Ubuntu and Sankofa: On Pathways to Strengthen Future Africa as a Pan-African Platform for Scientific Collaboration

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Ubuntu and Sankofa: *On Pathways to Strengthen Future Africa as a Pan-African Platform for Scientific Collaboration*

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ORGANIZATIONAL CONTEXT

Launched by the University of Pretoria in 2019 as a transdisciplinary Pan-African entity, Future Africa aims to harness African scientific expertise to tackle the continent's challenges. Initially envisioned as a self-funded research institute, initial investment fell short due to limited participation from African scientists and external funders. COVID-19 further hampered financial stability.

Under new leadership (Dr. Heide Hackmann, appointed April 2022), Future Africa has identified five key Challenge Domains:

- Sustainable Food Systems
- One Health (interconnectedness of human, animal, and environmental health)
- Sustainability Transformations
- Global Equity
- Science & Technology Futures

This Pan-African platform fosters collaboration among scholars and researchers, fostering solutions that transcend disciplinary boundaries. Future Africa's mission: to "unleash the transformative potential of African sciences to create thriving African societies."

PROBLEM OF PRACTICE

Future Africa has yet to articulate its Pan-African identity and relevance to scientists across the African continent. This is a prerequisite to meeting its stated mission, and failing to do so puts Future Africa’s credibility at risk, as it undermines the organization’s espoused value of a Pan-African platform for scientific collaboration. Without meaningful, consistent collaboration among African scientists from different parts of the continent, Future Africa cannot claim to provide an environment conducive for African scientists to solve African and global challenges. Fostering a strong sense of Pan-African identity and attracting investment from across the continent are vital to the success of the organization. It is our belief that efforts to increase human and financial gains from within can be mutually reinforcing, fostering sustainability and reducing dependence on external funds, which come with their own agendas.

EXECUTIVE SUMMARY

PROJECT QUESTIONS

1. What barriers and nourishers influence intra-African engagement for scientists beyond South Africa with Future Africa?

2. What social, cultural, political, and economic factors foster Pan-African collaboration among scientists?

FINDINGS

- **Pan-African Identity:** Although a unified vision of Pan-Africanism eludes both internal and external stakeholders, shared principles like Sankofa (learning from the past) and Ubuntu (humanity) offer a foundation.
- **Institutional Challenges:** Future Africa's funding and initial support came from the University of Pretoria (UP). However, the University's administrative structure, competitive academic environment, and historical positioning as a white institution create friction with Future Africa's pan-African goals.
- **Navigating Change:** Frequent leadership changes, COVID-19 impacts, and the balancing act of daily operations with research programs have hindered establishing impact metrics.
- **Funding Concerns:** Reliance on international funds presents a double-edged sword. While accelerating research, it can perpetuate neo-colonial power dynamics, discouraging some African participation.
- **Location as a Barrier:** South Africa's visa restrictions and the perception of its "big brother" role within Africa hinder collaboration with other African researchers, creating obstacles to building a pan-African science platform.

RECOMMENDATIONS

- **Shared Vision:** Define "Pan-Africanism" for Future Africa, incorporating transdisciplinary research, ubuntu values (humanity), and Sankofa (learning from the past). This clarifies the platform's mission for internal and external partners.
- **Autonomy for Impact:** Negotiate more autonomy for Future Africa from UP. This allows the org to define its identity beyond academia and potentially scale its impact further.
- **Strategic Metrics:** Develop metrics based on think tank research and existing Ubuntu frameworks to measure the platform's success. Use this data to create a 50-year strategic plan.
- **Science Advocacy:** Introduce a new challenge domain focused on science diplomacy. This initiative aims to raise African government science spending to 1%+ and foster an environment that attracts investment in Pan-African science platforms.
- **Regional Visibility:** Leverage South Africa's visa regulations to establish regional chapters. This will increase Future Africa's visibility, overcome geographical and linguistic barriers, and solidify its Pan-African identity.

Dedication

We call ourselves Team Future Africa after our partner organization. Throughout this capstone journey, we have evolved from a group with a task to a team with a meaningful project. We cannot thank our Leadership and Learning in Organizations program enough for the opportunity to learn and work together on such an intense international project.

To our primary advisor, Dr. Daphne Penn: Words do not begin to describe what you mean to our team. You challenged us to grow in more ways than one with your detailed comments, rejoinders during Zoom meetings, and questions that clarified our purpose with this capstone project without giving us the answers.

To our advisor in South Africa, Prof. Stella Nkomo: We thank you for your graciousness and openness to working with three strangers from Vanderbilt University on a partially formed project. From the moment we received your first email to the time we met you via Zoom and in Johannesburg, we knew we had it in us to complete what seemed like an opaque project. Thank you for the inspiration.

To our newfound family at Future Africa: Who knew how close we would become during this project? Dr. Heide Hackmann, Prof. Frans Swanepoel, and Ms. Juby Govender, we know you did more than met the eye to make our data collection and tests for validity possible. The Research Chairs—top academics in their fields—fit us into their hectic schedules on more than one occasion. We are grateful you did for us. Thank you, Future Africa, for your Ubuntu embrace.

To all our instructors, members of our cohort, librarians, and administrators, THANK YOU! We end our time at Peabody College with full hearts, in addition to what our minds have retained from our courses.

Personal Dedications

I dedicate this work to all my known and yet-to-be-known ancestors, my family, and my entire support network of my chosen family. Embracing the Ubuntu tenant of interconnectedness, I acknowledge that my journey is deeply intertwined with the collective experiences of humanity. To my loved ones, your unwavering support and belief in me during my whole journey through this doctoral program have helped me build my self-confidence and self-efficacy and have enabled me to stand in my strength. From the affirmations at a young age that I could do anything by from my parents, to my Grandma, who was a world traveler and a trailblazer who modeled for me how to be adventurous and curious, to my loving husband, who supported and continues to support me in all my endeavors to better myself. Finally, I could not have had better teammates turned into a family - thank you Courteney and Christian for making this program and this project such a memorable experience that will be everlasting. I look forward to ALL the future will bring. – Jacqueline Elizabeth

Guided by the Ubuntu philosophy, "I am because we are," I dedicate this work to the collective spirit that has nurtured my growth. To my children—Kiran, Kairi, Kepler, and my ever-supportive husband, Brad—whose love is at the foundation of all I do. To the supportive family I was born into, particularly my parents, whose values and sacrifices shaped my character: Dad, whose relentless pursuit of excellence serves an enduring example, and Mom, whose optimism is a constant source of light. To Kirsten and Brooke, friends who have shared laughter, tears, and academic challenges, your companionship is invaluable. To Christian, my brother, who ignited this journey and ushered me into new worlds, and Jackie, my sister and invaluable anchor. In addition to our advisors, I would like to extend my gratitude to Dr. Campbell, Dr. Rifkin, Dr. Self, and Dr. Bruyère, whose wisdom has illuminated my path. To the Future Africa community, for opening doors to new perspectives. And to all those who, seen and unseen, have contributed to this work, your impact is deeply appreciated. I hope it is of use. -Courteney

I (Christian) dedicate this work and doctoral degree to everyone who has molded me, lived with my horribleness, and elicited the best out of me. If your name does not appear here, please know that you still reside in my heart. I extend my deepest gratitude to everyone who has lifted and supported me throughout my journey. Please know that you are an integral part of my story, and I am forever grateful. The completion of this doctoral journey represents a collective endeavor. I extend my deepest gratitude to the following groups that have embodied the spirit of Ubuntu and profoundly shaped my life, including my attitude toward intellectual pursuits and how to do as much good as possible during my lifetime.

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You did not go to Vanderbilt to slack off." My father, Amb. Harold Acemah, has provided invaluable guidance and wisdom. The Ugandan relatives and friends (Grandpa and Grandma Yada, Owek. John Kagudde and family, Aunt Christine, Uncle Don, Aunt Patience Alizik, Uncle Caleb, Denis Owiny, Kristine Sullivan Owiny, Ophelia!, Nelson Sewankambo, Peter Mugyenyi, Harriet Mayanja-Kizza, and Diana Kizza), London crew (Aunt Mary, Uncle Jim, Aunt Svetlanna. Uncle Robert, Aunt Bessie, Aunt Phoebe, Sisters-in-law—Carol, Claire, and Cathy—German crew (Mummy Harriet Feil, Andrea Sura, Chris Zakin, Emily Sommer, Jack Sommer), the Geneva Crew (Mama Annette Nsobani, Sharon Mutawe, Alex Brett, Bjorg Sandkjaer, Roseline Iriza Murama, the Nabetas, Kenneth Biraro), the United States crew (Sally Stansfield, Chris Harris, Rob Gilbreath, Molly Roush, Mary Elliott McKetta, Christy Wahl, Matt Coleman, Geoff Sutton, Simon Navaratte, Joe Sullivan, Harwig Zakin, the Mahowald family, Jane Denes, John, Bella Denes, Calla Brown, Anne Zakin, Papa Don Zimmerman, Carol Hult, Dave Read, Dave Pearl, Raff Notaro, Chad Wolfsheimer, Adam Stafford, Emily Harris, Nate Sheely, Doyin Odubanjo, and Patricia Cuff) became a formidable cheerleading team for Christian Acemah through thick and thin!

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Organizational Context

The University of Pretoria (UP) initially conceived of Future Africa in 2013 as a hub for interdisciplinary research to solve the world's—most specifically, Africa's—toughest scientific challenges. By 2019, the university decided to launch Future Africa as a semiautonomous organization to leverage the best of African science to transform Africa. With the addition of a physical campus, Future Africa functions as a Pan-African platform for scientific collaboration, connecting scholars, scientists, and research teams to formulate solutions to problems that transcend disciplinary boundaries. Future Africa requires strong transdisciplinary intra-African partnerships to achieve its stated mission: "Develop and unleash the transformative potential of African sciences to inform and inspire a future of thriving African societies" (Future Africa, 2024a).

Currently, Future Africa has 27 employees and links with 623 researchers from around the world. It is physically located on the University of Pretoria's main campus in Hatfield, a suburb of Pretoria, South Africa. When conceptualizing the platform, UP staff anticipated that following the initial investment, the physical campus would be able to fund the research institute by generating income through the meeting facilities, dormitories, and dining facilities. Unfortunately, because of the low engagement of African scientists and funding institutions outside South Africa, Future Africa has not yet become programmatically and financially self-sustaining. In addition, the small support staff must divide its time between troubleshooting campus operations and assisting the research institute. This could look like writing funding proposals but being pulled from that work to source maintenance assets to troubleshoot generator issues for the campus.

Furthermore, COVID-19 caused the campus to lose operating revenue. After experiencing COVID-19-related instability and three leadership changes since its inception, Future Africa appointed a director, Dr. Heide Hackmann, in April 2022.

Challenge Domains

Under Dr. Hackmann's leadership, the organization articulated five focus areas, called *challenge domains* (see Table 1; Future Africa, 2024b).

Table 1

Future Africaôs Challenge Domains

Challenge Domain	**Intent**	**Program Examples**
Sustainable African Food Systems (est. Jan 2022)	Undertake cutting-edge transdisciplinary research to address societal problems and improve food systems while contributing to building the capacity of early-career researchers.	*Climate, Land, Agriculture, and Biodiversityð Africa*: This platform connects African scientists with governments and development institutions, enabling them to contribute science-based policy solutions for challenges in food security, land management, health, and resource use.
One Health	Utilize a collaborative, multisectoral, and transdisciplinary approach to achieve optimal health outcomes and recognize the interconnection between people, animals, plants, and their shared environment while considering the local, regional, and global context.	*University of Pretoria Community-Oriented Primary Care*: A collaborative approach to health care that brings together clinical and public health resources from University of Pretoria (UP) Health Sciences and UP Veterinary Science to work with people in defined communities to identify and respond to health-related needs systematically.
Sustainability Transformations in Africa (to be est. in 2024)	Advance African research and leadership.	Involvement in international initiatives, such as Future Earth and the World Climate Research Programme.
Global Equity in Africa (est. March 2023)	Pursue multiperspective strategies for global prosperity and peace, positioning Africa as not only a major beneficiary but also a contributor to that objective.	Establishing programs under the themes of solidarity, governance, and freedom from violence.
African Sciences and Technology Futures	Develop and enhance leadership for transformative African science systems, identifying and advocating for change where needed and supporting existing and future leaders to amplify the visibility and voice of African science on a global stage.	*Science Systems Leadership Academy*: Identifies individuals rising into leadership roles at scientific organizations and helps them establish support networks and acquire knowledge.

Each domain receives funding to run projects with other institutions and scientists across Africa. So far, most of the funding comes from Western and South African donors, such as the Bill & Melinda Gates Foundation and the Carnegie Corporation of New York. Funding for science, technology, and innovation across Africa comes from a mix of sources: government, local and international businesses, bilateral donors, foundations, science granting councils, research institutes, multilateral agencies, and universities, to mention a few (Campbell, 2024; Moja & Okunade, 2023; Moja et al., 2022; *Nature*, 2024; Nordling, 2018; Nyokong et al., 2021).

Future Africa aims to gain traction within the continent, but its positioning at UP in South Africa is complex for potential partners. This relates to the history of exclusion, segregation, and xenophobia within UP. Furthermore, South Africa's restrictive visa requirements make it difficult to foster collaboration with organizations in various countries on the continent. According to the UP International Partnerships and Agreements report for 2022, 85% of the international partners were based outside the continent (Knobel Green, 2024a). Within the continent, 52% of countries were represented—yet Pan-Africanism necessarily includes all of Africa's countries. The closer to 100%, the more Pan-African. It is therefore clear that to establish its Pan-African credentials, Future Africa will need to continue to move beyond UP's current reach. The following sections will discuss this objective further.

Collaborators

Collaborators both within and external to Future Africa have differing expectations of the organization and varied degrees of interest in and influence on its evolution. Thus, the potential impacts of our capstone project on these groups may differ.

