly, would impact and potentially strain diplomatic relations among these powers causing a tense international society. Second, traditional methods of diplomatic negotiation and mere interaction had changed due to the fast-paced rise of communication, improving not only by method but also by speed. Third, the USA began to have a rising influence in the international society and the regulations of diplomacy had to be slightly altered accordingly due to the distrustful relationship between the Americans and the Europeans. President Woodrow Wilson of the USA then became a key contributor in the conceptualisation of new diplomacy and its transition from old diplomacy at the end of World War I.

New diplomacy began roughly from 1919 onwards, where a notable shift took place from bilateral relations to multilateral relations between states and also the formation of international organisations (Geraud, 1945:246). Alliances were formed and mutual agreements were signed to ensure a more peaceful international society which was a key priority in comparison to old diplomacy where states tried their best to gain and preserve power.

Morgenthau (1945), recalls the sentiments of Woodrow Wilson, former US President. Wilson called for the end of an era that was ruled by power politics and welcomed the theme of international collaboration. According to Asada (2006), Washington strongly believed that the Anglo-Japanese alliance, that began in 1902, was a reflection of Wilson's unwanted old diplomacy that consisted of a military alliance which possessed significant influence. This represents the growing call, led by Wilson and Washington, to embrace new diplomacy that symbolised international cooperation and openness among states.

In 1920 the League of Nations was formed, initiated by Wilson (Morgenthau, 1946). Wilson attempted to create an open international society, where no secrets were held as in old diplomacy. The League of Nations made the utmost effort to omit the issue of wars occurring without their knowledge and therefore ended the very secrecy that diplomacy was built on. Secret treaties were no longer allowed nor was 'secret foreign policy' permitted. Issues arose due to the exclusion of states from the League of Nations who

were then able to have secret relations and treaties among themselves (Nicolson, 1963:86). Wilson's efforts of creating a flourishing League of Nations were unsuccessful but paved a way for what would come to be the most significant multilateral organisation to date, the UN (Legueuy-Feilleux, 2009:45).

The UN was formally established in 1945, however, it initially lacked comprehensive representation due to states believing that they were too powerful to submit to an international organisation. Eventually, representation of states improved and the UN became a platform for multilateral diplomatic relations. Often states would not engage in bilateral relations with one another due to power and status but through the UN, multilateralism occurred (Black, 2010:210). After the establishment of the UN, states came together to draw up the VCDR of 1961, which aimed to discuss the regularities regarding diplomatic relations and diplomatic immunities (Bruns, 2009:22).

The UN held the much anticipated conference in Vienna in 1961 to discuss diplomatic immunity and privilege. The conference was held in Vienna to be seen as a continuation of the Congress of Vienna of 1815 where the discussion of diplomatic law first arose. The VCDR attempts to uphold peace and security in the international society (VCDR of 1961). It can be summarised into four parts. The first part, articles two to 19 are explanatory and provide introductory remarks; part two can be considered from articles 20 to 40 and discusses diplomatic immunities and privileges as drafted by the International Law Commission and is considered the heart of the document. Part three, articles 41 to 47 covers miscellaneous provisions; and articles 48 to 53 conclude by dealing with the final clauses of the VCDR of 1961.

The VCDR of 1961 has been described as a legal framework that guides interstate diplomatic relations. Although many questions have arisen in the last decade regarding the relevance of the document taking into consideration the rise of non-state actors, it has continued to remain a frame of reference for diplomacy and diplomatic immunities and privileges (Wouters and Duquet, 2012:?).

Bruns (2009), highlights the importance of awarding diplomatic immunity and privileges to staff on a diplomatic mission, in addition to that of the diplomatic representative. Brown (1988), stipulates that according to the outcome of the International Court of Justice (ICJ) meeting on 24 May 1980, the diplomatic immunities and privileges awarded to diplomatic and consular personnel forms an integral aspect of international law.

New diplomacy also highlighted a particular shift from the traditional actors of diplomacy that were, historically, exclusively states, to include non-state actors (Langhorne, 2005). This is noticeable more than ever in the present day with the influence of social media and current US President Donald Trump's 'Twitter diplomacy' (Rogers and Landler, 2019).

Dinata (2014:1), realised the effects that Twitter had on diplomacy a few years prior to the official emergence of 4IR, coining this new era of public diplomacy as 'Twiplomacy'. Through the use of Twitter, an international actor may affect the perceptions of other international actors with the use of information displayed on social media, or in this instance the Twitter platform. Dinata (2014:3), continues by suggesting that public diplomacy has continuously evolved into the trends of social media.

Table 1: The central features of old and new diplomacy

Characteristics	Old diplomacy	New diplomacy
Date	700BC- 1914	1919-Present
Nature	Closed	Open
Communication	Physical missions	Physical missions, telephonic calls, email.
Interdependence	Low levels of interaction, alliances. Bilateralism. State is the primary actor	Multilateralism – states, non-state actors like international organisations and non-governmental organisations
Legislation	Congress of Vienna	Vienna Convention of Diplomatic Relations of 1963
Main Actors	Professional diplomats	Diplomats, international organisations.

Functions	To represent the state and achieve the foreign policy goals of the state.	To represent the state and achieve the foreign policy goals of the state.
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See footnote²

2.2.1 Recent strands of diplomacy

Over the last two decades, there has been a noticeable shift in diplomacy due to the influence of science and technologies (Cunningham and Dufour, 2003). Such shifts have introduced new strands of diplomacy such as economic diplomacy; science diplomacy; and innovation diplomacy. The strand of public diplomacy has also experienced a recent rise in diplomatic relations, through sub-topics of digital diplomacy and Twitter diplomacy.

2.2.2.1 Economic diplomacy

There is no final agreed upon definition for economic diplomacy. Leonidivina and Oleksivna (2015:136), state that some define economic diplomacy as the interaction of economic and trade instruments which have a significant impact on the foreign policy of the state. However, for the purpose of this study the definition used by Wayne (2019:23) will be utilised, which states that it is the use of diplomatic skills in addition to economic tools to advance the political, economic or strategic goals of a state.

Berridge (2005), explains that political and economic interests reinforce one another. Wayne (2019:23) states that economic diplomacy encompasses a range of aspects: first, it consists of states building global coalitions to assist countries in recovering from financial crises; second, states are most likely to apply measures and policies which will be advantageous to their economy, providing jobs for citizens even if it poses political costs; third, states may employ economic sanctions on countries to either deter or punish actors from making or acting on particular decisions; and lastly, economic diplomacy may build support to create and enforce norms and rules in the international society to motivate the idea that bribery and corruption is not acceptable. Pigman (2010:139) avers that areas of international trade, economic development, financial markets, and monetary cooperation and foreign investment are all areas of economic diplomacy. However, environmental concerns, such as climate change; pollution; energy; and water, also fall

² Adapted from Geraud (1945); Black (2010); Eilers (2006); Otte (2007); Roberts (2009); Morgenthau (1946); and Langhorne (2005).

under the category of economic diplomacy due to the economic and security areas it may impact.

According to Neves (2017:92), economic diplomacy does not imply a dominance of economics in international relations but rather a more appropriate and coordinated balance of economics and politics. Furthermore, it is not exclusively commercial in nature and implements economic tools to achieve negative and positive political goals. Rana (2007) emphasises that economic diplomacy is policy-orientated where countries prioritise international relations to maximise their state's national gains, consisting of bilateral, multilateral and regional dimensions. According to Berridge (2015:213), economic diplomacy may occur at a multilateral level, often constituting a high-profile gathering of heads of states, state ambassadors and diplomats, for instance: G20 summits, the World Trade Organization (WTO) and the International Monetary Fund (IMF). However, economic diplomacy may also occur at a much lower bilateral level, which does not mean it is any less significant.

2.2.2.2 Science diplomacy

Hennessy (2019:26) analyses what science diplomacy is, establishing that it is a form of diplomacy which aims to create and nourish scientific collaborations improving relationships among states. In addition, by providing scientific advice, foreign policy objectives can be more informed, creating greater opportunities for international cooperation and investment. The collaboration between scientists and diplomats has become increasingly important due to supranational challenges such as climate change, rapid urbanisation and diseases.

According to Vitorovic and Santacroce (2019), science diplomacy aids in promoting domestic and global interests with the ultimate goal of enabling peace and progress of the international society through creating new ideas, methods, and approaches to addressing 'asymmetric and imbalanced tendencies' of the global world. As previously stated, many issues are supranational which means that problems are often cross-border in nature and cannot be solved by one country alone, therefore, collaboration is required.

Hoy (2019:875), explores the historical background of science diplomacy, highlighting that scientists formed collaborative relationships, despite the existing tensions between their respective governments. The American Association for the Advancement of Science (AAAS) has been a key organisation in promoting science diplomacy. Former

Chief Executive Officer (CEO) of AAAS told Hoy that collaboration is imperative to ensure the advancement of science and in turn will be beneficial to all of global society. AAAS also emphasises the dire need to address global challenges, as mentioned above.

While historically when considering the disciplines of diplomacy and science respectively, one is naturally inclined to discuss the two separately. However, Vitorović and Santacroce (2019), suggest that the two disciplines are undeniably interconnected and may either advance or hinder the response by states, international organisations and other actors to global atrocities.

2.2.2.3 Public diplomacy

Ahyan (2018:1) states that public diplomacy was coined by Edmund Gullion in 1965, defining it as the influence of public attitudes and opinions in relation to foreign policy. Public diplomacy also extends beyond the traditional scope of diplomacy and delves into private group interaction, foreign affairs news reports and how it impacts foreign policy, communication between foreign actors and diplomats and intercultural communications.

Berridge (2015:200) refers to public diplomacy as *propaganda*, stating that it is the attempt to exercise indirect influence on a foreign state, by bypassing the government in an attempt to persuade a population of a certain agenda. Historically, tools used to influence public opinion include newspapers, radio broadcasting stations, television and more recently, social media. Cull (2013:124) states that the evolution and growth of technology and public diplomacy occurred simultaneously, intertwining with one another.

Brown (2004:16) had very early on predicted that public diplomacy would become more relevant as non-state actors become increasingly important and international communication infrastructures have emerged. Public diplomacy may be understood as international relations that extend beyond the realm of traditional diplomacy where there is a significant influence from public opinion, private interest groups, international media that influences policymaking, and intercultural communication processes.

Nye (2008:95) discusses public diplomacy as a form of soft power, stating that there are three major aspects to it. First, it consists of daily communication which refers to media management; second, strategic communication which promotes a specific foreign policy agenda and is advantageous as it enhances public visibility and gains support; and third, relationship building which emphasises 'people-to-people' relations (2008:97).

2.2.2.4 Digital diplomacy

Manor (2017) credits 2017 as the birth of digital diplomacy, contrary to Verrekia's (2017) sentiments that argue that Hillary Clinton's 2009-2013 stint as Secretary of State saw the emergence of digital diplomacy.

According to Adesina (2017:4), digital diplomacy evolves from public diplomacy. Bronk (2010:43) describes the digitisation of diplomacy as the 'most significant change' to diplomacy since the introduction of the telegram. Very early on, governments started to realise the notable influence that IT will have on diplomacy with Hillary Clinton advocating for 'smart power', in 2009, over hard and soft power (Lewis and Walker, 2009). Joseph Nye, key theorist of soft power, termed the combined use of hard and soft power as 'smart power' in 2003 after noting the changing environment of foreign policy where hard and soft power can be used together to achieve maximum results (Nye, 2009).

There is no single agreed-upon definition of digital diplomacy. Manor and Segev (2015) describe it as the increasingly popular use of social media platforms by a state to achieve its foreign policy objectives and control its international image. On the other hand, Lewis (2014) suggests that it is the use of 'digital tools of communication', such as the use of social media, where diplomats can openly engage with one another and the general public. Lastly, Hanson (2012) terms it as the utilisation of ICTs and the internet to pursue diplomatic aims and objectives. For the purpose of this dissertation, the definition put forward by Lewis (2012) will be utilised, noting that the ultimate aim of digital diplomacy is to achieve foreign policy goals.

Grant (2004), discusses the significant impact that the internet has on foreign policy, stating that technology influences the flow and availability of information across the world. This suggests that it gives other individuals greater opportunities to be involved in decision-making. In addition, Adesina (2017:7), explains that states are seizing the opportunity to enhance the way that they project themselves in the international arena through the use of blogs, YouTube, Facebook, Twitter, and other social media platforms.

The space of digital diplomacy is populated by the use of Twitter, increasingly highlighted in recent years. Sobel, Riffe, and Hester (2016:77), regard the use of Twitter by a government as a 'public relations tool', commonly termed as 'twiplomacy'. Dumčiuvienė (2016:92), also categorises Twitter diplomacy as a tool of public diplomacy where

governments, state officials and organisations may publicly engage with one another and other global audiences.

Jones and Matticci (2017:741), suggest that social media, heavily emphasising the use of Twitter, is often utilised by rebel organisations, dubbing this as 'rebel diplomacy'. These organisations are able to execute and control their own narrative, promoting the agenda of their organisation, and aim to positively persuade international audiences in believing they are credible. By doing so, not only do rebel organisations gain international attention but they also gain significant support. After much exploration regarding the correlation between the use of Twitter and rebel organisations, Jones and Mattiacchi (2017:741) have established that the use of Twitter by rebels enhances cooperation by a) clarifying the goals, in reference to regime type, and b) emphasising the possible 'so-called' atrocities committed by government.

2.3 Industrial revolutions

Over the past two to three centuries, the world has witnessed four periods of industrialisation and change (Sentryo, 2019). The first industrial revolution began in 1765 in Britain, prompted by Sir Richard Arkwright who invented the spinning machine and which led to a new realm of manufacturing and soon, mass production. Mass extraction also occurred, which introduced the rise of the steam engine. In this period, agrarian states became industrialised and went through a process of urbanisation. The second industrial revolution occurred in 1870 and is also classified as the 'technological revolution' where methods of communication changed to that of telegraphs and telephones. There was also a new reliance on gas and oil as a source of energy. The third revolution, in 1969, saw the introduction of biotechnology and high-level automation, and, in addition, there was a rise in the development and use of electronics and nuclear energy (Sentryo, 2019).

The first industrial revolution changed the world forever, from agrarian societies to economies centred on machine manufacturing (Flashes Magazine, 2017:56). It influenced population growth, foreign trade and the demand for manufactured goods. However, the first industrial revolution introduced dire social and economic consequences. Hauptert (2019:243) states that the first industrial revolution resulted in the amplification of large economic inequalities and poverty, in addition to decreasing profits and rising foreign competition.

The second industrial revolution consisted of better technological machinery, interchangeable parts, mass communication, and factory line production. Its impact was much wider-reaching and impactful in comparison to the first industrial revolution, reaching the US, Germany, Great Britain, France and Japan (Flashes Magazine, 2017:56). The three key facets of the second industrial revolution were electricity, petroleum, and steel. These facets fast-tracked urbanisation and transportation, in addition to the use of telegraphs, trolleys, railroads and the increased construction of skyscrapers. Railroads were an imperative factor in the process of industrialisation as it connected both people and markets which prompted economic growth and development (Mokyr, 1999:2).

Flashes Magazine (2017:55) describes the third industrial revolution as the 'digital revolution' which introduced previously unimaginable technologies and innovative advancements. A transition occurred from mechanisation to digitisation. Furthermore, Flashes provides a history of key events that occurred during the period of 4IR:

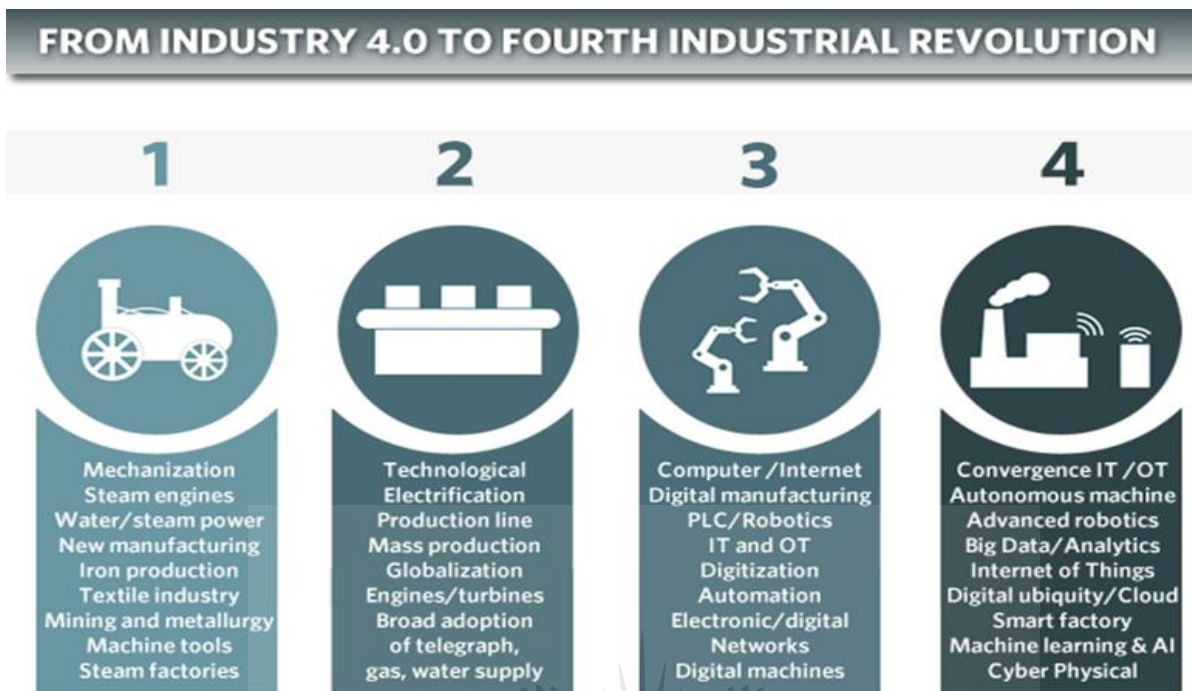
- 1969– APRANET (succeeded by the Internet)³
- 1971– First email sent
- 1971– First games console was released
- 1981– First laptop on sale

Greenwood (1999:2) emphasises the direct correlation between high-speed technological processes, decreased human-centred productivity and an increase in wage inequalities that occurred from 1974 at the introduction of the third industrial revolution. This highlights the impact of IT since the previous industrial revolution, having a great effect on sectors; however, was not as impactful as the industrial revolution currently being experienced today.

Below, Figure 1 provides a brief description of the various industrial revolutions, highlighting key characteristics of each (I-Scoop, 2019).

³ APRANET is the oldest merger of computational networks. The invention of APRANET was led by the Advanced Research Projects Agency (ARPA) after the US called for a mode for the quick transportation of information in the case of a catastrophic event (Strickland, nd).

Figure 1: Key elements of industrial revolutions



(I-Scoop, 2019).

2.4 Fourth Industrial Revolution

The 4IR is different to all previous revolutions, Schwab (2016b) clarifies that this particular revolution is much larger and more radical than ever before, categorising it as the ‘digital revolution’. Chitaba (2018) further emphasises that 4IR is the fusion of technological methods and processes removing barriers and borders between biological, physical and digital spheres; and Chitaba also emphasises that it differs from previous industrial revolutions due to its whirlwind emergence and propagation of information. The importance of 4IR is that it will lead to significant changes in government systems, production, and management (Chitaba, 2018).

Schwab (2016b) states that for three reasons 4IR may be understood as an entirely new revolution rather than merely a continuation from the third industrial revolution, this being: ‘velocity, scope, and systems impact’. No other revolution has had such an enormous impact in such a small space of time; it is affecting every industry imaginable, further impacting governance, production, and management.

