

Creating Space for Africa in International Relations? Contesting Ontological Security through Space Exploration

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This article provides original insights into why and how space exploration offers a romantic trigger for the wider contemplation and reimagining of global power relations and ontological security, in terms of our sense of identity and being-in-the-world. We demonstrate how the rapid expansion of African space programs provokes new conversations about African roles and status in international politics, forcing us to reconsider how we understand African agency. Narratives of African solidarity and renaissance have long been central to the way African actors rationalize and enact their international agency. However, the conceptual lenses developed in ontological security studies (OSS) have not been applied to theorize African agency, while OSS has overlooked African cases in its own conceptual innovations. To address these gaps, we offer a novel contribution to OSS by conceptualizing how ontological security-making can be understood at three interwoven and co-constitutive levels: continental, state, and individual. Drawing on 43 key informant interviews with scientists and policymakers at the heart of space science initiatives, we demonstrate how space exploration is being harnessed by a range of African actors across these levels—from AU leaders to national politicians and student scientists—to forge positive narratives about Africa that challenge pathologies of continental deviancy and backwardness. However, global inequalities of power and knowledge production limit African agency and render this ontological security only partially realized and precarious.

Este artículo ofrece ideas originales sobre las razones y las formas mediante las cuales la exploración espacial ofrece un desencadenante romántico para llevar a cabo una contemplación más amplia y una reimaginación de las relaciones de poder global y de seguridad ontológica en términos de nuestro sentido de identidad y de existencia en el mundo. Demostramos cómo la rápida expansión de los programas espaciales africanos provoca nuevas conversaciones sobre los roles y el estatus de África en la política internacional, obligándonos, de esta manera, a replantear nuestra comprensión en materia de la agencia africana. Las narrativas en materia de solidaridad y renacimiento africanos han ocupado durante mucho tiempo un espacio fundamental en la forma en que los actores africanos racionalizan y ejercen su agencia internacional. Sin embargo, las lentes conceptuales desarrolladas en los estudios de seguridad ontológica (OSS, por sus siglas en inglés) no se han aplicado con el fin de teorizar sobre la agencia africana. Además, los OSS no han tenido en cuenta los casos africanos en sus propias innovaciones conceptuales. Con el fin de abordar estas lagunas, ofrecemos una contribución novedosa a los OSS mediante la conceptualización de cómo se puede entender la creación de seguridad ontológica en tres niveles entrelazados y coconstitutivos: continental, estatal e individual. Partimos de la base de 43 entrevistas con informantes clave, incluyendo científicos y responsables de políticas fundamentales para las iniciativas de ciencia espacial, y demostramos cómo la exploración espacial está siendo aprovechada por una variedad de actores africanos en estos niveles (desde líderes de la Unión Africana hasta políticos nacionales y científicos estudiantes) con el fin de forjar narrativas positivas sobre África que desafían las patologías de la desviación y el atraso continental. Sin embargo, las desigualdades globales en materia de poder y de producción de conocimiento limitan la agencia africana y hacen que esta seguridad ontológica se realice solo de manera parcial y sea precaria.

Cet article offre une perspective originale sur les raisons et la manière dont l'exploration spatiale constitue un déclencheur romantique permettant une réflexion plus large ainsi qu'une réimagination des relations de pouvoir mondiales et de la sécurité ontologique, au regard de notre identité et de notre existence dans le monde. Nous démontrons comment l'expansion rapide des programmes spatiaux africains suscite de nouvelles conversations sur le rôle et le statut de l'Afrique dans la politique internationale, nous obligeant à reconsidérer notre compréhension de l'action africaine. Les récits de solidarité et de renaissance africaines ont longtemps été au cœur de la manière dont les acteurs africains rationalisent et mettent en œuvre leur action internationale. Cependant, les prismes conceptuels développés dans les études sur la sécurité ontologique (ESO) n'ont pas été appliqués pour théoriser l'action africaine, et les ESO ont négligé les cas africains dans leurs propres innovations conceptuelles. Pour combler ces lacunes, nous apportons une contribution novatrice aux ESO en conceptualisant la manière dont la construction de la sécurité ontologique peut être comprise à trois niveaux interdépendants et co-constitutifs : continental, étatique et individuel. En nous appuyant sur 43 entretiens avec des scientifiques et des décideurs politiques clés impliqués dans des initiatives spatiales, nous montrons comment l'exploration spatiale est mise à profit par divers acteurs africains à tous ces niveaux (des dirigeants de l'UA aux politiciens nationaux, en passant par les étudiants en sciences), en espérant forger des récits positifs sur l'Afrique afin de remettre en question les pathologies de la déviance et du retard du continent. Cependant, les inégalités mondiales en matière de pouvoir et de production de connaissances limitent l'action de l'Afrique et rendent cette sécurité ontologique seulement partielle et précaire.

