



## Africa, the Fourth Industrial Revolution, and digital diplomacy: (Re)Negotiating the international knowledge structure

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# Africa, the Fourth Industrial Revolution, and digital diplomacy: (Re)Negotiating the international knowledge structure

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## ABSTRACT

The Fourth Industrial Revolution (4IR) builds on the exponential growth of digital capacities, blurring the lines between the physical and digital spheres. Following its recognition as a phenomenon at the 2016 World Economic Forum, analysis has mainly focused on assessing the socio-economic challenges and benefits that advancements in science, technology and innovation hold. Yet there remains a shortfall in understanding the impact of these digital technologies from the perspective of international relations and diplomacy, particularly on questions of equality, governance, and emerging transnational relations. For Africa, participation in negotiating the international governance of digital technologies is critical in mitigating a peripheral role in the international knowledge structure, ensuring transformational rather than transactional relations when it comes to the 4IR. This article argues that analysis of digital diplomacy as diplomacy for digital technology – ie, negotiating the governance of digital technologies – provides a useful lens for critically assessing Africa vis-à-vis the 4IR.

## KEYWORDS

Fourth Industrial Revolution; digital diplomacy; Africa; international knowledge structure; negotiations

## Introduction

The concept of a Fourth Industrial Revolution (4IR), entailing the fusion of the digital, physical, and biological worlds, was first proposed at the 2016 World Economic Forum.<sup>1</sup> Discussions on the impact of advances in digital technologies have since proliferated in the literature, often focused on assessing the role of the 4IR in socio-economic development. Here the rhetoric casts the 4IR as something of a silver bullet for developing countries. Indeed, Cathy Smith argues that for Africa the indication is that the 4IR 'has the potential to turbocharge the socio-economic development of the entire African continent'.<sup>2</sup> While the literature concerning technology, society, and the economy has begun to grapple with the implications of these advances, there has been less analysis forthcoming from scholars of international relations and diplomacy regarding the impact of the 4IR and negotiating the international governance of these emerging digital technologies.

Technology and its development are not value neutral. Both come with social, economic, environmental, and political opportunities and challenges. While advocates

point to the promise of the 4IR, there are vulnerabilities that serve to perpetuate the international knowledge structure. Addressing the role of digital technologies in international relations highlights the role of 'knowledge as power', where those who have the 'right' knowledge are able to control its access and governance.<sup>3</sup> This power structure is reflected in the digital gap between developed and developing countries, deepening questions of inclusion in the 4IR. Just as there is a need to mediate the social tensions that arise from the introduction of new technologies within countries,<sup>4</sup> so too is it necessary to address the impact of digital technologies on relations between countries. This article argues that digital diplomacy, understood as diplomacy *for* digital technology, provides a useful lens through which to assess the competition and cooperation around digital technologies internationally; issues for consideration range from the transactional relations evident in engagement on international markets or data governance, to supporting transformational relations that have seen multistakeholder projects building space programmes and boosting regional connectivity, among others.

This study is exploratory, considering the value of digital diplomacy as a lens for assessing the emerging international dynamics around the 4IR, and how those dynamics will shape Africa's future position in the international knowledge structure. While much of the existing analysis on digital diplomacy gives attention to technology as a conduit or tool for the conduct of diplomacy, this article shines a light on the concept of diplomacy *for* digital technology. This includes a focus on negotiating access, implementation, and the international governance of these digital conduits. Drawing on the case of the 4IR, this approach demonstrates the role for digital diplomacy in negotiating the changing context of relations between states, and between state and non-state actors, when it comes to science, technology, and innovation (STI). Digital diplomacy in this analysis is perceived as more than a tool or means of engagement between parties, but as a means of navigating the evolving international digital governance regime and negotiating a more level playing field to address the inequalities in the international knowledge structure. Expanding the analysis of digital diplomacy thus helps shift attention to questions concerning the negotiation of access, resources, skills, and priorities of African stakeholders in the 4IR.

The article begins by assessing the current understanding of the concept of digital diplomacy before considering the context of the previous industrial revolutions in shaping Africa's position in the 4IR. This paves the way for the discussion in the final section, which highlights the role of digital diplomacy in the African context, where transactional engagement between the continent and the international milieu reflects Africa's limited role in the international knowledge structure. Yet, as this article points out, there is scope for Africa's participation in advancing a position on digital technologies that would challenge the status quo. This includes contributions to multilateral and regional negotiations that are shaping transformational relations around digital technology for the 4IR.