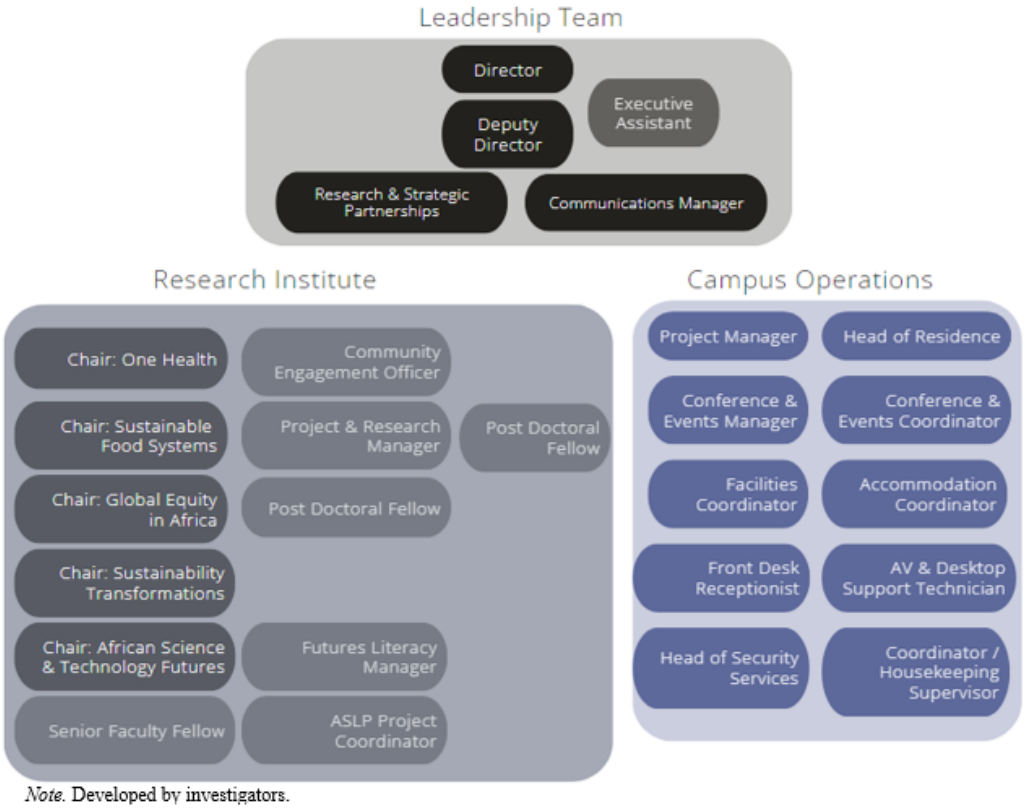
Internal Collaborators

Future Africa's leadership team implements the organization's strategy and undertakes its day-to-day operations. A director leads this team and reports to the vice chancellor of the University of Pretoria. The current director, Heide Hackmann, announced her departure for the end of June 2024. To date, the organization has maintained a predominantly South African leadership team. Any changes to the team's makeup could alter current power structures and national cohesion. The productivity of the leadership team could increase, decrease, or stay the same depending on how Future Africa manages the change process. This group holds explicit power and control over the organization's operations.

Although less powerful than the leadership team, the non-executive staff has an interest in sustaining Future Africa. Any changes to staff composition at this level could have a negative or positive impact on morale. See Figure 1 for an overview of the staff and leadership team.

Figure 1

Organizational Chart for Future Africa



Note. Developed by investigators.

The program directors (i.e., research chairs), who have significant autonomy, have expertise in specific fields, and use their connections to frame their programs, including how scientists from across Africa collaborate within these program areas. Currently, all research chairs work at UP, with the exception of a newly appointed chair employed by the University of Cape Town. Changes discussed in this capstone project could easily disrupt these experts' autonomy and how they select participants for their programs.

As the host of Future Africa, the vice chancellor and board of UP exercise ultimate oversight of the platform. UP's vice chancellor position has been unfilled, but the university announced in June 2024 that Francis Peterson will take office on October 1, 2024. As a result, the university's political support for Future Africa remains in flux. The evidence provided in this capstone project may speak to Future Africa's relevance to the next vice chancellor.

Finally, Future Africa's international advisory board gives the leadership team advice on program development and strategy. The advisory board imagines possibilities for growth but lacks the power to require the implementation of its suggestions. This capstone project may shed light on the advisory board's relevance and utility.

External Collaborators

South African agencies, such as the National Research Foundation (NRF), provide core funding for Future Africa's operations. The NRF, as the premier scientific research funding agency in South Africa and Africa as a whole, holds considerable power over Future Africa. However, transforming Future Africa into a pan-African platform may result in a shift in the NRF's power.

Beyond the NRF, South African-collaborating institutions hold significant power. These include other top-tier universities and research institutions in South Africa (e.g., Stellenbosch University, University of Cape Town, South African Medical Research Center). These institutions are currently enthusiastically supporting Future Africa through research collaborations and funding. Diversifying this group of collaborators into a representative African sample would alter how these institutions engage with Future Africa. National norms within South Africa's scientific institutions may not make sense to other African entities. Again, how Future Africa manages the change will influence the level of upheaval among collaborators.

The African Union and related entities, such as the New Partnership for Africa's Development (NEPAD) and the Pan African Parliament (PAP), have a vested interest in all platforms that seek to unite African excellence. Recognizing the need for African funding for research, education, and the sciences, the African Union—with funding from the African Development Bank—launched the Pan-African University (PAU) for Science, Technology, and Innovation in 2013; operations began in 2016 (African Union, 2018). PAU has regional research institutes in Algeria, Cameroon, Kenya, Nigeria, and South Africa. There is also a virtual institute. African scientific institutions, including PAU and other African science academies, research institutions, and grantmaking science councils, make up the bulk of Future Africa's institutional collaborators. This capstone team's recommendations may influence how Future Africa collaborates with these entities.

Finally, Eastern, Western, and multilateral funders approach collaborations differently. However, while Future Africa is financially and otherwise accountable to them, these funders are not. Informational and financial asymmetries pervade these relationships—an aspect this

capstone team examines in the literature review below. Recommendations for balancing these relationships could have an impact on Future Africa's funding levels.

Problem of Practice

How can Future African change its national identity to a Pan-African identity?

With only 52% representation from African countries in UP's funding partnerships and heavy representation of South Africans, Future Africa has yet to demonstrate a Pan-African identity and relevance to scientists across the African continent. But doing so is a prerequisite to its stated mission of being a Pan-African platform, and failing to do so puts Future Africa's credibility at risk. Without meaningful, consistent collaboration among African scientists from different parts of the continent, Future Africa cannot claim to provide an environment conducive for African scientists to solve African and global challenges.

How can Future Africa get African nations beyond South Africa invested in this endeavor?

In sharp contrast to the available talent and vision of its human resources, and the asset of the physical campus, the leaders of Future Africa grapple with financial sustainability and the inherited legacies of the organization's location in South Africa. Non-African entities provide a significant portion of its financial resource envelope; this poses three interconnected risks:

1. **Power:** Future Africa's reliance on external funding creates a potential power imbalance, risking the alignment of its mission with funders' often Western-centric priorities rather than its Pan-African mandate. To foster genuine Pan-African ownership and direction, the organization must actively cultivate trust and partnerships with other African nations and researchers. This requires demonstrating

a tangible commitment to a Pan-African vision through its everyday operations and decision-making, thereby attracting broader African support and reducing dependency on external donors.

2. **Sustainability:** Without a broad, primarily African funding base, Future Africa could cease to exist, should its non-African donors decrease or stop financing its activities. African donors would likely invest more in Future Africa's longevity than non-African funders, whose priorities change without warning. What is more, funding from within the continent, beyond South Africa, fosters a sense of African ownership of Future Africa.
3. **History:** As stated above, Future Africa, which is based at UP and branded as a UP initiative, has inherited a history of apartheid, racism, and xenophobia in South Africa (Gordon, 2023). UP's image as a historically White-only institution makes Future Africa's position more tenuous. Not only do non-White South Africans view it with suspicion, but Africans from other countries embed it within South Africa's brutal history and perceived hegemony as Africa's biggest economy. The fact that Future Africa's leadership team consists of South and Southern Africans calls into question its Pan-African credentials.

Fostering a strong sense of Pan-African identity and attracting investment from across the continent are vital to the success of the organization. Efforts to increase human and financial capital from within the continent can be mutually reinforcing, fostering sustainability and reducing dependence on external funds, which come with their own agendas.

Evidence of the Problem

Building a Pan-African identity requires collaboration across a large and diverse continent. Africa has 54 countries, each with unique perspectives, histories, and cultures. This diversity can make building a sense of shared identity difficult, especially given the historical tensions between some countries and regions. For example, scholars often view North Africa as historically related more closely to the Mediterranean and Middle East than to sub-Saharan Africa (Hillbom, 2023). Additionally, South Africa has low levels of "supranational identification with Africa" (Gordon, 2023, p. 1), possibly because of the country's history of racial segregation known as apartheid. Under apartheid, which existed from 1948 to 1994, the White minority took control of the government and denied the Black majority basic rights and freedoms (Majee, 2020). Although it ended in 1994, apartheid left a legacy of racialized educational inequalities and xenophobia. South African universities still maintain long-standing patterns of racialized educational inequalities that exist within a Western framework (Majee, 2020).

Apartheid did not affect only South Africans. In the battle to regain power, migrant workers played vital roles in maintaining South African gold mines (Majee, 2020). Neighboring countries also endured an apartheid military campaign to destroy the African National Congress and suffered USD 60 billion in damage to regional infrastructure (Majee, 2020). Anti-immigration sentiments within South Africa compounded the financial loss, stifling the economic development of neighboring countries (Majee, 2020).

Many of Future Africa's collaborators recognize the importance of building a unified African identity for the continent's future. However, discussions with representatives from

various sectors—including science academies, funding agencies, governments, nongovernmental organizations, and research institutions—across Africa, Europe, and North America also revealed ongoing challenges to achieving this unity:

1. Current practices around funding lead to intense competition among scientists.
2. Current employees of Future Africa are frustrated by the lack of participation from scientists beyond South Africa.
3. Representatives from outside organizations are hesitant to continue investing in Future Africa's Pan-African ideals without Pan-African results.

The overall implication is clear: entities in these sectors aim to protect African scientific endeavors from colonial and neocolonial influences, thereby maximizing the potential of African solutions to address African problems, free from Western priorities. These sentiments provide critical perspectives for conducting root cause analysis and better understanding Future Africa.

Literature Review

To better support Future Africa with this capstone project, our team conducted a inexhaustive review of existing literature on Pan-Africanism, intra-African development partnerships, coalition building, and national and international collaborations. This literature review situates Future Africa within the scholarship on these topics, enabling us to explore its potential role in effective, international science collaboration and how groups and individuals within collaborative organizations relate.

From the outset, the capstone team understood the inherent difficulty in merging these disparate strands of knowledge, so we limited ourselves to the literature that related directly to our problem of practice. That limitation notwithstanding, we balanced the strong and often

opposing ideas within each strand to balance our review and, subsequently, the conceptual framework.

The following questions provided useful parameters for our literature review:

1. What is Pan-Africanism?
2. What factors influence international scientific collaboration?
3. How do collaborative organizational identities and cultures emerge?
4. How can individuals from diverse backgrounds have a sense of belonging in the same organization?
5. How do diverse voices impact organizational/team effectiveness?

We chose to start with Pan-Africanism because of Future Africa's emphasis on its Pan-African identity and agenda. To start at the global level and work our way to Africa could have made sense, but we made an intellectual judgment to center Africa and its knowledge systems throughout our study. This intentional choice underscores the importance of uplifting African knowledge systems, particularly since the agents of colonialism and neocolonialism forcibly rendered African epistemologies irrelevant (Gwaravanda, 2017; Kumalo, 2017; Ndofirepi & Gwaravanda, 2019). As Gwaravanda (2017) argues, "mental colonization has caused underdevelopment in Africa, and genuine development can only be achieved after a rigorous mental decolonization exercise that recognizes the place and value of African indigenous knowledge systems" (p. 185). We had to guard against privileging Western or global thought in a quality improvement project for an African-based organization that desires, above everything else, to become a Pan-African entity.

What Is Pan-Africanism?

Historical Context

How people define *Africanism* differs based on place (intracontinental via diaspora) and time. The term *Pan-Africanism* emerged in the mid-19th century (Kuryla, n.d.) in North America as a philosophy to guide the liberation of the peoples of African descent in Africa and the diaspora, at different historical moments (Oloruntoba, 2015). This ideology served as a beacon of hope, action, and intellectual orientation to overcome the horrors of slave trade, colonialism, and racism (Dodoo & Donkoh, 2014; Oloruntoba, 2015).

Physician and journalist Martin R. Delany was one of the earliest proponents of Pan-Africanism; he popularized the slogan "Africa for the Africans" in support of mass emigration attempts in the 1800s. This slogan garnered attention, even capturing the support of Thomas Jefferson. Unfortunately, these efforts were ultimately unsuccessful, but they laid the groundwork for a resurgence in 1900 with the landmark convening of the first Pan-African Congress held in London, England. The tireless work of W. E. B. Du Bois and Marcus Garvey prevailed during this period; three more meetings were held before 1927.

The movement continued to grow internationally throughout the middle part of the century through the advocacy of groups such as the All-African People's Organization (Carlisle, 2008). The All-African People's Revolutionary Party was founded by Kwame Nkrumah of Ghana, who called for a Pan-African political union with "common foreign policy and diplomacy," a unified approach to economic and industrial development, a common monetary zone, and common currency (Dodoo & Donkoh, 2014, p. 152). Countries in favor of such a union included Ghana, Algeria, Egypt, Guinea, Libya, Mali, and Morocco. Countries opposed

included Senegal, Liberia, Nigeria, and most of the former French colonies. These countries favored a more gradual approach, as they were still dependent on France. Those in favor of the union came together in 1963 at the invitation of Emperor Haile Selassie of Ethiopia, and representatives of 32 countries signed the charter that created the Organization for African Unity (OAU) (Dodoo & Donkoh, 2014, p. 152). The OAU served as a platform for intra-African cooperation and self-determination in the postcolonial era between 1963 and 2002, drawing heavily on Pan-African ideals (Biney, 2008; Okhonmina, 2009). "By 1984, with the exception of South Africa, all fifty independent African states were members of the OAU" (Dodoo & Donkoh, 2014, p. 154). Its successor, the African Union, founded in 2002, serves as the 21st-century reincarnation of the OAU.

Contemporary Context

The definition of *Pan-Africanism* has evolved over time. Today, it frequently emphasizes unity of the countries on the African continent, specifically sub-Saharan Africa (Kuryla, n.d.). In contemporary Africa, Pan-Africanism has arguably become a call to action for Africans to resist Western domination, draw upon their indigenous knowledge to chart a common African path to progress, and understand their African identity as a source of humanizing dignity (Ayeni & Aborisade, 2022; Landsberg, 2019; Mungwini, 2017; Oginni & Moitui, 2016). South Africa, under democratically elected President Thabo Mbeki, championed these ideals. Mbeki articulated a vision for an "African Renaissance" (Landsberg, 2019), and South Africa became the champion for intra-African development partnerships and African leadership on the global level (Marumo & Chakale, 2018).

The commitment to Pan-Africanism continues. In 2013, the African Union committed to Agenda 2063: The Africa We Want, defining the Pan-African vision as "an integrated, prosperous and peaceful Africa, driven by its own citizens, representing a dynamic force in the international arena" (African Union Commission, 2015, para. 2). Similarly, in 2014, the African Union launched the Science, Technology and Innovation Strategy for Africa 2024. The strategy placed intra-African collaboration in science, technology, and innovation at the center of Africa's development (African Union Commission, 2014). These initiatives demonstrate the enduring influence of Pan-Africanism on African development strategies.