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Introduction

In this article we examine the relationship between space exploration and ontological security, in terms of an actor's identity or "fundamental sense of being" in the world (Mitzen 2006b). During the Cold War space exploration was central to the superpowers' pursuit of physical security (rocket propulsion, computing, satellite communications, etc.), but was also bound up in struggles over roles, status, and identity (Wolfe 2013). Today, emerging powers like India and Indonesia engage in space exploration for the pursuit of physical security (Alfathimy et al. 2022) but also as a means to signal their growing stature in international politics, while states like the United Kingdom and Russia harness space exploration to stave off perceptions of their decline (Hussain and Ahmed 2019; Curanović and Szymański 2022; Planetary Society 2024).

In 2023 the African Union (AU) launched the African Space Agency (AfSA) in Cairo, signaling a hitherto unprecedented ambition to realize both physical and ontological security through space exploration and space science in general. The resources underpinning this effort are not insignificant, with estimates suggesting that Africa's space industry could be worth as much as \$22.6 billion by 2026 amid a growing geopolitical scramble between the United States and China to influence and/or control African space activity (Baloyi 2024). As Samuel Oyewole observes, recent investments suggest that "the status of Africa is increasingly changing from a spectator to a participant in space" (Oyewole 2017, 186). In its ambitious "Agenda 2063" program, the AU sets out a plan to establish Africa as "A major social, political and economic force in the world, with her rightful share of the global commons (land, oceans and space)" which, it hopes, will enable it to address a wide range of physical security demands (African Union 2015, 10). In the AU's Africa Space and Policy Strategy (African Union 2019, 6), it goes as far to claim that "Space applications are needed to achieve over 90 percent of the strategic objectives across the eight departments of the African Union Commission (AUC)."

Beyond these considerations of physical security, the AU's space program forms a critical part of a much wider project of pan-Africanist political and social engineering, including the aim of securing the social, political, and economic integration of the continent. This includes no less than an aspiration for 2063 in which

Africa is self-confident in its identity, heritage, culture and shared values and [is] a strong, united and influential partner on the global stage making its contribution to peace, human progress, peaceful co-existence and welfare. In short, a different and better Africa. (African Union 2015, 2)

This quest for a "different and better Africa" comes at an important and yet somewhat paradoxical moment. On the one hand, the continent faces continuing challenges in the form of coups, authoritarianism, conflict, debt, and economic crises, while on the other hand, "Africa has emerged as an increasingly powerful and confident actor on the world stage" (Abrahamsen, Chimhandamba, and Chipato 2023).

At this important juncture, this article addresses gaps in existing scholarship. It offers the first attempt to directly utilize the concepts developed in ontological security studies (OSS) to understand the significance of space exploration:

just as space exploration has been and will continue to be critical to the status of existing and emerging powers in international society, we illuminate how it is also a critical site of "anti-colonial world-making" (Getachew 2019) for actors in the global South aiming to challenge existing concentrations of material and epistemic power in world politics.

To do so, we develop a second contribution relating to how we understand African agency in international relations (IR). There is a growing body of IR scholarship exploring how and why the AU or individual African states have played critical roles in forging and contesting the contemporary world order (Nkiwane 2001; Brown 2006; Khadiagala 2010; Taylor 2010; Harman and Brown 2013; Abrahamsen 2017; Tieku 2022). However, concepts of ontological security have been overlooked in this literature. While there is one article exploring South African ontological security (Mahant 2019), there has been very little work in the wider literature in OSS that considers African actors, and where this has been evident, it considers what African relations mean for external actors' ontological security (Gallagher 2009; Langan 2012; Hoijtunk and Muehlenhoff 2020; Klose 2020; Hastrup, Duggan, and Mah 2021). Bringing literature on African agency in IR into conversation with OSS, we argue that struggles over African identities are critical to understanding how the roles and status of African actors are constructed and contested.

We examine ontological security across levels, including three "bodies" seeking ontological security through space exploration: the AU, at the continental level (where continental and subcontinental space programs are driven), the Ghanaian and South African states (which drive individual but connected space programs), and the African scientists on space projects themselves. We explore AU and state-level narratives surrounding the African space sector, and how these are harnessed to challenge negative portrayals of the continent. Through fieldwork, including forty-three key-informant interviews with African actors at the center of recent space programs, we offer a unique insight into how these narratives seeking to affirm African ontological securities are reproduced (or not) at the individual level, where the success or failure of these projects bears the capacity to reify or undermine positive narrations of African modernity and scientific advancement. In this respect, we understand ontological security-making as a bottom-up as well as top-down process. As Antonia Witt's recent work on the AU has demonstrated, while the AU has attempted to inculcate a top-down project of promoting pan-African cultural identity, "how citizens relate to the continental organization is heavily shaped by their variegated experiences with and exposures to AU norms and policies as well as their tangible effects on people's everyday lives" (Witt 2023, 1). Therefore, while elites might try to construct certain notions of a state or continental identity, we illuminate how the very meaning of scientific modernity and "Africa" are negotiated and contested within the everyday spaces of the scientific projects themselves: contestations that in turn reveal some of the frailties of African ontological securities.