## **The 4IR and digital diplomacy**

As a developing continent, Africa is identified as a region where the 4IR is set out as a means of leapfrogging the environmentally dirty industrial revolutions that came before. The argument is that the 4IR presents a path towards addressing 'global challenges using smart systems'.<sup>5</sup> From its conception by Klaus Schwab at the World

Economic Forum in 2016, the 4IR has attracted much interest. Research has proliferated around the impact of technological advances on jobs, and the structural adjustments countries will need to make in order to adapt to these developments.<sup>6</sup> Yet, while the impact of the 4IR is expected to touch all disciplines, there is scope to expand the critical analysis by scholars of international relations and diplomacy.

When it comes to Africa, the discourse on the 4IR centres on the opportunities presented by the introduction of digital technology, although increasingly analysis points to the constraints in its implementation such as poor infrastructure, shortfalls in skills and education, and limited investment in research and development.<sup>7</sup> The leitmotif across this narrative is that the continent is playing catch-up when it comes to STI.<sup>8</sup> Growing attention is also being given to the mixed results of digital technology in its implementation by governments in shaping socio-economic development. As Edna Solomon and Aaron van Klayton point out, while there are governments that look to share knowledge and prioritise the procurement of digital technology, there are those that have exploited the growing reliance of publics on digital technology and the Internet, in some instance moving to shutdown communications as a means of domestic control, thereby decreasing democratic freedoms.<sup>9</sup> In Africa, even the more advanced economies such as South Africa have been referred to as 'almost a backwater when it comes to developing a comprehensive 4IR policy'.<sup>10</sup>

Beyond the focus on the implementation of 'smart systems', Ewan Sutherland adopts a more critical analysis in urging caution in pursuit of the 4IR, which is characterised as a rallying flag of 'an indisputably elite initiative'.<sup>11</sup> Nevertheless, research continues to point to the exponential growth of digital technologies across the continent that impacts on 'every facet of life in African societies',<sup>12</sup> with the conclusion that further discussion is required on the 4IR as it relates to many facets of life. These include but are not limited to cybersecurity, data protection, and advancing education, skills and infrastructure.<sup>13</sup> Building on this focus on digital technologies, Bitange Ndemo and Tim Weiss point to the transnational nature of the 4IR. In the context of Africa this includes its rapid integration and the subsequent transformation of societies, what they term a 'pan-African phenomenon'.<sup>14</sup> This continental reach is reflected in development of the AU's Digital Transformation Strategy for Africa (2020–2030), which gives recognition to:<sup>15</sup>

the efforts of the continent's leadership to prioritize and accelerate digital transformation, ... African countries are ready for a comprehensive digital transformation strategy to guide a common, coordinated response to reap the benefits of the fourth industrial revolution.

Yet, as Mark Graham *et al* argue, when it comes to Africa's relations with countries further afield, 'the geographies of digitally mediated content indicate a worryingly diminishing role for sub-Saharan Africa vis-à-vis other world regions'.<sup>16</sup>

On questions of international engagement and the governance of digital technology, the rhetoric on Africa and the 4IR continues to uncritically promote the ideals of partnership, without considering the impact of the international knowledge structure in shaping these relations. As Marcus Holmes argues, '[d]espite the significant changes in communication and transportation that globalization has brought to the world, the structure of international politics and diplomacy has, in many ways remained unchanged'.<sup>17</sup> This is true when considering the continued peripheral position of developing countries when it comes to accessing ICT, science and technology, and participation in its global

governance. This has been brought into sharp relief with the COVID-19 pandemic and the move to online technology, with the 'datafication' and 'virtualisation' of everything from business to education, with even international negotiations moving online.<sup>18</sup>

The study of digital diplomacy gives prominence to the use of digital platforms in facilitating the practice of international relations, as conduits of diplomacy.<sup>19</sup> Although there is as yet no agreed definition of digital diplomacy, it is in the main perceived as a method of diplomatic engagement through ICT, broadly defined as the performance of diplomatic functions through digital means,<sup>20</sup> or as 'the use of social media for diplomatic purposes'.<sup>21</sup> This includes expanding research on the use of social media platforms such as Twitter, Instagram, Facebook and Snapchat, by states, international organisations, political leaders, non-governmental organisations (NGOs), the private sector and even officials on their individual accounts.<sup>22</sup>