Future Africa's mission aligns seamlessly with these Pan-Africanism aspirations. Its focus on intra-African partnerships connects to the continent's historical liberation struggles and contemporary development challenges. In this sense, Future Africa embodies the West African philosophy of *Sankofa*, which calls upon Africans to understand their histories on their own terms as the basis of their present and future developmental plans (Donadey, 2024; Kissi, 2018). As Jackson (2020) explains, "the word 'Sankofa' can be broken down into three syllables—'san' (return), 'ko' (go), and 'fa' (take)—that can be translated into 'go back and take it,' or more philosophically, go back to learn" (p. 104). Similarly, in Kenya, Ngũgĩ Wa Thiong'o (2009), known as East Africa's leading novelist, recast Sankofa as putting together the dismembered parts of Africa and Africans. Through contextually relevant learning, Sankofa makes Africa and Africans whole again after traumatic engagement with non-Africans (Kumalo, 2017; Mbembe, 2020).

Even with the positive sentiments around unifying the population, there are some critiques of Pan-Africanism. It is critical to note that the term's origin outside the continent has contributed to some criticism. Langlois (2019) posits that Pan-Africanism advances a "single

system of thought representing all African societies" developed by Western academics (p. 21). Rather than establishing an appreciation for individual communities and societies, Langlois argues that Pan-Africanism can lead to stereotyping. Some countries in the 1960s echoed this sentiment, cherished their new independence, and refused to relinquish their status, even within the continent (Dodoo & Donkoh, 2014, p. 157). Moreover, the Pan-African movement's leaders have historically faced some suspicion for their perceived greed and/or power-hungry nature (Dodoo & Donkoh, 2014, p. 157). Another critique of Pan-Africanism is that the African Union has not been able to unite countries across the five recognized regions (Dodoo & Donkoh, 2014, p. 162). As a result, future discussions on Pan-Africanism must navigate these complexities to ensure the term remains a unifying force for African progress.

Defining Pan-Africanism

Dodoo and Donkoh (2014) highlight that Pan-Africanism includes intellectual, political, economic, and cultural cooperation that would form the basis of African unity (p. 151). Although Pan-Africanism is a stated objective in Future Africa's organizational artifacts, it is not defined explicitly in those documents, and existing definitions vary. Thus, our team developed a working definition: *Pan-Africanism* denotes a philosophy and generative practices of solidarity among peoples and cultures of African descent.

What Factors Influence International Scientific Collaboration?

This capstone study focused on collaborations among African scientific institutions and entities in the Global North and Global South. Acknowledging that African science systems operate within a broader global science system, globalization influences international scientific

collaboration on the African continent (Adams, 2013; Subramanian, 2020; Wagner et al., 2015). This section focuses on some specific science collaboration issues in the African context.

North–South Collaborations

North–South science collaborations have existed for decades, bolstered by rapid globalization (Subramanian, 2020). These collaborations result in global public goods, globally credible knowledge, and greater international cooperation (Coccia & Wang, 2016). In fact, at the height of the Cold War and immediately afterward, collaborations between American and Russian scientists averted nuclear war and stopped terrorists from acquiring nuclear weapons (Rubinson, 2018).

In the wake of the COVID-19 pandemic, unprecedented international scientific cooperation led to the rapid development of preventive and therapeutic remedies to a global challenge (*Nature*, 2024). Even with the present geopolitical tensions, collaborations among scientists from warring parties remain relevant, especially given such global challenges as climate change (Büntgen & Rees, 2023).

Placing international science collaborations within a historical context unearths several dynamics that enable and hinder collaborating entities from meeting their stated goals. As a legacy of colonialism, “colonial histories and sentiments” manifest in current collaborations (Ticktin, 2014, p. 282). Even when African entities collaborate with noncolonial partners in the North (e.g., Scandinavian countries), power imbalances, the purported superiority of Northern knowledge, and dehumanizing practices still occur (Adriansen & Madsen, 2019; Lowe & Manjapra, 2019). These imbalances are amplified by the fact that colonialism and the enslavement of Africans enabled the development of the West, fueling the agrarian revolution of

the Americas and the industrial revolution of Europe (Dodoo & Donkoh, 2014, p. 157), followed by the contribution of African minerals to the development of Western technology. Additionally, African countries continue to be robbed of skilled human resources when scholars and professionals leave the continent to pursue economic opportunity (Dodoo & Donkoh, 2014, p. 157).

South–South Collaborations

South Africa's neighbors in the Southern African Development Community (SADC) feel as though South Africa has not acknowledged the pivotal role of those neighboring countries in dismantling apartheid. The SADC's contributions include supplying migrant labor in the mines, supporting the struggle against apartheid, and enabling South Africans to profit from investment in their countries (Majee, 2020). Empirically, South Africa demonstrates low levels of "supranational identifications," with xenophobia and racism as lingering symptoms of apartheid (Gordon, 2023, p. 1).

Researchers found that factors like frequent cross-border interactions, positive historical evaluations of the continent, solidarity with Black communities globally, and faith in national leaders influence citizens' sense of belonging to Africa (Gordon, 2023). The ability of collaborative partnerships to generate new knowledge is correlated with procedural fairness, trustworthiness, level of scientific certainty, and diverse participation (Leach et al., 2014, p. 591).

Other organizations have experienced challenges when trying to foster international collaboration. For example, the Adolescent HIV Prevention and Treatment Implementation Science Alliance (AHISA) identified primary challenges to international collaboration: capacity building, developing mentorship, engaging collaborators, support for training efforts, and

funding for region- or country-specific networks that respond to local issues and increase implementation of science capacity across sub-Saharan Africa (Sturke et al., 2020). AHISA found success by empowering partners with a local geographic focus.

South–South science collaborations have also failed to achieve their goals partly because of the scientific systems they inherited during colonial times. The modes of learning, success, and knowing all mirror Northern ways. In this context, a South–South collaboration comes under the guise of doing better than a North–South collaboration while perpetuating colonial asymmetries of power, money, and information (Dutta et al., 2021). Within these arrangements, colonial practices thwart any chance of creating valuable outputs for collaborators (Kontinen & Nguyahambi, 2020).

Despite the negative histories of science collaborations in Africa, we glean from them some necessary conditions for collaborations that chart a new, more humanistic paradigm.

Success Factors for International Science Collaborations

Scholarly literature provides useful entry points for focusing on the factors that accelerate or make international science collaborations successful. These points provide an understanding of collaborations that we can apply to Future Africa's specific case. In particular, the literature highlights factors that lead to equitable collaborations. Not every aspect applies to Future Africa (as we will see in our findings and recommendations section), but we learn a lot from situating our exploration in a global context.

Voller et al. (2022) argue for the co-creation of research agendas among all participants in an international science collaboration. Co-creation can explicitly include the communities in which the challenges exist, making the resultant solutions readily accessible and relevant to the

intended beneficiaries (Faure et al., 2021; Reddy et al., 2018). Shackleton et al. (2023) emphasize one of the benefits of taking a transdisciplinary approach to research in Africa:

> This requires building relationships within the TD [transdisciplinary] space—with knowledge-holders and users, communities, and policy makers—through networks and innovative third spaces that are accessible and nonthreatening and that allow for expression of different actors' perspectives, knowledge systems, needs, and interests. Such safe spaces also provide the opportunity to work through identity politics, gender issues and power dynamics all of which can act as hindrances to transformative change. (p. 12)

From program conception to implementation and evaluation, each participant's value contributes to the collaboration. When agreed-upon international guidelines for science collaborations exist (e.g., the Commission for Research Partnerships with Developing Countries guide for transboundary research partnerships and the Research Fairness Initiative implementation guide), they should inform how collaborators come together to address a given challenge (Voller et al., 2022).

Spreading power across all parties fosters international scientific collaboration that uplifts, recognizes, and encourages the voices of all parties to work toward creating a sense of distributed power (Faure et al., 2021; Vieira, 2022). A balance of power in which all parties feel heard and valued creates both a sense of belonging among involved parties and co-ownership of all the outcomes of a collaboration (Asare et al., 2022; Shackleton et al., 2023). Such a balance becomes more important in transdisciplinary research (Shackleton et al., 2023):

> These power relations often dominate the problem-framing process and prioritizing activities and outputs. Creating novel and safe spaces for collaboration with external actors is critical to fostering TD work. (p. 10)

Collaborations that remain sensitive to power imbalances and address them through corrective measures create optimal conditions for achieving collective goals (Lobo et al., 2023).

As discussed in the next section, *Ubuntu*, "an African communitarian ethic and a theory of justice and fairness" (Munung et al., 2021), has the potential to embed humanistic practices in science collaborations in Africa. "Ubuntu focuses on communal harmony and emphasizes the collective construction of knowledge in Africa. Humanness and becoming human are the results of everyday knowledge creation and knowledge building founded on the concept of Ubuntu" (Borti et al., 2024, p. 3). Because Ubuntu is a ubiquitous concept and practice in various African cultures, it presents an opportunity for collaborators to ground their work in a concept that instinctively makes sense in the African context (Borti et al., 2024; Mabele et al., 2022). If the collaboration aims to impact African communities, Ubuntu offers an accessible pathway for contextually operationalizing the scientific solutions that emerge from international engagements.

Clarity and mutual agreement on funding modalities and decisions promote international science collaborations. Scientists from wealthy (mostly Western) nations can easily control programs that take place in Africa without the input of their African colleagues (Faure et al., 2021; Munung et al., 2021). The ease of control comes at a steep cost in the form of mistrust and hesitation to candidly engage in international projects. To remedy this situation, in the co-creation stage, collaborators who openly discuss money and financial decision-making upfront have an opportunity to build trustworthy relations that, in turn, galvanize all parties to work towards a common goal (Shackleton et al., 2023).

African governments and businesses have a responsibility to fund research to promote national and continental pride. Funds flowing into Africa from external sources to solve African problems present a problem of long-term dependency, which reinforces existing power imbalances (Arvanitis et al., 2022; Faure et al., 2021; Lobo et al., 2023). National and continental

funding contribute to balancing power dynamics and ensuring that programs continue should external funders abandon a collaboration (Kizza et al., 2024).

How Do Collaborative Organizational Identities and Cultures Emerge?

Through initial investigations into fostering collaborative organizational identities, the capstone team encountered various theoretical frameworks and philosophical concepts. These diverse perspectives offer valuable insights into cultivating collaborative environments, each illuminating distinct aspects of the phenomenon.

How Can Individuals From Diverse Backgrounds Have a Sense of Belonging in the Same Organization?

Ubuntu, Sense of Belonging, and Identity

The natural fibers of Ubuntu are rooted in African philosophy, which emphasizes the interconnectedness of an individual to a community and the community to the individual. It comes from a Nguni proverb, "*umuntu ngumuntu ngabantu*," which means, "A person is a person through other persons" (Mutsonziwa, 2020, p. 14). In Ubuntu, the individual and community operate as one and the same (Aliye, 2020). Creating a sense of belonging and identity within a Pan-African frame fosters interconnectedness.

Nansubuga and Munene (2020) clarify the notion of community implied in Ubuntu to caution against viewing Ubuntu as a homogeneous manifestation; rather, diverse cultures practice it in their nuanced ways: "the Ubuntu principles are highly exclusive as they are embedded in a particular group or community that shares the same characteristics. It is also known that Ubuntu believes in the coexistence of others and the interconnectedness among people" (p. 110). Given these cautionary remarks, we must take great care in applying Ubuntu to

specific organizational contexts. In so doing, we notice narratives that emerge as organizational actors interact with each other in their specific context. Stories play a key role in bringing Ubuntu into daily organizational practices (Nansubuga & Munene, 2020). In particular, success stories create bonds of trust and psychological safety among organizational actors when they work together toward a common goal (Molose et al., 2018). The collective success of the organization takes precedence over individual accolades (Heinecke-Müller et al., 2022).

The leadership style of those in charge of an African organization plays a crucial role in embedding Ubuntu tenets of respect, compassion, fairness, dignity, and care for others and community (Laloo, 2022). A leader who intentionally assumes the role of a "servant leader" models these tenets for the employees in their care. The leader's model informs the workplace culture of an organization and increases interpersonal relationships and job satisfaction, while decreasing turnover and workplace anxiety (Mabaso et al., 2024; Molose et al., 2018). Chetty and Price (2024) refer to this type of leadership as "Ubuntu leadership" in their study on South African workplaces:

> Ubuntu leaders actively listen to others, valuing their perspectives and ensuring that every voice is heard and respected. This culture of collaboration and respect has a direct impact on employee satisfaction and commitment to the organization. (p. 2)

In many ways, Ubuntu leadership calls for an ethic of care (Molefe, 2019; Noddings, 1992) for the leader and other organizational actors (Mabaso et al., 2024). Compassion, support, and empathy for one another within an organization characterize an ethic of care (Ramnund-Mansingh & Naidoo, 2023).

Ubuntu places interconnectedness, respect, and fairness at the core of any developmental partnership (Voller et al., 2022). Without these three characteristics, actors involved in a partnership cannot work with each other on the basis of trust. They have no sense of belonging to each other or their purported partnership. A sense of belonging is further inhibited when the actors do not co-create the program based on mutually beneficial priorities (Voller et al., 2022). The idea of co-creating knowledge and programs becomes central to any partnership, as it grounds any project in the contextually relevant experiences of the communities served (Adelle, 2019).

Moreover, Ubuntu offers an African framework for managing change. Mangaliso et al. (2022) describe it best:

> In most organizations, the motivation for change is based on seeking improvement in the traditional metrics of organizational performance, such as production efficiency, market share growth, and profitability. In sub-Saharan African countries the traditional values of solidarity, group well-being, social harmony transcends the former. (p. 1044)

Ubuntu provides renewal for African organizations without relying on an external (e.g., Western) knowledge system or management wisdom (Chinoperekweyi & Trottier, 2024; Nansubuga & Munene, 2020). An entity can remain uniquely African through different stages of its evolution. In fact, even if it has situated leadership, management, and operation processes in non-African knowledge systems, it can summon Ubuntu to form, reform, rejuvenate, and sustain its uniquely African identity. In a university setting, for example, Ubuntu can provide ways to manage conflict that comes with change management while centering a common purpose, care, and togetherness (Omodan, 2022).

How Do Diverse Voices Impact Organizational/Team Effectiveness?

Diverse teams improve organizational performance. According to Sendze (2023), "Diverse teams create more innovative products, achieve higher performance, produce up to 41% greater returns on shareholder equity compared to non-diverse teams, and increase shareholders' profits" (p. 378). Diverse voices play a crucial role in driving innovation and improving research outcomes. Research demonstrates that over time, individuals in groups tend to conform to majority perspectives (De Dreu & West, 2001).