The *Mail and Guardian* (6 September 2019) interviewed Nicholas Davis who worked alongside Klaus Schwab and was instrumental in coining the term the ‘*fourth industrial revolution*’. Davis categorises 4IR as another stage of human development which was

their reason behind the name of the latest industrial wave, stating that actors would need to know and understand early on what the revolution meant to avoid making mistakes as in prior revolutions, such as overinvesting in particular technologies or incorrect implementation processes. Davis continues by distinguishing between the previous digital revolution by stating that algorithms play a central role in decision-making for humans. This is potentially threatening as humans begin to become less and less autonomous and leave computer systems to make bold decisions on behalf of governments, such as in times of combat or in decision-making processes.

Schwab (2015:4) states that 4IR may gear up income levels and improve the standard and quality of living for individuals around the globe, as developing states may skip stages of industrialisation that were previously missed. However, one cannot ignore that those who have benefited from a digitised world are mostly those that can afford it with new and improved products and services continuously established to enhance daily efficiency. Such technological advancements have contributed towards easier and simple living, such as booking flights, buying products from the comfort of your own home, ordering a cab with the mere click of a button on your smartphone and making banking transactions.

Schwab (2015:5), highlights the bright side for those of lower-income levels, stating that in due time technologies will drastically improve both productivity and efficiency which will have a domino effect for transportation and communication. Both equally vital sectors will see a decrease in costs along with more effective supply chains and logistics. As a result, global trading costs will shrink or altogether diminish, opening up opportunities for new markets to emerge. In addition to such factors being a positive accelerator for economic growth, it poses as an opportunity for more individuals and developing countries to partake in emerging markets and become significant actors in such markets instead of historically where global capital belonged to a select elite.

4IR will impact governments, businesses, and individuals. Schwab (2015:7) begins by discussing the impact on businesses, simplifying this impact into four ultimate effects: the changing expectations of consumers due to a wider variety of products and services to choose from; the ability to enhance products through digital processes and the use of new technologies; the opportunity to collaborate with other businesses due to technological disruptions and a wider consumer base; and lastly, considering

cyberspace, businesses, and consumers are able to interact on a global scale reaching different cultures and talent and therefore organisational reform is imperative.

For governments, access to new technologies allows for greater control and surveillance of populations (Schwab, 2015:8). However, governments may experience more pressure if they stick to traditional methods of public engagement. For example, the use of social media allows government to interact more closely with its citizens and also to a greater number of its population in comparison to previously. Although, for government to be successful in the era of 4IR, it will need to adopt agility, having the ability to quickly adapt to changing situations and to react to changes at a faster pace than ever before. The new technologies introduced by the latest industrial revolution will also have a profound impact on national and international security and ultimately changing the face of warfare with autonomous weapons that are becoming more and more easily accessible to various actors.

Schwab (2015:9) insists that 4IR does not only change the things individuals do but it also changes who they are. Privacy is repeatedly emphasised in the study of 4IR and often a crucial part of who we are as human beings, yet humans constantly feel the need to be 'connected' and share their daily activities. In addition, 4IR has the potential to impact when we work and how we work; the skills we attain and potentially how we develop such skills; it is already illustrated daily that technology plays a role in meeting people and how we nourish our relationships online, often without physical interaction.

Brynjolfsson and McAfee (2012:28) discuss the implications of an automated society, highlighting that although the 'economic pie' may be getting bigger, it does not necessarily suggest that all will benefit from it. The replacement of labourers by machinery may result in larger inequality in societies as capital returns increase while labour returns decrease. Schwab (2015:5) notes this possible effect but claims it may yield greater possibilities as labourers are forced to enhance their skills resulting in highly skilled and rewarding jobs with higher income levels, where those with lower skills will continue to earn lower wages which too will have an impact on social relations.

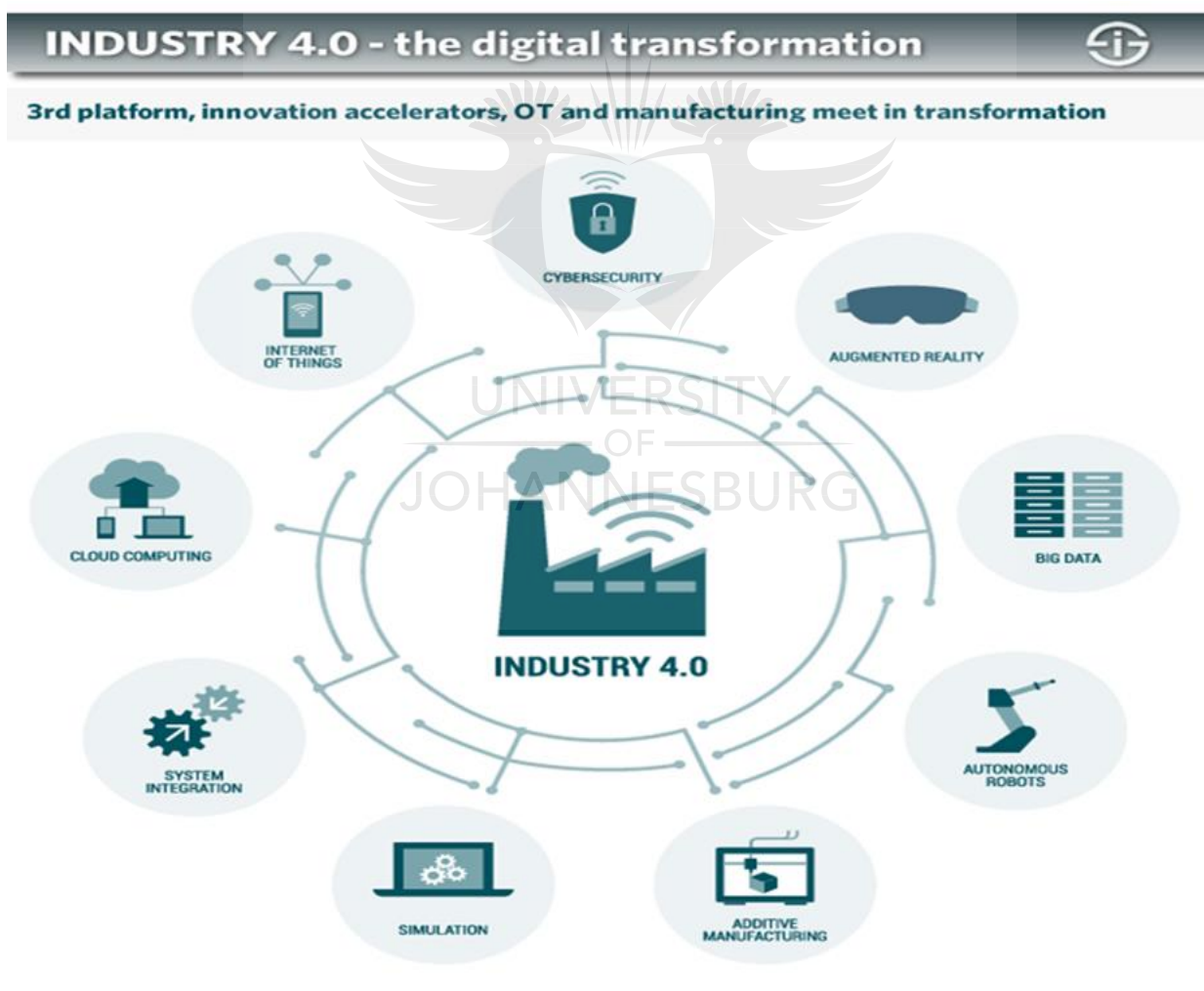
Sentryo (2019), a leading institution exploring possible vulnerabilities introduced by the IoT, states that 4IR introduces a virtual world. Now more than ever, there is an increased reliance on AI, IoT, and robotics. Berger (2019) states that AI aids us in finding solutions in a 'human-like manner', with the ability to perform tasks which often a human would do;

with the ability to reason, generalise, uncover meaning and learn from past mistakes. Berger further explains machine-learning, also an integral aspect of 4IR, which analyses data to reach almost perfect conclusions.

2.4.1 Aspects of 4IR

4IR consists of a number of integral aspects that make up its enormous revolution and impact. Aspects specifically significant to this dissertation and the study of diplomacy are big data, AI, IoT, cybersecurity and cyberspace, ICT and robotics, as depicted in Figure 2 below (I-Scoop,2019). The study will provide a detailed explanation of the aspects mentioned above for further understanding later as to how such aspects may impact diplomacy.

Figure 2: Key features of 4IR



(I-Scoop,2019).

2.4.1.1 Big data

According to Hurwitz, Kaufman, Halper, and Nugent (2013:10), big data is considered a data source when it consists of at least three commonalities: 'large *volumes* of data, high *velocity* of data, and a wide *variety* of data'. It enables organisations to gather, store, interpret, manipulate and manage large amounts of data in a timely manner, to gather appropriate insights. Furthermore, it is worth noting that big data is not new or stand-alone technology but has developed and evolved over the last 50 years. Hurwitz et al., (2013:15-16) titles it old and new technology, highlighting that it allows organisations, companies or individuals to efficiently gather data, interpret it and respond.

Big data is crucial for decision-making. Oracle South Africa (2019) states that with the latest technological discoveries, data storage and computing have become significantly less expensive, suggesting that companies, organisations and various actors can now store more data more cheaply. With greater accessibility to big data analytics, decision-making can be more efficient and accurate.

According to Cukier and Mayer-Schoenberger (2013:40), big data is more than merely communication but allows us to learn from an extremely vast body of information which is more than we could previously comprehend. The expansion of big data has been immense in just a short period of time: in 2000 only a quarter of the world's information was digitally recorded, but, fast forward to 2013, only 2% of such information remains non-digital. In addition, not only has big data grown in size but also in impact and possibilities, with the process of 'datafication', just about any piece of information is digitised such as GPS, books and even friendships through social media.

Cukier and Mayer-Schoenberger (2013:42), explain that there are three central changes when dealing with data: first, large amounts of data should be collected rather than previously when only small amounts were collected. Second, researchers should accept and utilise 'messy' data; previously, data was cleaned to be made as pristine as possible but may limit your outcomes as opposed to messy data which may gather and interpret more information. Third, big data allows researchers to have access to massive amounts of information and 'everything that is associated with them'. This may assist researchers in identifying patterns and predicting future events.

2.4.1.2 Artificial intelligence

A brief definition of AI was provided in the previous chapter, however, AI is much more complex than a single definition can provide and encompasses a range of features like facial and voice recognition; self-driving cars, drones, online shopping and robotic assistants (Hulick, 2016). Many authors heavily rely on the 'intelligence' part of the term, stating that intelligence is concerned with the mental capabilities to reason, solve problems and learn from experiences or situations (Shabbir and Anwer, 2015:1). Shabbir and Anwer emphasise that today technologies have the ability to imitate human behaviour and even thought processes, with the ability to perform tasks and make decisions accordingly. AI software comprises programs inserted into robots, computers and other systems.

AI may be understood as the development of computer systems to assist in finding solutions for problems in a human-like manner, it has the ability to reason, generalise and aid in understanding past mistakes while it further assists humans in reaching almost perfect conclusions (Berger, 2019). However, AI poses a number of challenges such as the fact that it is inherently built to perform a specialised task and cannot do more than that or deviate from its purpose. In addition, AI learns from and utilises data to reach conclusions and therefore inaccuracies are possible (SAS Africa, 2019).

There are two types of AI: 1) strong AI, and 2) weak AI. Strong AI has the ability to both think and act like a human being, learning from experiences. Weak AI is unable to think for itself and can merely respond to situations as it has been programmed to, such as iPhone's Siri (Kerns, 2017).

2.4.1.3 Internet of Things

The IoT, also known as the *Infrastructure of Information Society*, is relatively new on the ICT scene and is best described as a coalition of digital and physical realms, providing instantaneously available information (Chou, 2019: 106-107). According to Qureshi and Aldeen (2018:1114), IoT refers to an established network system where different things or objects are able to communicate. It consists of 'intelligent sensing and transmission capabilities' working for various applications such as smart parking, logistics, and smart water supply. IoT systems have the ability to be remotely controlled and allow for the integration of both computing systems and the physical realm (Stăncioiu, 2017:75).

Euchner (2018:10) states that the IoT carries multiple meanings in accordance with its purpose with different users and systems, however, simplifies it as an integrated system whereby direct communication with devices and users is possible without having to access a central server. This simple, yet groundbreaking, factor makes innovation possible to all those who have access to the IoT. The possibilities of the IoT is reminiscent of the establishment of the Internet, where fruitful growth is promising.

Qureshi and Aldeen (2018:1114) discuss the advantages of IoT, stating that: it saves time; it is beneficial to existing communication structures; it provides learning opportunities; and it is an easier platform that is more cost-effective than traditional methods. Stăncioiu (2017:75) also highlights the benefits that 4IR holds, stating that it enhances efficiency; it is cost-effective; it is flexible; and lastly, it allows for the integration of production methods. IoT has gained the attention of corporations, governments, and even individuals in their homes due to its advanced smart applications which have the ability to make connections and providing new and updated services.

Following Adryan and Konigsdeeder's (2017) in-depth study of the foundations of IoT, a few limitations and drivers have been listed as an imperative for IoT producers and consumers going forward. The drivers of IoT, as briefly highlighted above, include cost-reduction in addition to the possibility of profit-maximisation due to improved efficiency and lowered production costs; IoT may also provide the opportunity for a greener economy but outcomes are not yet clear enough for producers to make the necessary transitions (Adryan and Konigsdeeder, 2017:123).

The limitations of IoT have been discussed very minimally by most authors, with most overlooking the disadvantages and opting to discuss the exciting possibilities of IoT. However, Adryan and Konigsdeeder (2017:124) discuss three major limitations of IoT: First, it lacks in operability as current systems are not as up to date as the latest technologies and therefore incompatible with the technologies currently utilised by organisations and there is no direct solution for this. Second, there is a lack of trust among consumers as it is not only governments, organisations and businesses who have access to IoT but also every other private individual which makes devices and systems vulnerable to hacking and sabotage. It is therefore imperative for IoT engineers to ensure the utmost security of IoT systems to build trust with consumers. Third, IoT poses the concern of a lack of privacy for consumers. Major questions are raised by consumers,

such as: who owns the generated data, who else has access to it and may possibly make decisions based on it. It is imperative for consumers to have answers to such questions to understand who their personal data is available to.

2.4.1.4 Cybersecurity and cyberspace

Cybersecurity is essential in the light and usage of cyberspace. Cyberspace is a non-physical dimension that manipulates and exploits information through integrated infrastructure systems. Furthermore, cyberspace is an unlimited public good that may be understood as a shared space to be used by individuals, governments and non-governmental organisations. Hess and Ostrom (2007), discuss cyberspace as a common resource and highlights that those who are excluded from accessing it may result in their limited participation.

According to Black, Scarfone, and Souppaya (2014:1), cybersecurity can aid organisations in various ways. Cybersecurity can ensure verification of security measures and controls to ensure compliance with the relevant policies and organisations may be able to identify their strengths and weaknesses regarding security. In addition, organisations may identify security trends both internal and external. Furthermore, cybersecurity is beneficial to organisations through improving security-related performance, evaluating compliance, and answering 'high-level business questions'.

Reveron (2012:3) suggests that cyberwarfare was predicted long before it became a reality. Today, it is not only militaries that hold strong capabilities but other actors too. Hackers, cyber terrorists, and intelligence services can be a great threat to the cybersecurity of individuals, organisations, governments and international security. Reveron continues by recalling the 2008 events of the Russian tankers that entered the territory of the Georgian defence force, highlighting that although its effect was not destructive, it was indeed 'disruptive'.

In 2011, President Barack Obama noted the increasing role that cyberspace was beginning to play and introduced the *International Strategy for Cyberspace*. The document emphasised four key elements in dealing with cyberspace: securing trust; openness to innovation; ensuring the reliability of cybersecurity systems; and taking into consideration the possibilities of future cyber warfare (New York Times, 2011).

Furthermore, in 2011, the US's Defence Department established a number of strategic initiatives acting as a guideline for when operating in cyberspace. Such initiatives include:

building strong relationships with international allies to strengthen cybersecurity; form coalitions with other government departments, and the private sector, to form strong national cybersecurity; employing new and agile defence systems; and treating cyberspace as an 'operational domain to organize, train and equip' the state's defence department to fully maximise the potential of cyberspace (Alexander, 2011).

2.4.1.5 Robotics

Rus (2015), states that robots have already changed, and continue to, change everyday life. Robots have the ability to carry out numerous tasks, that is: perform in manufacturing assembly lines and object recognition. Meticulous algorithms have been key in improving the functionality of robots, improving coordination, control, reasoning, and perceptions. With the exponential growth of robotic technology over the last 20 years, it has found a place in multiple fields, such as health care, entertainment and even house-keeping (Pagliarini and Lund, 2017: 272). Without even acknowledging it, human-robotic interaction occurs daily. Some interactions may be minimal while in other areas, its impact cannot be ignored.

Robotic technology, and all other forms of technology, are not immune to malfunctions which may result in dire consequences. The use of autonomous weapons, in particular, is an area of major concern and, according to Wisskirchen, Biacabe, and Bormann et al., (2017:57), should be banned by the UN. Al-Rodhan (2015:177) discusses the proceedings of the 2015 International Joint Conference on AI. More than 1 000 researchers and various field experts, such as Elon Musk of Tesla and Professor Stephen Hawking, presented a letter calling for the ban of autonomous weapons.

While the intelligence and capabilities of robots have grown exponentially in recent years, robotic technology continues to lack moral reasoning. This is a significant pitfall as states increasingly begin to rely on robotics for military purposes which may have detrimental effects (Al-Rodhan, 2015:178). Nourbakhsh (2015:23), also shares such sentiments, stating that robots lack a moral compass and do not have the ability to prevent 'ethical transgressions', therefore there is no consideration for the protection of human life or privacy. Perhaps the lack of moral judgement stems from the fact that programmers and engineers of robotics are not also specialists in ethics.

While Rus (2015), argues that with robotics, driverless cars are a safe, realistic and efficient option for human beings, Uber's recent efforts of autonomous vehicles prove

differently. Knowles (2019) discusses the 'fatal flaw' of Uber's autonomous vehicles in an attempt to have a self-driving car service: failure to consider pedestrians. The death of a pedestrian, Elaine Herzberg, has sparked major concern for the possible future of self-driving vehicles after the vehicle's software failed to detect the pedestrian in time and bumped into her, ultimately leading to her death. It is crucial for software engineers and programmers to incorporate the considerations for human intervention to avoid such accidents and have successful and safe autonomous vehicles.

2.5 Conclusion

This chapter has critically explored the concepts of diplomacy and industrial revolutions, but more specifically, 4IR. The evolution of diplomacy has been traced back to where it occurred at a very minimal level. By tracing the evolution of diplomacy, it may be stated that diplomacy has continuously evolved, specifically in accordance with current societal and global trends. It is clear that diplomacy has experienced significant influences from technological fields and digital domains as new technologies emerged. Industrial revolutions have continuously been influential in a range of areas. However, the latest industrial revolution is considered to be the most impactful of all industrial revolutions due to the snowballing effects that its technologies possess, affecting virtually every sphere of life. As established in the chapter, most aspects of 4IR have a place in various fields of society and its impact cannot be ignored. The following chapter will explore the theoretical impact that 4IR may have on diplomacy, critically exploring readings and documents that have acted as a framework for diplomacy for centuries.

Chapter 3: Pillars of Diplomacy Affected by 4IR

3.1 Introduction

Following a review of the key issues in diplomacy that are or will be implicated by 4IR, this dissertation categorises the issues as follows: communication, interdependence, domestic and international legal frameworks, actors and openness, and diplomatic functions. This chapter will explore the theoretical implications of the pillars to establish how 4IR has or may impact the nature of diplomacy as it is traditionally known and referred to. Although this chapter will make reference to some examples, the following chapter will focus on practical implications in the respective pillars.