The primary focus on digital technology as a conduit of diplomacy is highlighted in Olubukola Adesina's review of the literature on digital diplomacy.<sup>23</sup> However, in addition to side-lining the idea of digital diplomacy as engagement on the broader governance of the digital space, these accounts paint a rather state-centric understanding of the concept. As technologies develop, so the negotiations around their role in society come to the fore. Non-state actors are increasingly part of these negotiations. For example, large digital media companies such as Google, Facebook, and Apple have been drawn into decision-making through their prominent positions in the knowledge structure and their control of communication, information, and knowledge resources.<sup>24</sup> This emerging role highlights the challenges that digital technologies represent for the Westphalian state system.<sup>25</sup> As Karen Allen argues, this 'new technological dawn also represents a shifting of power from traditional governments to those who control and own big data, including big commercial entities'.<sup>26</sup> This is evident in the inclusion of members of the private sector in negotiations on the governance, harmonisation, and regulation of global standards and practices in the digital space.<sup>27</sup> For example the Internet Corporation for Assigned Names and Numbers (ICANN) is a public-private partnership that creates public policy related to domain names and IP addresses.<sup>28</sup> In addition, the World Summit on the Information Society (WSIS), organised by the UN International Telecommunications Union (ITU) in 2003, was the first 'trilateral' UN conference including representatives from governments as well as civil society and the private sector.<sup>29</sup> The Internet Governance Forum, as the main outcome of the WSIS, is tasked with keeping governments in touch with the advice and perspectives of nongovernmental stakeholders on Internet governance.<sup>30</sup>

It is these developments, which reflect the changing dynamics between stakeholders as they negotiate the emerging digital governance regime, that need further critical discussion. The lack of a 'straightforward definition of digital diplomacy', Bob Wekesa argues, provides the impetus 'for African scholars to weigh in on the debate around what aspects of it [digital diplomacy] should be emphasised above others'.<sup>31</sup> This article argues that this 'weighing in' includes consideration of the engagement between stakeholders in negotiating the international digital governance regime. Indeed, while research may point to digital diplomacy 'as the use of ICT tools, platforms and skills for diplomatic work', or the 'digitalisation of diplomacy', this article is instead seeking to focus on the role of diplomatic relations concerning digital technology;<sup>32</sup> that is, the complexities and

importance of negotiating, communicating, and representing different positions in shaping the global governance of digital technologies.

Given questions around the protection and use of big data, the spread of misinformation and the rights of citizens when it comes to the use and access of digital technologies,<sup>33</sup> digital diplomacy must certainly be conceptualised to include the negotiations shaping the international digital regime. This approach would then also help address what Holmes laments as the tendency to 'reduce digital diplomacy to public diplomacy'.<sup>34</sup> With knowledge and information increasingly seen as a form of power in the digital age,<sup>35</sup> an expanded understanding of diplomacy focused on digital technology provides scope for the interrogation of negotiation positions in navigating the 4IR and the international knowledge structure.<sup>36</sup>

The implementation of digital technologies across Africa does not take place in a vacuum. While these technologies may be perceived as a means of bridging divides, they also have the ability to exacerbate them. As is pointed out, the current 'approaches to governing, managing, and regulating digital technology, such as they exist, are dominated by a small number of countries based on the priorities of developed nations'.<sup>37</sup> As such, diplomatic engagement on digital technology must play a part in addressing the imbalance in knowledge power structures. This is a challenge given the context in which these relations were forged in the previous industrial revolutions, which saw Africa pushed to the margins of the international knowledge structure.

## **Industrial revolutions and the shaping of the international knowledge structure**

The maxim that 'knowledge is power' is reflected in the inclusion of knowledge as a factor in shaping international geopolitics. The emergence of the study of the international knowledge structure follows the focus of scholars of international political economy (IPE) in presenting a structural theory of power.<sup>38</sup> In leading this thinking, Susan Strange argued that actors create structural power by either denying or allowing access to knowledge resources through the control of knowledge.<sup>39</sup> Despite the identified link between knowledge and power, the impact of the knowledge structure on international politics needs further analysis. As Blayne Haggart points out, the commodification of knowledge has been a 'blind spot', especially when it comes to 'who is setting the rules governing the production, use, and dissemination of knowledge, and to what ends'.<sup>40</sup> Addressing this blind spot is necessary in avoiding the scenario suggested by Ndemo and Weiss, that the future may be much like the past, where existing 'pathological dependencies are reproduced and remain dictated by powerful elites, multinational corporations and transnational agencies'.<sup>41</sup>