Through this work we provide two key contributions to OSS scholarship. First, we offer the first attempt to weave together a study of the co-constitution of ontological security across three levels of analysis: individual, state, and continental. This builds upon existing literature highlighting

how conflicting narratives emerge at different levels (usually between states and their citizens) about a state's identity and what roles it should play. This *variance* in narratives, it is argued, generates ontological insecurity in which a state's sense of self is unsettled and undermined (Steele 2008). However, while not eliding such tensions and conflict, our approach also creates space for understanding how narrative *congruence* may emerge between a variety of actors concerning who they are and what their roles should be. In particular, we explore how narratives associated with space exploration are co-constituted across different levels of African actors in an effort to advance confident and forward-looking African identities.

Second, we build on recent work in OSS (Krickel-Choi 2022) and challenge existing understandings of the relationship between physical and ontological security, specifically the relationship between material capabilities and an actor's sense of being. We do so through this study of African actors situated in a context of neocolonial dependence. It is argued in OSS that powerful states with high material capability are vulnerable to ontological insecurity because the expectations they and others place on their role are high, potentially generating shame or anxiety when they fail to meet these expectations and/or when actors assume they have greater aspirations to influence politics than they have in reality (Mitzen 2006a; Steele 2008, 69; Subotic and Steele 2018, 393). By contrast, actors with lower material capabilities—such as smaller states—are assumed to lead a more “emancipatory existence” because “ironically, their state of constrained agency” leads to much lower expectations being placed on them (Steele 2008, 69). While we do not question the arguments about powerful states and their sources of ontological insecurity, we challenge the assumptions about the “emancipated existence” of less powerful actors. We find that while the expectations on less powerful actors may indeed be lower, the fact that they have less material resources available to them is, in itself, a source of perennial anxiety because it restricts their capacity to sustain efforts to secure greater status in international politics. Rather than ontological insecurity being triggered at particular moments of acute crisis (which is often the focus of OSS scholarship), African ontological insecurities should be understood as a continuum, generated and sustained by colonial trauma and postcolonial injustices. In this sense, they reflect the “temporal” dimensions of ontological security in which “a country's self or identity emerges from its past experience, which is transported to the present through narration” (Bachleitner 2023, 26). We show how the material resources to support African ontological security-making through space exploration are insufficient, reproducing long-standing anxieties about “Africa.” Rather than breaking a glass ceiling and centering African knowledge leadership in the world, investments in space exploration instead hold a mirror to continuing relations of residual colonial racism, global inequity, and economic dependence that inhibit the full realization of confident African identities.

Ontological Security across Levels of Analysis

Laing's work on the “divided self” argues that ontological security comes from a stable environment and consistent personal relationships, which provide a superstructure for an individual's sense of reality and self. Conversely, ontological insecurity occurs when these superstructures are threatened, leading to anxiety, confusion, and existential fear (Laing 1990). Ontological security in this individual context is therefore defined by Laing as the capacity to expe-

rience and understand oneself as “real, alive, whole, and, in a temporal sense, a continuous person” (Laing 1990, 39). There are two key elements to this security: how individuals perceive themselves internally (subjective identity) and how they are perceived and identified by others in their external social environment (externally assigned identity). When there is congruence between these internal and external perceptions, individuals may experience a sense of stability, security, and authenticity in their sense of self (Laing 1990, 35–7). In this regard, Anthony Giddens defines ontological security as “the confidence that most human beings have in the continuity of their self-identity and in the constancy of the surrounding social and material environments of action” which in turn gives them their sense of “being-in-the-world” (Giddens 1990, 92).