3.2 Communication

The integration of 4IR technologies into diplomacy has resulted in a change in the ways diplomats and heads of states communicate with one another and with citizens, domestically and abroad. ICTs, AI and sentiment analysis have been instrumental in changing the face of communication and interpreting such communications. This section explores the use of social media applications, instant language translation, virtual assistants, digital propaganda and real-time communication. Three main areas are prioritised as focal points in this sub-section: digital diplomacy, hashtag diplomacy and digital propaganda. These topics are relevant to communication as all three discuss engagement between two or more parties. In addition, digital propaganda is a communicative act where a message is extended from one party, such as the state, to another (Briant, 2015).

3.2.1 Digital diplomacy

Bekenova and Collins (2019), state that new technologies have allowed for the coexistence of multiple actors and 'multiway' engagements, irrespective of territorial borders and hierarchies. This highlights a crucial feature of digital diplomacy where governments are able to gain the confidence of target audiences and build trust-based relationships with them. The use of social media for governmental processes, and more specifically in the area of foreign affairs, has had a domino effect on states where it is now uncommon for a state to not have a social media page for public engagement.

Manor and Segev (2015), discuss the conceptualisation of digital diplomacy and its rise in international relations, highlighting that it operates at two levels. First, digital diplomacy occurs at the level of the MFA, and second, at embassies. By operating at these two

levels, governments are able to tailor their foreign policy accordingly to suit their history, traditions, values and culture. Potter (2002), emphasises the role played by social media, the internet and mobile devices in diplomatic practice. As previously highlighted, President Trump utilises Twitter to engage with other leaders and illustrate his position on particular situations (Shim Jae Hoon, 2017). However, there is no regulation on this very public type of diplomacy.

Fisher (2013), acknowledges the benefits of digital diplomacy which include reduced costs, real-time communication, and the ability to share varying content that reaches a wider audience through social media. However, the negative implications cannot be ignored. Due to the instantaneous nature of communication, states do not have the time to adequately prepare their response to situations in times of crisis. Other implications include cyber threats such as hacking and private information being leaked (Manor, 2015). Lastly, anonymity on the internet poses major concerns as users are freely able to mistreat, attack and threaten without major consequences due to their unknown identity online (Yakovenko, 2012).

Manor (2017), acknowledges the experimental efforts of states with digital technologies that have now led to digital diplomacy becoming an official, and indefinite, aspect of diplomacy. Manor (2018) cites the use of WhatsApp groups by the UN to coordinate UN-related initiatives and keep delegates up to date with their progress, highlighting that the use of WhatsApp has been a beneficial tool in diplomatic processes, increasing communication times significantly. Manor (2017), explains that the use of digital technologies in diplomatic processes does not simply encompass new processes introduced by new technologies but also, ultimately, leads to the promotion of new norms regarding diplomacy and introduces new behaviour.

According to Bjola and Pamment (2018:2), states, and more specifically, MFAs, have already begun using digital tools in multiple ways for the sake of diplomatic relations or activities, by bridging the gap between the home and host states of their citizens, to improving relations with allied countries. Digital technologies are also used by states to 'pierce, penetrate and perforate' political information to achieve desired results. This act has been coined digital propaganda, which will be further discussed later in this chapter.

Adesina (2017), makes a strong case for how ICTs have illustrated, and continue to illustrate, how they may have the ability to transform the conduct of diplomacy. First, ICTs

have major effects on diplomacy such as altering the forms of communication and information exchange resulting in a continuously evolving political, social and economic environment. Adesina continues by highlighting how the use of social media, like Facebook and Twitter, allows for unmediated and 'open conversation spaces' where engagement between users is constantly occurring. ICTs have allowed for multiway engagements where citizens directly engage with diplomats and heads of states on social media platforms.

While social media presents indefinite opportunities for states, it also introduces difficulties, specifically in policymaking for the regulation of such online platforms. Evans and Commins (2017) emphasise that thus far, and for decades to come, social media may be used for both pure and ill intentions, as it is a space used to gain traction for political movements and the recruitment of members for terrorist organisations, as highlighted by the infamous #BlackLivesMatter movement that gained international attention. Mansour (2018:97), explores the use of social media by the terrorist group of the Islamic State of Iraq and Syria (ISIS). The cost-effective and mostly accessible use of the internet has allowed ISIS to weaponise social media platforms, like Twitter, to attract new members, spread the ideologies of the organisation and psychologically influence individuals. Despite rapid advances in technologies that enables internet censorship, ISIS has remained resilient and flexible.

Hocking and Melissen (2015), state that social media allows for a more inclusive policymaking process as a greater number of individuals have access to and engage on social media platforms. However, the new wave of increased participation may allow for false presentation as individuals may sign online petitions but not have more meaningful participation than this. The use of platforms such as Twitter and Facebook have allowed citizens to actively voice their opinion, granting governments a greater understanding of public opinion and demands. Finlayson (2019), acknowledges that unregulated social media engagement allows for harassment and verbal abuse.

According to Feiner (2019), Twitter has taken a bold step in regulating and flagging offensive tweets by world leaders. Twitter critically flags influential accounts that happen to be government officials or individuals running for office. The accounts are verified and consist of 100 000 or more followers. Twitter has said that accounts that match these characteristics will be flagged for content that breaks its regulations in the matter of

bullying or abusive behaviour. In addition, this drastic step taken by Twitter also ensures that there is no reflection of political bias of the application. The platform has recognised that some tweets may be of public interest but if it may be considered offensive, the application will place a notice on the tweet that users will have to click on before opening the tweet.

Unfortunately, there is a significantly large amount of fake accounts, or 'bots', on social media that may negatively affect online discourses, leading to a false understanding of public opinion on social media. Corcoran (2020) states that bots and fake accounts are becoming increasingly sophisticated and it was difficult to distinguish real accounts from fake ones. Corcoran (2020) lists the five ways to determine if an account is real or fake, as suggested by social media expert, Jason Simms. Five features may be considered: the availability of a profile photo; if the name seems real and legitimate; the age of the account; the number of followers the account has; and the content that is covered by the account.

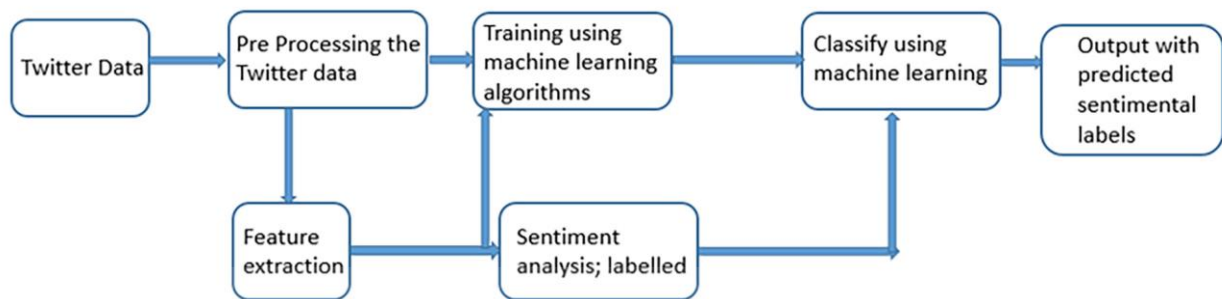
While sifting through accounts one by one may be a time-consuming and inefficient process, Zaidi (2017), explains the use of algorithmic applications and websites, like Botometer and Botornot, to assess the probability of followers being bots. The algorithmic processes identify which accounts are bots and class the accounts categorically. Botornot explores six features and the more features met by the account, the higher the probability of the account being a bot. The features include sentiment, network; user; friends; content and temporal. Although this process is not perfect and Zaidi hopes for a 'super smart' system in future, this process may be more efficient for governments aiming to understand public opinion and eliminating the contributions made by fake accounts that may falsely distort public opinion and negatively impact decision-making processes.

AI-driven sentiment analysis allows for social media analytics where human opinions and attitudes towards a particular topic can be judged using a five-step algorithmic process of: 1) information gathering, 2) sentiment recognition, 3) feature selection, 4) categorisation, and 5) calculation of sentiment dissipation (Battacharyya, Chakraborty and Hassanien, 2019).

McLellan (2015), explores sentiment analysis, particularly reviewing feedback for business through Twitter. The author highlights that Twitter consists of three Vs (Volume, Velocity, and Variety). In terms of velocity, businesses or in this case, governments,

require 'real-time data' to receive 'real-time results'. Twitter consists of millions of users and therefore has volume; and lastly, the popular social media application consists of variety where thousands of topics are discussed from all corners of the world.

Figure 3: Sentiment analysis process of Twitter data



(McLellan, 2017)

3.2.2 Digital propaganda

Briant (2015), defines propaganda as purposefully manipulated information in the form of text, images, video or speech with the aim of persuading an audience in a particular direction of thought, feelings or actions. Nicolson (1969:92), discusses propaganda as a distasteful inclusion of appealing to the public through media in matters of international public policy. Nicolson goes on to accuse Bismarck and his accomplices of purposefully distorting information to influence public opinion, a common practice in public diplomacy today.

Very early on, Nicolson (1969), warned of the consequences of 'wireless' propaganda. First, propaganda may be harmful to diplomatic relations by distorting public opinion and taking away from the privacy aspect of diplomatic relations. In addition, those that engage with false, distorted content may become victims to it, and lastly, the use of propaganda may be a costly tool as Nicolson cites that Germany had previously spent roughly £5 million on foreign propaganda, at the time of publication. It remains a very large aspect of the state's budget with Russia spending US\$500 million on foreign propaganda through media, in recent years (Bershidsky, 2015).

Briant and Wanless (2018:49), raise a point of concern as new technologies and propaganda intersect, highlighting that while previously individuals would only consume 'propagandistic messages', individuals now have the option to openly engage with the

content, furthermore Briant and Wanless (2018), state that the new- found abilities for engagement between citizens and propaganda must be investigated and analysed to understand the possible consequences it may result in.

Deep-fakes, that is AI-driven machine-learning algorithms, may also be used in propaganda attempts to falsely distort public opinion or ruin the image of an individual or state. The Centre for Data Ethics and Innovation (2019), describes deep-fakes as purposefully manipulated digital or audio content to falsely portray or present an individual, object or environment. It may take the form of speech synthesis or facial replacement, generation or re-enactment. While deep-fakes may previously have been easily detectable, with improved technological capabilities, it is becoming increasingly difficult to distinguish what is real and what is fake, as has been highlighted in a recent iteration of the annual US Congressional Research Service Report (2019).

Bettilyon (2018), claims that the ability to distort and control information is currently the 'most powerful' that it has ever been; an indefinite threat to democracy and international relations. Furthermore, as technology becomes increasingly advanced and available, deep-fakes no longer remain just in the realm of hackers and ICT geniuses but can be employed by the average citizen to weaponise any piece of public information. Bettilyon does, however, highlight that video distortion does have limitations and major distortions depend on a computer's capabilities that may not always allow for the most advanced algorithmic models.

Westerlund (2019), explores the consequences of deep-fakes for states, noting that it may pose a threat to both international security and international relations. Examples of deep-fakes may be distorted videos where a head of state or ambassador makes racist or hateful comments or where the military of a state is performing beheadings on a particular ethnic group. In 2019, in attempting a military coup of the Gabonese government, a deep-fake of President Ali Bango was shared. The video illustrated an unwell Bango and negatively contributed to an already politically hostile environment (Raj, 2020). This may lead to conflicting diplomatic relations and a tense international community where states may hastily withdraw from international agreements and allied organisations.

Deep-fakes may be used to incite violence, ruin or falsely accredit the reputation of individuals or states at large, spread and promote hate speech, and blackmail individuals

or organisations, as mentioned above and it is becoming increasingly advanced. Naffi (2020) insists that the only way to curb deep-fakes and reduce the belief of false information is for states to equip citizens with the appropriate skills and knowledge to detect deep-fakes and for them to have the ability to distinguish factual information from falsely distorted images, videos or speech recordings.

3.2.3 Hashtag diplomacy

Doctor (2013), explains the manner in which a hashtag works, stating that topics are categorically arranged allowing users to easily identify particular discussions of interest and engage with them. Furthermore, the use of the hashtag on social media allows for an 'inner circle' – no matter how small or big that circle may be – meaning all interested members can engage from all corners of the world with common interests in mind.

Manor (n.d.), suggests that the use of hashtags by governments and organisations is in an attempt to build their public image or illustrate their position on a particular topic. This illustrates a new era of public diplomacy. Bjola and Pamment (2019), state that both state and non-state actors rely on digital diplomacy for a myriad of reasons, such as promoting an agenda or for recruitment purposes.

Hitchings-Hales and Calderwood (2017), strongly state that social media has a major impact on online movements, highlighting the success of #HeForShe; #StopFundingHate; and #BringBackOurGirls.

Digital technologies have the potential for diplomats to amplify their message, indicate the interests of their state or the state's position on a particular matter. Hocking and Melissen (2015), highlight that states do not necessarily need social media to achieve the foreign policy goals of the state but have come to favour the platform as it opens up a world of communication, projects the message of the state and may assist the state in its diplomatic missions.

By selecting the 'like' or 'retweet' option, an individual, organisation or state demonstrates their support on a specific matter. According to Bjola and Pamment (2019), hashtags allow online conversations and may assist topics or movements in gaining traction as it builds a discussion on a theme and it is tailored to a target audience. Not only does the use of hashtags demonstrate an individual or organisation's position on a matter but it may allow states to use hashtag analysis to determine the following of a hashtag and its reach.

3.3 Interdependence

As the world is currently the most interconnected that it has ever been and continuous breakthroughs occur in technology and science, collaboration is key. International cooperation should occur between states, governments, MNCs and private interest groups or think tanks. Science and technology diplomacy are the collaborative efforts amongst state and non-state actors for the purpose of scientific and technological advancement and improving international relations, therefore it is a key area of the interdependence pillar (Yakushiji, 2009). This section explores the possibilities and depth of interdependence and cooperation through science and technology diplomacy, further exploring science for diplomacy, diplomacy for science and science in diplomacy.

3.3.1 Science and technology diplomacy

As previously highlighted by Hennessy (2019), science diplomacy encompasses the scientific collaborative relations among states. Cunningham (2003), highlights the intersection of scientific, technological and diplomatic fields, expressing that science and diplomacy are becoming a central part of international negotiations. Van Langenhove (2019), explains that scientific-diplomatic relations have been around for decades but were not classified as such as the term was only coined later on citing, for example, the joint efforts of the US and Union of Soviet Socialist Republics (USSR) for space exploration. The ascent of science diplomacy in the last decade may be attributed to the strides made in science and technology that have transformed communication channels, the nature of daily tasks and opened a door to development for many developing states.

The Madrid Declaration on Science Diplomacy (2019), explores the advantages of science diplomacy which are wide-spanning and diverse. First, science diplomacy promotes cooperation to address global challenges such as terrorism and climate change. It also creates more sustainable conditions for scientific activities as more states integrate science and technology into their foreign policies. This inevitably leads to an evidence-based foreign policy. The benefits are not exclusive to foreign policy but also extend to public policy as there is a smoother integration of science and policy.

Roig (2018), describes diplomacy as a soft power that promotes participation, peace and alliances. In addition, it can reduce hostility. As technology and science have come to play a significant role in international relations, MFAs do not consist of diplomats and international relations advisors exclusively. Scientific expert advisors have become an

integral aspect of the MFA, tasked with exploring how technology, science and innovation can be advanced. The inclusion of scientific advisors may prove to be extremely beneficial to a diplomat whose skills and knowledge are rooted in the field of international relations and diplomacy. A diplomat may experience difficulties attempting to integrate aspects of science and technology into diplomacy, especially considering the rapid development in the era of 4IR.

According to Yukushji (2009:7), science diplomacy is mutually beneficial and 'empowering'. The benefits of engaging in science diplomacy are not limited to a single actor but rather extend to all who partake in it, leading to the formation of cooperative agreements between states and non-state actors. Turekian et al., (2018), highlight that smaller and developing states have witnessed the significant value that science and technology holds, further assisting some states in positioning their state in a more favourable light in the international society.

3.3.1.1 Diversities of science diplomacy

The Royal Society (2010), outlines the three diversities of science diplomacy realising how science can assist states in achieving their foreign policy objectives. This does not exclude the possibility that science and technology may have made contributions to diplomacy in previous decades but rather highlights that this contribution may be much greater in recent years due to the innovations in science and technology. The three aspects are categorised as 'science for diplomacy', 'diplomacy for science', and 'science in diplomacy'. This highlights that there are different ways in which science may contribute to diplomacy or diplomacy may contribute to science.

Turekian et al., (2017), critique the Royal Society's (2010) variations of science diplomacy, describing them as limiting and more theoretical in nature which may make them better suited exclusively in academia rather than in government. The alternatives proposed by Turekian et al., (2017), are: 'actions designed to directly advance a country's needs', 'actions designed to address cross-border interests', and 'actions primarily designed to meet global needs and challenges'. The alternative attempts to be more aligned to the state and its actions and allows the possibility for an action to overlap over two or more themes. However, at the time of writing this alternative is yet to be popularly referred to by states and that of the Royal Society (2010), continues to be a source of reference for most researchers, organisations and actors.

Table 2: The Royal Society's diversities of science diplomacy

Science for Diplomacy	Science and technology are utilised as a diplomatic tool to improve foreign relations between states in the efforts to collaborate against cross-border issues.
Diplomacy for Science	Traditional diplomatic tools are utilised in an attempt to equip the state with the knowledge of foreign sciences and technology to improve national capabilities.
Science in Diplomacy	With the input and interests of scientists on foreign policy, it may enhance foreign policy actions and responses in times of war or peace.

(Van Langenhoven, 2019).

3.3.1.1.1 Science for diplomacy

According to the UN (2020), private-public partnerships (PPPs) will be crucial in achieving the Sustainable Development Goals (SDGs) using big data. The international organisation aims to improve transparency and reduce but ultimately avoid the abuse of human rights and the invasion of privacy, within states and among states.

Two notable initiatives directed by the UN and its secretary-general include, but are not limited to, the Cape Town Global Action Plan for Sustainable Data that took place in 2017 and the UN Global Pulse. The Global Pulse is driven by data science and is geared at promoting awareness of big data-related opportunities for sustainable development and humanitarian assistance. In addition, Global Pulse aims to develop 'high-impact analytics' for the UN and governments through networks strictly covering data science, attempting to decrease adaptation and scaling barriers (UN, 2020).

Figure 4: Big data for sustainable development



(UN Global Pulse, 2017).

Above, Figure 4 presents how big data may be used to achieve the UN's SDGs (UN Global Pulse, 2017). Particularly relevant to 'Science for Diplomacy' is 'Climate Action' and 'Life Below Water'. In reference to 'climate action', deforestation is a major transnational issue, according to Dean (2019), who explains how large forests such as the Amazon store carbon and when such forests are torn down or burned down to create industrialised sites, carbon is released into the air as carbon dioxide. Global Pulse suggests that through big data, states and international organisations may closely track deforestation utilising 'satellite imagery, crowd-sourced witness accounts, and open data'. It is evident that through collaborative efforts and big data, states may address cross-border issues.

Global Pulse (2017) suggests that big data can be used to establish 'illegal, unreported and unregulated' (IUU) fishing activity. Emmert (2018), highlights that machine-learning

techniques have allowed for more accurate and sophisticated techniques through satellite tracking where the global footprint of fishing can be traced from space and further track the movement of illegal shipping vessels.

3.3.1.1.2 Diplomacy for science

According to Van Langenhove (2019), diplomacy for science involves utilising traditional diplomatic tools to equip a state with the appropriate knowledge of science and technology to improve national capabilities. Science offers the opportunity to bridge the gap between states that have previously had weaker political associations (Royal Society, 2010).

Boyd et al., (2019), discuss diplomacy for data and argue that data has become an integral aspect of diplomacy as data-driven AI technologies become increasingly popular and integrated into diplomatic practice. Data has become a transformative tool that has the power to drive or trigger change. Notable types of data that may be relevant to diplomatic practice include geographical, natural, financial and meteorological data.