The industrialised countries at the centre of the first three industrial revolutions have been the winners in the international knowledge structure. As Peter Engelke argues, '[t]echnology has long been an ingredient in how states gain, use or lose power'.<sup>42</sup> This imbalance has resulted in 'exploitative' relations between the developing countries of Africa and the developed industrialised countries. Patti Clayton *et al* define exploitative relations as those that adopt a unilateral approach that 'take advantage of or harm one or both parties'.<sup>43</sup> Exploitative relations in the international knowledge structure were consolidated during the first industrial revolution (1700s), driven by steam. Colonialism

in this period saw a divided Africa relegated to the periphery of the international knowledge structure, where the continent became a source of raw materials and cheap labour for the industrialising countries. While the industrialising colonial countries utilised their knowledge capital, there was little exchange or trickle-down effect to their colonies. This position on the periphery remained entrenched during the second industrial revolution (1800s), driven by electricity, and the third industrial revolution (1900s), driven by the advancement of telecommunication, advances in transport, and mass production.<sup>44</sup> Each epoch saw knowledge empowering the industrialising countries with little benefits flowing to the developing world. This has led to a position today where, as Diana Games argues, 'Africa is stuck in the second industrial revolution, with governments still prioritising industrial programmes and skills that will be disrupted, and even marginalised, by current technology trends'.<sup>45</sup>

The impact of colonialism and the peripheral position of Africa in the previous industrial revolutions have shaped Africa's position in the 4IR and its engagement on digital technology. These constraints are acknowledged in the African Union (AU) Digital Transformation Strategy for Africa (2020–2030). This strategy document points to weak coordination, limited cooperation and cohesion across the continent, poor interconnection of networks between countries, limited finance, shortfall in education and training, and the exorbitant costs of resources underlying Africa's continued economic status.<sup>46</sup> These limitations exclude a number of African countries from engaging in the international knowledge structure when it comes to digital technologies. Development is certainly hampered by shortfalls in Internet connectivity. In 2014, statistics indicated that only 16% of Africa's population had access to the Internet.<sup>47</sup> By March 2020 Internet penetration on the continent had grown to 39.3%; however, this is in stark contrast to the average Internet penetration for the rest of the world which stands at 62.9%.<sup>48</sup> The challenge is that technology and innovation remain the preserve of those with capital and investment.

The impact of this peripheral position is evident in shaping the discussions on global governance of digital technology issues. Research points to discrepancies in feedback from business and development organisations on the one hand, and the recipients of benefits arising from digital technologies on the other, concerning the impact of digital technologies.<sup>49</sup> While NGOs and the private sector reports point to the positive impacts of the Internet on socio-economic growth, academic studies have found that the Internet has an uneven impact on development. The study by Mark Graham *et al* for instance concludes that the 'geography of digital content and digital engagement displays similar stark core/periphery effects. This ultimately means that it has been difficult for African firms and entrepreneurs to compete at a global scale'.<sup>50</sup>

The shortfall in skills and lack of infrastructure in Africa have seen a 'digital divide' forming; the continent's peripheral position is further exacerbated through exclusion from accessing particular digital technology. As Solomon and van Klyton argue, 'internet inequality in Africa created major challenges for millennial digital entrepreneurs. In fact, African-based businesses are often subjected to restrictions in using certain global e-payment and webhosting services simply because "they are operating from certain African countries"'.<sup>51</sup> This has seen the emergence of research on the idea of digital colonialism, considering the role of Western technology companies and the 'mining of data' for profit from countries across Africa where there is little legal protection and nominal

benefit for communities.<sup>52</sup> Here the research highlights the exploitative role for digital diplomacy by those engaging in a 'new scramble' for Africa's data and market access for technology.<sup>53</sup> The scramble to capitalise on knowledge resources has seen developed economies (ie, the US, Germany, Japan), and emerging economies (ie, China, India) adapt and advance their technology and systems to gain a competitive advantage in the knowledge structure. The result has been that developed economies – and increasingly some emerging economies – occupy positions as 'producers' and exporters of knowledge. In contrast, developing countries occupy a position as 'consumers' of knowledge, a place where technology and innovations are sold (markets) or implemented (often via official development assistance).<sup>54</sup> The result is that African countries are often the subject of research and scientific discovery, but their citizens are rarely participants in the process,<sup>55</sup> nor, does it serve to build relations between states (or people) given the transactional nature of the interactions.