IR scholarship has examined how ontological security may help us understand the behavior of states in the international system. Mitzen, for example, urges us to move beyond a traditional focus on physical security and to instead shift our attention to “security not of the body but of the self, the subjective sense of who one is, which enables and motivates action and choice” (Mitzen 2006b, 344). This level of analysis requires us to consider the “state as person,” to use Alexander Wendt's famous term, in which we “attribute to them properties we associate first with human beings—rationality, identities, interests, beliefs, and so on” (Wendt 2004, 289). Pointing to the inherently social character of states themselves and the “reflexivity” and indeterminacy this produces in them, Brent Steele argues that “state interests and identity are always up for grabs; each is formed and reformed by the individuals who constitute those states” (Steele 2008, 18). In this sense, as Kinnvall has argued, state ontological security is not something that can ever be fully realized: It is inherently contingent (Kinnvall 2004). This is particularly true of states from the global South and rising powers, whose quests for ontological security represent a “social demand for recognition” from more powerful states in the international system (Kinnvall 2004; Chacko 2014; Shani 2017; Chavoshi and Saeidabadi 2021, 360). Such struggles over identity must therefore be understood “at different levels of analysis simultaneously” (Steele 2019, 325) as the product of continuous internal struggles and social interactions, both within and between states, as well as at the interface of their interaction with other international actors and institutions.

Actors may try to augment a sense of ontological security in a range of ways. This might include establishing roles and routines in which an identity can be enacted, as well as crafting supportive narratives that can rationalize these activities. Mitzen argues that routines provide a sense of continuity and certainty in an international environment of constant change and uncertainty (Mitzen 2006b, 346). These routines and the “social identities” they help mold are informed by the roles that actors play in the world, which can include those of superpower, donor, regional leader, and anti-imperialist, among many others (Thies 2010). As Klose (2020, 582) puts it, “international actors satisfy ontological security needs as they realize themselves in society through the roles they play in the interaction with others.” There are three core dynamics of role-playing most relevant to our argument here. First, there is role-taking, where an actor takes on a role based on their perceptions of the expectations that others attach to their behavior. As Sebastian Harnisch has argued, however, “players are not dupes that merely ‘take on roles’”. Instead, they engage in a second dynamic, role-making, in which actors attempt to proactively make and define a role for themselves appropriate to the situation they

find themselves in, which relies in part on their ability to learn and harness their “individual creativity” in relation to others (Harnisch 2012, 48).

A third dynamic of role-playing is what is known as alter-casting, in which an actor casts others into roles that complement or reaffirm a role and identity that they have of themselves (McCourt 2011, 1607; Klose 2020, 852). In short, this is defined as “a conscious manipulation of one’s own role-taking behaviour to (re)shape the role of another actor, presumably a counter or commensurate role” (Harnisch 2012, 55). For example, during the Falklands War, Britain tried to resist being alter-cast as a colonial aggressor by other actors at the UN. Instead, British Prime Minister Margaret Thatcher sought to define Britain’s role in the conflict as being that of the “clear victim” so that they could, in turn, alter-cast the Argentinian state as a belligerent and unreasonable aggressor disrespecting norms of sovereignty (McCourt 2011, 1610).

These studies illuminate the importance of narratives for actors to rationalize their behavior and roles. As Steele (2008, 10) notes, for example, states “talk about their actions in identity terms” in that the policies and actions a state takes are woven into stories that help the state and others understand its identity and roles. Through biographical narratives, international actors thus link their behavior (e.g., humanitarian aid or foreign aggression) to the understanding of their self, while at the same time these narratives about the appropriate roles, routines, and status of an actor are negotiated through their interaction with significant others, including their potentially conflicting narratives (Steele 2008; Zarokol 2010; Subotić 2016).

It is this focus on narratives that can facilitate the study of ontological security across different levels of analysis. Steele, for example, explores the case of US military reunion videos in which armed service personnel returning from combat operations post videos of themselves coming home to their “surprised” families. For the children, spouses, and soldiers “starring” in these videos, these routines form part of a narrative about bringing the soldier “back home” to the familiar, while for the US state these individual stories feed into a “US Self” harnessing such narratives to find “some closure or repair for its morally and militarily ambiguous conduct of the war on terror” (Steele 2019, 338). Such accounts draw attention to potentially conflictual relations between different levels of actors. Indeed, this concern about tensions between states and their citizens dates back to some of the first OSS scholarship, which argued that the individuals and social collectives that make up society within a state could be seen as a potential source of “disordering” for a state’s identity because their heterogeneity could invoke “the possibility of chaos,” thus limiting the state’s capacity to develop a coherent identity (Huysmans 1998, 241). As such, it has been argued, this might trigger the need for states to confront individual heterogeneity because “in seeking to homogenize a “corporate” self-identity, [states] might satisfy the drive for ontological security in marginalizing and internally violent ways. . . that endanger swaths of their own populations” (Steele 2008, 64).