Science diplomacy, and specifically diplomacy for science, may be a key driver behind 4IR as scientific partnerships and collaborations have produced innovative discoveries and resulted in tremendous scientific advances. Flatten (2019), cites the success of the 'Synchrotron Light and Middle East', also known as the SESAME project that unites researchers focusing on archaeology, environmental sciences and physics, to name a few.⁴

3.3.1.1.3 Science in diplomacy

Science in diplomacy may be the most comprehensive variety of all three. It draws on soft power as it is both attractive and influential as a national asset as highlighted by the Royal Society (2010). In addition, it further provides different types of *science in diplomacy* such as: new institutions; educational opportunities; track-two diplomacy; science cooperation agreements; and international science exhibitions.

New institutions are designed to assist states in achieving the scientific goals of diplomacy and requires international collaboration that may include governments, non-profit organisations, and private corporations (Royal Society, 2010).

⁴ Partners of the SESAME project include Israel, Jordan, Turkey, Iran, Cyprus, Pakistan, Egypt and Palestine (Flatten, 2019).

Educational opportunities attempt to create, enhance and build international partnerships, often between two or more states in the efforts of expanding or building on long-term knowledge-based relations to sustain a particular field, as stated by the Royal Society (2010).

Track-two diplomacy was coined by Montville (1987). It may be understood as individuals that do not form part of the 'official negotiation and mediation process', such as scientists (Royal Society, 2010:12). Such individuals are regarded as credible and possess significant influence as Lieberfeld (2002), states that these individuals should be heavily credited for achieving official political, track-one, agreements.

Scientific cooperation agreements are defined as scientific agreements among states may provide a sense of hope that improved political relations are on the horizon, as stated by the Royal Society (2010).

Lastly, the Royal Society (2010) states that international science festivals and exhibitions are another display of science in diplomacy, explaining that science festivals and exhibitions highlight the historical aspect of science, in addition to its borderless nature where states and non-state actors may share common interests.

3.4 Domestic and international legal frameworks

While 4IR technologies have been mostly welcomed into diplomatic practice, there is no international law that legislates its use. It is argued that some aspects, like the use of newly built autonomous weapons are automatically catered for in the same legislation that guides other weapons. However, this is not the case for the technologies specifically utilised for diplomatic purposes. The VCDR of 1961 is the only document that legislates all aspects of diplomatic practice but since its inception, tremendous strides have been made in the way in which diplomacy is practiced and how diplomats conduct themselves. This section aims to determine the usefulness of the VCDR of 1961 given the current nature of diplomacy and further explores other possible documents that may legislate diplomatic practice given the recent rise of technology in the field of diplomacy.

According to Turekian et al., (2017), the rapid growth and continuous development of technologies presents growing challenges to security and foreign policy, on a national and international level. Therefore, states have to take a bilateral and multilateral approach to developing protocols surrounding cybersecurity and ungovernable spaces, like the internet.

Technologies like AI are complex and have cemented its place in international relations, in areas such as decision-making, military forces and communication. Therefore, Gill (2019), suggests that the legislation of AI cannot be done only by coders, scientists, industries or states independently but rather in collaboration with one another. The governance of advanced technologies like AI ought to be done by all central players to avoid overlooking key aspects of legislation and potential implications. However, apart from the importance of legislating AI, equally significant is its implementation. All states and non-state actors, such as industries, international and civil-based organisations and innovators have to be tasked with the responsibility of executing the governance of AI.

Edelman (2020) states that to begin the process of regulating AI, it is important for all policymakers and states to acknowledge that it is a tool with an immeasurable amount of uses, therefore it is not the tool that must be regulated but rather the ways in which it is used. Edelman recommends that states should work on tailoring AI policies at the national level for use in the public and private sector. Internationally, states should explore existing technology-related policies and work from there, ensuring that the benefits and risks posed by AI are evaluated on all scales and in all areas of the international economy and in national economies. However, Edelman (2020) notes that it is not possible to adopt a 'one-size-fits-all approach' but that policies should rather be implemented on an area-specific basis.

The Royal Society (2010:23), explores *Governance of International Spaces* that looks to regulate the spaces beyond national borders such as the high seas, Antarctica, and outer space. There are valid concerns over international spaces that cannot be governed through traditional modes of diplomacy and governance. It is therefore imperative that more agile modes of enforcing international collaboration and cooperation ought to be pursued through 'scientific evidence and underpinned by practical scientific partnerships'.

It is rumoured that Russia has already begun utilising unmanned robotics in real-life urban scenarios. This comes after Russia confirmed to *Forbes* that in the near future, it intends to replace human soldiers with unmanned robots to save human life from dangerous and life-threatening situations (Spry, 2020). In addition, Spry (2020) states that Russia has confirmed that its robotic soldiers will be 'faster, stronger and infinitely more accurate'. Hambling (2019) states that the US army is also successfully creating

robotic soldiers that can understand and interpret instructions as well as perform tasks, ask questions and provide reports. The research team involved in their development has explained that it has utilised a hybrid approach in their design, relying on deep learning for image recognition and object identification. However, the design team continues to deal with two challenges: the slowness of the robots and the need for resilience.

Garcia (2018), argues that lethal and militarised AI may create detrimental effects in international security and stability, possibly infringing on Article 2.4 of the UN Charter that deals with peaceful resolutions in times of dispute. Singer (2009) raises two imperative questions: 1) should an AI-led arms race be prevented before it begins? and 2) should AI be designed to effectively destroy and kill without human input? Kirkpatrick (2016), states that autonomous weapons driven by AI should be utilised in conjunction with human input and cannot act independently.

There are mixed responses about the militarisation of AI but what remains is that there is no existing legislation that speaks to the regulation of AI and autonomous weapons in international relations. Michaelsons (nd), explains that although states have made some legislative provision for the use of AI, it is not sufficient due to the fast-paced development of AI. There is a desperate need for universal law but it is imperative to ensure a balance between the protection of citizens and the encouragement of innovation. According to Azoulay (nd), the UN and its advisory bodies have been working on and submitting reports and declarations regarding the ethics and use of AI. The IO has played a crucial role in regulating previous technological advancements such as the Universal Declaration on Bioethics and Human Rights (2005) and the Universal Declaration on the Human Genome and Human Rights (1997).

Garcia (2018), expresses concern that the use of autonomous weapons will infringe on the currently relied upon frameworks that guide the use of military weapons and suggests that militarised AI may result in more violence. However, Kirckpatrick (2016), provides the opinion of experienced military officers who claim that the use of AI will decrease the number of mistakes made in combat due to improved accuracy and a lack of emotions that may cloud judgement.

To uphold peace and security within the international society, the legislation of AI must be 'innovative and agile' (Gill, 2019). This may ensure that legislation is continuously

updated to keep abreast of AI developments and that at no single moment will international security be vulnerable to AI.

3.4.1 The Vienna Convention on Diplomatic Relations of 1961

While the VCDR of 1961 was, and continues to be, a key document guiding international diplomatic law, its relevance may be questioned in an era where communication has drastically evolved and the traditional methods of diplomatic relations are no longer utilised. With communication being a key aspect of diplomacy as emphasised by Spies (2016:39), it is without a doubt going to be affected by 4IR where communication is an integral component of change.

Further, Wouter and Duquet (2012) raise the important concern of the VCDR and the actors it refers to, this being exclusively states. Therefore, the document does not take non-state diplomatic actors, such as the European Union (EU), into consideration and raises the question: is the current VCDR of 1961 enough to guide diplomatic relations for both state and non-state actors?

In addition, the VCDR states that one of its sole drivers is to ensure and maintain peace and security in the international society. Ensuring security in the present day differs from previously when the cyber dimension did not exist as it does today. The VCDR of 1961 also outlines the special privileges and immunities that a diplomat, head of state and their family members are entitled to. With new threats emergent over the last few decades such as cyber threats and attacks, it must be questioned if such privileges and immunities remain appropriate.

3.4.2 The use of 4IR in diplomatic communication

The symbolic act of diplomatic missions between sending and receiving states always formed an integral aspect of diplomatic relations. Berridge (2015:155) discusses resident embassies, highlighting that historically their purpose was mostly a matter of convenience to not only minimise the costs of frequent travel but also the risks this entailed. It also aided diplomats in the opportunity to better understand a state when residing in it and to adequately prepare them for negotiations. Berridge (2015:156) notes that initially states were extremely reluctant, afraid diplomats would act as spies and note the receiving state's inadequacies. However, soon the art of permanent diplomatic missions and resident embassies became a significant element of diplomatic relations.

Berridge (2015), highlights that embassies have survived the transports and communications revolutions due to their immense importance in diplomatic relations, however, noting that some states have become more restrictive and withdrawn due to costs and other factors. Cucos (2012) discusses how embassies have been closing down and governments have chosen virtual diplomacy as an alternative. Although this option carries complications, it poses significant implications for international relations as diplomatic missions are a crucial aspect in international relations, promoting and building trade and economic ties and the physical meeting between two states is imperative. Furthermore, public diplomacy has become an integral aspect of diplomacy in building and maintaining educational and cultural exchanges between states. However, the addition of new technologies should not supplement traditional embassies but rather complement them and improve the services they may offer or expand their reach in smaller regions.

Cucos (2012), further discusses the need for governments to seek alternative courses of action when closing down embassies. For the US, that alternative has been a virtual embassy which comes in the form of a website where e-services are available. This method was utilised specifically in Tehran, Iran, when the US embassy closed down. Diplo Foundation (2007), discusses the Maldives and the launch of the first virtual embassy which was described as an 'online space' to create and allow for new forums for diplomatic representation and negotiation.

Tavares (2018), describes virtual embassies as a wholesome source of information regarding political, economic and trade news. Over and above, the virtual embassy should also provide a plethora of the necessary e-services such as educational opportunities, visa applications, assisting with stolen or lost passports and retrieving personal information. Lastly, the platform should consist of remote communications of important information like travel restrictions and the latest developments between the host and home countries, this is especially significant in hostile periods.

Although the virtual embassy is a great tool on paper, allowing most individuals instant access to their state's e-services, it may sometimes be used as a tool by rebellious states. This is precisely what Iran did in 2011, just two days after the US's virtual embassy was launched (Reuters, 2011): the Iranian government blocked access to the website after it was unhappy with decisions made by the US government and retaliated how it

felt was most appropriate. However, blocking access to such a site poses concerns, especially for US citizens in Iran. With decades of non-diplomatic relations between Iran and the US, the virtual embassy was off to a shaky start.

Communication has always been a key pillar of international relations and diplomacy (Spies, 2016:39), and it has even been emphasised in the VCDR (1961:8). Article 27 of the VCDR states the importance of diplomats being able to protect free information during an official mission, whether through coding and ciphering, or the use of wireless transmitters.

The use of coding and ciphers highlights that states used technologies to their advantage to protect information and regulate diplomatic activities. Article 27 of the VCDR (1961) makes reference to wireless transmitters which were historically more unknown and difficult to get a hold of as technology was not as advanced as it is today, however, it was a key aspect of protecting information. Today, the very essence of 4IR is faster, wireless and involves more enhanced communication and communication technologies allowing for the free flow of communication and its protection (Kunst et al., 2019:2).

Ehiane and Mosud (2013) explore the integration of ICT into diplomacy, stating that ICT is a profound and strategic tool for communication and collaboration. Therefore, integration may yield positive results for diplomatic relations. Furthermore, if correctly utilised, ICT may assist states, and more so developing states, to manage diplomatic issues that may constantly emerge such as an unclear line of communication between states or states and citizens.

Accessibility and reliance on technological applications, such as Skype, have allowed for diplomats and heads of states to have instant, albeit virtual, face-to-face communication via video calls (Ehiane and Mosud, 2013). This may save MFAs time and money, where previously long and costly trips were required for diplomatic engagement to occur. Although in-person contact remains a crucial element of diplomacy, virtual meetings may be utilised when in-person contact is not possible.

The latest technologies have also introduced applications pertaining to instant language translation which may be extremely beneficial when heads of states or diplomats engage with one another but language poses as a barrier to engagement. In January 2019, Google launched its very own instant language translator that Titcomb (2019) describes as a 'game-changer' for tourists. At the time of the launch, the application had the ability

to instantaneously translate 27 languages. Titcomb explains that all that is required is for an individual to speak in their native language and select the language that their phrase, comment or statement ought to be translated into. However, as useful as instant language translation may be, it may take away from the personal element of diplomacy and conversations may lose their meaning. Furthermore, diplomats are often required to use charisma to achieve desirable outcomes, which is at risk of being lost in translation with the use of applications.

3.5 New 'new' diplomacy

The previous section reflected on the two phases of diplomacy, old and new diplomacy. Both phases embody specific characteristics, styles and features which make it respectively unique. In addition, old and new diplomacy represent an era of diplomatic theory and practice over a specific time period. Upon reflection of the two phases, it simultaneously highlights the evolution of diplomacy and how it became influenced by specific trends and developments, such as the influence of APRANET and the rise of the media. Therefore, new 'new' diplomacy may be defined as diplomatic tools and practice driven by AI, ICT and big data that assist a state in achieving its foreign policy goals. In addition, it may be practiced and influenced by state and non-state actors. This section, entitled new 'new' diplomacy, attempts to categorise a new phase in diplomatic theory and practice, as influenced by 4IR. An exploration of the new actors, new practices and a new sense of openness in modern diplomacy is examined, exploring virtual and e-diplomacy.

3.5.1 Virtual diplomacy

Pilegaard (2016), predicts that future practices of diplomacy may potentially be impacted by ICT. The US came to realise very early on the significance that technologies may play in diplomatic affairs, launching Virtual Presence Posts (VPPs) in the Maldives and Russia. VPPs are the extension of diplomatic services and the availability of information using ICT to serve a group of citizens that cannot access physical embassies. At the time of writing, Nielsen (2007:9) recorded that there were 41 existent VPPs. The first five were established by Russia for illustrative purposes and the VPP in the Maldives was designed in the absence of a physical US embassy. The Congressional Service Report (2019) explains the purpose of VPPs, highlighting that it may enable diplomatic engagement in smaller, yet important, regions.

Hocking and Melissen (2015) explore the implications of large datasets, particularly referring to big data, on the traditional functions of diplomacy such as the gathering of information and analysing datasets for faster and more accurate delivery of information and services. This illustrates that the services of e-diplomacy may be drastically enhanced by big data. Such enhancements may be vital in times of bilateral conflict and crisis management. According to Manzoni (nd), big data offers a wide availability of information that can contribute to quick and appropriate decision-making in times of crises.

Bousfield (2019) discusses the upside to horizontal engagements as a result of more reliance on ICTs. Horizontal engagement encompasses the ability for ordinary citizens, various non-state actors and any user, to engage on online platforms as equals, irrespective of the laws or degree of freedoms that their governments allow. However, citizens in some states have experienced internet censorship by governments in an attempt to deter citizens from online engagement or to prevent citizens from being exposed to particular content. Fassihi (2019), recalls how internet censorship has been a common practice in Iran where the government shut down the internet in the wake of anti-government protests in 2019. In addition, in the decades-long tension-filled relationship between Iran and the US, Iran has often shut down the US's virtual embassy in times of conflict, as witnessed in 2011 (Reuters, 2011).

With developing ICTs, there is also an opportunity to one-up your opponent. During the #occupycentral protests that took place in Hong Kong in 2014, citizens were wary of the fact that the state may shut down the internet as protests intensified, and so, to ensure the momentum and communication continued among citizens and global supporters, FireChat was downloaded. FireChat is an application that allows for continuous engagement offline, in the absence of the internet (Boehler, 2014).

3.5.2 E-diplomacy

Hare (2016:289) states that with the recent technological innovations and the communications revolution, e-diplomacy continues to become an increasingly popular diplomatic tool for diplomats. As a field, however, it remains in its 'infancy'.

According to Hanson (2012), e-diplomacy is the utilisation of the internet and newly developed ICT to achieve the diplomatic goals of the state. It is birthed out of connective technologies that have digitised different processes and practices of diplomacy, aiding

states in knowledge and information management, disaster response and the practice of public diplomacy.

Sandre (2012), notes that while social media may play a key role in e-diplomacy, it is not the only tool of this strand of diplomacy. Text messaging, crowdsourcing capabilities, mapping software, and mobile and computer technology are all important tools that enable a more digitised and efficient diplomacy. While the advancements of technologies have resulted in the growth of e-diplomacy, it has also reduced the costs of traditional diplomacy. Hare (2016), states that in the last 50 years, the costs of communication technologies, computer and mobile devices has dropped dramatically and therefore making them more affordable to individuals, states and organisations, making diplomacy extremely open and responsive as states and non-state actors openly engage on online platforms.

The continuous developments of communication technologies offer a downside to diplomacy and that is its rapid and ever-changing nature (Hare, 2016). As technology develops, diplomacy is forced to adapt but it may prove to be a difficult task for diplomats and other relevant actors to continuously be equipped with the new skills and knowledge pertaining to technological advances.

Kurbalija (2011), highlights three implications of e-diplomacy. First, the constant growth and influence of new technologies have resulted in a continuously evolving environment for diplomatic practice. Such advancements have already and continue to affect a change in the global economy due to ICT-led advancements. Second, as official diplomatic practice has transitioned to online platforms and the use of the internet has increased significantly, states have to be increasingly concerned with internet governance. And lastly, diplomatic actors ought to consider the new tools of diplomacy, such as the internet, finding information that can now easily be done with the use of big data and Natural Language Generation (NLP), Processing and Understanding, and the use of social media.

E-diplomacy and its new tools may be utilised by and for multiple diplomatic purposes. States may have more consistent and useful engagement with the diaspora, this simultaneously enhances the practice of public diplomacy. In times of crises, be it natural disasters or terrorist attacks, e-diplomacy allows for instant communication. As previously mentioned, the use of technologies may influence decision-making, allowing

policymakers, diplomats or heads of states to make better and more accurate decisions quicker. In addition, e-diplomacy tools may allow citizens to be part of foreign policy decision-making processes (Kurbalija, 2011).

Al-Mustfah et al., (2018), conducted a comprehensive study on the factors that may influence the implementation of e-diplomacy. The study explored social, political and economic factors and resulted in a conclusion that there are 18 influential factors, positive and negative, that may affect implementation. From the findings of the study, it was established that secrecy, resistance to change and finances may hinder the implementation of e-diplomacy. Historically, diplomacy is known to be private and closed but this has changed over time. However, some diplomats still prefer to keep aspects of diplomacy private and therefore their reluctance to share information on online platforms may affect implementation. Some actors' work may be made up of sensitive information using complex but traditional processes and failure to adapt may make their department obsolete, resulting in these actors becoming resistant to change. The financing of technologies for diplomacy may be a large area of concern for many states, especially those that do not have excess financial resources. In addition, some states may feel that it is not necessary and choose to use their budgets in other areas which may be considered of greater priority. Therefore, states may not upgrade to newer systems and processes, affecting the implementation of e-diplomacy.

According to Tavares (2018), dramatic changes ought to occur for diplomacy to remain relevant in a highly technologically-driven global environment, detailing the cost-effective and agile nature of e-diplomacy. Furthermore, the implementation of e-diplomacy may provide and uphold public accountability and enable the good image of the state.

Hare (2016), suggests that the advanced communication technologies that both individuals and governments have access to today offer both opportunities and risks for states and diplomatic relations. Positively, states have access to greater outreach with foreign audiences, with websites detailing educational opportunities in the US and visa applications (Slavin, 2013). However, hackers can easily make threats against governments. Following the tensions and airstrikes between the US and Iran in January 2020, a group of Iranian hackers hacked a US governmental website with an image of a distorted and bruised President Trump and a vow to seek revenge for the murder of Qassem Suleimani (France-Presse, 2020).