However, introducing diverse perspectives can disrupt this status quo and lead to greater innovation (De Dreu & West, 2001). Within the academic community, greater creativity and problem-solving ultimately lead to higher-quality research, which, in turn, attracts greater funding opportunities (Liao, 2010). Notably, organizations need to develop an "absorptive capacity" to recognize and leverage the value of new information for maximum benefit (De Dreu & West, 2001, p. 1192). *Absorptive capacity* is the ability to "recognize the value of new information, assimilate it, and apply it," which can be fostered through participative decision-making (De Dreu & West, 2001, p. 1192).

Extrapolating this concept to the national level, international collaboration unlocks a broader pool of insights and expertise than do collaborations within a single country (Frenken et al., 2010, p. 354). This broader perspective fosters further innovation and strengthens research endeavors. Both international and intra-African collaboration could help Future Africa develop.

Conceptual Framing

In order to become a truly Pan-African organization, Future Africa needs to focus on its organizational identity, bringing with it a connection to the past (Sankofa), and fostering interconnectedness (Albert et al., 2000). To apply the literature review to Future Africa, a blend of Ubuntu and Sankofa based on African knowledge systems provides an appropriate framework to better understand which pathways may lead to Future Africa's sustained growth and impact. This blend aligns with the Pan-African vision of Future Africa and limits the risk of applying a borrowed framework from other continents to an African organization.

Ubuntu, the African collectivist theory that fuses an individual with a community, demands that individualism be abandoned as we explore Future Africa. Sankofa, the African philosophy of ensuring that Africans remember their history as they move into the present and future, grounds our study in traditional African wisdom and speaks to Future Africa's Pan-African ethos. These concepts enabled our team to consider Future Africa using ideas readily available in its context.

Three concepts shaped the capstone team's conceptual framework: a shared view of Pan-Africanism, a sense of embeddedness and belonging, and collaborators' metrics for success provide. These concepts, which each rely on the practice of Ubuntu and Sankofa, will foster the emergence of a truly Pan-African platform for collaboration (see Figure 2). At the outset of our qualitative study, our research propositions included:

1. Future Africa's mission resonates with its collaborators, internal and external, when they collectively have a shared view of Pan-Africanism.

2. Future Africa gains relevance across Africa when African scientists possess a sense that they have a stake in Future Africa. For internal collaborators, this sense presents as a feeling of embeddedness within the organization. For external collaborators, it presents a feeling that Future Africa embraces them regardless of nationality.
3. A consolidated set of metrics to gauge Future Africa's success in the medium term will provide a roadmap for the organization's improvement.

Figure 2

Sankofa and Ubuntu Are Fundamental to Pan-Africanism

Note. Imagine a Baobab tree, also known as the "Tree of Life." It possesses a strong root system (identity) that nourishes a vast, interconnected tree (Africa). The branches (individual nations/communities) may look different, but they share the same roots and a sense of belonging to the greater tree. Ubuntu represents the sap flowing between the branches, ensuring the health of the whole tree. Sankofa reminds us to learn from the soil's history (past) to nourish the tree's growth (future). Finally, Pan-Africanism represents the collective effort to ensure the entire tree thrives.

Project Questions

Given the preceding literature review and conceptual framework, we now present the questions that guided our study. These questions were co-created by the capstone team and Dr. Heide Hackmann, Director of Future Africa.

1. What barriers and nourishers influence intra-African engagement for scientists beyond South Africa with Future Africa?
2. What social, cultural, political, and economic factors foster Pan-African collaboration among scientists?

Project Design

This capstone project investigates barriers and nourishers that foster Pan-African collaboration among scientists within Future Africa. It aims to provide Future Africa with a thorough contextual understanding of stakeholder perspectives and will provide actionable recommendations as it evolves into a mature organization. Now that Future Africa has embarked on a strategy-formulation process for the next 5 years, our recommendations on this worthy topic may provide crucial insights to contribute to its sustained success and growth in the years to come.

The study used a multimethod qualitative approach with the collaborator group as our unit of analysis. Originally, we anticipated conducting a survey and qualitative interviews, but we determined that qualitative interviews, focus groups, and document review would provide the most effective means of data collection. We opted for qualitative interviews, informed by the understanding that stories and storytelling make up a significant knowledge translation method in African tradition, which holds stories and knowledge as inseparable (Mayanja, 2021). This

approach allows participants to share their experiences and perspectives in a richer, more nuanced way than with quantitative methods. To acquire these stories, we conducted a series of semi-structured, empathy interviews from a range of participants to ensure rich rigor (Tracy. 2010)

We conducted a document review using a combined document analysis and content analysis approach to develop interview protocols and gather contextual information from organizational documents, Future Africa's website, and publicly available media sources about science collaborations in Africa.

We employed member checking to ensure the credibility of our findings. This portion of the project involved circulating interview transcripts with participants for verification. We also conducted focus group discussions with internal stakeholders to present our initial analysis and collaboratively refine our understanding with our interviewees. This multimethod, qualitative approach enabled us to explore and compare stakeholder perspectives on Pan-African collaboration with Future Africa's official stance as outlined in its publications and UP's governing documents. This informed recommendations for fostering a collaborative environment that aligns with Future Africa's strategic goals.

Data Collection

Participants

We planned to interview 20–30 individuals from various locations, roles, and organizations to ensure a wide range of experiences. We attempted to recruit 37 people for initial interviews, but ultimately interviewed 33 participants (89% response rate; see Table 2). We omitted two transcripts from our analysis due to technical issues but maintained field notes from

the conversations. To capture, multivocality, in this case, a diverse representation of members of the science community within Africa, we recruited participants from different geographical locations in Africa, a range of ages, and different ethnicities.

We drew our participants from samples of three populations:

- Future Africa staff (*N* = 18):
  - Support staff: Staff members who work on the physical campus who are either employed by UP or contracted through a third-party organization
  - Leadership team: Full-time staff members who are either employed by UP or the University of Cape Town
  - Fellows: Full-time graduate fellows who reside on Future Africa's campus
- External collaborators (N = 10): People who relate to Future Africa through their work within the ecosystem of African scientists and reside within the continent, including those associated with funding partners.
- Potential collaborators (N = 5): African scientists or other transdisciplinary academics that work in organizations supporting science in Africa that aligned with the five challenge domains but are not yet formally engaged with Future Africa

To honor the importance of land and nature in relation to people (Mayanja, 2021), the team traveled to the campus in Pretoria, South Africa. Christian Acemah ensured that the team incorporated some cultural elements into the interview process, including the use of titles (e.g., addressing someone as "Professor" in lieu of their first name) and offering participants food and drink to establish rapport. While we strove for sincere engagement with African Indigenous Knowledge Systems (AIKS) and practices, which embrace communal, relational, spiral, and multidimensional methods (Mayanja, 2021), we acknowledge that we were still largely operating

within Western methodologies. We have strived to be transparent about the processes we used in order to mitigate biases and assumptions inherent in the perspectives of two of the three researchers.

Prior to our visit to Future Africa's campus, we sent an advanced summary introducing ourselves and outlining our objectives through the director and her assistant to members of the organization. While on site, we used a voluntary response strategy. Fortunately, with the director's endorsement, we interviewed the entire leadership team—the director, deputy director, and research chairs—at various points throughout the project. We also interviewed a sample of full-time staff members, including those who work on support services (e.g., facilities management and restaurant) and those who work on the research arm. We also contacted research fellows who reside on campus. The number of people on site depended on individuals' desire and availability. We scheduled virtual interviews with participants who could not meet us on campus due to scheduling constraints.

We also used a voluntary response strategy to create a sample of external collaborators. We recruited participants using the Uganda National Academy of Sciences, International Science Council, and Future Africa collaborator lists. The list identified 41 people as representatives of various scientific organizations. It included current and active contributors to the science field and noted their country of origin. We interviewed individuals from South Africa and those who reside in other countries within Africa. Acknowledging the limitations of a voluntary response strategy—including bias from strong opinion, potential errors in data quality, and lack of representation—we elected to interview all Future Africa personnel in the leadership team and requested recommendations for others who would likely speak from diverse perspectives based on their backgrounds.

Table 2

Accounting of Interviews and Focus Groups Conducted for This Study

Initial Interviews	Omitted Transcripts (Technical Issues)	Additional Interviewees	Member Checking 1:1	Member Checking Focus Groups
31	2 (1 internal staff, 1 potential collaborator)	2	6	1 group 2 participants 2 groups; 3 participants

Interview Plan

Interviews "provide deep, rich, individualized, and contextualized data" (Ravitch & Carl, 2021, p. 124). The capstone team felt that interviews would allow us to develop detailed descriptions of multiple participant experiences in context (Ravitch & Carl, 2021), so we placed a lot of emphasis on the creation of interview questions. We took Ravitch and Carl (2021) seriously when they said, "The research design does not matter unless you, as the researcher, approach the data collection process with the understanding that people are experts of their own experiences" (p. 120). As much as we had an intellectual capstone project to complete, we also wanted to remain open to the possibility of connecting with other people through our shared humanity. As Paris and Winn (2013) advised, we had to do our best to co-create opportunities to engage in "projects in humanization," given the dehumanizing legacies of colonialism, neocolonialism, and apartheid.

We utilized a semi structured interview format, aiming for a balance between structure and flexibility (Ravitch & Carl, 2021, p. 125). We anticipated that each interview would last 45–60 minutes. The interview mode depended on the participant's availability. In-person interviews took place in Pretoria, South Africa, primarily on the UP campus. We conducted remote

interviews via Zoom. With each interviewee's permission, we recorded and took field notes for both in-person and virtual interviews. Recording allowed us to use technology, specifically TurboScribe, to create transcripts, and record real-time observations for the data book. If not permitted to record, we had planned to write the transcripts and relevant notes and compare them during a debriefing period following the interviews. Fortunately, all participants agreed to recordings. We elected to obtain voluntary informed consent verbally to use an Ubuntu-informed and situated relational approach to obtaining consent (Ewuoso, 2021; Klykken, 2021; Mayanja, 2021).

We developed the base questions outlined below, but in tradition with qualitative interviews, we customized follow-up questions to capture a range of experiences and look for connections. Also, we tailored the questions to the roles, experiences, and vantage points of the participants (Ravitch & Carl, 2021, p. 124). The questions focused on Pan-Africanism, sense of belonging, and collaboration. When appropriate, they provided opportunities for participants to make Future Africa recommendations.

The interview questions (see Table 3) consisted of grand-tour, descriptive, and contrast questions. We developed these questions based on interactions with the then-director of Future Africa, Dr. Heide Hackmann, and information-gathering interviews with leading African scientists, which allowed us to pilot and refine the questions to focus specifically on Pan-Africanism.

Table 3

Capstone Teamôs Interview Questions

Interview Question	Area Explored
Please tell us about yourself and your professional background?	Background
How did your professional life and work lead to connecting with Future Africa?	Background
When did you connect with Future Africa and what is your role here / relationship?	Background
What individual characteristics do you think are important for scientists to bring to create a collaborative environment?	Collaboration
Can you describe the most impactful/positive experience you collaborated on as a science leader?	Collaboration
Can you describe any institutional barriers when creating collaborative/ programmatic partnerships and how you overcame them (if at all).	Collaboration
Are you familiar with Pan-Africanism? If you are familiar with it, how would you define it? Based on your definition: What does Pan-Africanism look like and feel like now? In a perfect/ideal world without any constraints would it look like and feel like?	Pan-Africanism
What do you think might nourish or create barriers to achieve Pan-Africanism?	Pan-Africanism
More specifically, how do you feel about Future Africa's progress toward becoming a Pan-African organization?	Pan-Africanism
1. In what ways are they achieving?	Future Africa
2. What are Future Africa's biggest challenges in enacting a Pan-African organization?	Future Africa
3. If not the organization, what are some of the barriers, institutional, national, and international levels that impede increasing Pan-Africanism?	Pan-Africanism
4. What recommendations would you give to increase Pan-Africanism within Future Africa?	Pan-Africanism
In your own words, how would you define a sense of belonging? Inclusivity?	Ubuntu/Sense of Belonging
To what extent does Future Africa create a sense of belonging/ inclusivity among scientists?	Ubuntu/Sense of Belonging
Do you think scientists feel an equal sense of belonging? If not, what creates scientists feeling more or less like they belong in Future Africa?	Ubuntu/Sense of Belonging
In what ways can Future Africa, increase the sense of belonging to scientists who are part of their network?	Ubuntu/Sense of Belonging
What are some suggestions/recommendations of how to recruit and engage new scientist collaborators to Future Africa?	Ubuntu/Sense of Belonging
What do you see as the promise of Future Africa? Where do you want to see it in 3-5 years if it was successful?	Future Africa
What is needed to reach Future Africa's fullest potential?	Future Africa

To explore themes, we gathered demographic data such as country of origin, country(ies) of schooling, age, race, and gender. Information around origin and schooling is critical for exploring the representation of the continent in an organization that wants to unite scientists

across the continent. Information around age and race will be used to aggregate information and explore whether the opinions of those born post-apartheid ("born free") differ from those who lived through it. We only collected gender data to identify any potential trends in the responses. For further information on participant data, please see Knobel Green (2024b).

Data Analysis

After transcribing the interviews using TurboScribe, the capstone team reviewed them for accuracy and to become familiar with the data. The team conducted most interviews together. When a team member was not able to attend an interview, we strived to assign the absent member the transcript for that interview, to establish descriptive validity, or the factual accuracy of the data (Ravitch & Carl, 2021, p. 172). We also offered a transcript review (discussed further in the validity section).

To establish dependability, consolidated general observations, notes on physical demeanor, and powerful quotes and statements from field notes into data memos. After cleaning the data and compiling the initial memos, we conducted an abductive approach to data analysis. This means we identified themes and codes as they emerged from the data (Bingham, 2023) and identified how they aligned with what we knew about existing theories (Timmermans & Tavory, 2012). Memos were consolidated via an Excel file on Google Drive. These memos consisted of the key observations and important quotes mentioned above but were expanded to include "buckets," using research questions as an organizing framework and identifying emerging themes that fit within them (e.g., collaboration and barriers/nourishers). Although the memos were divided among the researchers, every researcher was encouraged to add their observations and takeaways to the consolidated memos for each participant. The collaboration in this

document enabled us to organize data and enabled coding areas to evolve during first- and second-cycle coding. Additionally, the collaboration addressed confirmability, allowing for inter-rater reliability checks.

The first draft of the codebook was based on emerging themes identified during the familiarization process. The second draft of the codebook was created by nesting these themes within the research questions (e.g., statements relating to visas were an emerging theme that were often cited as barriers to international collaboration based on the "political" factors at play). The final version of the codebook was created in MAXQDA using AI Assist to suggest new codes on samples of transcripts and determine if they were frequent enough to suggest additions or revisions to existing codes. Initially, interviews were coded manually by two researchers; round two and three coding took place in MAXQDA. We mapped the findings to our conceptual frame to aid us in responding to our research questions.