A core challenge for Africa in addressing this position is that the focus on technology, along with research and development, continues to comprise a comparatively small percentage of developing countries' budgets, with access to modern equipment, infrastructure, and even scientific publications often prohibitively expensive. When it comes to research and development, ten countries account for approximately 80% of the world's spending (including the US, Germany, Japan, South Korea, Finland, Sweden, and Switzerland). These countries spend on average over 2% of their GDP on research and development, with North America and Western Europe contributing 39.7% of the world's researchers.<sup>56</sup> In contrast, the countries of sub-Saharan Africa spend an average of 0.4% of their GDP on research and development and contribute 1.1% of the world's researchers, limiting the continent's international engagement on the development of technology and science.<sup>57</sup>

In the rhetoric, at least, there is a move away from exploitative relations between developed and developing economies to a focus on establishing partnerships. In practice, however, much of these relations have assumed the form of transactional relations, which are little better than exploitative relations as they do not allow for growth. Transactional relations are designed to achieve a specific outcome and as a result are short-term in nature.<sup>58</sup> These relations are characterised as an exchange of something that each party desires and, while there may be benefits for the parties involved, there are no long-term changes in approach expected from this engagement.<sup>59</sup> This transactional approach to engagement is evident in some of the narratives from African researchers, where Africa is seen as a place to be researched rather than a partner in shaping knowledge. This is reflected in the experience of Duncan Omanga and Pamela Mainye, Kenyan researchers who took part in a collaborative project with a partner from a developed country, assessing the role of digital technologies and electoral violence in Kenya.<sup>60</sup> With increasingly prescriptive research parameters set by the developed country partner, the African partners were left to conclude that 'as to the power dynamics in the research project, there was now a growing sense that we were on the lower rungs of shaping the kind of knowledge to be produced here, with the transactional nature of the research collaboration becoming blunter'.<sup>61</sup> In this instance, digital diplomacy may have seen more local involvement in digital technology projects between Africa and partner countries; however, the planning and budgeting continued to take place in the developed countries.<sup>62</sup>



In another case, that of Japan's engagement with Africa, Taizo Yakushiji points out that, 'leading science and technology [is] being shared with the industrialized nations, and less advanced "middle-of-the-road" technology [is] going to developing nations'.<sup>63</sup> In these transactional relations, Africa is a recipient of science and technology that it can integrate into its existing (underdeveloped) sector while engagement with the industrialised countries is focused on working partnerships on new areas of technology, such as bio-defence and cybercrime issues.<sup>64</sup> Concerns around cybercrime has furthered the transactional nature of engagement on big data technology. While developed countries move towards negotiating a comprehensive international legal framework, governments across Africa lack a domestic legal framework and the capacity to address these challenges, with the result that, instead, they are being addressed by the private sector.<sup>65</sup>

Even emerging developing countries such as China are increasingly cited for adopting a transactional approach towards Africa. As Wesley Mwatwara and Ushehwezu Kufakur-inani point out in their study on China's role in Zimbabwe, the Chinese bring their technology, which Africa then adopts with no opportunity for cooperative development.<sup>66</sup> This includes building infrastructure such as power stations, expanding fibre-optic broadband networks, and supplying equipment for monitoring wildlife. The transactional nature of these relations is highlighted by Allen, who notes that despite the optimism, there has been no sustained focus on the capacity to support and partner with Africa on the 4IR.<sup>67</sup>

In the case of Rwanda, X N Iraki points out the value of the use of drones in bringing medicine to inaccessible areas. While he calls for the need to exploit 4IR digital technologies, there is little critical reflection on how these will be used or how relations are negotiated in supporting Rwanda's ability to develop their own drone programme or the country's participation in discussions shaping the governance of the role of drones.<sup>68</sup> The use of digital technology is limited to the use of 'off-the-shelf products from overseas', which are brought into the African context with little discussion on the role of these technologies in shaping relations between the parties.<sup>69</sup> This transactional approach informing relations on digital technology has seen Desmond Ayentimi and John Burgess raise questions concerning the extent to which 'the 4IR [is] relevant to sub-Saharan Africa',<sup>70</sup> yet this is a case where Africa would gain through digital diplomacy, given that many current international rules and standards are not always appropriate for a developing country context, in view of the constraints on resources and different policy priorities.<sup>71</sup>

### **Digital diplomacy for, and by, Africa – towards transformational relations**

It is clear that digital diplomacy practised according to a transactional approach will leave African states excluded from the knowledge economy and the 4IR. African states will need rather to press for a transformational approach in their digital diplomacy, building relations as they negotiate new terms to overcome the digital divide and to gain a place in the 4IR. Transformational relations place an emphasis on 'real' partnership and sustained engagement, and offer a means to address the current gap in the international knowledge structure. Transformational relations are understood as those where both parties 'grow and change because of a deeper and more sustainable commitment'.<sup>72</sup> These relations are characterised as being long-term or open-ended, where the parties 'explore emerging possibilities, revisit and revise their own goals and identities, and

develop systems they work within beyond the status quo'.<sup>73</sup> The emphasis of transformational relations is that they build a deeper level of engagement than those at a transactional level, as they are based on shared approaches to planning, decision making, implementation and financing.<sup>74</sup> Such a transformational approach would seek to build on existing digital capacities to create the platform needed for Africa's take-off into the 4IR.