3.6 Diplomatic functions

Technology has changed the composition and execution of daily tasks in virtually every field, including that of diplomacy. This section will explore the popularising theme of cyber diplomacy and further the role of a diplomat in the 21st century.

3.6.1 Cyber diplomacy

According to Barrinha and Renard (2017), cyber diplomacy may be understood as the utilisation of diplomatic tools and resources in the cyber domain to pursue foreign policy goals and serve the state's national interests. Hocking and Melissen (2015), refer to technological developments and the use of social media by diplomatic actors as a central feature of cyber diplomacy. The actors of cyber diplomacy are vast, consisting of business leaders of technological industries and companies, international organisations, states and interest groups. Diplomatic issues pertaining to the cyber domain include cybercrime and security, internet freedom and governance, and confidence building. Buck (1998:6) terms cyberspace as a 'global common' where citizens and states engage. Other global commons are the high seas and outer space. Therefore, the intersection of diplomacy and cyberspace may be largely due to the growing need for governing structures to regulate the increasing and more formal use of the internet.

Bousfield (2017:1048), states that the events of 9/11 led to the prioritisation of internet governance and security with private and public actors being concerned about securing online platforms. With states coming to realise the value of the internet and the outcomes that its content may result in, states began to strongly regulate political and social content on online platforms to deter unwanted outcomes, such as terrorist attacks or movements against the government. This is often done through internet regulation and internet censorship.

While many states have snubbed China for its harsh internet regulations, Canada has also implemented similar practices but mostly for the purpose of protecting its citizens with state and non-state actors like Internet Search Providers (ISPs) and private search engines. Canada's internet regulation prioritises eliminating criminal elements such as online child pornography, whereas China aims to deter social engagement on particular topics that go against the Chinese constitution (Diebert, 2012).

China's cyber diplomacy is predominantly centred on the state, attempting to utilise traditional modes of diplomacy to pursue regulation (Bousfield, 2017). The Chinese

government utilises UN legislation, such as the Internet Government Forum to enforce its right to regulate the internet. The large jurisdiction of the UN allows China to freely and widely implement its cyber diplomacy. However, the continuously developing nature of ICT infrastructure may pose significant challenges in the regulation aspect of a state's cyber diplomacy and may dictate the future of such regulations and practice.

Digital Watch (2020), states that the IoT poses particular security risks with IoT tools becoming increasingly popular in the case of cyberattacks and while the private sector has taken the lead in curbing such attacks, it does not have the resources or capabilities to fight such battles alone. In addition, governments and public sector organisations have increasingly become targets of IoT-led cyberattacks. According to Orr (2020), cyberattacks against government and governmental organisations have increased by 65% since 2019. Swivel Secure (2020), recalls the biggest cyberattacks on governments since 2011, noting that they have become increasingly detrimental over time with improved technologies.

3.6.2 A diplomat in the era of 4IR

According to Bull (1977), diplomats are tasked with the responsibility of socialising the relationships between actors while simultaneously promoting the norms, rules and values within the international society. Nicolson (1998), lists the characteristics of a great diplomat, stating that they have to be charming, unbiased to classes in societies, patient, courteous, able to speak multiple and popular foreign languages, have a good memory, and be truthful.

Ambassador Al-Alawi (2019), discusses the more functional characteristics historically known, such as negotiation and representation skills, protecting the interests of citizens in the diaspora, and the ability to gather, analyse and distribute information. However, Al-Alawi continues by emphasising how imperative it is for diplomats to acquire the appropriate training to adequately perform their duties. The ambassador acknowledges how the forms of communication and information gathering are evolving, particularly highlighting the importance of *Data Mining*⁵, and its implications for how diplomats may appropriately process large quantities of information.

⁵ Data mining is the 'exploration and analysis' of huge datasets to establish informational patterns and trends (Microstrategy, 2020). In addition, data mining powers AI-led applications, such as search engines.

As technology enhances the process of diplomacy, it automatically enhances the role of a diplomat and their ability to gather and share information in a timely and relevant manner. Hutchings and Suri (2020), state that this allows diplomats to 'micromanage' diplomatic relations and information, irrespective of distance. However, the rapid availability of information from different sources may diminish the reporting role of a diplomat. As aforementioned, ICT is available to all who can access it and all who can afford it. Therefore, the minute an event, crisis or attack takes place, it may be publicised. Within seconds, the world is aware of the events that have occurred. This is unlike previously where diplomats would provide formal reports informing parties about the events that have taken place. However, as much as the information has already been shared, the diplomat ought to confirm the facts of the information as true events may be falsely distorted.

Bjola (2019), explains that in using AI as a tool for diplomacy, the diplomat's role and daily functions may be enhanced. Meier (2016), believes that such tools include hashtags, that may easily group topics of engagement on social media and allow diplomats to understand the views of citizens. Grottola (2018), states that AI may improve negotiation processes for diplomats as it may be utilised in analysing past negotiation scenarios and exploring the outcomes rather than making decisions based purely on facts and understanding at the time in the hopes of a particular outcome. Cranston (2011), acknowledges that new tools may enhance a diplomat's daily activities and reduce the time used for such activities significantly but raises concerns regarding the time it may take to train diplomats in how to use new tools. In addition, as technology is continuously being improved and new tools that may be provided to improve the work of a diplomat may need updating every few months, how does a state ensure diplomats keep up with constantly evolving trends?

Swissnex, a network created by the Swiss government, is an international science and technology initiative that aims to exchange knowledge and talent (Swissnex Network, 2020). The organisation consists of offices in five innovative hubs around the world, including Bangalore, San Francisco and Boston. The network describes the four primary practices of their organisation as: the promotion of Swiss higher education, tech start-ups and research institutions; inspire innovative and fresh ideas prompted by the exchange of knowledge; and examine and advise on scientific, technological and/or educational opportunities and trends. According to Tavares (2020), Swissnex is a leading

organisation responsible for training diplomats on knowledge and skills pertaining to technology and innovation to ensure diplomats are equipped to deal with modern and digitised challenges and use such skills to improve diplomatic practice.

3.7 Conclusion

This chapter has explored the implications of 4IR on the pillars on diplomacy. Each pillar represents a subsection, yet integral, aspect of diplomacy which is expected to be widely affected by 4IR. Communication, interdependence, domestic and international legal frameworks, new 'new' diplomacy and diplomatic functions have all been critically discussed. In conclusion, it may be stated that technological advancements allow for a smoother line and enhanced process of communication. Digital diplomacy has taken a more frequent front in diplomatic relations. However, technologies do pose negative implications for international relations as it drastically hastens the required response time of a state in times of conflict or natural disaster. In addition, deep-fakes may negatively affect the public image of the state which may hinder public diplomacy. The section which explores interdependence highlights that international cooperation is key in various forms, such as educational opportunities abroad and research collaborations. Furthermore, international cooperation prompted by technology may assist in more states harnessing the complete potential of 4IR and address global challenges which are a key aspect of science diplomacy. In reference to legislation, states have taken some steps to regulate the use of AI but mostly to protect the privacy of a citizen. There is currently no legislation that guides the use of AI in international relations. As it stands, there has only been reports and recommendations by organisations and private think tanks. The pillars of new 'new' diplomacy and diplomatic functions are very similar and may overlap in some instances. New 'new' diplomacy represents yet another shift in diplomacy since old diplomacy and new diplomacy. The findings of this subsection and that of diplomatic functions illustrate that the objectives of diplomacy and tasks of a diplomat mostly remains unchanged, but the methods may be different due to the influence of technology. The following chapter will explore the practical applications of the pillars in real-world diplomatic scenarios.

Chapter 4: 4IR's Impacts in Application

4.1 Introduction

Considering the five central pillars of diplomacy that are implicated by 4IR, this chapter will explore the real-life examples of each pillar. Although 4IR is relatively new and adaptation continues to take place and is yet to be integrated in some fields, practical application has taken place in some diplomatic spaces and for diplomatic functions. While some countries have been more progressive and eager to integrate AI, IoT and other technologies, other states may be slightly more skeptical or financially incapable to integrate new technologies into diplomatic practice. However, due to the interconnected nature of diplomacy, at one point or another, states are forced to face the realities of a highly industrialised diplomacy and slowly begin to digitise. To illustrate the expansive influence of 4IR on diplomacy, this chapter explores a host of different examples, framed as mini-case studies. This provides a more holistic view of how far-reaching the implications of 4IR are and avoids making generalisations by only examining one or two case studies. This chapter will explore examples categorically, beginning with communication and later followed by interdependence, domestic and international frameworks, new 'new' diplomacy, and diplomatic functions. Lastly, this chapter will explore the possibility of a new global order prompted by partnerships and innovation, as 4IR grants new opportunities and possibilities to states.

4.2 Communication

Communication is a central feature of diplomacy and its forms diversify over time with technological innovations. Diplomatic communication between states, citizens and organisations has made tremendous strides. Social media allows for a large and multifaceted world to feel close-knit and intimate and has greatly progressed public diplomacy as governments have a direct line of engagement with foreign audiences. In addition, governments have begun to rely on sentiment analysis on social media platforms to have a better understanding of public opinion and make informed decisions based on their findings. Heads of states have also taken a liking to the use of hashtags to illustrate their state's position on a particular topic.

4.2.1 AI meets public diplomacy

Despite the rapid diplomatic relationship between the US and Iran, public diplomacy has remained a central feature between the two states. The US has continuously made efforts to engage with the Iranian citizens through social media channels and the virtual

embassy. However, the Iranian government has not received the efforts of the US well, often resulting in internet censorship. AI, has already demonstrated to be a powerful force in the public diplomacy of the two states, posing negative and positive implications.

Deep-fakes pose a rather serious threat to the image of the US as Venkataramakrishnan (2019), highlights the possibility of Iran utilising it as a weapon against the US. The Congressional Research Service Report (2019) warns that deep-fakes are becoming more and more realistic as AI develops, making it difficult to distinguish between what is real and what is fake. The report goes on to explain that deep-fakes are utilised against the US to demolish public trust, influence public opinion and manipulate heads of states and diplomats. Stanton (2019), explains the damaging effects of deep-fakes on international relations, claiming that it has the ability to incite violence – already demonstrated in US-Iran relations.

BBC News (2020), discusses the creation and spread of a deep-fake image of President Trump, created by 'Iran Cyber Security Hackers'. The image depicts the president with a bruised and battered face, along with a bloody mouth. In addition, the image contained a message by the group pledging their support for states within the Middle Eastern and North African (MENA) region. The deep-fake intends to illustrate the potential effects that would come as a result of Trump not stopping his targeting of Iran. The deep-fake demonstrates the AI capabilities of Iran, the length the state is willing to go to in protecting itself and lastly, the lack of concern to preserve diplomatic relations between Iran and the US.

Iran has demonstrated a likeness to digital authoritarianism, censoring websites and content covering particular topics, as seen in 2011 when it blocked the virtual embassy of the US (Shahbaz, 2018). Tajdin (2019), also notes the censorship of popular social media platforms, such as YouTube, Facebook and Twitter, in addition to independent foreign media. This is damaging on the US's side, as the state's public diplomacy has heavily relied on social media for direct engagement with Iranian citizens. Iran's practice of digital authoritarianism attempts to secure a national internet, built on the internet services of domestic service providers.

4.2.2 #Trumpdiplomacy

President Trump is no stranger to social media platform, Twitter, and since his inauguration he has frequently reached out to heads of states on it or to voice the stance

on the US on a particular matter. According to Daileida (2017), the president's most used hashtag during his presidential campaign and during his presidential stint is #MAGA – translating to 'Make America Great Again'. Trump's other favourite hashtags include #AmericaFirst; #USA; #ObamaCare; and #ICYMI, translating to 'in case you missed it'.

Salhani (2020), states that President Trump has executed much of the US's foreign policy on Twitter, with little to no advice from his political advisors. Trump's Twitter fingers have resulted in confusion surrounding US policy. Salhani believes Trump reignited the fire and tension between the US and Russia. Russia swooped into Northern Syria after Trump tweeted that US forces had evacuated the region, leading to a snowballing effect of chaos and tension in the Eastern Mediterranean.

Laine (2019), refers to the use of Twitter by world leaders as 'thumb-boat diplomacy' – a modern version of gunboat diplomacy⁶. Despite Trump's negligent use of Twitter, the US Department's fondness for and embrace of digital diplomacy and digital tools is spearheaded by Secretary of State, Michael Pompeo. Laine continues by citing Pompeo, who describes Twitter as the 'most effective way to communicate' US policy. Referring to Iran, which the US hoped to employ maximum pressure upon, Pompeo states that Twitter is transparent and accessible not only to Iranian citizens but to the international society as a whole.

Early January 2020, following the US airstrike on Iranian Major General Qassem Soleimani, the world witnessed a very public and threatening display of Laine's (2019), thumb-boat diplomacy. The virtual encounter was a back and forth affair between President Trump and Iranian leader Ali Khamenei. Khamenei tweeted '#SevereRevenge' in response to the death of his major general and Trump was quick to respond (Romero, 2020). The US president bravely proclaimed that new targets were identified for airstrikes, areas classified as official Iranian cultural sites.

Following the prompt remarks on Twitter that inflated global hostility, two days later it was de-escalated on the same platform. Both, Trump and Khamenei, stated that neither would like the tension to result in a full-blown war (Graff, 2020). The escalation and de-escalation of the public Iran/US feud illustrates the pros and cons of real-time communication. Should the communication between the two not be as instant, the effects

⁶ Gunboat diplomacy is the execution of foreign policy geared by the threat or use of military force (Laine, 2019).

of the tension could have been much worse, possibly physically destructive. However, it may have not even have resorted to that point to start with if both leaders did not engage in a real-time, virtual engagement that fueled tensions.

Simunjak and Caliandro (2019), believe that Trump's use of social media for diplomatic purposes challenges the traditional characteristics of diplomatic language. This challenge may result in one of two possibilities: 1) Trump's style and use of social media may 'disrupt' the traditional methods of diplomacy and upset international relations, this has already been witnessed in more ways than one as discussed above; and 2) Trump may ignite the interest and growth of a new, more conventional form of diplomacy –highly digitised and instant. This would break the mould of traditional diplomacy and change its norms, rules and behaviour. Both possibilities have been realised thus far.

AI and ICT are both key drivers in the evolution of communication. Digital diplomatic tools like hashtags and social media pages have become central features of diplomatic communication, as highlighted by the exploration of President Trump's Twitter diplomacy. By examining real-life examples through a mini-case study of Iran and US public diplomacy, it is highlighted that new digital technologies may promote diplomatic communication, but it also has the potential to hinder it. The instantaneous nature of advanced technologies and ICT infrastructures may prove to be a disadvantage or an advantage, but this is mostly circumstantial. In addition, deep-fakes and internet censorship may pose considerable harm to public diplomacy as it may diminish public trust and limit engagement.

4.3 Interdependence

The introduction of 4IR has caused much chaos and concern, particularly among developing countries. The WEF (2020), boldly states the importance of PPPs. Collaborations among governments, international organisations and businesses will be instrumental in ensuring no state gets left behind in the latest wave of technological innovation. This section will explore partnerships which have emerged, all of which are centred solely on 4IR, or other technological innovations.

4.3.1 The case of India

India, a developing nation, has showcased promise in the era of 4IR. Kedia (2018), highlights that, in 2015, the country was ranked 11th in terms of global manufacturing competitiveness, out of 40 countries. In addition, it was anticipated that India would

continue to climb the rankings in years to come. What provides India an advantage includes its large and young workforce, low labour costs and a vast skills base that include engineers, researchers and scientists. However, considering that the majority of its workforce is low-skilled, the government and private sector need to work extremely hard in ensuring it can reap the benefits of the latest industrial revolution.

According to Verma and Sharma (2018), India's Prime Minister, Narendra Modi, has encouraged all of India's ministries to welcome AI and familiarise themselves with it. In doing so, ministries can establish how AI may be utilised to address the wide-ranging socio-economic issues of the country. In a 2018 radio address, Prime Minister Modi (2018) highlighted the possibilities of AI, stating that it may reduce poverty and corruption through increased transparency. In addition, Modi states that drones may be used to increase crop production and in turn the livelihood of farmers and, furthermore, may enhance security in remote regions.

Despite India's traditional, albeit successful, manufacturing system, the WEF has recognised the country's promise, so much so, that it was prompted to set up a Centre for the 4IR in the country. Ariffen (2018), highlights some of India's innovative initiatives that may have caught the attention of the WEF. These include a national database with the biometrics of 1.2 billion residents; being ranked first in ICT service exports in 2017; a robust start-up scene; and the announcement of the National Programme on AI.

Herh (2018), details the joint cooperation agreement signed by South Korea and India that aims to enhance cooperation among the states for the advancement of 4IR. The Korea-India Future Strategy Group enables collaboration between India and the Korean Institute of Advanced Technology for the highly industrialised manufacturing of robotics, smart factories and other developments in addition to partnerships for research and design projects.

In 2019, India and the US engaged in a 2+2 dialogue⁷. The US Department of State (DoS) (2019), reports that the dialogue was led by Mark Esper (US Secretary of Defence); Michael Pompeo (US Secretary of State); Rajnath Singh (India's Minister of Defence); and Dr Jaishankar (India's Minister of External Affairs). Chaudhury (2019), details the key outcomes of the engagement, one of which being a new science and

⁷ 2+2 dialogue is a mechanism for diplomatic engagement between two countries. Two ministers from each country meet to discuss the security interests and strategic objectives of their respective states (Rana, 2018).

technology agreement. It outlines cooperation efforts between the US and India in the fields of technology, science and innovation. The US continues to be a primary and imperative partner to India for the development of science and technology and the agreement provides a framework for continued collaboration and success.

Brende (2018), claims that not only does India have the potential to play a vital role in 4IR but it may also have the ability to shape the revolution. In addition to its large and youthful workforce, the country also possesses the second greatest number of internet users worldwide. The Indian government has made its aspirations clear and has initiated key relations with public and private stakeholders, governments and international organisations to steer its country in the appropriate direction.

4.3.2 The case of China

China has clearly illustrated its efforts to assist developing countries, more specifically African countries (Wu, 2019). However, Ferchen (2020) explores China's international developmental assistance and how it differs from the traditional modes of Western assistance, such as aid. China presents developmental assistance to developing countries as mutually beneficial for both parties, but such countries have questioned if these partnerships are indeed beneficial and if they coincide with their country's own developmental trajectory. Brazil has expressed concern over 'commodity dependency'⁸. Myanmar also attempted to redirect its diplomatic relations and has since come to rely on the US as its main commercial partner. Sri Lanka worries about the 'Chinese loans-for-infrastructure' that may see Sri Lanka over-burdened with debt, further leading to unsustainable economic growth. Such realisations and concerns by developing countries illustrate that countries are looking beyond their immediate needs and economic circumstances and are instead in search of sustainable development.

Funwie (2019:6), explores the cases of China and South Korea in the era of 4IR and in relation to international relations. The author describes both states as 'late-starters', in comparison to other highly-industrialised states such as Japan and the US. China and South Korea both possess roughly a decade's worth of knowledge and experience regarding 4IR technologies, allowing the states to make immense expeditious progress in this time.

⁸ A country may be considered commodity dependent when 60% or more of their total exported goods are raw materials, rather than finished products and services (UNCTAD, 2019).

China's Belt and Road Initiative (BRI), also referred to as the 'One Belt, One Road' initiative, was established in 2013 with the aim to connect Asia, Africa and Europe through six land and sea corridors (European Bank for Reconstruction and Development [EBRD], nd). It is an attempt by China to enhance regional integration and trade and further stimulate economic growth within the respective regions. EBRD (nd) highlights the five priority areas of the BRI which are: connecting individuals from the respective regions; financial integration; policy coordination; unrestricted trade; and infrastructure connectivity. Yang (2017), highlights the opportunities presented by BRI where developing countries may 'leapfrog' stages of industrialisation that they may have missed.