Where we differ in our approach is that we seek to understand ontological security-making across different levels, not only in these contentious forms. Instead, we put forward an understanding of ontological security-making as a co-constitutive exercise within and across levels of analysis. This is not to downplay or elide tensions and conflict that may exist. Such tensions are understood—to return to psychology literature—as a product of *variance*: where an actor’s sense of self and “being in the world” is at odds with the percep-

tions significant others hold toward that actor and the expectations they place on them with regard to the “appropriate” roles and routines they should enact. This might manifest in variant narratives regarding who we/they are, what roles we/they should play, and what behaviors are expected of us/them. Such tension and conflicts are a fundamental part of the process of co-constituting ontological security. It may produce ontological insecurity wherein an actor’s identity is constantly challenged through the alter-casting behavior of others, making their sense of being-in-the-world unsettled and conflicted.

However, our approach creates the space to recognize where *congruence* may also occur. *Congruence* is understood as the alignment of an actor’s impression of themselves and how that identity is reaffirmed through their behavior and interactions with others. We argue that the co-constitution of ontological security can also be achieved through congruent narratives that construct and rehearse a shared sense of identity between actors, including creating and establishing the roles and routines that can support the realization of such identities. This requires the alignment of narratives (this is who we are, this is what we want to do, this is how we act). What we illuminate here, then, is that it is this dynamic interaction—including the presence of both variance and congruence—that lies at the heart of the co-constitution of ontological security within and between actors across different levels.

To develop this argument, we examine how African ontological (in)securities are co-constituted across three interwoven levels of African actors—individual, state, and continental—as well as through their interaction with external actors. This occurs primarily through variance with external narratives about African “backwardness,” aberration, and supplication in the international system. Such narratives, we contend, seek to “altercast” African actors into roles that complement and reify the roles and identities of external (mainly Western) others. By contrast, we explore how African actors attempt to construct congruent identities through role-making and establishing routines associated with leading space programs. This, in turn, helps them to try and construct wider notions of “African renaissance” and African leadership in the world.

Figure 1 reflects our multilevel approach. What we develop in the analysis below is a sense of how these three levels are interwoven and co-constitutive. The boundaries between each of these concentric circles are deliberately porous, illustrating how a sense of being African in the world is co-constituted across these levels. Complete homogeneity at each level is, we argue, not a necessary condition for some degree of congruence, nor is heterogeneity necessarily a source of unmanageable variance and conflict. If, for example, we were to metaphorically “zoom out” from this diagram, each individual (denoted here as a circle both within a state and within the wider continent) would appear as a tiny dot in a pointillist painting: unique in its own right but combining with others to co-constitute a wider corporate image of self for both their state and the continent. To move up a level, each African state, for all their diversity, contributes to a wider depiction of the continent. Some strong degree of congruent narratives is necessary to order the dots into a legible image of African identity at each level. Such narratives will then interact (and potentially conflict with) the narratives of external “significant others” who may try to alter-cast African actors (who may then in turn alter-cast them as neocolonial agents, for example).