Plan for Trustworthiness

To establish credibility, we employed triangulation, combining theoretical and empirical data. Theoretical validity was grounded in the selection of relevant frameworks (Ravitch & Carl, 2021, p. 173), specifically Ubuntu, Sankofa, and a sense of belonging. Dr. Mutsonziwa's (2020) Ubuntu scale, operationalized through 82 indicators, further refined our conceptual lens. By interviewing over 30 participants, we sought to achieve perspectival triangulation. As data analysis progressed, we continued to refine our understanding of these concepts through a process of crystallization. Crystallization encourages researchers to continue to develop nuanced, multifaceted understanding of a worthy topic, as opposed to a "singular truth", while also acknowledging that their viewpoint is partial (Tracy, 2010, p. 844).

During our project, we utilized member checking twice. First, after the interview was completed, we sent an email to all participants, asking them whether they would like to review the verbatim interview transcript for accuracy. We offered the option to respond via email or to schedule a virtual meeting to submit any additional commentary or dispute any data. Six participants requested copies of their transcripts, which were delivered via email. Then, when we synthesized the data into initial findings, we used member checks in the form of in-person focus groups at Future Africa's campus. This interpretive method allowed us to confirm/disaffirm initial findings and provided some new data constructed in a new social setting. We acknowledge that some challenges come with the focus group setting, including the possibility of group or researcher coercion (Birt et al., 2016, p. 1804). We also ran individual member checks with our primary collaborator (in person) and two field experts (via Zoom) using synthesized analysis. These forms of member checking allowed us to refine our understanding with collaborators and align with our focus on the co-construction of recommendations. We do not anticipate generalizing the results beyond the participants of this qualitative study but some of the insights on international science collaboration and Pan-Africanism are transferrable to similar contexts where there is a focus on building inclusive and equitable partnerships.

While the data collected answered our project questions, we encountered some challenges. These included modifications to data collection protocols that resulted in nonstandard questions being asked of several participants. Some of this was due to time constraints, in which researchers had to prioritize specific questions over others in order to obtain the information most relevant to our project questions. Fortunately, the question structure often prompted respondents to share stories that addressed even unasked questions. Additionally, we experienced technical issues with the recordings during three interviews. One was resolved by obtaining the

participant's consent to re-record. Comparing the re-recorded interview with detailed notes revealed no significant deviations from the initial responses, even though the participant was aware of the questions. Another participant elected to refrain from having their transcript included. The final participant did not have the availability to re-record, so we relied on notes taken during the interview. We expect that these measures will have no negative impact on our ability to answer the project questions or the credibility of our findings.

Findings

When the capstone team explored the data in detail, the findings did not fit into the four deductive categories—sociocultural, political, economic, and organizational—that originally guided our data analysis. To maintain fidelity to the data, we explored the source of the incongruity. As we abandoned the four categories, we discovered five interwoven and crosscutting themes in the data: transdisciplinarity, Pan-Africanism, Sankofa, Ubuntu, and neocolonialism. This section represents our best attempt to make sense of these themes.

Finding 1: Interviewees agreed unanimously that Pan-Africanism is a unifying mindset and practice and that the tenets of Sankofa and Ubuntu are nourishers. However, internal and external collaborators do not have a shared definition of Pan-Africanism.

According to our interviews, Pan-Africanism recognizes the shared history, common development goals, cultural similarities, and collective potential of African peoples to work together to address their common challenges. Key aspects of Pan-Africanism that appeared in the data include:

- Fostering collaboration, technology transfer, and science–policy integration across Africa
- Developing African-led and Africa-based resources, expertise, and initiatives to reduce dependence on external support

- Promoting an African identity, unity, and representation on the global stage
- Transcending colonial-era divisions and boundaries to integrate the continent
- Centering African values, cultures, and perspectives as the foundation for development
- Enabling Africans both within the continent and in the diaspora to interact, network, and work towards shared goals
- Emphasizing collaboration and collective action as means to increase impact, access resources, and achieve greater progress than is possible with individual or siloed efforts
- Including political dimensions as well as economic, scientific, and cultural cooperation and integration
- Overcoming entrenched administrative and policy barriers, as well as the legacy of colonialism and external influence that has shaped African development
- Proponents call for a revitalization of Pan-Africanism that is inclusive, centers the African voice and perspective globally, and promotes equity and empathy.

Every participant, when asked to define Pan-Africanism, provided an answer, most of which included keywords such as: unity, collaboration, equity, and equality. There were nuances in the definitions, with some participants sharing historical context and narration of the definition, and others providing a very short, sentence-length definition. Participants expressed varying levels of confidence in their definition. Those who were most nervous were primarily the employees of Future Africa's physical campus. This was apparent in the way they asked clarifying questions or required additional scaffolding for the questions, particularly contextual questions on concepts.

One definition, shared by an external collaborator, encompassed themes we observed:

> Pan-Africanism is about understanding that due to our shared history, and especially the history of disruption in our way of life by colonialism, and all sorts of stories that are told about us as Africa, as though we were one. Because of this, we really could be much stronger together than the way we behave separately and try to keep our resources to ourselves and our knowledge to ourselves and be in competition with one another.

In our interviews, 47% of participants' answers emphasized historical context, using keywords such as *history*, *traditions*, *values*, and *roots* in the discussions around the meaning of Pan-Africanism and how Future Africa can accomplish this mission. Specifically, *Sankofa*, looking to one's history to inform one's future, appeared as an in vivo code in one interview, illustrating how Sankofa can help unite scientists across Africa:

> We do not know that we as Africans led the world in many ways before colonialism. We had advanced ways of dealing with our medical problems, we had advanced ways of trading with one another, we had advanced ways of educating and bringing up children and political and government systems. . .. So I think that disorientation that, you know, when you're trying always to be like others, one, you'll never succeed in being like the other because you're not the other, and at the same time, it is the opportunity of being who you could be if you could embrace yourself, your roots, how you responded to your environments.

When discussing the meaning of Pan-Africanism, two participants in the data set had an in vivo code and referenced *Ubuntu*, meaning "a person is a person through other persons," while 89% of participants mentioned at least one of the tenets of humanness, compassion, and interconnectedness. One external collaborator makes the explicit link between Pan-Africanism and Ubuntu:

> The ideals of Ubuntu, the ideals of the Africa we want, the ideals of community, the ideals of peace and unity and really being rooted in an Africa that is independent for thought, politically, economically. An Africa that is independent and is able to chart its own pathway without all of those. Especially the mental hindrances of whether we can do it or we can't do it as Africans. I believe in all of my being that I am an African that believes and lives in the ideals of Pan-Africanism.

While 100% of our interviewees believed that the Pan-African concept could unite the continent, they identified two critiques and cautions when defining and conceptualizing this ideal for Future Africa. One external collaborator noted, "My critique about our current engagement with Pan-Africanism is that we try so hard to juxtapose it against patriarchy or on patriarchy and on capitalist ideas on the continent that simply do not work." This participant went on to suggest that instead of continuing down the path of capitalism, we should consider the historical Africa that was collectivistic and maternalistic in order to reimagine the path forward.

In addition, another interviewee noted, "Africanism is something for the rest of the world to listen [to] and that's having the strength and courage to recognize all humanity derives from Africa. Our origin as a species is on this continent." This critique did not specifically target the concept of Pan-Africanism; rather, it advocated for a global reorientation towards Africa, acknowledging the continent was the birthplace of flourishing civilization.

Finally, we wanted to explore how Future Africa as an organization has defined Pan-Africanism in their written content and compare it with our interviewees' definitions. When we completed our document review, we noticed that, although its landing webpage describes Future Africa as a "unique Pan-African platform" (Future Africa, 2024a), *Pan-Africanism* is not defined anywhere on the website. Only in the "About Future Africa" section does the word *Pan-African* reappear, and the bullet point discussing Africa's future in a global context lacks a definition. In addition, the "How We Operate" page states, "Future Africa is a platform that acts as an incubator for transdisciplinary research projects" (Future Africa, 2024d, para. 1), and it notes that this collaboration is bringing scientists from diverse fields; however, this page does not mention Pan-Africanism. What is more, Pan-Africanism is mentioned but not defined within Future Africa's constitution, nor is it defined in the UP's African Global University Partnerships

(AGUP) Project Strategic Plan or Implementation Plan, which describe Future Africa as one of four “centers of excellence” (University of Pretoria, 2020).

Finding 2: Future Africaôs relationship with University of Pretoria is intricate. The University provided funding for establishing Future Africa, as well as connections to donors, and is looking for a return on investment. As Future Africa attempts to embrace its transdisciplinary and Pan-African purpose, the general administrative barriers and branding that come with being a semiautonomous asset of the University, as well as the competitive and hierarchical nature of academia, act as barriers to Future Africa fulfilling its mission. Additionally, the relationship with a historically White and advantaged institution complicates perceptions around the ability to be truly Pan-African.

Among the internal staff interviewed, 88% reflected on UP’s essential role in incubating and conceptualizing Future Africa, and about 47% of internal interviewees provided predominantly negative commentary on the relationship. In addition, at least 47% highlighted how the unique transdisciplinary nature of the organization has evolved since its inception. This is visible in the team member profiles, where 14 of 17 internal staff participants highlighted some science or science policy education or experience, even if they were not serving Future Africa in that capacity. On top of that, in the interviews, many staff highlighted how Future Africa’s transdisciplinary approach allows the organization to be more collaborative than the traditional UP campus. One participant noted:

> Future Africa is a great example of how to create a physical but also virtual space for transforming how collaborations are taking place. I am going to highlight just a number of areas that I think are just so critical. The first one is these research chairs that they have been appointing at Future Africa and that are so rooted in like a transdisciplinary, multidisciplinary way of doing things and that are so collaborative in nature. And when you see the types of things that they are engaged in, you can see that this is a kind of space that will definitely transcend boundaries.

While interviewees all noted how Future Africa was conceptualized to be innovative and collaborative, many noted that the relationship with UP makes collaboration difficult, as academic institutions are created hierarchically, with bureaucracies embedded into the fabric of

the institution. During initial interviews, six interviewees mentioned or referenced UP's institutional bureaucracy and general administrative burden. At least three internal staff participants cited examples of human resources (HR) and procurement policies as obstacles to achieving their organization's mission; others expressed frustration around current employment agreements. During the focus groups gathered for member checking, 100% of participants agreed that the institutional bureaucracies were a hindrance to Future Africa's progress. One internal staff member noted, "So the institutional nature of academic institutions and other research institutions regrettably has created hierarchies, which I feel are barriers to entry."

In addition to these policies, hierarchical structures and competitive mindsets inhibit the collaboration Future Africa envisions: 28% of respondents noted competitiveness and a siloed nature, with many of them referencing experiences at or with UP. An internal staff member stated:

> Academics are competitive, some of the most competitive people in the world. And so in an academic environment, I think it's actually more difficult than putting a transdisciplinary thing in an NGO [nongovernmental organization], where people already have a broad mind. That's where I think it would always be a struggle.

While seven interviewees acknowledged the benefits of working at a university, 16 expressed their disapproval of Future Africa's association, sponsorship, or inception by UP, a historically White and privileged university. The conversations highlighted how apartheid, and its exclusionary practices, benefited the minority White population, which influenced UP's emergence as a premier academic institution in Africa. Based on this history, an external collaborator noted that Future Africa cannot claim that it has a Pan-African identity:

> It's not a Pan-African organization. It's an organization of the University of Pretoria. Anyone in Africa can claim Pan-African status because we are but Africans. . . . Effort needs to be made to develop the empathy that allows you to present yourself as Pan-African. That empathy involves recognizing the entire course of history through which

> Africa's current status is created, recreated, reproduced on a continuous basis. It's not as if history has stopped ever. It's important to recognize that.

According to information gathered during our interviews, member checking, and document review, *semiautonomous* means that Future Africa has significant independence in day-to-day operations but is ultimately accountable to UP.

- Independence: Future Africa has its own director, executive management committee, and stakeholder forum (Future Africa, 2023, §§ 4.5, 4.7). These bodies handle strategy development, financial planning, and day-to-day management (Future Africa, 2023, §§ 4.5, 9.2).
- Accountability: The University's executive and senate oversee Future Africa's performance (Future Africa, 2023, § 4.2). The director reports to them through annual plans and evaluations (Future Africa, 2023, § 4.2).
- Financial oversight: Future Africa's budget is part of the University's budgeting process (Future Africa, 2023, § 9.1). The director submits financial plans for approval by the executive (Future Africa, 2023, § 9.2).

Future Africa is not fully autonomous because the University retains control over its budget and has final say on its performance. However, it has considerable freedom in managing its internal affairs. The implications of having limited control over the organizational budget and administrative reporting requirements to the university reduce the director's decision-making power. This impacts the mission, vision, and progress of the organization, given money constraints and the need for approval for Future Africa's goals.

Data collected during member-checking focus groups in June revealed a consistent theme among internal staff participants: the perception that the HR department at UP is bureaucratic and hindering. Two key issues emerged:

- Grant management fees: Future Africa's grants are managed by the University, which currently levies a 15% moratorium as grant management fees, per university policy. This policy creates a financial barrier for Future Africa's Pan-African aspirations.
- Restrictive policies: Because UP holds these funds, Future Africa must adhere to its HR and procurement policies. These policies include limitations on international travel expenses, which are often insufficient to cover multi-country visits, necessitating constant justification and exception requests. Additionally, the South Africa–centric vendor list presents an economic obstacle to achieving Pan-African reach.

Furthermore, upon examining the relationship between Future Africa and UP, some respondents revealed that the University has processes that constrain Future Africa. One internal staff member recalled that when they presented the 5-year strategic plan on the main campus, very few deans attended. In addition, another internal staff member noted:

> I think it really needs to be inclusive in terms of the University. We really need to get university people involved in everything that we do. And it shouldn't be us begging. People should be knocking on the door wanting to be here.

Another internal staff member noted a solution to help communicate Future Africa's semiautonomous state and to clarify their relationship with UP: having an aggressive brand campaign to distance Future Africa from UP. They stated:

> So that's on its own, like we need to foster reputation, we need to better communicate, profiling our research, our domains, the work that we do, our partnerships, and just narrating basically how we connect Africa one partner at a time. And I think to put it out there, it talks for itself. It's more evidence-based, truth. People require proof.

"Complex" does not begin to describe the relationship between Future Africa and UP. The university contributed ideas, money, land, and other resources to establish the organization. Those involved in Future Africa's founding sought to establish a Pan-African and collaborative

science entity. The current relationship between UP and Future Africa, however, hinders the collectivist practices inherent in Ubuntu. The University's siloed, competitive, and hierarchical systems and policies impede true collaboration.

Finding 3: Future Africa has navigated a significant amount of change during its first 5 years of existence, resulting in a lack of impact metrics to track its success. These changes include COVID-19-related challenges to funding, three changes in leadership, and the difficulties of straddling day-to-day operations of a campus in addition to running research programs. While Future Africa has still made strides, the lack of stability has caused tension for employees.