In 2017, President Xi Jinping announced the digitisation of the BRI as he attempts to steer China into the complete transition towards a digital economy. Wenyan (2018), details the statement made by the Chinese president at the BRI Forum for International Cooperation, where he stated that countries should pursue innovation-driven development and intensify cooperation in frontier areas such as digital economy, artificial intelligence, nanotechnology and quantum computing, and advance the development of big data, cloud computing and smart cities so as to turn them into a digital silk road of the 21st century. The rise of 4IR may present the perfect opportunity to kickstart BRI since the initial momentum of the initiative has died down.

Wenyan (2018), provides detailed ways in which a digitised silk road may promote sustainable development, green transformation and e-commerce:

Table 3: The possibilities of the Digital Silk Road for Developing countries

	Utilisation	Example
1.	The Digital Silk Road has the potential to improve the viability, efficiency and sustainability of infrastructure development which is essential for developing countries who lack in infrastructure.	The utilisation of monitoring systems and smart sensors may ensure optimal use of resources.
2.	Advanced ICT infrastructure to BRI partner countries allowing for the	Mobile internet in rural villages may create jobs, transforming traditional

	upgrade and transformation of traditional businesses. This may be especially significant in rural areas as it has the potential to induce job creation and economic growth.	farmers to online vendors. Furthermore, more routes may be designed connecting rural and urban areas offering further business potential.
2.	As small businesses connect to digital networks for trading in international markets, it may be supported by 'smart cross-border logistics systems.'	11 November is commonly known as 'Singles Day' where Chinese e-commerce businesses traditionally host 24-hours of online shopping sales. It consists of buyers and sellers from over 200 countries. Such a significant quantity of orders for global distribution may pose logistical challenges. However, with AI and Geographical Information Systems ⁹ (GIS), the quickest and most cost-effective routes may be determined for delivery.
3.	Sustainable development through big data allows for the direct solving of environmental issues.	Big data is used in African countries to improve the responses to water insecurity, natural disasters and climate change. This can significantly improve food production and farming.
4.	Provide basic internet to over 3 billion citizens. An inaccessibility to internet connection may widen the divide between the developed and developing.	Small businesses can be digitised, opening up their target market and further generating growth and job creation.

(Wenyan, 2018)

⁹ GIS is cemented in the geographical sciences. It is a system that designs maps that 'communicates, perform analysis, share information, and solves complex problems' (Esri, nd). In addition, GIS provides more in-depth analysis of large datasets that may allow for more informed decision-making processes.

Nan (2019), highlights key notes made by JinPing at the 2019 G20 summit. He emphasised multilateralism in the era of 4IR, stating that there should be a transition from a 'blockade to openness' and that states should move from operating in isolation to forging integration with one another. JinPing distinctively draws attention to development opportunities that are now arising as a result of 4IR and encourages states to take on those opportunities, as a result of international collaboration and cooperation.

4.3.3 The case of South Africa

South Africa, a young democracy with a fragmented economy, has stated its desires to harness the full potential of 4IR. At the annual State of the Nation Address (SONA), President Cyril Ramaphosa (2019), discussed the formation of the 'Presidential Committee on the 4th Industrial Revolution'. The committee is made up of various stakeholders and experts from different industries. These individuals are tasked with establishing how to speedily integrate technological innovations into South African industries, sectors and the economy, in an effort to achieve 'inclusive growth and social development'. President Ramaphosa has stated that digital transformation is imperative for South Africa as it may make the country an international competitor.

At President Ramaphosa's second SONA (2019), he highlighted his desire to create a smart, highly digitised city. However, this was not the first effort to have an industrialised and digitised smart hub in South Africa. In 2014, Zenda Developments, a Chinese development company, expressed their intention to create and build a smart city in Johannesburg East. Construction on the US\$8 billion city started at the beginning of 2015, but roughly a year later the development group decided to abandon the project, due to South Africa's 'poor economic conditions' (Business Tech, 2019).

Despite this, Ramaphosa's efforts appear to be on track. At the 2020 SONA, the President highlighted that the government, together with financial institutions, had established 'an innovative process' for the funding of digital, water, sewerage and electrical infrastructure. This, along with the roads, are the foundation of the new smart hub in Lanseria, Gauteng (Head, 2020). In 2020, the Presidential Commission also recommended numerous priority areas, such as the creation of an AI institute, building 4IR infrastructure, amending or creating 4IR-centered policy and legislation, and investing in human capital development. However, Dwolatzky and Harris (2021), critique

the governments abilities to execute such recommendations, citing a 'gap' in the Commission's vision and the reality of what is happening on the ground.

Maisiri and van Dyk (2019) explore the readiness of South Africa for 4IR. Their study is based on six key factors, some of which include: skills availability, data-driven services, infrastructure, and organisational strategy. They conclude that in the realm of digital transformation, the country is 'partially emerging' and 'partially developing'. The authors highlight that South Africa is lacking in infrastructure and strategy that supports 4IR and thus requires greater international collaboration to advance science and technology within the country. 4IR and its technologies ought to be appropriately integrated into all sectors to kickstart inclusive economic growth and make South Africa a viable competitor in the era of 4IR.

South Africa has noted the value of science diplomacy. Masters (2016:177), describes the state's efforts in this regard as a two-track approach where track one refers to South Africa as a 'producer' or 'exporter' of knowledge and track two considers the country as a 'consumer' or 'importer' of knowledge. South Africa has prioritised international cooperation in the areas of science and technology, forming bilateral relations with countries such as the United Kingdom (UK), Sweden and Norway, to name a few. South Africa's Department of Science and Technology has also formed partnerships with non-state actors such as the National Research Fund (NRF) and the Council of Scientific and Industrial Research (CSIR).

In Africa, South Africa plays a key role in producing and exporting scientific knowledge in an attempt to promote African development (Department of International Relations and Cooperation, 2015). However, Masters (2016), evaluates if the country may consistently uphold its role as a knowledge producer and exporter, citing the concerns of Wild (2015), who claims that there is a lack of coordination among the South African government, academia and industries. This concern may be more pressing in current times than ever given the rapid speed at which technologies are developing in the era of 4IR. South Africa needs to develop a more comprehensive approach at absorbing and producing knowledge to uphold its title as a knowledge producer. It is possible that the Presidential Committee on the 4IR may provide the country with the more coordinated approach it requires.

As a knowledge 'consumer', South Africa attempts to position itself as a viable and sustainable destination for collaborative partnerships in the advancement of science and technology (Masters, 2016). If positioned favourably, countries or organisations may deem South Africa as an appropriate destination to invest scientific and financial resources into. It will be critical for South Africa to become equipped with the latest technologies that may advance practices in public and private life. In addition, it may fast-track the country's development and later transform the country's abilities as a knowledge producer and exporter, creating favourable opportunities for diplomatic relations on the grounds of science.

Skills acquisition is imperative for the South African labour force and can be done through international exchange programmes. In 2017, South Africa and China's respective ministries on science and technology established the 'Young Scientists Exchange Programme', with the goal of providing young researchers the opportunity to acquire skills and exchange knowledge (SA Government, 2019a). The first exchange occurred in April 2019, with seven students from various scientific fields placed at different research institutions in the other country. Ultimately, students are encouraged to publish academic papers, advance research, and develop new products and patents. Such programmes are imperative for creating young leaders in South Africa within the scientific fields that can assist the country in making breakthroughs, integrating science and technology into varying sectors, and making the country a true frontrunner for 4IR in Africa.

The EU and South Africa's Department of Science and Innovation (DSI) have a long-standing partnership which saw the department touring Europe in September 2019 to equip itself and the relevant entities with the knowledge of how best to respond to 4IR. In addition, the EU aims to assist South Africa in seeking out opportunities and forming key partnerships in the areas of the public and private sectors, business, and research funding (SA Government, 2019b).

While South Africa, and Africa at large, have shown promise with numerous tech hubs and budding start-ups, Oguamanam (2019), states that these attempts have mostly been uncoordinated, with a higher than average failure rate. Therefore, partnerships are key. Partnerships should occur among public and private sectors, North-South relations, South-South relations, and regional and international organisations.

Burger (2021), outlines the newly developed partnership between CSIR and Columbia's Centre for the Fourth Industrial Revolution under the WEF network. The partnership aims to enhance research capabilities and unlock the maximum potential of AI and IoT. It further calls for technical training to develop new skills and the required infrastructure for digital transformation to occur. The partnership aims to make considerable efforts in creating a framework on new and advanced technologies that may foster new digital opportunities. Importantly, the collaborative efforts aim to support strategies amongst public and private partners that may lead to technological developments that meets industry needs.

President Ramaphosa has emphasised the need to prioritise skills development in schools that will contribute to the country's vision of an e-skilled based economy driven by technology, as per the National Development Plan. To support this vision, the government has begun prioritising coding and robotics into the schooling curriculum (Business Tech, 2021). President Rampahosa has highlighted that a draft curriculum on robotics and coding has been submitted to Umalusi to undergo evaluation and quality assurance and it is expected to be rolled out in 2021, at 200 schools for Grades R to 3 and 1000 schools for Grade 7.

Nagtegaal (2021), details South Africa's plans to modernise the country's National Identity System. The government plans to create a highly digitised and secure identity system that will act as a single source of information for all citizens. The system will include citizens and non-citizens that are within the territorial borders of South Africa. In addition, the system should be affordable and accessible to all, specifically those residing in remote locations. More importantly, it should be robust, secure and protect user-privacy. However, the budget of the National Department of Home Affairs may act as a hinderance to achieving a newly transformed and digitised system. However, Nagtegaal (2020), states that it is possible and the government should look to Estonia for inspiration as the country leads in digital governance.

From examining mini-case studies of India, China and South Africa, it may be established that international cooperation and collaboration with state and non-state actors is imperative for states to harness the full potential of 4IR. Despite financial resources being an asset in the era of 4IR, equally important is the knowledge and skills that a state possesses. States that lack either are inclined to seek partnerships that are mutually

beneficial, ensuring their development and preventing them from being left behind in terms of scientific and technological advances.

4.4 Domestic and international legal frameworks

Feijioo et al., (2020), explore the regulatory steps that have been taken by states to deal with the integration of AI. In 2017, the US set up an advisory committee, titled the Future of Artificial Intelligence Act, to explore the possible implications of AI on various activities of day to day life. China has launched several ethics-related standards. China's steps have mostly been geared towards robotics and driverless vehicles. Although government bodies have offered the relevant support, most of the initiatives are instrumented and led by industries. In the UK, it was strongly called for that consumers are aware when AI is utilised to make sensitive or important decisions. While these strides speak to the use of AI in daily activity and industry, it fails to exclusively regulate the relationship between AI and diplomacy or international relations at large.

Canada has also realised the promise of AI and in collaboration with the Canadian Institute for Advanced Research (CIFAR), developed a national AI strategy entitled the Pan-Canadian Artificial Intelligence Strategy. According to CIFAR (2020), the strategy was the first of its kind in the world and prioritises four central objectives:

- Build and support an AI-focused research community on a national level;
- Create a global footprint for Canada that leads in AI-focused discussions in policy, economic, ethical and legal implications in the advancement of AI;
- To substantially increase the number of AI researchers and graduates within Canada; and
- To create and maintain collaborative efforts among the three major Canadian hubs for scientific excellence – Toronto, Edmonton and Montreal.

The upper house of the UK Parliament, the House of Lords (2018), notes that as per advisement from the Law Society of England and Wales, AI should not yet be legislated as it remains in its infancy and its full effects and capabilities are yet to be realised. Once complete development of AI takes place, then it can be appropriately legislated. If AI is legislated before it is fully developed, legislation may need to be regularly updated to meet new requirements.

According to Kula (2019), Japan has also taken steps to ensure the protection of personal information. The country amended the Act on the Protection of Personal Information

(APPI). Given the digitisation of many industries, civilians often share their personal data online and this poses risks in the event of being hacked and their information being stolen online, this has forced states to take greater protectionist measures.

Given the consequences posed by deep-fakes, states have begun acting against it. Ruiz (2020), explores the proposals and laws by the US to protect itself and individual states against deep-fakes. In a 12-month period, 12 federal and state bills were passed. In Texas, the law attempts to deter election interference which often occurs through deep-fakes in video form. Ruiz (2020), further highlights that at the time of writing, numerous bills were set before the US Congress and waited to be passed, such as the 'Deep-fakes Accountability Act' and 'Identifying Outputs of General Adversarial Act (IOGAN)'. Due to the complexity of deep-fakes, how realistic it is becoming and the rapid pace at which technologies are developing to design it, both scientists and policymakers should work at developing policies to protect the state and citizens against it.

Chipman et al., (2019), provide the key aspects of the IOGAN Act, stating that the Act requires detailed and timely reports regarding deep-fakes by foreign threats. In addition, the Act also covers the identification of deep-fakes that may be harmful to US elections as it spreads false information. Lastly, the Act attempts to encourage competition among researchers for the detection of deep-fakes.

Policymakers may encounter difficulties when attempting to legislate AI, or any other advanced technology, but that is to be expected due to the continuous and rapid development of new technologies. According to Turekian et al., (2018), this rapid development of technologies will result in security challenges on a national and international level and therefore it requires a multilateral approach. As the nature of technology is not geographically bound and its abilities transcend borders, states may realise that to protect themselves and ensure the highest level of cybersecurity, legislation will have to be done on a bilateral or multilateral level.

Gill (2019:176), highlights the 2018 meetings of the Group of Governmental Experts (GGE) on 'emerging technologies in the area of lethal autonomous weapon systems (LAWS)' to establish a framework that attempts to ensure national security in the application of AI. Comprising of 125 states, 10 principles were identified in the areas of accountability, international humanitarian law, risk assessment and mitigation, human responsibility and human-machine interaction. In addition, other outcomes of the GGE

meetings include the group acknowledging the potential implications of civilian casualties and therefore explored what possible measures can be taken to prevent the loss of human life. GGE also promotes the responsible but innovative design of emerging technologies and encourages the responsible use of LAWS in accordance to international law (Geneva Internet Platform Digital Watch, 2020).

The European Commission has acted swiftly to design an ethical framework on the use of AI. The High-Level Expert Group (HLEG) on AI drafted a framework that prioritises three aspects of trustworthy AI, stating that it should be lawful, ethical and robust. According to the European Commission (2020), the HLEG focuses on seven requirements in the ethical guidelines that AI should meet to be considered as trustworthy. These requirements include, but are not limited to, ensuring that AI models, data and systems are transparent; adherence to data governance and privacy; and AI models should promote diversity and fairness by being accessible to all and avoiding possible unfair bias.

The Public Voice is an organisation concerned about technological developments, specifically those pertaining to the internet. The organisation has drafted a universal guideline for the design and use of AI. The Public Voice (2018), highlights that AI systems should ensure human safety and take precautionary measures in this regard; institutions should secure themselves against cybersecurity threats; should an AI system reach a stage that it operates in the absence of human control, it should be terminated; and the institution that designs an AI system should be made known to the public.

Feijoo et al., (2020), acknowledge the efforts of various and independent stakeholders, organisations, businesses and governments but believes that aside from independent efforts by actors, there is a dire need for an international collaborative effort for the use and legislation of AI. Many states have established frameworks regarding AI as a whole, aspects of AI like deep-fakes and LAWS, and privacy protection. In addition to the frameworks designed by states, some regional and international organisations have also proposed ethical guidelines for the use of AI. Despite the steps taken by the respective states and organisations, there is yet to be a common framework that guides a digitised diplomatic interaction between states such as the VCDR of 1961.

4.5 New 'new' diplomacy

As aforementioned, old diplomacy was old and secretive. New diplomacy was more open but now, we see yet a newer and more open phase of diplomacy as diplomats and citizens have a direct line of engagement on social media and diplomats from respective states openly engage with one another on various online platforms. This section will explore recent examples of this new 'new' diplomacy of open interaction. In addition, it will further examine the use of sentiment analysis by governments and organisations to understand the response of citizens on social media to assist foreign policymakers and enforcers in making more informed decisions.

4.5.1 Horizontal engagements

Dumčiuvienė (2016), examines the practice of 'Twiplomacy' by Lithuania with the state's foreign policy being very specific in its foreign policy focus. The state utilises Twitter to support and execute the foreign policy goals of the state and further build and uphold the public image of Lithuania. Lithuanian foreign minister, Linus Linkevičius, is extremely active on Twitter, sharing the state's foreign policy objectives and important upcoming events pertaining to international relations. Lithuania also comprises of Twitter accounts specific to diplomatic missions and individual diplomats to provide a more specific line of information and communication.

China has also embraced Twitter, mostly to communicate with foreign audiences as the use of the application remains banned within the state. The Bangkok Post (2020), describes the use of Twitter by Chinese officials as 'confrontational' and 'informal'. In 2019, a virtual dispute between Chinese minister, Zhao Linjin, and former US ambassador, Susan Rice took place. Linjin made allegations regarding racial discrimination experienced in Washington and Rice responded by referring to the Chinese official as a 'racist disgrace'.

Yuan Zeng, a media expert and lecturer, tells Bangkok Post (2020), that four factors have pushed China to join and utilise Twitter:

- Negative foreign media surrounding the mass detention of Muslims in Xinjiang, China;
- The pro-democracy movement in Hong Kong that may add pressure to communist China;

- The on-going trade dispute between China and the US which has served as an additional source of negative media; and
- 'The Trump effect'.

China's attempt to use the social media application to improve its public image has mostly been unsuccessful. In February 2020, leader Xi Jinping called a meeting with Chinese government officials and much of the meeting focused on the government utilising Twitter to illustrate a united China with a fighting spirit in the wake of the global pandemic, Covid-19 (The Economist, 2020). However, the execution did not go as planned after one Chinese official Zha Liyou's tweets became offensive in response to criticism surrounding how China has dealt with the virus, stating: 'You speak in such a way that you look like part of the virus and you will be eradicated just like virus. Shame on you.'

4.5.2 Sentiment analysis

With sentiment analysis, the US may improve its understanding of the opinions of foreign audiences. To learn about and understand Iranian sentiment towards the US, was a costly and tedious process as Elson and Nader (2011), conducted a study involving telephonic interviews with 1 002 Iranian citizens. It took roughly 18 days to interview all 1 002 citizens and all interviewers were external to the study, undergoing rigorous training beforehand. The study yielded some fruitful results but consisted of multiple limitations, excluding members of society that do not possess a home telephone line and many who were unwilling to participate. In addition, some interviews were abruptly cut short due to events that may have taken place at the time which cut telephone lines. Sentiment analysis is a more cost-efficient and effective alternative to understand the opinion of foreign audiences.

The government of the UK has begun using Latent Dirichlet Allocation (LDA) to more concisely understand public opinion. Similar to that of sentiment analysis, LDA creates structured latent patterns from a sea of unstructured data (Gracie et al., 2019). Killbride (2020), states that utilising a sentiment analysis application, the UK-based organisation Aylie, was able to analyse and understand public opinion regarding 'Brexit'. The study sought news articles that featured Brexit anywhere in the body of the source, it separated negative from positive articles and then illustrated the findings numerically on a graph. In addition, the study explored media within the UK as well as foreign media groups by countries to further understand foreign perceptions of Brexit.

Gracie et al., (2019), investigated sentiment analysis in the US Department of Defense (DoD). A special unit of DoD, the Defense Advanced Research Projects Agency (DARPA), gathers large inputs of data and interprets it to 'assess potential threats and inform mission planning'. Information is pulled from various social media platforms, comments on official government websites or pages, and field agent reports. To ease the process, the unit created a program titled Deep Exploration and Filtering of Text (DEFT). Geared by NLP, automatic extraction of the relevant data occurs, the data can aid analysts in gaining insightful information and enable them to take the appropriate action from there.