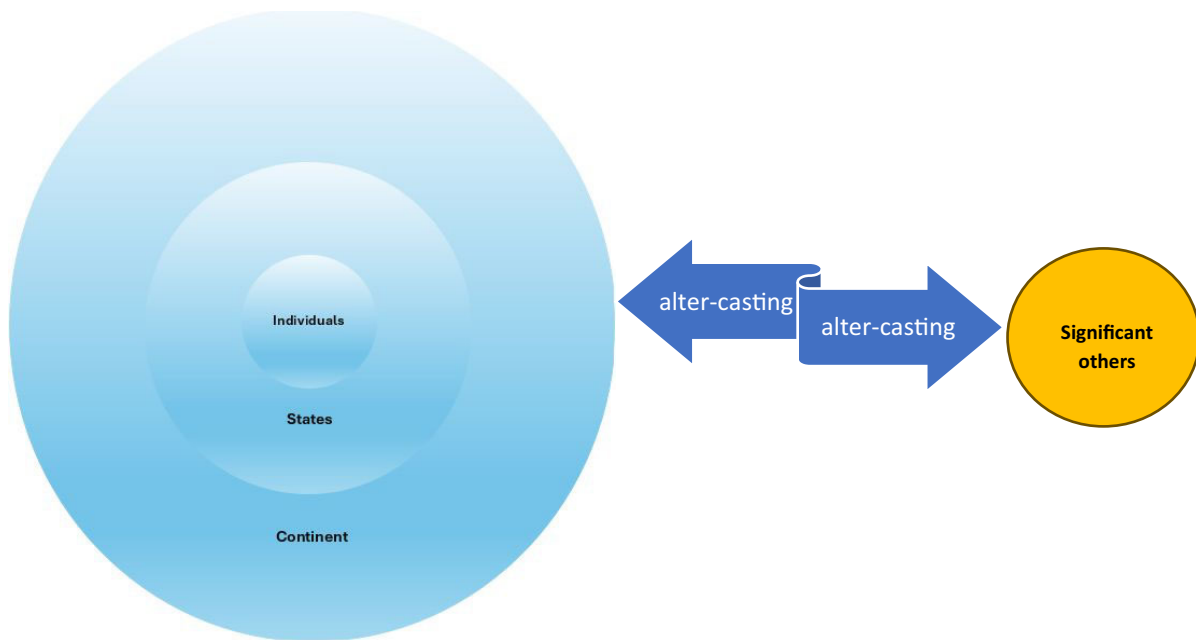


Figure 1: The multilevel co-constitution of ontological security

Case Context and Method

The Square Kilometre Array (SKA) is a radio astronomy project that represents one of the most significant investments in African space exploration. It aims, through global collaborations, to build the world's largest and most powerful radio telescope and, in doing so, to expand African space science capacity (SKAO 2024). Those behind the \$2.4 billion project claim that,

"The scale of the Square Kilometre Array represents a huge leap forward.... Deploying thousands of radio telescopes, in three unique configurations, it will enable astronomers to monitor the sky in unprecedented detail and survey the entire sky thousands of times faster than any system currently in existence." (SARAO 2022)

The SKA has been hailed by some science commentators as "the biggest scientific experiment on earth—a radio telescope that will be able to detect signals from the beginning of the universe" (Wild 2012). What we explore below is how African cooperation in this "huge leap forward" contributes to ontological security-making.

Fieldwork was conducted over an eight-month period from December 2019 to August 2021 and was focused on the SKA project itself and one of the smaller-scale, connected projects: the Development in Africa with Radio Astronomy (DARA), which aimed to develop technical skills and scientific capacity by delivering training and higher education opportunities for African scientists connected to SKA. Forty-three key informant interviews were conducted with scientists, postdoctoral researchers, PhD and master's students, policymakers, activists, and politicians at the center of the SKA and DARA projects. This enabled us to move beyond secondary sources (which are often the focal point of OSS scholarship) in order to elicit personal narratives about these actors' everyday experiences of these projects on the ground and what implications this had, in turn, for their sense of identity. The interview questions were designed to capture the participants' perceptions of agency, their role in decision-making processes, and the challenges they faced in

navigating the power dynamics inherent in global scientific collaborations.

These interviews were complemented by participant observation at critical events to understand how the value of these projects was publicly debated. This includes key international seminars and annual meetings organized by SKA and DARA project leaders, including the DARA Annual Meeting in Goonhilly, UK (2019); the Benny Fanaroff Annual Lecture in Manchester, UK (2020); and the Space Generation Council Meeting in Accra, Ghana (2021). In these settings, the researcher adopted the position of "observer as participant," engaging with the social setting under study while maintaining a nonmember status. The meetings provided a rich, previously underexplored source of data, as they brought together students, governments, AU officials, distinguished academics, and corporate representatives to speak candidly about the opportunities and challenges they faced.

This data was supplemented by documentary analysis, which involved a comprehensive review of primary and secondary sources, including policy briefs, government reports, SKA and DARA project agreements, meeting minutes, and relevant academic publications. Additionally, speeches delivered by key stakeholders—such as African policymakers, SKA project representatives, and international collaborators—were analyzed to identify narratives relating to ontological security. All of the data was systematically coded for recurring themes related to agency, collaboration, identity, dependency, and resistance.

Taken together, this multimethod approach enabled us to understand the "official line" being promoted by policymakers and leaders at the state and AU levels. It also, however, enabled us to bring ontological security "to life," in that it allowed us to move beyond the officially sanctioned narratives to explore how these were received and acted upon at the "coal face" of everyday life on these space projects.

Analysis

Pan-African Ontological Security

The ontological securities of African states and, as we see below, individuals, are bound up in wider contestations over who and what “Africa” and “Africans” are in IR. One of the challenges, in the case of African identities, is that they are immersed and entangled in the collective trauma brought about by the experiences of centuries of slavery and colonialism—and the epistemic violence this inflicted on Africa and Africans’ sense of collective self-worth, (Ekeh 1975; Davidson 1993; Fanon 2001). The importance of this “collective memory” reflects the “temporal” dimension of ontological security identified by Kathryn Bachleitner, who has argued that an actor’s “self or identity emerges from its past experience, which is transported into its present through ‘narration’”. They argue, in relation to Austria and Germany’s difficult relationship with their Nazi past, that “in the course of such a “temporal” identity construction, the “significant other” is not any longer a contemporary, spatial “external other” but a “significant historical other” from the actor’s past (Bachleitner 2023, 26). However, for African actors their significant (colonial) historical “others” are also, at the same time, “contemporary, spatial others” to use Bachleitner’s terms, because of how the legacies of colonialism and continued asymmetrical relations of power between African actors and their former colonial masters manifest ubiquitously in the present. As such, while a great deal of OSS literature explores how states experience ontological insecurity as ephemeral bursts of anxiety triggered by crisis or external attack (for example, Subotić 2016; Purayil and Purayil 2021), by contrast, African states experience anxiety as a continuum of colonial violence and enduring inequities. As Haastrup et al. argue, in this way the resilient “coloniality of power” is significant for understanding ontological security-making in global politics (Haastrup, Duggan, and Mah 2021). Indeed, this “postcolonial context,” Cash and Kinnvall argue, “affects the constraints and possibilities within which insecurity prevails and security can be sought” (2017, 268–9).