Five internal staff members noted that the leadership turnover was a vulnerability for the organization. One internal staff member noted:

> I think the platform started, had a sort of start-stop with the initial, it changed leadership. So there's a need to find a way for continuity to ensure that there's some coherence, you know, because if you do go in one direction for 3 years and then you change, you kind of will just go round in circles. So I would say some sort of coherence, continuity would be important.

Director Heide Hackmann transitioned from Future Africa into a position at another university in July 2024. While conducting initial interviews and member checking focus groups, interviewees noted that under her strong leadership, Future Africa was on the right path. One response illuminated this point:

> It depends on the systems within the institutions themselves, the willingness and the leadership. So I think their previous VC [vice chancellor] was very supportive. So it depends on the current leadership. Let me say I'm hopeful that it's possible, but of course, cautiously optimistic. I know Heide's trying her best. She's recruiting the Pan-African team, just to make sure that that's going there.

The leadership shifts also impacted the goals and objectives for the organization. Since the organization is young and launched officially right before COVID-19, each time there were leadership shifts, the goals and objectives shifted. When comparing the organization under former director Prof. Cheikh Mbow to the organization under his successor, Heide Hackmann, one member noted:

> So the world stopped, and so did sort of a lot of the Future Africa work. But all that said, I think Cheikh's interpretation of how to lead the platform versus my interpretation as acting director versus Heide's interpretation, there are some similarities, but there are also divergences.

Our analysis of initial interviews indicated that respondents were not able to articulate a measure for impact and success for Future Africa. We asked the interviewees to define a meaningful impact for the organization. Respondents emphasized that even when they did not have a recommendation for a key performance indicator (KPI), academic publications or science experiments alone cannot serve as measures of success. Instead, what mattered most was making a difference on a community level. One statement elevated these sentiments: "It's not the test tube. It's not genomic sequencing. It is how relevant I am to the environment where I am."

This statement illuminates how academic metrics are focused individualistically, a tenet of neocolonialism that detracts from Pan-Africanism. The internal staff member went on to highlight the need to have different KPIs for Future Africa:

> And there's almost a paradox in the academic sector that conditions people to develop themselves. Yes, researchers collaborate and coauthor articles, but at the end of the day, this is about their pursuit of the number of publications they have, or the incentives for promotion, etc., are very much a solitary journey, right? And that is almost contradictory to what we have to do as a Pan-African platform, where we have to have an openness of collaboration.

A number of respondents noted that an impact measure or KPI for Future Africa could be social change, from grassroots to grasstops. One response encompassed such responses:

> Being the center for innovation, being a place where any African researcher or founder or political figure, or even a civilian even, can identify as the place to meet with like-minded people and brainstorm ideas and come up with solutions and implement those solutions. I would like Future Africa to be known as a place where change is actually implemented. And our concern is not only to synthesize knowledge, but then to make sure that knowledge has an impact in the crowd. So, yeah, I would like Future Africa to be known as that place.

At least 11 respondents within Future Africa noted in initial interviews that having a wide reach across the continent and internationally, including representation within the organization, would be a means or example of assessing impact. One interviewee shared what it would like if Future Africa had such impact:

> I would view success in 5 years' time as a change in the way we have conversations as Africans in the research community, as Africans in the global research community, and the way we speak with people across other sectors. And that change in tone of conversation, I would view as a very, very important point of success.

An interview with an external collaborator highlighted that if Africa had 1 million PhDs, then the science landscape within the continent would change. Eight interviewees emphasized the importance of developing youth into employable fields, with many focusing on the potential of youth becoming scientists. Another internal staff member noted the potential for the number of engaged youth earning PhDs as a possible KPI for Future Africa:

> And then, I think, the development of young staff. I always feel that if that's not happening, what are we doing? So that's on different levels. How many nodes are you putting across Africa? How many PhDs are earned across Africa? How many postdocs do you have across Africa any further than that is how many of those people are actually named in these Pan-African transdisciplinary and environments.

An interviewee cautioned that the mass production of PhDs alone would not change the science landscape within the continent. This interviewee cautioned that many universities abroad and, on the continent, have adopted Western science and have defined science and learning in neocolonial ways. The recommendation was to ensure that science itself within learning institutions comes from an African perspective:

> And it's how do we revitalize what we feel should be approaches to science and society from an African perspective? And that's really, really hard, because the way we measure ourselves is by the metrics given to us by Western societies and institutions. And so I would love to see a revitalization of Pan-Africanism in a very inclusive way, because Pan-Africanism at one point was described in an exclusive way of rejecting all other cultures besides African. So when I think about Pan-Africanism, I think it's more of an

equity in the African voice on the global stage, and ownership of our Pan-African views, and a promotion of that on a global platform as equal partners.

Of note, success metrics for the AGUP, the program that spurred the creation of Future Africa within UP include (University of Pretoria, 2020, § 2.4):

- Pan-African Impact:
  - Diverse student body representing all African regions.
  - Strategic partnerships for student flow, research, and industry collaboration across Africa.
  - Thought leadership and research contributions to Pan-African priorities.
- Global Reach:
  - Focus on strategic partnerships with key institutions on major continents.
  - Two-way flow of students and knowledge.
  - Recognition by top global ranking metrics and organizations.
- Innovation and Thought Leadership:
  - Build on existing research platforms ("TRPs").
  - Attract world-class researchers and partners.
  - Produce groundbreaking research and thought leadership.

Due to changes in leadership and the global pandemic, neither the university nor any of the organization's directors finalized the metrics for Future Africa. Our interviewees recommended developing KPIs and metrics for impact, emphasizing community and social impact instead of traditional academic impact measurements.

Finding 4: Future Africa receives a significant portion of its funding from non-African entities, as there are few African funders for science. Reliance on international funders can nourish and act as barriers to Pan-Africanism. Neocolonial relationships alienate some partners from participation based on unequal power structures, while others accept these imbalances as a necessary component of research.

Several participants provided examples of establishing intra-African partnerships for majority funding models to enable Future Africa's priorities to be realized. Our interview protocol did not include specific questions on funding or North–South collaborations, but these topics came up in 83% of our initial interviews. Participant responses acknowledged a heavy reliance on funding from the Global North for scientific research in Africa, as well as sentiments

that African countries should strive to fund their own research efforts and avoid depending on external sources. Specific themes that emerged included:

- Power imbalances in existing partnerships:
    - Funding from the Global North often comes with strings attached, limiting research priorities in Africa.
    - Decisions about how the money is spent are often made by the funders, not African researchers.
- Need for increased African investment: African governments and institutions need to allocate more resources to science and research. There is a call for Pan-African collaboration to pool resources and support scientific endeavors.

The overreliance on Western sources poses a challenge as it diminishes the autonomy in utilizing grants to promote Pan-African science goals, misses opportunities to boost intra-African commerce, and hinders genuine liberation from colonizers. For example, 15 interviewees noted negative aspects of receiving funding from Western sources, often citing it as a barrier to Pan-African science collaboration. Reasons for this spanned from reliance on the funder, who may hold conflicting priorities that could even be at odds with the organization's stated core values or goals. Building on this, some spoke about the threat of funds being withheld or going away for initiatives. Another interviewee highlighted how taking Western grants impacts the outcomes of the transdisciplinary nature of Future Africa and collaborative science, because it is counter to Western culture, which is more individualistic. Being a Pan-African science platform requires true collaboration:

> And if we acknowledge all of these inputs in an equitable way, we then can have a true conversation about collaboration and dealing with issues. But if donors feel, hey, I bring money and that's the most important thing, well, all the money in the world will not make a difference if you don't have an evidence-based intervention, right? You can have all the

> money and the best intervention, but if you don't get buy-in from a local community, your program is not going to take off, etc., etc. And so, I don't think we're at that level of sophistication yet when it actually deals with transdisciplinarity and an extended stakeholder community of researchers as well as sectors.

A theme arose from seven interviewees, who reflected that taking Western money was detrimental to Africa's benefit. They noted that the money always seems big at the time, but when it comes down to it, there are a lot of strings attached. One gave an example of how, when giving grants, Western entities are also generating business for themselves and exploiting Africa:

> Your help is toxic to us. I mean, look at this. Those of you who know about the Bible, the Bible says the man who gives benefits more than the one who receives. It's the same thing all over. The aid I get, the $100 I get from Europe, from America, you know, 80%, 60%, 80% of that goes back to America in one form or the other. If you're going to buy a vehicle for the project, are you going to buy it from my country? No, you buy it from your company.

Some expressed concerns about the mismanagement of funds within African institutions. Others highlighted that finding alternative funding sources and developing innovative funding models is crucial. Another theme highlighted the importance of respect, trust, and flexibility in partnerships between African and Global North institutions.

However, there are barriers to investment within the continent, including a neocolonial mindset, the government's lack of fiscal notes for science innovation, and strict auditing of South African funds. Fifteen of those we interviewed identified neocolonial mindsets of individuals, governments, and universities within Africa as barriers to Pan-Africanism. Many responses highlighted how a focus on Western or Global North traditions was incompatible with historical value systems on the continent. A theme that stood out was that colonialism is evident not only in policies but also in mindsets, and that many Africans are still not unshackled. One explained how the neocolonial mindset has remained after independence:

> I believe it's mindset . . . at independence we had Kwame Nkrumah of Ghana as the first country which was going to be getting its independence from the British, and if you look

> carefully at that time, people like Kwame Nkrumah did not have any difficulty seeing one Africa at all. The influence of fighting slavery and colonization really galvanized something that said, this is who we are, when we become independent we'll be one country, but obviously the colonial masters had figured this out a long time ago and said, well, at the time each country will sign an agreement with this colonial master anyway, and they made it so attractive to sign your agreement with your former colonizer.

At least 16 interviewees noted how African governments are barriers to Pan-African science collaboration. Primarily, they cited policies that hinder cross-border movement and investment in science initiatives. Some went so far to call out governments that were corrupt, greedy, and Western facing. Interviewees also suggested that these governments relied and continue to rely on external funding sources for science in their countries. When talking about Africa not having money, an interviewee made a blanked statement, saying , "The government needs to disburse, which is usually such a large amount of money into the system without us reflecting on it, but how are we utilizing the money that is already in the system to do things differently?"

In addition, one external collaborator noted that there was no nation within Africa that used 1% or more of their country's budget for science:

> So partly it is history, partly it is economics. I mean that, I mean our governments are not in a position to give support. They also do not have the conviction that it is critical to support science in their own countries. You know, leaders are not enlightened in this way. If they were then then the amount of money that we get from the West is not something that African governments can't give us. I mean they can do that.

Even with African funds, challenges remain. When conducting our second round of member checks, six interviewees emphasized the strictness of government audits. The paperwork involved in financial reporting and answering audit queries imposes a significant burden on staff. Also, the South African Auditor's Office assumes that all countries have the same structures as South Africa. For example, explaining why air tickets to South Africa from some African

countries cost a lot more than anticipated takes weeks. Multiple approvals and paperwork go into justifying how overspending in one area can be offset by underspending in another.

Some interviewees recognized the need for African governments to invest in science collaboration, including sufficient funding to support intra-African partnerships. One external collaborator shared the following insight:

> You know the most critical thing is resources, you know, if Future Africa and other and other such institutions could, who could work on a system whereby African governments contribute to scientific collaboration within the continent that would make a lot of difference you know it is the the critical problem that we have is the indifference of many African governments to support scientific collaboration.

For increasing Pan-Africanism when applying to funding, another external collaborator noted:

> If you color in a map for each project, you at least need to have representatives from all the regions of Africa, not just Southern Africa or the country you are working with. And for me, what's and it's bigger than just Future Africa. If you can start getting people from other African countries to be PIs [principal investigators]. Because at the moment it's very much still driven by the Global North. If you need the funding, PIs are not Africans. They are subgrantees, getting a bit of money. They are not driving the research. We need PIs from other African countries to drive the applications and research. And in a way the money does not get sifted away.

Overall, participants expressed a desire to achieve more scientific independence from the Global North and control over its research agenda. They also felt confident that African governments would be able to provide appropriate funds for science development within the continent. African governments' tangible ownership of the solutions to the continent's challenges would mark a mindset shift from dependence on non-African funding to independent problem-solving.

Finding 5: Future Africaôs physical location in Pretoria and strict visa rules for entry into South Africa serve as both a physical and symbolic barrier to collaboration with other African countries. While many have tried to advocate for changes to policy, many participants cited difficulty obtaining visas, a neocolonial policy that creates imaginary barriers. Even those who have successfully obtained a visa cited experiences rooted in xenophobia. Others highlight the stereotype of South Africaôs ñBig Brotherò role.

Nine participants noted that the current boundaries between African countries were a barrier to collaboration. Some respondents described the boundaries as fictitious, constructed by colonizers to establish geographical, cultural, and linguistic barriers within Africa, thereby preserving their power and dividing the African populace. One stated, "Blurring the boundaries between the lines that divide this continent that were not drawn by ourselves as Africans. So Pan-Africanism, for me, involves greater integration of Africa inside Africa, because those 53 lines are not of our making."

Furthermore, 11 participants highlighted issues with South Africa's intra-African visa system; some noted that visas are a way to maintain neocolonialism and to prevent Pan-Africanism. One stated:

> The postcolonial lines are very much there, more so in people's minds than in reality. It shows little ways, such as the visa requirements. I think those are things that postcolonialism put in place and we still allow them to flourish. So it's easier for you, as an American, to enter most African countries than it is for me as an African to you know, and of course the big question is, "Why would that ever be? Why should that ever be?

Three interviewees noted that Rwanda is leading the continent in disrupting neocolonialism, as it waived its visa requirements for African countries. The interviewees noted that this is a way to accelerate science collaboration through Pan-Africanism. However, all of the interviewees noted that South Africa enforces strict visa requirements for Africans; some referred to this as the *visa regime* and noted how this makes it challenging to convene a Pan-African science platform in South Africa. Respondents noted that hosting a Pan-African science collaboration in South Africa was not Pan-African, and highlighted the Big Brother complex and specifically noted how South Africans interact with other African scientists:

> I found South African organizations tend to be, and staff tend to be quite low on diplomacy skills. They really don't know how to engage well enough. I think they engage often with a chip on their shoulders, almost like what you get with UN [United Nations] organizations, especially when they are dealing with other African countries. I think

> many of them are inexperienced and yet, but because they have resources they talk down on other Africans, and it doesn't go unnoticed.

A *Big Brother complex* refers to South Africa's perceived power and knowledge in relation to the rest of the continent, both globally and within the continent, and serves as a symbolic boundary. This theme emerged in three interviews, and there were three contexts in which these responses talked about this complex: internally as South Africans, externally from Western nations, and externally within the continent of Africa. Internally, some South African interviewees noted that this role has a double-edged sword; based on their positionality, they can bring Africa onto the world stage. Yet this furthers the narrative of being separate or talking for other African countries:

> So, an example is, you know, they led this effort to prosecute Israel for the war in Gaza. So, in some sense, they are seen, or they see themselves, and I use them because I'm not South African, as a representative of other African peoples and international community, nonaligned community, if you like. So, I think that does open them up to criticism because of issues like xenophobia. You know, you might say, well, why are you critiquing others when even whatever your views are on that, when you have all these issues in your own country?