The late 2000s saw a growing interest in the potential of digital technology in Africa. Kenya was touted as the 'silicon savannah' following a rush of 'corporate actors, donor agencies, civil society and government stakeholders ... increasingly implementing information and communication technologies (ICT) in the global South'.<sup>75</sup> The increase in digital capacity has seen countries like Rwanda able to increase annual revenue collection and South Africa reducing the costs of tax collection, while the reduction in bureaucratic red tape in Mauritania, Rwanda and Senegal has allowed new small and medium-sized businesses to open.<sup>76</sup>

Access to digital and cellular technology resulted in innovative practices across the continent as Africans developed mobile lending applications and platforms for e-commerce, along with the creation of over 400 technology hubs across the continent alongside 'incubators, accelerators, innovation hubs, maker spaces, technology parks and co-working spaces that support them'.<sup>77</sup> However, these entrepreneurial hubs, as with investments into digital technologies, are found 'in geographic clusters' around Egypt, Ghana, Kenya, Morocco, Nigeria and South Africa, which raises caution around the uneven distribution of digital technology and knowledge within Africa.<sup>78</sup>

While the continent is attracting international interest and building regional technology hubs, discussions on the terms of access and inclusion concerning the future of Africa's digital technology are still in their infancy. This includes aspects such as negotiating regional power grids, transportation networks, and ICT infrastructure, without which digital technologies do not function.<sup>79</sup> The AU Digital Transformation Strategy for Africa notes that there are 'economic opportunities in virtually every sector, and the continent's youthful population structure is an enormous opportunity in this digital era and hence the need for Africa to make digitally enabled socio-economic development a high priority'.<sup>80</sup> Yet the range of issues covered by the 17 objectives of the strategy, focused on the period 2020–2030, require considerable diplomatic engagement to address enhancing accessibility (including inclusivity and equality of access), security, standards and regulations, all gauged to support socio-economic development.

### ***Regional initiatives in transformational digital diplomacy***

Evidence of work within Africa's regional economic communities (RECs) points to some engagement on digital technologies in addressing the inequalities presented by the digital divide. In 2001 the Southern African Development Community (SADC) Declaration on Information and Communications Technology gave recognition to the need to develop a coherent regional approach to ICT as well as address the early indications of a digital divide.<sup>81</sup> The declaration points to the impact on inequality that a digital divide brings, noting that it would 'not only manifest itself economically or technologically but also culturally, creating a world that is increasingly less representative and reflective of the languages, cultures, ideas and diversity of the peoples of the world'.<sup>82</sup> The

region has gone on to agree on an ICT strategy, a Protocol on Transport, Communication and Meteorology, and an e-SADC Strategic Framework. These initiatives represent an unfolding effort in digital diplomacy (diplomacy *for* digital technology) in building a coordinated approach to ICT in supporting development in the states of the region, along with the need to provide the necessary infrastructure to support its transformational application within the region.<sup>83</sup>

In a similar vein, in 2015 the Economic Community of West African States (ECOWAS) set out to review an ICT strategy linked to growth and development of the region. This included negotiating an agreement on legislation on cybersecurity and cybercrime as well as the creation of a new Department for Telecommunications and Information Technologies within the ECOWAS Commission.<sup>84</sup> Advancing on this, by 2020 the focus of representatives at the ECOWAS West Africa Internet Governance Forum (WAIGF) homed in on talks on enhancing cooperation in support of developing the digital economy of the region.<sup>85</sup>

Transformational digital diplomacy is also evident in initiatives to address the divide apparent between Africa's regions. As Jonathan Adams points out, 'Africa has three distinct networks: in southern Africa, in French-speaking countries in West Africa and in English-speaking nations in East Africa'.<sup>86</sup> Efforts in regional cooperation – from conferences such as that on Global Connectivity for Africa (Addis Ababa, 1998), to the development of the African Continental Free Trade Agreement (AfCFTA) – provide opportunities for diplomacy focused on the digital space to address the fragmented approach to knowledge advancement. There is much room for more deepening collaboration between institutions such as the African Scientific Research and Innovation Council (ASRIC), the Pan African Intellectual Property Organisation (PAIPO), and the African Innovation Society Initiative (AISI).