Over time, technology has allowed diplomacy to become more open and inclusive through social media platforms. However, algorithmic processes like sentiment analysis takes understanding engagements to new levels as states become more informed about public opinion. Social media has allowed for a direct line of engagement between citizens at home and abroad and further taken public diplomacy to new heights as states directly engage with foreign audiences, as witnessed with Chinese officials. In addition to understanding public opinion through sentiment analysis, strides made in AI like DEFT and NLP, allow states to quickly gather and interpret information, allowing decision-making processes to occur in a timely manner.

4.6 Diplomatic functions

Satariano (2019), explores the work of the world's 'first foreign ambassador to the technology industry', Casper Klyngé of Denmark, who describes emerging technologies as a daunting factor as it threatens national institutions, human rights and democracy. Appointed in 2017, Klyngé was tasked with approaching Silicon Valley to represent his nation's interests to technologically-centred corporations like Facebook and Google. Minister of Foreign Affairs for Denmark, Jeppe Kofdad, explains the importance of governments setting the boundaries for technologies and not vice versa. While technology may be consuming and dictate decision-making procedures, government officials ought to remain in control of such decisions and ultimately, create a guideline for its use.

The US DoS (2017) details the tasks of the first official 'Cyber-diplomat' of the US, Christopher Painter. Painter's tasks include acting in collaboration with private and public sectors on cyber concerns and issues, the coordination of US departments' diplomatic

engagement on cyber-related issues and advising the necessary state departments and secretaries on cyber engagements and issues. It is evident that the role of a cyber diplomat is not much different from the traditional tasks of a diplomat but to serve exclusively to cyberspace and cyber issues.

According to Maack (2019), after Estonia experienced a cyberattack in 2007, referred to as the world's first cyberwar, the country was urged to focus on cybersecurity. In 2018, Estonia appointed Heli Tiirma-Klaar, boasting the title 'Ambassador at Large for Cyber Security', the ambassador insists that there is a dire need for specialised diplomats that may serve as translators and seek out the appropriate means and routes to improve the cybersecurity of their state. Tiirma-Klaar states that the daily activities performed by a diplomat today may be considered a deviation from traditional diplomatic practice and tasks. In addition, where diplomats were mostly responsible for communicating with other diplomats from the respective states, they find themselves also communicating with different stakeholders for the state to stay abreast of technological developments.

As 4IR continues to disrupt virtually all subsets of international relations, states have illustrated their commitment to a highly digitised diplomacy. Denmark, the US and Estonia have appointed diplomats and ambassadors to secure their state's national interest on a technological front and improve and secure cybersecurity. The interactions of cyber diplomats and ambassadors are not limited to states but extend to non-state organisations such as tech-hubs in Silicon Valley. In addition, apart from being equipped with the diplomatic skills to secure their nation's interest, the cyber diplomats should also possess the necessary technological and scientific knowledge to best achieve the foreign policy goals set out by the state.

4.7 A new global order

Barrinha and Renard (2020), state that central to the very definition of power is the cyber dimension, which is becoming just as significant as security and economic factors. In addition, the cyber capabilities of a state may allow it to make up for the areas in which it lacks such as financial or skilled resources. Segal (2016) claims that to be termed as a 'great cyber power', there are four elements to possess: a predatory military driven by cyber advances and intelligences, an attractive cyberspace story, public institutions that utilise and channel the findings and energy of the private sector, and technologically-driven economies.

According to Kedia (2018), developed countries have the upper hand, possessing monetary and skills-based resources but argues that hope is not lost for developing nations. Kedia explains that countries, such as India, have the opportunity to leap-frog stages of development and industrialisation. This can be done in two ways: first, by identifying their comparative advantage and second, by preparing for a highly digitised and industrialised future.

Leurent and Aurik (2018), also highlight that not all countries may embrace 4IR technologies and choose to stick with traditional modes of production. They, however, also advise that states explore their possibilities and find their competitive advantage in new, highly industrialised industries. The authors also suggest that it is indeed time for collaboration, not just among public and private sectors but also among governments, an act that may be key in addressing international concerns.

Nan (2019), explains the key factors mentioned during the annual WEF meeting in Davos, where Klaus Schwab emphasised that 4IR will 'shape international cooperation'. No country has the ability to operate independently and new technologies may introduce new challenges. Four main elements are likely to arise as a result of 4IR: enhanced economic relations among states, greater trade and investment, increased integration due to mutual interests, and interaction between industrial chains.

It has been traditionally believed that technological capabilities and financial resources have been barriers to states developing or acquiring nuclear weapons, as highlighted by van der Meer (2016). However, that belief was proved to be redundant in 2006 when North Korea, a state that has been known to be less developed, acquired nuclear weapons.

Barkin (2017), discusses the concerns of Federica Mogherini at the time of writing. Mogherini, the EU's chief of foreign policy, warns of diplomatic relations becoming more transactional and less emotional as diplomacy is increasingly affected by globalised trends. Globalisation and increasingly advanced trends in AI, big data and IoT have resulted in a complex and more interconnected international environment (Afshan, 2019).

Previously, bilateral and multilateral engagements were prompted by aligning values and the promotion of such values in the global arena, but states are now concerned, more than ever, with their own national interests and national security in a new, borderless world (Afshan, 2019). According to Anderson (2014), when dealing with ICT

infrastructure, it is imperative for states to cooperate despite the existing geopolitical tensions. ICT infrastructure may play a significant role in regional security and may limit the possibility of terrorism.

Gill (2019), explores the geopolitical impact of AI on international security and notes that states who have already begun investing in new technologies for an automated military force and digitised security systems may be the frontrunners of international security. While China and the US have been illustrated to be the most competitive in terms of reaping economic and material benefits for national security as a result of AI integration, this era of AI advancements may provide opportunities for states like Japan and Canada. Japan, Canada and others that are financially capable may develop new techniques to use AI in a 'less-data-hungry' manner (Gill, 2019:171). Such developments may result in a more equal balance of power in international security and in the global society at large, transitioning to a multipolar system.

According to Brondoni and Zaninotto (2018), the latest globalisation trends, spurred by 4IR, have prompted the emergence and growth of developing countries. Countries such as India, Taiwan and South Korea are beginning to become more active in international markets and more competitive with bigger, traditional players like the US. The new dynamics of the global arena may change the traditional global order as we know it where the US and China have taken centre stage and many developing countries have remained on the periphery. States now have the opportunity to play a bigger part in international markets while simultaneously improving their global status.

4.7.1 The threat of cyber warfare on diplomacy

Military weapons and the threat of force has become an increasingly popular tactic among governments to achieve their states' national interests, as highlighted at the 2019 North Atlantic Treaty Organization (NATO) Summit. President Trump stated that the US military is at its most powerful and the state would utilise it, if necessary (Gamel, 2019). These threats are not new, but it is possible that physical and diplomatic implications are becoming more alarming as more states have access to advanced technologies and weapons. George (1996), was quick to ask a valid question: when is the use of force acceptable as a deterrence measure or in times of crises? George continues by quoting President George Bush (1993), who states that 'every case is unique'. While at the time,

President Bush felt that there was no single set of rules that could establish whether or not force should be utilised. Unfortunately, this can no longer be the case.

Bell (2017), optimistically toys with the idea that if more states possess nuclear weapons, it may result in a more peaceful international society. The primary goal of states is security and if a state feels secure due to their nuclear possessions, states may be less likely to threaten other states or be threatened. However, this is an unlikely scenario. Gill (2019), highlights that the threat of AI on international security is much greater than it is imaginable. As states weaponise AI and prior to a state dislodging it for attack, international security is immediately threatened. The ever-changing and continuously developing nature of AI is a major contributing factor to insecurity.

Galliot (2015), claims that integrating autonomous weapons into military systems may reduce the length of war against human forces, resulting in the stabilisation of peace in an anarchic territory. Wars, or armed conflicts, between human forces such as anti-governmental groups or rebel forces may last for decades and result in the loss of human lives, infrastructure and stability in the region. Countries, or international organisations like the UN, often spend billions to deploy human peacekeepers to occupy a region for lengthy periods at a time where conflict is prone to occur such as the deployment of UN peacekeepers in Liberia from 2003 until 2018 (United Nations Peacekeeping, 2019). Armstrong (2010), has described the deployment of peacekeepers by the UN as a form of public diplomacy.

Arayoe (2018:14), highlights that advances in war technology, particularly among wealthier Western states, have resulted in an increased chance of the human race facing extreme destruction. Previously, fewer states had access to nuclear weapons and advanced technologies, but Sawers (2017), highlights that, at the time of writing, nine states possessed nuclear weapons. World Population Review (2020) confirms those states as:

Table 4: States' possession of nuclear weapons

State	Number of nuclear weapons	For defensive purposes	To manipulate conflict into favourable outcomes	To threaten; protect state; and secure benefits

US	6185	✓		
UK	215	✓		
Pakistan	145		✓	
Israel	80	✓		
North Korea	15			✓
China	280	✓		
France	300	✓		
India	135	✓		
Russia	6850		✓	

Adapted from Sawers (2017) and World Population Review (2020)

4.7.1.1 *Cyberattacks and threat*

Digitised threats and attacks on governments have become increasingly frequent. Governments have committed entire committees to deal with such threats. Although a significant number of these threats may be from private interest groups or terrorist associations, it may also be from other governments. In addition to the exploration of cyber threats and attacks, this section will also explore the hostility between governments and the back and forth threats that are made by the respective states.

4.7.1.1.1 North Korea and the US

In recent years, the international society has been a hostile environment as bilateral relations between the US and North Korea continue to become increasingly tense. Arayoe (2018,) credits nuclear weapons developments as the primary factor for the strained relationship between the two states.

North Korea has always illustrated strong desires to develop their nuclear capabilities and new AI advances just might grant the state the perfect opportunity to do so. Barno and Bensahel (2018), explain that the latest technological advancements for weapons and military capabilities as a result of 4IR, may place 'rising power' states at an advantage and even more so for authoritarian states that do not abide by regulatory norms such as civilian oversight and transparency– such as North Korea. The US mostly

relies on 'over-invested legacy systems', as determined by Barno and Bensahel (2018), which implies that the state has to incur the costs of traditional systems and new systems, whereas other states without a century-old system may fully invest in new highly technologically advanced systems driven by AI.

Military and Aerospace Electronics (2018,) reported that the US has been secretly investing in research to design an AI system enabling its military to anticipate and track missiles launched from North Korea in particular but also other states which may pose a threat. The Pentagon stated that the research was highly classified and if it had successful outcomes, the AI system would have the ability to think independently, sort through large amounts of data, and its speed and accuracy will be far beyond that of human resources. Such detection systems may result in significantly reducing the impact of air-strikes.

Kang (2018), explores North Korea's efforts in research and design aligned to AI, robotics and other advanced technologies which Kim Jong Un has expressed can be used for economic and military purposes. While it is widely believed that North Korea hopes such advances may allow the country to keep a more watchful eye on South Korea, the state may also be attempting to position itself as a powerful force in geopolitics.

North Korea's acquisition of nuclear weapons was not received well by the US. The New Statesman (2017), recalls President Trump's promise to raise 'fire and fury like the world has never seen before' in response to the country's new acquisitions. However, North Korea responded claiming to be in possession of a small, but lethal and advanced, nuclear warhead that could reach US soil. According to Shim Jae Hoon (2017), the possession and threats of North Korea pushed the US closer into the embrace of South Korea. A few weeks after the first test launch of the intercontinental missile towards California, North Korea launched yet another one but this time it landed even closer to the US. These advances in such a short time illustrate North Korea's dedication to its nuclear ambitions, in addition to its possession of advanced technologies.

Kim (2020), highlights the two priority goals set out by Kim Jong Un since his term as North Korean leader began: 1) nuclear development; and 2) economic development. The goal of nuclear development was primarily to deal with threats from the West and improve the country's international power status. Mansoor and Hussein (2017:15), explain that the rapid development in nuclear technology may be as a result of foreign assistance,

'reversed engineering of Russian technology', and the state's own technical knowledge and skillset. In 2018, North Korea changed its position in the international arena, going from a state in isolation to one that is willing to partake in diplomatic engagement. Laipson (2017), explains that countries who spend long periods in isolation may possess major insecurities causing them to seem as if they are poised and confident, but in reality, the state is concerned with showcasing its vulnerabilities to global superpowers and within the global arena.

According to Kim (2020), the change from isolation to wilfulness may be a result of Kim Jong Un feeling satisfied with his nuclear developments and being ready to take on economic development which required much assistance and confidence from other states. This led to numerous diplomatic engagements with leaders from Russia, China, South Korea and the US in just a short stint of 18 months. In 2013, Jong Un expressed that only once the state is secure, then economic growth could occur. The rapid developments in security as a result of advanced technologies and foreign assistance allowed Jong Un to focus on economic development, deeply affected by sanctions.

Once again, the US has failed in derailing North Korea's ambitions and their new-found capabilities have resulted in even greater hostility in international relations. Trump's reliance on Twitter diplomacy has also been of little significance in easing the tension. The US president even went as far as expressing his fury on Twitter for China, stating that the opposing superpower makes billions of dollars yearly in trade surplus but has in no way illustrated any action in assisting the US with North Korea, claiming China is full of talks (Shim Jae Hoon, 2017). Mansoor and Hussain (2017), state that the US should stop attempting to denuclearise North Korea and rather give diplomacy a chance to do its job. Hecker (2017), also shares such sentiments, highlighting that diplomacy has not failed but rather that the US has failed to implement diplomacy effectively. North Korea's acquirement of nuclear weapons is a threat to international security. The ever-advancing strides made in autonomous weapons and technology that improve the speed, accuracy and destructibility factor of such weapons are a cause of concern that is yet to be legislated.

[4.7.1.1.2 Norway experiences cyberattack](#)

In 2020, Norway was victim to a US\$10million cyberattack. According to Coble (2020), the cyberattack took place on 16 March and was only detected on 30 April after the

hackers attempted to fraudulently retrieve money for the second time. The attack was made possible by six months of online lurking by the hackers who were then able to falsely manipulate information and impersonate a microfinance institution which had received a loan from Norfund, the money was then sent to a diverted account in Mexico.

Norfund (2020), has described the cyberattack as 'advanced', made possible by extensive digital channels. In addition, the attack was not the first for a Norwegian institution as other private companies have also experienced similar attacks but due to its advanced nature, it has gone unnoticed and therefore, unreported. In March 2019, an aluminium production company experienced an immense cyberattack that impacted production and operation and would result in weeks of recovery. The hackers requested large sums of money for Norsk Hydro to retrieve its information again, but the corporation insisted it would not pay the ransom but rather retrieve its information from its own back-up systems. The cyberattack cost roughly US\$40 million in its first week and had large scale financial and physical implications as it slowed down production (Adomaitis, 2019).

4.7.1.1.3 Russia's role in cyberwarfare

According to Bloomberg (2018), Russia is one of the world's 'leading practitioners of cyberwarfare', highlighting the accusations against Russia for obtruding in the 2016 US elections. Russia's role in the election was an attempt to tarnish Trump's opposing candidate, Hillary Clinton and assist Trump in winning the 2016 election. Abrams (2019), explains that Russia's efforts were executed through hacking voter databases, campaign committees and further spreading false propaganda on social media to instil a sense of distrust in the American democracy and boost voter support for President Trump. Over a three-year period, during an ongoing investigation, the information surrounding Russia's involvement in the 2016 US election has come to light with 12 Russian citizens being indicted for their role in the saga. It was also discovered that the personal information of roughly 500 000 American citizens was stolen.

Ahead of the 2020 US election, Doffman (2019), predicts that Russia may pry once again. The US Federal Bureau of Investigation (FBI) has prioritised election security and acknowledges the potential threat of other states in the field of cybersecurity. Furthermore, Check Point, a cybersecurity software company that provides solutions to governments has warned the US of Russia's possible intervention in the US election. Doffman (2019), echoes the primary concerns in Check Point's report which highlights

that at the beginning of 2019, Russia invested a significant amount of money into espionage capabilities. Check Point believes that this investment attempts to equip Russia with the capabilities and potential to tarnish the 2020 US elections.

Cyberattacks on the US by the Russians is not an exclusive incident. According to Brumfield (2019), Russian military group Sandworm has been creating extremely advanced tools for highly sophisticated and destructive cyberattacks, attacking the Ukraine on two separate occasions. Furthermore, as predicted, Sandworm's efforts and advancements have had major spillover effects and prompted advanced attacks by other groups such as the 2017 attack on the US and Europe by NotPetya. Brumfield recalls that NotPetya's attack was specifically destructive and wide-spanning on the Ukraine as it took down 300 Ukrainian government entities which included hospitals, banks and airports.

4.8 Conclusion

This chapter has thoroughly explored practical examples of the application of 4IR and the relevant technologies. Examples of state and non-state actors have been dissected. From the findings of this chapter, it is evident that some developing states, such as India and South Africa, have noted the value of 4IR and have begun integrating 4IR into their systems and processes. However, 4IR has mostly been utilised in highly developed states that possess an abundance in AI capabilities, such as Russia and the US. States, such as Canada, have realised the value of research to advance the integration of science and technology into daily activities and to improve the delivery of services and performances of tasks. Over time, more application may be visible as technologies become more readily available and accessible to developing and developed states, as well as the other relevant non-state actors which may improve the practice of diplomacy.

Chapter 5: Conclusion

The study is underpinned by five pillars: communication, interdependence, legislation, new 'new' diplomacy and diplomatic functions. Each pillar represents a subset of diplomacy that may be implicated by 4IR and has been independently explored throughout the research. The research is guided by three research questions: 1) how does 4IR affect diplomacy? 2) what new technologies trigger a change in diplomacy? and 3) do costs act as a barrier to states?

5.1 How does 4IR affect diplomacy?

The dissertation has thoroughly explored diplomacy from the ancient era in Greece to the present. After providing a detailed conceptual framework which studies old and new diplomacy, it has clearly been discussed how old and new diplomacy differ and how both phases of diplomacy differ from the type of diplomacy that is practiced today. Although diplomacy remains a relevant practice, the execution has been slightly different than in previous decades as advanced technologies have altered how humans interact and the way in which services are provided. This study then proposes that we now enter a new phase of diplomacy: new 'new' diplomacy. The Table below provides a simplified explanation of the characteristics and nature of diplomacy in three different phases.

Table 5: The central features of old, new, and new 'new' diplomacy

	Old diplomacy	New diplomacy	New 'new' diplomacy
Date	700BC-1914	1919-2020	2020-
Nature	Closed	Open	More open
Communication	Physical missions	Physical missions, telephonic calls, email.	Physical missions, telephonic calls and social media.
Interdependence	Low levels of interaction, alliances. State is the primary actor	Multilateralism– states, non-state actors such as international organisations and	Multilateralism– states, non-state actors. Public citizens,

		non-governmental organisations	businesses, interest groups.
Legislation	Treaty of Westphalia of 1648. Congress of Vienna of 1814.	Vienna Convention of Diplomatic Relations of 1963.	Vienna Convention of Diplomatic Relations of 1963– falls short in some areas.
Actors	Professional diplomats	Diplomats, international organisations	Diplomats, IOs, media, public, businesses, interest groups
Functions	To represent the state and achieve the foreign policy goals of the state.	To represent the state and achieve the foreign policy goals of the state.	To represent the state and achieve the foreign policy goals of the state.

See footnote¹⁰

Old diplomacy began in 700BC in ancient Greece and concluded in 1914. During this period, diplomacy was very closed and practiced in secret as highlighted by Otte (2007), often made up of bilateral relations with the state being the primary actor. The birth of new diplomacy was simultaneous to the formation of the League of Nations in 1919 and it is the same type of diplomacy referred to in practice in the past decade. It is open in nature and occurs on a multilateral level. Geraud (1945), describes the introduction of international organisations into diplomatic relations as a distinctive factor of new diplomacy. Langhorne (2005), has categorised its introduction as a shift from exclusively state actors to the inclusion of non-state actors. In addition, Morgenthau (1946), highlights that world leaders such as Woodrow Wilson deemed international cooperation as a top priority in new diplomacy. At present, 4IR takes every field by storm and changes the way we live and work. This presents yet another shift in diplomacy, entitled new 'new' diplomacy. New 'new' diplomacy is even more open than the previous phase of

¹⁰ Adapted from Geraud (1945); Black (2010); Eilers (2006); Otte (2007); Roberts (2009); Morgenthau (1946); Langhorne (2005); Manor (2017a); Bjola and Kornprobst (2018).

diplomacy as the range of actors has multiplied, now including the state, international organisations, MNCs, private corporations and citizens; as diplomacy has been taken to social media.