Africa, African states, and Africans therefore often find their identities and roles alter-cast for them by external others looking to sustain their own ontological security through the maintenance of international hierarchies of power (Gallagher 2009; Haastrup, Duggan, and Mah 2021). One of the greatest sources of continued African ontological insecurity is the manner in which the geographical proximity of African states is crudely harnessed by outsiders to justify and regularly rehearse sweeping generalizations about the continent’s political challenges and perceived deviation from Western modernity. This tendency to construct “pathologies of deviancy,” as Bilgin and Morton (2004) powerfully articulate it, was widespread at the turn of the century in mainstream media. This includes the now-infamous depictions of Africa in the 1980s as the hapless victim of supposedly apolitical famines in need of Western philanthropy or as the “hopeless continent” in the 1990s whose breakdown posed the threat of “coming anarchy” to the Western world (Kaplan 1994; The Economist 2000). Africa was—and to a large extent still is—portrayed (often simultaneously) as uniquely violent, corrupt, impoverished, dangerous, needy, and desperate, where events like the Rwandan genocide or the leadership of Robert Mugabe are used as a cypher to feed monolithic narratives of continental aberration (Schimmel 2011; Pointer 2023). What these depictions often hold in common is a focus on Africa’s internal failings

as a cause of this breakdown, eliding the impact of colonial legacies and continued economic dependency.

Countering this alter-casting of African agents by external actors has always been a challenge. In struggles against colonialism, debates about pan-African identity formed part of a wider, multifaceted pan-Africanist movement, which, despite its many differences, at its core sought to promote the dignity of Africans as part of wider struggles for political liberation, self-determination, and equality on a global scale (Falola and Agbo 2019). Ideas of pan-African identity were central to African liberation movements, who, in their quest for national liberation, couched their struggles firmly within a narrative of reclaiming pan-African dignity as well as national freedoms. While expressions of pan-African identity are deeply contested, they have nonetheless continued to play a significant role in shaping African agency in international relations after independence (Oloruntoba 2023). In short, a collective, pan-African ontological security has been long coveted by African states and societies as part of a wider cultural and ideological movement promoting “African equality with other races. . . to reclaim the rightful place of Africans in the world” (Falola and Agbo 2019, 1). As Adom Getachew notes, forging pan-African solidarities and identities was a critical pillar of “anti-colonial worldmaking” (Getachew 2019).

African political elites sought to establish a corrective narrative of “African renaissance” at the turn of the century in an effort to reclaim control over ontological security, both in terms of who sets the meta-narratives about the continent and who plays what roles in African development and security. Politically, this drive toward renaissance manifested institutionally in the formation of the AU from the remnants of its predecessor, the Organization of African Unity. For its leading architects, like former South African President Thabo Mbeki, the formation of the AU signified the continent “entering a new period that required that we as Africans must move further forward with regard to the matter of the consolidation of the unity of the peoples of our continent. . . to fulfil the dream. . . that Africans would unite” (Mbeki 2003, 167). In this respect, the African Union is ambitious and explicit in its Agenda 2063: “Culture, heritage and a common identity and destiny will be the centre of all our strategies so as to facilitate a Pan-African approach and the African Renaissance” (African Union 2015, 8). Antonia Witt (2023) notes that the AU’s ambition is for a potentially “transformative project” of social engineering and economic development in which “the question of how to create a sense of belonging and identification with that project among those affected constitutes an important dimension of this endeavour.”

Investment in science and technology is framed as critical to providing the strides forward in economic development needed to sustain the identity of a “different and better Africa” the AU has sought to cultivate (African Union 2015, 2). According to Thabo Mbeki, science and technological advancement would be central to the reclamation of African standing and identity in the world because it would enable Africans to reassert their past scientific leadership and proactively shape the “content” of global knowledge (Mbeki 2003, 169). The AU considers physical and ontological security as indissoluble: Space exploration is framed as being central to its fulfillment of its physical security needs, including across a wide range of developmental concerns (AU; African Union 2015, 108; 2019, 6). However, the record level of investment is also critical to its wider ontological security-seeking ambitions set out in Agenda 2063 “for an African century” (AU 2015, 14) in which “Africa will take

her rightful place in the political, security, economic, and social systems of global governance towards the realization of its Renaissance, establishing Africa as a leading continent” (African Union 2015, 10; 2019, 4).