Established in 1996, the AISI is an early example of African agency in digital diplomacy. This initiative aimed at building continental cooperation in expanding Africa's Internet capabilities from a position where, in 1995, only five countries had Internet access. From its outset the focus was on bridging the digital divide (within Africa and between Africa and the world) and addressing the 'Continent's entry into the information and knowledge economy'.<sup>87</sup> As Kingsley Amoako argued at its outset,<sup>88</sup>

To move into the Information Society, Africa must be clear on what it wants and make its desires clear to others. If we are clear, if we have a compelling vision for ourselves, then it is likely that our choices will turn into our own reality. If we are not, then we will either be perpetual observers on the information highway or find ourselves on a road not fit for our needs.

Despite initial optimism for the role of the AISI in negotiating Africa's position in the digital divide, beyond an initial flurry of work during its first five years, there are now few reports that have emerged regarding this framework. The work of the AISI now appears increasingly to be folded under the broader work of the UN Economic Commission for Africa.

Concerns regarding cybersecurity have led to additional regional digital diplomacy initiatives, including one of the earliest agreements within the AU, the Convention on Cyber Security and Personal Data Protection adopted in June 2014. Diplomacy for access and the development of Africa's digital capacity has also seen negotiation and

agreement at the continental level on efforts to facilitate relations through the AU's Science, Technology and Innovation Strategy for Africa 2024.<sup>89</sup> The strategy points to the importance of building an integrated approach through regional research institutions, networks, and building partnerships. It also gives recognition to the need to address Africa's position within the global knowledge structure, highlighting as its mission the need to '[a]ccelerate Africa's transition to an innovation-led, Knowledge-based Economy'.<sup>90</sup>

Initiatives such as the Science Granting Councils (SGC), an effort which works with 15 Science Councils across Africa, further aim to facilitate transformational diplomatic engagement for digital technology across the continent and beyond between governments and non-state actors. The SGC includes an emphasis on cooperation in designing and monitoring programmes as well as partnerships. This draws together institutions such as the New Partnership for Africa's Development (NEPAD), the Southern African Research and Innovation Management Association (SARIMA), the African Centre for Technology Studies (ACTS), and the African Technology Policy Studies Network (ATPS), linking science, technology and development initiatives. The SGC also draws in development partners from the UK (DIFD), Canada (IDRC), Sweden (SIDA) and South Africa (DST, NRF).<sup>91</sup> The inclusion of external funders does, however, raise concern that transactional elements may still underlie some of these interactions. As the AU Science, Innovation, and Technology Strategy indicates, there is still an 'over-reliance on external financial support, which is often targeting short-term activities and solutions'.<sup>92</sup>

The global nature of the 4IR means that Africa's digital diplomacy will need to extend beyond the limits of the continent. Yet the countries of Africa, along with other developing countries, continue to find themselves limited in their engagement. This, it is argued widely, is partly a function of the challenges posed by imbalances of power in global governance structures but are certainly also affected by lagging connectivity levels and the pre-existing relationships that are reflected in the international knowledge structures. This is apparent in the literature which questions 'whether Sub-Saharan Africa's engagement with the global knowledge economy will continue to be on terms that reinforce dependence, underdevelopment, and economic extraversion'.<sup>93</sup> When it comes to some of the world's most protracted international challenges, such as climate change, Africa continues to have limited input. This includes under-representation on panels such as the Intergovernmental Panel on Climate Change (IPCC), where African participants constitute around 10% of the scientists involved in authoring, contributing and reviewing the special report on global warming.<sup>94</sup> Certainly, concern has been raised that increased connectivity does not explicitly lead to greater inclusion in the international knowledge structure, with Africa continuing to trail in contributing the smallest share globally to digital knowledge.<sup>95</sup> Venkat Siddhartha argues that in this context negotiations have been exclusionary, and where developing countries are allowed at the negotiating table they are susceptible to being co-opted into the current STI regime.<sup>96</sup>