Parallel to interviewees' feelings about Future Africa's association with UP, eight interviewees discussed the complicated racist history of South Africa and how the lingering racism and xenophobia within the country can be a barrier to Pan-Africanism. Specifically, one reflected how South Africa has a history of racism that was recognized internationally, "South Africa was expelled from the World Archaeological Congress in the early 1970s because of racism in even compiling history."

Five interviewees recommended that in order for Future Africa to truly become a Pan-African science platform, it must have locations outside of South Africa; even more participants

championed increasing representation of other countries among employees. One interview noted that staffing needs to be more diverse, specifically the research chairs:

> I also think that one of the things they need to immediately work on and look at is staffing, because one of the first things you do with a global or transnational organization is to ensure you get people of different nationalities involved to make sure you have a staff that reflects your population.

In addition, one interviewee made a recommendation on how to restructure Future Africa into a regional model, "I feel like a ground-up approach makes more sense, maybe establishing nodes in different countries, being respectful of different research, because it is an academic project, different research communities need different African countries, and structuring it as a network."

Recommendations

The dynamic interplay of theory and qualitative sensemaking enabled the capstone team to develop the recommendations in this section. Among many possible recommendations, we chose to highlight five. Each finding corresponds to a recommendation (e.g., Finding 1 corresponds to Recommendation 1), although the interconnectedness of the findings renders these connections imprecise. That limitation notwithstanding, we have made every effort to craft a cogent narrative that links each finding and recommendation in a logical way. The organization may choose to implement any recommendations in any order, but the researchers recommend completing the first recommendation before all others.

Recommendation 1: Create an operational definition of *Pan-Africanism,* embedding transdisciplinary, Ubuntu, and Sankofa concepts to develop a shared understanding among Future Africaô s internal and external collaborators.

The interview responses and our research on Pan-Africanism revealed many definitions, and no agreed-upon scholarly definition of this concept emerged (Esedebe, 1970; Eziakonwa, 2021; Kuryla, n.d.; Ola, 1979; Williams, 2022). Indeed, Future Africa does not provide a clear

definition of *Pan-African* or what it means to be a Pan-African science platform. Developing an operational definition is important, as it gives communicable meaning and concreteness to a concept, enabling everyone to use and understand the term in exactly the same way each time (Stevens, 1935). Defining what is meant by a Pan-African science platform would ground the organization and allow all collaborators to have a shared understanding of how Future Africa operates.

An operational definition has two parts: the "what" and the "how." For "what," consider the African Union's Pan-African vision: "an integrated prosperous and peaceful Africa, driven by its own citizens, representing a dynamic force in the international arena" (African Union Commission, 2015, para. 6). Future Africa's could use this definition as a starting point from which to develop its own definition. We believe the group should choose if it wants to include the historic Sixth Zone Act, also known as the "Diaspora Clause." This was added to the African Union's definition in 2006 and makes it clear that the focus is on people of African descent around the world (Edozie, 2012). Our recommendation would be to add this component to the definition as a way to shape and ground Pan-Africanism concretely when talking about globalization and international affairs. For the "how" aspect of the operational definition, some key concepts came up in both the interviews and the research: transdisciplinary and transformative research, Ubuntu, and Sankofa. To define a Pan-African science platform, Future Africa needs to narrow the language used and intentionally tie Pan-Africanism with these concepts.

We therefore make the following suggestions:

- Incorporate the concept of Sankofa when defining Future Africa as a Pan-African science platform.

    - A sample definition: A Pan-African science platform is a place where societal and scientific solutions for Africa are created by Africa to rebuild and liberate Africans from colonialism, to amplify Africa's voice in the international science arena, and to reconnect Africans post-diaspora.
    - Alternatively, this statement on the organization's website could be revised: "Future Africa provides a gateway to Africa's rich and diverse scientific community, building equitable global partnerships, and projecting the voice of African sciences on the global stage" (Future Africa, 2024c, graphic under objective 3).

- Place a renewed emphasis on transformative over transdisciplinary research to improve clarity and consistency and enhance the organization's visibility. Most of the participants in our study characterized Future Africa's research as "transdisciplinary." This is consistent with UP's AGUP Implementation Plan (University of Pretoria, 2020). Future Africa's (2023) Constitution, however, uses *transformative research*, which it defines as research conducted "research that is purposeful in addressing complex societal challenges and adopts an approach that is integrative (interdisciplinary), engaged (transdisciplinary), holistic (using systems thinking), digitally enabled and futures-literate" (footnote 2, p. 2). Consistent terminology will aid in branding. A shift to one over the other will likely require a formal communications plan, but ways to encourage employees to adopt the transformative mindset could include:
    - Highlighting how Future Africa's research addresses complex societal challenges.
    - Mentioning any collaborative or engaged research practices it uses.

  - Describing how its work incorporates systems thinking.
  - Briefly mentioning the role of digital tools and future-oriented thinking in its research.

- Establish a connection between transformative research and Ubuntu to develop the "how" of the operational definition.
  - Update the "How We Operate" and "Core Values" pages of the website to highlight the connection between transdisciplinary research and Ubuntu, potentially developing a theory of change.
    - Process of transdisciplinary research (Lang et al., 2012):
      - Phase A: Problem framing and team building: Co-identifying the real-world/societal problem and development of research process and methods
      - Phase B: Co-creation of solution-oriented transferable knowledge: Doing the research in the community and scientific methods adopted
      - Phase C: (Re)integration and application of created knowledge: Applying and implementing the research results through societal and scientific practice.
  - Update the "Core Values" page of the website to incorporate Ubuntu and Sankofa.
    - Sankofa: Valuing our history to plan for the present and future.
    - Ubuntu: "A person is a person through other persons."
      - Humanness: The belief that all people possess the innate characteristic of being human, which is to say, being aware of themselves and of other people.

- Interconnectedness: The belief that people are bound together by virtue of their shared humanity.
- Compassion: The conviction that we should treat others with care due to our shared humanity.

Clarity on the definition of the Pan-African science platform is a critical piece of Future Africa's identity and purpose. It will provide a reference point for all collaborators, both internal and external, and allow the organization to develop clear impact metrics.

Recommendation 2: Future Africa should negotiate an autonomous relationship with the University of Pretoria to allow for its growth beyond the intellectual confines of a purely academic setting.

Under the leadership of Prof. Cheryl de la Rey and her successor, Prof. Tawana Kupe, UP articulated the vision for Future Africa. They incubated an idea for a transdisciplinary Pan-African science platform, which officially launched in 2019. They intended Future Africa to become an innovative and groundbreaking connector for the best African scientists to find solutions to African problems.

COVID-19 and leadership transitions prevented the creators from fully actualizing the vision and impact metrics. Academic audiences consider the transdisciplinary approach innovative and a means to break silos. However, Brandt et al., in their 2013 review of transdisciplinary research, identified several significant challenges to undertaking a transdisciplinary approach. These challenges include discrepancies between the recommended best-practice transdisciplinary research and its publication in scientific journals, practitioner engagement, knowledge exchange, the rarity of empowerment, and difficulties in achieving high scientific impact. We acknowledge that the tie to academic metrics presents another challenge when using transdisciplinary research as the basis for impact metrics. The decoupling of Future Africa and UP can allow the organization to be separated from academic institutions.

Instead of adhering to UP's hierarchically developed policies, the organization would be free to develop and create administrative, procurement, and HR policies that embody Ubuntu. This would allow an ethic of care and recognize the worth of each organizational actor, setting the stage for all staff to have a sense of belonging at Future Africa and serving the greater purpose of creating a Pan-African platform for the common good of Africans (Molefe, 2019; Noddings, 1992). In practice, an ethic of care is a manifestation of Ubuntu.

Finally, this shift would enable truly Pan-African collaborations, where businesses, NGOs, community members, and academics can become part of Future Africa's challenge domains, increasing representation from across Africa. If undertaken, this autonomy would allow Future Africa to distance itself from UP and its complex and exclusive history as a historically White and privileged institution. Ending its relationship with Future Africa would also send a signal to the continent that UP is truly committed to becoming more inclusive. It would give Future Africa an opportunity to nurture its Pan-African identity.

Indeed, this model has precedence: other autonomous organizations are located within UP. For example, the Gordon Institute of Business Science (GIBS) serves as UP's business school. GIBS has bespoke management, accounting, procurement, recruitment, and marketing structures. Like Future Africa, GIBS's campus includes conferencing and lodging facilities. These similarities demonstrate the real potential for Future Africa's independence from UP. However, Future Africa and GIBS have one major difference: location. Whereas Future Africa's campus is located on the UP premises, GIBS built its campus in Sandton, an upscale area in the city of Johannesburg, 30 miles away from Pretoria. This physical separation may partially account for GIBS's independence.

Future Africa currently has an opportunity to advocate for its independence, given the new leadership at both UP and Future Africa. UP's new vice chancellor and principal, Prof. Francis Petersen, will officially join UP on October 1, 2024. Effective July 1, 2024, Future Africa will have an interim director, Prof. Wanda Markotter, who understands both institutions. New organizational structures could include a strategic board composed of high-level collaborators from across Africa, including those based in South Africa and UP; a refreshed position for the executive director to focus solely on the work of the research domains and fundraising; separate management for the facilities (rooms, dining room, and conferences); and staff from all regions of Africa.

A separation would signal to internal and external partners that the research arm of the platform will generate African research excellence and that the physical space is an enabling factor, both for Future Africa's community and for fiscal revenue. This recommendation will take time to implement, but conceptualization and diplomacy around a potentially sensitive separation can start immediately. Now that Future Africa has embarked on a strategy-formulation process, this recommendation offers timely input from an external team that supports Future Africa.

Recommendation 3: Develop impact metrics for a Pan-African science platform using guidance from research on think tanks and established Ubuntu frameworks in other content sectors to develop a long-term strategic plan for Future Africa.

Future Africa's slogan, "Transforming the world through African research excellence" is at odds with the statement that it is a neutral platform (Future Africa, 2019, March 29). The neutrality stance is part of being tied to an academic platform; however, the notion of transformative research—defined on the "About Future Africa" webpage—notes that it advocates for "research that contributes to concrete solutions to complex, real-world problems

and that informs and supports processes of profound social change towards global sustainability" (Future Africa 2024c, para. 3).

We suggest that Future Africa consider transitioning from a transdisciplinary academic research organization to a continental think tank and connector of African scientific endeavors. Such an orientation would position Future Africa as an institution that does research and analysis on public policy, gives advice to governments, and connects the academic and policy-making communities (McGann & Whelan, 2020). Future Africa could play the following roles (McGann & Whelan, 2020):

- Research policy problems
- Advise on immediate policy concerns
- Evaluate government programs
- Interpret policies and current events for electronic and print media
- Facilitate "issue networks" and the exchange of ideas
- Supply personnel to governments that may not have research positions within the current ecosystem of science institutions within Africa, such as African Research Universities Alliance, national science academies, and grant-making science councils, Future Africa could become a facilitator of "issue networks" to provide a space for developing cohesion among organizations.

When creating impact metrics aligned to the functions of a think tank, it is imperative to ensure that these metrics are grounded in Ubuntu, as a way to ensure that Future Africa has a Pan-African impact. While there are no examples of how this looks for a Pan-African science platform, Mupedziswa et al. (2019), in *Ubuntu as a Pan-African Philosophical Framework for Social Work in Africa,* highlight how social work in Africa has embedded Ubuntu into its

framework. In the introduction, Mupedziswa et al. (2019) notes that, while "Africa's 'political systems, social structures, economic conditions and cultural practices vary greatly,' it is equally true that there are certain tenets of social work that cut across the entire continent" (p.21). The article continues to note that social work operates at three levels (Mupedziswa et al., 2019):

- Macro: Services include programs such as policies, non-governmental organizations, civil society, and government institutions that provide indirect care to create enabling conditions.
- Meso: Services that focus on groups who have the same challenges
- Micro: Services for the individual, such as clinical care (p. 34)

Future Africa can use the Ubuntu framework for social work as a reference when developing its own metrics. If the organization were to adopt this model, it could then develop macro-, meso-, and micro-level impact metrics that center around humanness, interconnectedness, and compassion as the tenets of Ubuntu, defined both by the Ubuntu Framework for Social Work (Mupedziswa et al., 2019) and the Ubuntu Scale (Mutsonziwa, 2020).

If Future Africa develops impact metrics that incorporate think tank goals and adapts the Ubuntu framework, it will allow the organization to develop a cohesive plan for a significant period of time. A cohesive strategic plan would ensure a more cohesive vision over time, especially during leadership transitions. We have provided some sample impact metrics for Future Africa to use in a long-term strategic plan (see Table 4). To develop these samples, we used the African Union's Agenda 2063: The Africa We Want and research on think tank impact metrics.

Table 4

Sample Impact Metrics for Future Africa

Macro level: The governments of individual African countries, the African Union, science platforms that currently exist within the continent
● Influence and advocate to increase the number of African governments that use 1%+ of their spending to be used for science ● Through collaboration, increase the number of PhDs in science content areas to 1 million on the continent ● Develop connectivity, both globally and intra-Africa, via web-based platforms
Meso level: Future Africa's challenge domains
● Research chairs codevelop 50-year goals for challenge domains ● Develop an engagement goal, whereby Future Africa tracks continuous partners and new collaborators; set a goal for representation across the continent ● Ensure that a heterogeneous and robust group of collaborators are participating within the challenge domains
Micro level: The individual, regionally run projects (e.g., One Health's project about bats and livestock to reduce disease)
● Develop a data system to track the number of individuals impacted by a project ● Develop a data system to track the number of individuals impacted by information/media campaigns ● Ensure that individuals from communities are part of the building process of the projects

Recommendation 4: Create an additional challenge domain that focuses on science diplomacy and advocacy, with a goal of increasing the commitment of all African governments to spending 1%+ on science. Doing so could reduce the need for external fundings and develop an enabling environment for Pan-African science platforms.

For the long-term goal, the African Union has set a target that 1% of its gross domestic product will be invested in science, technology, and innovation (African Union, 2018); however, currently, only three countries have come close to meeting this goal: South Africa, Kenya, and Senegal. Future Africa currently concentrates on the challenge domains akin to traditional university faculties that have within them different departments focused on one broad area (e.g., food and agriculture; human, animal, or planetary health). But it lacks a public policy and advocacy domain that could enable Africa to achieve fiscal independence from non-African interests in science research and design. Therefore, we recommend developing a challenge domain to connect all domains and serve as the conduit to strengthening Future Africa's relationships with African governments, businesses, and development banks.

Through this new domain, collaborators from different hubs could coauthor grant applications and respond to requests for proposals from consortia. Combining the strengths of scientists across hubs can only make Future Africa stronger across Africa and generate more funding that aligns with its mission.