In old diplomacy, there was very little that guided the interaction of diplomats with hardly any legislation in place. In 1648, the Treaty of Westphalia was signed that concluded the end of a 30-year war which saw the death of roughly 8 million people. In 1814, the Congress of Vienna was an attempt by the Europeans to develop a peace plan following the Napoleonic and French Revolutionary wars. In new diplomacy, the VCDR of 1961 was formed which deals with diplomatic immunity and privileges of diplomats, heads of states, their family and other staff on the diplomatic mission. As discussed, the VCDR is extremely detailed and deals with various aspects of a diplomatic mission such as the protection of highly classified information and the diplomat. However, as it stands, the current version of the VCDR is insufficient as it stands to guide diplomatic practice in a highly globalised and interconnected international environment. It is then imperative that the document be reviewed once again to establish how it can remain relevant and adequately protect diplomats, staff and their families on diplomatic missions.

In old diplomacy, diplomacy was conducted by professional and charismatic diplomats who were highly knowledgeable of the state at hand. In new diplomacy, the diplomat's role became slightly more complex having to be patient, courteous, be highly skilled and trained and speak multiple languages (Nicolson, 1998). As aforementioned, diplomats also have to have excellent negotiation skills and represent their state well, in addition to protecting citizens domestically and abroad. The main actors who may conduct diplomacy in new diplomacy include the state and international organisations. However, as technology becomes to mean more in diplomacy, diplomats have to now have the ability of understanding and interpreting AI algorithms and be extremely familiar with how to use social media. Therefore, diplomats will have to undergo extensive training ahead of their deployment. The actors involved in new 'new' diplomacy range from the state, international organisations, citizens, MNCs and interest groups.

Lastly, from the findings of this study, it is evident that the utmost primary function in all three phases of diplomacy remains identical and that is to represent the state and achieve the foreign policy goals set out by the state. This is irrespective of how such goals and objectives may be achieved.

5.1.1 Communication

The communication pillar has extensively explored digital diplomacy and the use of social media for diplomatic practice. In addition, it has explored the positive and negative implications of AI in diplomacy, looking at deep-fakes and sentiment analysis. Over the past decade, we have witnessed a steady rise of digital diplomacy (Manor, 2017; Verrekia, 2017). The growing accessibility of advanced technologies and the internet has diminished territorial borders and opened up a greater space for communication.

Digitised diplomatic practice is cost-efficient and offers real-time communication, different to delayed communication in old diplomacy and in some ways, faster than new diplomacy too. Fisher (2013), credits advanced ICT infrastructure for a faster and more efficient diplomacy. However, the instantaneous nature of the internet drastically decreases the time a state has to respond to conflict or crises in foreign media.

Digital diplomacy allows audiences to witness states engage in real-time on social media. In addition, Evans and Commins (2017), highlight that social media allows movements to quickly gain momentum and sweep the globe in a matter of hours or days. This may result in state leaders experiencing significant pressure if they do or do not pledge support to the movement, as illustrated in the 2020 Black Lives Matter movement.

Due to the wide and open conversational spaces, states can have a greater sense of public openness. Hocking and Mellissen (2015), believe that this may allow for a more inclusive public policymaking process. In addition, McLellan (2017), highlights that sentiment analysis also provides states the platform to have a more in-depth understanding of public opinion. The benefit of sentiment analysis is that it explores real-time data providing real-time results which is crucial in times of specific events, such as movements or during election periods.

Digital propaganda has also been discussed in great detail highlighting the sentiment of Briant and Wanless (2018), who state that technological advances may advance the face of traditional propaganda, moving from newspapers and radio sources to social media and deep-fakes through advanced AI. The Centre for Data Ethics and Innovation (2019), has described deep-fakes as purposefully manipulated audio or visual content to falsely distort public opinion. Nicolson (1998), very early on predicted the fate of wireless propaganda. Deep-fakes are becoming more highly advanced and increasingly difficult

to detect. According to Westerland (2019), this poses a significant threat to international security and international relations.

The last subsection of digital diplomacy that has been explored is that of hashtag diplomacy which has become increasingly popular in the last five years. Manor (nd), has described the use of hashtag diplomacy as an attempt by government or non-state actors to build their public image. Chapter 4 explored President Trump’s fondness for hashtags over the last four years, such as #MAGA.

5.1.2 Interdependence

The interdependence pillar explores international collaboration and cooperation, specifically in the field of science and technology diplomacy. As stated, Hennessy (2019), describes science diplomacy as the scientific collaborative efforts among states. Three subsets of science diplomacy were explored: science for diplomacy, science in diplomacy and diplomacy for science.

The intersection of science and diplomacy is not a new phenomenon but may be populated in the era of 4IR. Cunningham (2003) has claimed that science and diplomacy are becoming a central feature of international negotiations. Of late, we have witnessed science and technology become more cemented in diplomatic relations, especially on a multilateral platform. The study has explored the numerous multilateral meetings to discuss 4IR and international cooperation to smoothly integrate the latest revolution into economies around the world and achieve endless possibilities.

To recap, Van Langenhove (2019), describes the varieties of science diplomacy as follows:

Science for Diplomacy	Science and technology are utilised as a diplomatic tool to improve foreign relations between states in the efforts to collaborate against cross-border issues.
Diplomacy for Science	Traditional diplomatic tools are utilised in an attempt to equip the state with the knowledge of foreign sciences and

	technology to improve national capabilities.
Science in Diplomacy	With the input and interests of scientists on foreign policy, it may enhance foreign policy actions and responses in times of war or peace.

(Van Langenhove, 2019)

Each variety has been thoroughly dealt with. In the exploration of science for diplomacy, Graham (2017), explores the use of big data in Africa to gather large inputs of information on health and disease on previous outbreaks. In doing so, West African countries have studied the patterns, routes and time it takes for diseases and viruses to spread, to limit future impacts.

The UN (2020), also states that with big data and PPPs, the SDGs may be achieved. For example, deforestation can be closely observed and tracked with 'satellite imagery, crowd-sourced witness accounts and open data' (Global Pulse, 2017).

In the subset of diplomacy for science, the Royal Society (2010), states that 'science offers the opportunity to bridge the gap between states that have previously weaker political association'. As science becomes a greater part of our world and indefinitely cannot be avoided, this presents an opportunity to states to come forth and collaborate. In addition, from scientific cooperation, other political relations may strengthen between the two states. Mann (2019), details the Large Hydron Collider project that consisted of roughly 8 000 researchers from over 60 countries that came together to create a powerful and ground-breaking accelerator.

The third and final variety, science in diplomacy, is the most comprehensive of them all. It encompasses new institutions, educational opportunities, track-two diplomacy, cooperation agreements and international science exhibitions (Royal Society, 2010). New institutions are extremely popular during the era of 4IR. The Centre for the Fourth Industrial Revolution is an example of new institutions. According to the WEF (2020), global centres around the world are being set up in major cities to understand how new technologies can be utilised in different parts of society and realise the maximum potential of 4IR.

For the future of diplomacy to remain relevant and secure, there are a number of steps that can be taken by states and organisations. First, states should work closely with one another, technology developers, scientists and researchers to reduce the risk of the state being vulnerable to attack by external parties who have access to newly advanced and destructive technology. Second, while the use of social media for diplomatic communication, between states and with citizens, is encouraged there should be a framework that guides virtual interactions. This may ensure that there is not an overshare of information or inappropriate display of interaction or remarks that may negatively impact the state or state officials. Lastly, the VCDR of 1961 should be updated to remain relevant. Although the responsibilities and tasks of a diplomat and the state remain the same for the most part, the way in which tasks are performed may be slightly different and influenced by technology, such as the introduction of the virtual embassy and interaction via e-mail. In addition, the protection of national and international security in a highly digitised and interconnected world should be dealt with in great detail to maintain peace and security in the international society as the VCDR of 1961 sets out to do.

5.1.3 Domestic and international legal frameworks

The only official document that exclusively guides diplomatic practice is the VCDR of 1961. However, since its formation it has never been updated to reflect current trends in diplomatic practice. Edelman (2020), states that it is important to regulate AI but it cannot adopt a one-size-fits-all approach due to the complexity and diversity of technology. Therefore, regulation ought to be extremely specific and agile. In addition, AI technology is continuously developing and therefore may not be fully legislated until it is completely developed (Michaelsons, nd).

States have been working on AI integration into military services. Russia has built robotic soldiers with the intent of replacing human soldiers (Spry, 2020). Although such projects are highly sophisticated, it is not yet perfect and is yet to be regulated. Garcia (2018), explains the threat of militarised AI to international security and stability. From the findings of this dissertation, it has been established that AI cannot be utilised or trusted if it operates independently but rather it requires human input and strict regulation.

Wouters and Duquet (2012), explain that the VCDR of 1961 does not include non-state actors. This is problematic as non-state actors have come to play a greater role in diplomatic relations and therefore it needs to be updated. In addition, one of the key

drivers of the VCDR is to preserve and maintain international security. However, this is difficult as the nature of security continues to change and what was deemed as secure 10 years ago or even five months ago, may not be considered secure in the current spectrum.

Communication is also an important element of diplomatic relations and made mention of in Article 27 of the VCDR. However, forms of communication have drastically evolved since 1961 and transcends to the use of social media and platforms like Skype, WhatsApp and Twitter. Therefore, how is information protected on such platforms? In addition, it ought to be established if coding and ciphering for the protection of information may still be relevant irrespective of the forms it may take.

Lastly, permanent missions such as embassies are also a crucial part of diplomacy. This dissertation has explored the rise of virtual embassies in smaller regions to ensure that citizens have instant access to e-services. However, it must be established if a virtual embassy can fully replace a physical embassy and provide all the relevant services. This may be explored in future studies.

5.1.4 New 'new' diplomacy

The section on new 'new' diplomacy explored virtual and e-diplomacy which have become increasingly popular in the last five years. Virtual diplomacy deals with VPPs and virtual embassies. Nielsen (2007), cited 41 VPPs at the time of writing. It is possible that this has drastically increased over time and will continue to do so in the foreseeable future.

The integration of ICTs has allowed for horizontal engagements between states and citizens, allowing for open conversations and better understanding of public opinion. This dissertation has explored the threat of internet censorship which may deter horizontal engagements. Fassihi (2019), describes internet censorship as a common practice in Iran.

E-diplomacy is continuously evolving due to rapid advances in technologies. 4IR is a definite influencer as it contributes to a diversifying diplomatic practice. E-diplomacy may assist with engagement between states and citizens, enhanced public diplomacy and more accurate and faster decision-making processes.

Al-Mustfah (2018), states that secrecy, resistance to change and financial capabilities may hinder the implementation of e-diplomacy. However, Tavares (2018), explains that e-diplomacy is cost-effective and agile.

5.1.5 Diplomatic functions

Cyber diplomacy and the role of a diplomat have been explored in detail. According to Barrinha and Renard (2017), cyber diplomacy is the use of diplomatic tools and cyber resources to achieve foreign policy goals. Buck (1998), classifies cyberspace as a 'global common' similar to the high seas. Issues relating to diplomacy and the cyber domain include, but are not limited to, cybercrime and security, internet freedom and governance. In addition, over the last few years cyberattacks on states and organisations have become popular but it remains difficult to regulate the use of AI, ICT and big data.

The scope of activities of a diplomat have drastically widened, despite their overall role remaining the same and that is to represent the interests of the state. The influence of technology has had a significant impact on a diplomat's role. Al-Alawi (2019), states that diplomats ought to undergo extensive training to keep up to date with the latest technological inputs. In addition, Grottola (2018), explains that diplomats may use AI for negotiation processes. Organisations such as Swissnex Network (2020), have played a central role in offering skills training to diplomats allowing them to stay abreast of the latest trends. Despite the new skills required by a diplomat and the new activities that ought to be performed, diplomats still have to be patient, charismatic and endearing.

5.2 What new technologies trigger a change in diplomacy?

4IR consists of a vast array of technologies. Most of the technologies are not new but due to recent advancements, the possibilities have multiplied and intensified. Technologies specific to diplomacy and that of this study that have been explored include AI, big data and ICT. From the findings of this study, it is evident that AI and ICT are the most impactful technologies on diplomacy. This may be due to their wide-spanning nature as each encompass a range of applications and abilities.

5.2.1 AI

AI is very complex and extremely multifaceted. It can be applied in a variety of ways to stimulate a desired outcome. A variety of systems are geared or processed through AI. This dissertation has explored sentiment analysis, a form of social media analytics that judges human opinions and attitudes in relation to a particular topic. McLellan (2015),

states that sentiment analysis can be done on Twitter as the application has volume, velocity and variety. This assists states in understanding domestic and foreign public opinion. The process of sentiment analysis is extremely efficient and detailed.

While the dissertation has extensively explored the positive implications of 4IR, it also explored the negative implications like the rise of deep-fakes. As discussed, the purposefully manipulated audio or visual content is designed to sway public opinion and tarnish the image of an individual, state or organisation. It is becoming increasingly advanced, difficult to detect and potentially damaging on diplomatic relations and the public diplomacy efforts of a state.

Instant language translation is used for governments to understand a wider audience on social media. It may also be utilised to limit the language barrier between diplomats or heads of states at diplomatic meetings. However, although this may improve the understanding between two or more parties, it may take away from the personal element of diplomacy.

Hashtag diplomacy has also been explored and it is powered by AI algorithmic processes that group specific topics together. It assists states or individuals in illustrating their stance on a particular topic and helps movements gain momentum.

5.2.2 Big data

Big data is an extremely useful tool and may also be utilised in a number of ways. Hashem et al., (2015) explain that big data uses structured or unstructured dataset inputs to 'capture, process and reveal insights in a timely way'. It aids in decision-making, allowing such processes to be faster, more efficient and accurate. Hocking and Mellissen (2015), also state that big data allows for a more accurate delivery of information and services. As highlighted by Global Pulse (2019), it can assist with deforestation and limit the impact of climate change.

5.2.3 ICT

ICT also plays a substantive role in the evolving nature of diplomacy as communication is a central feature of diplomatic practice. Fisher (2013), described ICT as one of the primary influences in improving the speed and efficiency of diplomacy.

Adesina (2017), states that ICT alters the forms of communication, allows for unmediated and open conversations; and stimulates direct engagement between states and citizens.

The dissertation has explored numerous examples of this, illustrating how digital diplomacy has been popularised through the use of ICT.

The open and continuous dialogue, also termed as horizontal engagement, between states has allowed for citizens to have direct access to diplomats and heads of states where they can openly state their concerns or ask questions. As a result, this has boosted the confidence of citizens in their government as well as assisting with trust-building between the two (Bekenova and Collins, 2019; Bousfield, 2019).

In the past decade, governments across the world have made a tremendous effort in increasing their social media presence and building their online image. Verrekia (2017), discusses the US DoS's close observance of Twitter feeds. In addition, the US government has utilised language translation applications to understand the concerns and opinions of a wider international audience. Governments have also utilised ICT in VPPs to provide diplomatic e-services to citizens who cannot access physical embassies.

The advances of ICT do not only positively implicate the line of communication between states and citizens but also between states exclusively. Ehiane and Mosud (2013), explain that improved communication between states may result in improved diplomatic relations between states. This is especially relevant to states who were previously hostile or in times of crises, as explored in chapter 4 in relation to Iran and the US solving their dispute on Twitter.

Wenyan (2018), highlights that the accessibility and cost-efficiency of new and advanced ICT infrastructure may improve communication in developing countries and expand their reach in international society. Anderson (2014), further highlights that it may enhance regional security and possibly limit the chance of terrorism.

5.3 Do costs act as a barrier to states?

Yes and no.

New technologies are costly, and some developing states still lack adequate ICT infrastructure and financial capabilities to stay abreast of the latest technological trends. However, Kedia (2018), states that 4IR presents an opportunity for developing states to skip stages of industrialisation that were perhaps missed in previous industrial revolutions. Innovation is a key element in reaping the full or maximum benefits of 4IR.

Brynjolfsson, McAfee and Spence (2014), highlight that the states who are able to produce innovative ideas will benefit from 4IR, despite their financial positions.

Schwab (2016a), also discusses the potential of 4IR to empower individuals in a political, economic and social development sense but it also has the power to widen the scales of inequality and further marginalise groups of society or states as a whole. Therefore, the response of states will be imperative to determine if they will fly or fall in the era of 4IR (Porro, 2017).

The WEF has also been exploring the potential of states, developed and developing, to determine if it is an appropriate environment for 4IR to flourish. Ariffen (2018), echoes the accomplishments and characteristics of India which led to it being earmarked by the WEF. This has resulted in a Centre for the Fourth Industrial Revolution being set up in the country.

According to Al-Mustfah et al., (2018), financial capabilities may hinder a state's ability to implement e-diplomacy. This may result in states not engaging, fully or partially, in diplomatic practice due to a lack of funds. It may further hinder a state's attempt at public diplomacy as technology plays such a central role in the current trends of public diplomacy.

Despite a country's readiness and approach to 4IR, collaboration is also a vital element. South Korea and India have signed a joint-cooperation agreement for the advancement of 4IR in the respective states (Herh, 2018). India and the US have also committed to increase their collaborative efforts in the fields of science, technology and innovation (US DoS, 2019). China has also illustrated a strong willingness to assist developing countries, especially African countries (Wu, 2019). However, China's efforts are no surprise after President Xi Jinping emphasised the importance of multilateralism and operating with a sense of openness in the international economy rather than in isolation (Nan, 2019). Mairisi and van Dyk (2019), also highlight the need for international collaboration exploring South Africa's readiness, or lack thereof, for 4IR.

It is possible that no state possesses all the innovative ideas and financial capabilities required to reap the benefits of 4IR. Some states may possess the financial capabilities required to purchase and invest in new technologies while other states may have no funds but may possess innovative researchers and skilled individuals with unlimited

potential to grasp the 4IR. Therefore, partnerships and collaboration are crucial (Leurant and Aurik, 2018).

5.4 Recommendations for future study

As the phenomenon of 4IR and its intersection with diplomacy is a relatively new and unexplored topic, this study may be utilised as a foundation and future research may be built on from here.

The field of diplomacy is extremely vast which resulted in this study being rather extensive. The study explored five pillars of diplomacy but due to the level of study, it does not go into extensive detail. Therefore, it is possible that each pillar may be a stand-alone study, allowing the researcher to explore the implications of 4IR on a particular pillar in great detail.

4IR is vast and encompasses many different aspects of technologies and applications. Therefore, future study may explore specific aspects of 4IR in relation to specific aspects of diplomacy, for example: the implications of sentiment analysis on public diplomacy.

Future studies may also take a case study approach that may provide a more practical understanding of 4IR. However, comparative case study analysis is recommended over a single case study to avoid generalisation or to ignore certain aspects that may influence the study such as the GDP of a state, poverty, educational levels and so forth.

It is also recommended that ahead of selecting the research topic, extensive exploration is completed on the research questions to ensure that there is an adequate amount of reputable and academic sources, specifically academic books and journal articles. Positively, new sources are constantly published as new information is being discovered and patterns are developed.

Future researchers should conduct interviews with academics, analysts and state officials that are well-informed on the topic at hand and have extensive experience in the field. Due to the newness of this field, interviews may prove to be invaluable. Although this study has been approved for interviews, in the end none were conducted as the researcher had a surplus of information on different aspects on the topic.

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