While much of the discourse may place Africa on the periphery of the international knowledge structure, there are areas where the continent is active in knowledge development and the application of digital technology. The use of mobile money services is one such area, which Ndemo and Weiss point out has grown exponentially, so much so that 'high density of services is often-times attributed to the success of Safaricom's MPESA'.<sup>97</sup> Developments in digital financing more broadly have seen a move internationally to engage in discussions on its governance. In 2020 the UN established a task force to

assess the role of digital financing in accelerating the financing of the Sustainable Development Goals (SDGs). This builds on the UN Secretary-General's Roadmap on Digital Cooperation (2020), which calls for a 'more effective architecture for digital cooperation'.<sup>98</sup> While there were three panel members from Africa (Botswana, Rwanda and Kenya) on the High-Level Panel on Digital Cooperation, there were five in the case of the 17-member Task Force on Digital Financing (two from South Africa, and one each from Zimbabwe, Kenya and Benin).<sup>99</sup> Key among the outcomes was the importance of negotiated inclusive international governance on aspects such as regulations and standards on digital finance, noting 'a new generation of global digital financing platforms with significant cross-border, spillover (sic) impacts'.<sup>100</sup>

When it comes to supporting wider multilateral engagement, the United Nations (UN) is increasingly addressing the governance of digital technologies. The UN Economic and Social Council adopted Resolution 2001/31, which saw the establishment of the Science and Technical Diplomacy Initiative under the UN Commission on Trade and Development.<sup>101</sup> The UN and its specialised agencies such as the World Intellectual Property Organisation (WIPO), and organisations such as the International Telecommunications Union (ITU), provide an opportunity for promoting Africa's transformational digital diplomacy in the context of the 4IR, particularly around issues such as artificial intelligence, big data, and the Internet of things.<sup>102</sup> A further area of partnership with Africa has been concerning the issue of cybercrime. Siddhartha notes that this is linked to the impact cybercrime has on developed countries, who are urgently pursuing a treaty-based international cyber order.<sup>103</sup> As in the case of digital finance, this is an issue on which Africa is exercising digital diplomacy; Kenya, Mauritius and South Africa are all present in the UN group of government experts on ICT issues, participating in discussions on the development of cyber norms and how this shapes international human rights law.<sup>104</sup> Yet the challenge remains in linking digital diplomacy internationally with Africa's aspirations regionally. For example, while there is an AU convention on cybersecurity, this had been ratified by just five African countries (Ghana, Guinea, Mauritius, Namibia, and Senegal) as of 20 February 2020.<sup>105</sup> The danger is that while Africa is pursuing transformational relations in the field of STI at the global level, relations at the regional level may support transactional relations if due care is not exercised.

As the talks on the governance of cybersecurity demonstrate, advances in technology offer new areas of cooperation and competition. This requires international agreement on aspects such as emerging international norms on cybersecurity as well as discussion on its implications for areas as diverse as human rights and autonomous weapon systems (drones). The challenge is, as Nikhil Seth argues, '[u]nsurprisingly, many big powers with a comparative edge in these technologies do not want to engage in the cooperative creation of regulatory systems or international laws'.<sup>106</sup> Yet the transnational nature of digital technology means that all countries face concerns around cybersecurity or data governance.

## Conclusion

For Africa, participation in negotiating the international governance of digital technologies is critical in mitigating a peripheral role in the international knowledge structure, ensuring transformational rather than transactional relations when it comes to the 4IR. This article argues that analysis of digital diplomacy as diplomacy *for* digital technology

– ie, negotiating the governance of digital technologies – provides a useful lens for critically assessing Africa vis-à-vis the 4IR.

The historical context in which the 4IR is being negotiated, especially colonialism and its exploitative relations, has seen the continent marginalised. In addressing this position, continental and regional institutions acknowledge the value of building partnerships in advancing digital technology across Africa. The challenge is that the analysis of digital technology does not always take into account the imbalances in these relations.

Digital diplomacy is increasingly a part of relations between countries across Africa and beyond, including both developed and emerging economies of the world. Some of these relations remain transactional, where engagement on digital technology has been confined to achieving limited outcomes that have been short-term in nature. There are, however, examples that point to the role of digital diplomacy, by Africa and for Africa, in shaping transformational relations through cooperation in the RECs, at the AU level, and at the UN. Yet negotiators will need to remain cognisant of the current configuration of power within the international knowledge structure as they seek to close the gap, ensuring progress towards transformational relations that are equitable, building ‘real’ partnership and sustained engagement. This exploratory study underlines the need to further unpack Africa’s diplomacy around digital technology, in assessing the negotiations, the actors, and the outcomes.

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No potential conflict of interest was reported by the author(s).

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