This challenge domain would tie directly to the impact metrics for the macro level, with the goals of increasing the commitment of all African governments to spending 1%+ on science, developing an enabling environment for Pan-African science collaboration, and reducing the reliance on non-African sources of funding. External funding can still come to the organization, but Future Africa would not face an existential crisis if non-African funders changed their priorities or stopped funding. This challenge domain and goal would allow Future Africa to directly disrupt the neocolonial mindset of needing Western aid to solve Africa's problems.

Recommendation 5: Leverage the reality of South Africaôs visa regime to establish regional chapters to increase visibility and dissolve some of the geographic and linguistic barriers Future Africa faces in truly becoming a Pan-African science platform.

Given the challenges African scientists face when they apply for South African visas or work permits, Future Africa should go to them. In Ubuntu, if those who need assistance cannot reach you, you reach them. It is a realization that Future Africa cannot become whole without all its collaborators. Regional hubs in, for instance, Angola (Lusophone/Southwest Africa), Morocco (Francophone/Arabic/North Africa), Nigeria (Anglophone/West Africa), Rwanda (Anglophone/Francophone/Eastern Africa), and Senegal (Francophone/West Africa) would increase Future Africa's visibility and dissolve some of the geographic and linguistic barriers that derail its mission. This endeavor may foster in external collaborators a sense of belonging and build on the successes these countries have had in funding science, technology, and innovation programs.

The five countries mentioned above have well-established scientific institutions (e.g., grant-making science councils, science academies, research institutes). Close consideration should be given to the hosting arrangements for these hubs to ensure that they will contribute to Future Africa's overall mission without hindrance. At agreed-upon intervals, all hubs can meet in South Africa or in different regions on a rotational basis. Future Africa's convening and transdisciplinary research activities can take place across the continent without the additional strain of obtaining South African visas for each activity. This recommendation aligns with the sentiments of the Technical Advisory Group (TAG) of the International Science Council. The TAG proposed a shift in agenda-setting from the global level to regional levels (International Science Council, 2023):

> The strategy proposed by TAG flips the more traditional science model, allowing the agenda and priorities to be determined by regional communities and stakeholder needs,

> and engaging science in service to society in which science communities collaboratively design, produce, integrate, implement and evaluate potential pathways to achieve sustainability outcomes. It also aims to break down silos and radically increase regional capacity to understand and address nexus issues. (p. 15)

Although we take issue with the notion of a global scientific entity "allowing" or permitting organizations such as Future Africa to focus on the needs of their communities, the TAG underscores the need for regional hubs to foster intra-African science collaborations.

Conclusion

Future Africa has the opportunity to become the modern embodiment of Pan-Africanism as a driver for the continent's development. That the University of Pretoria turned the idea of the organization into a tangible, beautiful, resourced, and proudly African institution demonstrates UP's dedication to dismantling the legacies of apartheid and colonialism. It comes as no surprise that the offices of important national, African, and international institutions—the Department of Science and Innovation, the National Research Foundation, the Human Sciences Research Council, the Academy of Science of South Africa, the Agricultural Research Council, the Water Research Commission, the Innovation Hub, the South African Bureau of Standards, and a multitude of embassies—surround Future Africa's campus. It is the heart, mind, and soul that will bring African excellence to life!

Future Africa possesses the resources it needs to actualize its potential to become a force for transformative change and improvement in Africa. Its stakeholders know what Ubuntu, Sankofa, and Pan-Africanism should look and feel like in modern times. Their goodwill, passion, and vision for the organization make it uniquely situated to become a unifying agent of Africa's peoples and a source of cultural renewal. Through Future Africa, African knowledge systems and wisdom will place Africans and their contexts as the cornerstone of the continent's development. We hope that our improvement project's findings and recommendations will

contribute to the emergence of Future Africa in its humble grandeur. One of our Uber drivers in Pretoria, South Africa, had the following response when a security official asked him where he would drop off his clients: “To the future of life.” That is Future Africa!

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Appendix A: Instruments

Interview Protocol

Interviewee: Name and Title

Date:

Opening/ Introduction:

Hello, thank you again for agreeing to meet with us and taking the time out of your busy schedule to participate in a sixty-minute interview. Before we get started, we would like to introduce ourselves and get to know more about you. Then we would like to review what our capstone project is and what we hope to learn from your interview. Finally, at the end, we would like you to give us any last thoughts, feedback on the process, and let us know if you would like to stay in touch.

Jackie- Hi- I'm Jackie and this is Courteney and Christian. We are all doctoral students at Vanderbilt's leading learning organizations. We are currently completing our capstone for our program, which is a quality improvement project, where we have partnered with Future Africa. We are looking to discover information to answer these two project questions:

- What barriers and nourishers influence intra-African engagement for scientists beyond South Africa with Future Africa?
- What social, cultural, political, and economic factors foster Pan-African collaboration among scientists?

Professionally, I have been working in schools or supporting schools in the US for my entire career and currently live in Dallas.

Courteney- Professionally, I started out my career as a Logistics Officer in the Army. I also worked in a technical role for the Texas Department of Transportation in Austin. Currently I am in Colorado Springs and focusing on my capstone.

Christian- Currently, I serve concurrently as Executive Secretary of the Uganda National Academy of Sciences (UNAS) and Head of School, Olney Friends School, where I led all strategic, programmatic, financial, and administrative issues of both organizations. Prior to joining UNAS, I was Director for Strategy and Program Development for the African Science Academy Development Initiative of the U.S. National Academies.

With your permission, the conversation will be audio recorded. Audio recordings of the interview will be uploaded to a secure, password-protected server with access limited to members of the project team, who reside in the United States. Transcripts of the interview will be de-identified to remove personally identifiable information.

Thank you so much for sharing, and we look forward to hearing more within this interview. For today's meeting, you will have an opportunity to share your experience to gain perspective on our project questions we talked about earlier. At any time, if you need a break, want to stop or shift the conversation, we can.

Do you have any questions before we get started? Now I am going to start to record, do I still have permission to record?

Interview Questions

Bolded questions indicate the need for prioritization in the event time is constrained.

Background Questions: (For Interviewee)

1. **Please tell us about yourself and your professional background?**
2. **How did your professional life and work lead to connecting with Future Africa?**

3. **When did you connect with Future Africa and what is your role here / relationship?**

Collaboration As a Scientist

4. **What individual characteristics do you think are important for scientists to bring to create a collaborative environment? [If experience is provided, skip question #5]**
5. **Can you describe the most impactful/positive experience you collaborated on as a science leader?**
6. **Can you describe any institutional barriers when creating collaborative/programmatic partnerships and how you overcame them (if at all).**

Pan-Africanism and Future Africa

7. **Are you familiar with Pan-Africanism?**
    a. *Option 1:* If you are familiar, how would you define it? Based on your definition:
        i. What does Pan-Africanism look like and feel like now?
        ii. In a perfect/ideal world without any constraints would it look like and feel like?
    b. *Option 2:* If you are not familiar with the term, it generally refers to unity and collaboration between people of African descent, regardless of their countries of origin.
        i. What does Pan-Africanism look like and feel like now?
        ii. In a perfect/ideal world without any constraints would it look like and feel like?
8. **What do you think might nourish or create barriers to achieve Pan-Africanism?**
9. **More specifically, how do you feel about Future Africaôs progress toward becoming a Pan-African organization?**

a. In what ways are they achieving?
b. What are Future Africa's biggest challenges in enacting a Pan-African organization?
c. If not the organization, what are some of the barriers, institutional, national, and international levels that impede increasing Pan-Africanism?
d. What recommendations would you give to increase Pan-Africanism within Future Africa?

Sense of Belonging

10. In your own words, how would you define a sense of belonging? Inclusivity?
11. To what extent does Future Africa create a sense of belonging/ inclusivity among scientists?
    a. [OPTIONAL] Do you think scientists feel an equal sense of belonging? If not, what creates scientists feeling more or less like they belong in Future Africa?
12. In what ways can Future Africa, increase the sense of belonging to scientists who are part of their network?

Recommendations

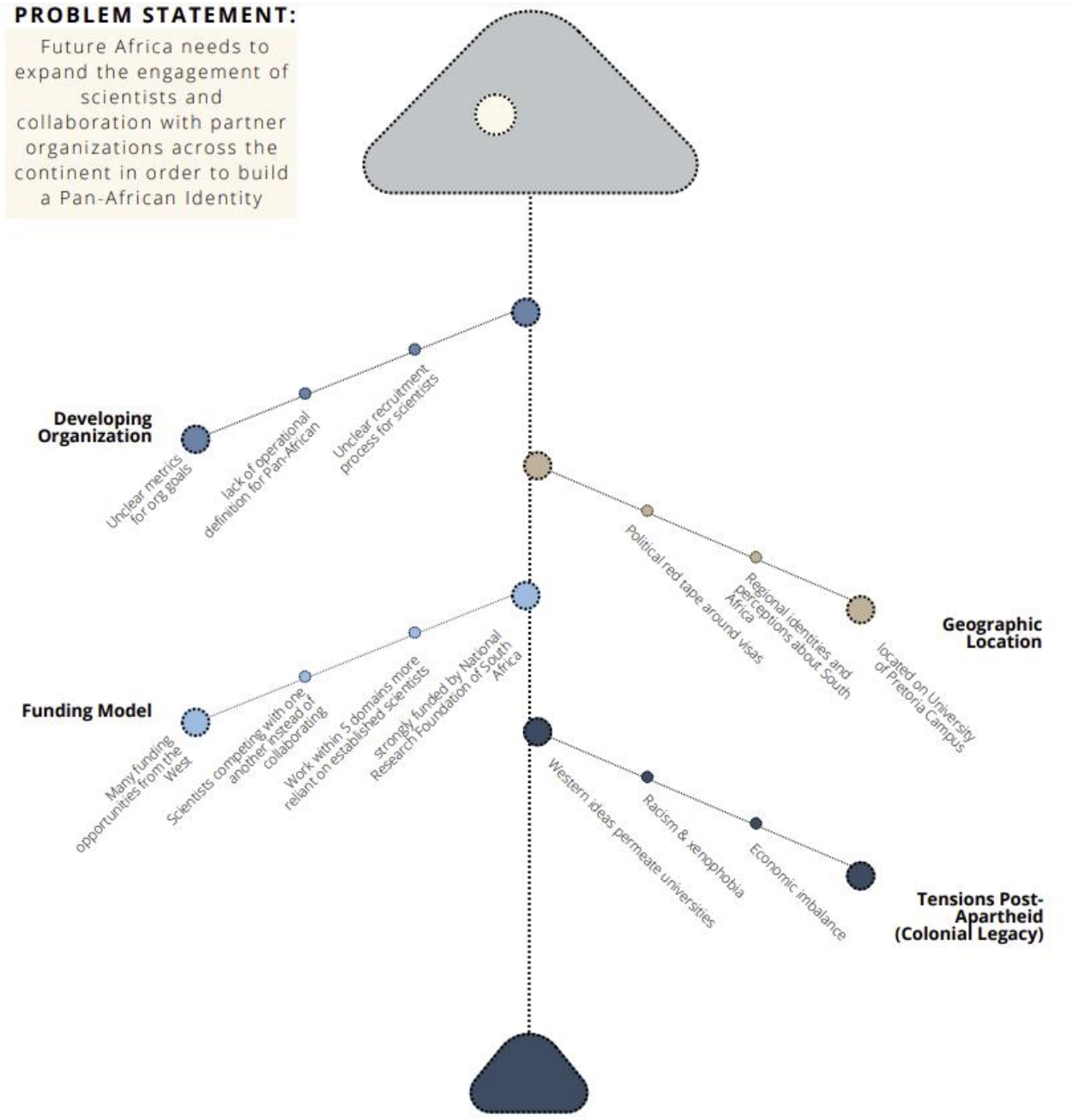
13. **What are some suggestions/recommendations of how to recruit and engage new scientist collaborators to Future Africa?**
14. What do you see as the promise of Future Africa? Where do you want to see it in 3-5 years if it was successful?
15. What is needed to reach FA's fullest potential?

Appendix B: Ubuntu Scale

Dr. Mutsonziwa's Ubuntu Scale (2020, pp. 210–211).

SECTION B: UBUNTU SCALE					
B1 First, I am going to read out some statements about how you might view other people. To what extent do you agree that the following statements describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree.					
You respect other people	1	2	3	4	5
You treat other people with dignity	1	2	3	4	5
You recognise other people	1	2	3	4	5
You treat other people the way that you want to be treated	1	2	3	4	5
You value other people	1	2	3	4	5
You believe in the humanity of other people	1	2	3	4	5
B2 Next, I am going to read out some statements about what you might have in common with other people. To what extent do you agree that they describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree.					
Your life is interdependent with the lives of other people	1	2	3	4	5
You like living together with other people	1	2	3	4	5
You share possessions with other people	1	2	3	4	5
Your life is richer because you share it with other people	1	2	3	4	5
When you are connected to other people you feel a sense of harmony	1	2	3	4	5
B3 Now I am going to read out some statements about how you might behave towards other people. To what extend do you agree that the following statements describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree.					
You wish the best for other people	1	2	3	4	5
You are helpful to other people	1	2	3	4	5
You are concerned about the well-being of other people	1	2	3	4	5
You try to be a blessing to other people	1	2	3	4	5
You exhibit good will to other people	1	2	3	4	5
You are thoughtful of other people	1	2	3	4	5
You have a caring attitude towards other people	1	2	3	4	5
You feel sorry for people who are suffering	1	2	3	4	5
SECTION C: DEMOGRAPHICS					

Appendix C: Fishbone Diagram



Appendix D: SWOT Analysis

Appendix E: PESTEL Analysis

POLITICAL

- Multiplicity of meanings and motivations for Pan Africanism
- Lack of commitment at the highest political levels to unity and dismantling barriers to intra-African collaboration
- Conflict in West, Central, and the Horn of Africa (destabilizing forces)
- Arbitrary visa rules

ECONOMIC

- Contracting African economies
- The "localization" agenda from several traditional science and technology donors, including the United States and Ireland
- Dwindling national budget commitments to education

SOCIAL

- Xenophobia
- Increasing mistrust in experts and expertise
- Diversity of cultures, languages, identities, and practices across Africa
- High percentage of youth (either a population dividend or burden)

TECHNOLOGICAL

- Technologies have made communication easier and faster
- Multiple avenues to disseminate scientific advice
- Internet and social media as sources of "expert" advice

ECOLOGICAL/ENVIRONMENTAL

- Climate change-related disasters (e.g., tsunamis, landslides, and food insecurity)
- Desertification in the Sahel and below
- Environmental degradation to provide jobs and agricultural land

LEGAL

- Governments enacting laws hostile to independent scientific advice
- Anti-homosexuality laws in some countries (e.g., Uganda and Nigeria)
- Statues that restrict the mobility of expertise (e.g., in Ethiopia)