The bid to host the SKA telescope project in Africa is an important example of efforts to confront Afro-pessimism through space exploration. Two rival groups of countries emerged trying to host the telescopes: the first, led by Australia and New Zealand, and the second, including a range of African states, led by South Africa. After a diplomatic struggle, the SKA Board agreed that hosting of the large telescope will be split between Australia and South Africa. Securing the co-hosting of SKA in South Africa was immediately hailed by the then Minister for Science and Technology, Naledi Pandor, as marking a major diplomatic coup for Africa as a whole because:

the decision had more to do with politics than science. As with all such big projects, questions of national prestige intruded upon technical judgements and that was particularly so in Africa, where the SKA is seen as a good news story for a continent still struggling to overcome its image as a violent and chronically unstable place. (Economist 2012)

In short, according to its proponents, the “unique opportunity” offered by proactive agency in global space science offers significant physical and ontological security benefits: securing both AU’s developmental ambitions while at the same time contributing to an African renaissance in which the continent can elevate its standing and prestige in world affairs. It is at the state level, however, where space activity (such as telescope installation and satellite launches) takes the form of routines that could support the AU’s space ambitions, as well as add weight to the narratives of African renaissance that go alongside it. As we see below, this reflects the co-constitutive nature of ontological security found at the interface between African states and the AU: Just as the AU relies on states to provide sustenance to its narrative ambitions of space leadership, African states frame their space programs as intertwined with a wider continental project of renewal.

State Ontological Security: Ghana and South Africa

African states themselves have also sought to harness space science for the advancement of their ontological security. Indeed, as Ayşe Zarakol (2010) notes, states unsatisfied by their ranking on the international hierarchy tend to adopt status-enhancing policies, and a particular way by which states might try this is to position themselves in relation to narratives of modernity (Meyer and Jepperson 2000).

For the African National Congress (ANC), South Africa’s liberation movement and ruling party since 1994, investing in space science is part and parcel of its efforts to reclaim a more positive image for the country on the world stage after apartheid, arguing:

Scientific endeavour is not purely utilitarian in its objectives and has important associated cultural and social value. It is important to maintain a basic science competence in “flagship” sciences such as physics and astronomy for cultural reasons. Not to offer them would be to take a negative view of our future - the view that we are second class nation, chained forever to the treadmill of feeding and clothing ourselves. (White Paper on Science and Technology 1996)

South Africa’s science, technology, and innovation (STI) policy as the African SKA lead country has evolved significantly since the end of apartheid, driven by this goal of po-

sitioning the nation as a leader in global knowledge production and technological innovation. The 1996 White Paper on Science and Technology laid a foundation for this by emphasizing collaboration between government, academia, and industry, aiming to shift the economy from resource-based to knowledge-based, while the establishment of the Department of Science and Technology (DST) in 2002 marked a pivotal point, consolidating efforts to develop a cohesive STI framework (White Paper on Science and Technology 1996).

The establishment of the South African National Space Agency (SANSA) in 2010 was presented as a milestone development establishing South Africa as a global leader. During the launch, the Minister of Science and Technology, Naledi Pandor, claimed that:

Our combined efforts at enhancing South Africa’s space capabilities will not only be of immense value to the scientific community in the Southern African region. Our efforts in enhancing space science and technology will also assist in addressing the persistent challenges of health care provision, water resource, agricultural mapping, and urban planning and communications. (Pandor 2010)

At this time, STI investment was increased significantly, and the 2019 White Paper on STI and the Decadal Plan for STI (2021–2031) further emphasized space science, aligning it with the country’s National Development Plan to address poverty, inequality, and unemployment (White Paper on Science, Technology, and Innovation 2019; Government of South Africa 2022).

Roodt argues that the eventual establishment of a space agency reflected “support for development of a scientific prowess to position the country for global recognition, and . . . see Africa develop into a leading force in all aspects of life on a global stage” (Roodt 2006, 26). Successive ANC governments sought to routinize space activity through satellite launches and basing astronomy projects in the country. With the launch of the SALT telescope in 2005—which was then the largest space telescope in the Southern Hemisphere—South African ministers boasted that this would allow the world to “recognise South Africa’s potential to become a global astronomy destination” and that “South Africa will not only become an origin for Humankind, but also the launching platform that takes the world to the stars and beyond” (Mangena 2008). Gastrow (2015b, 83) observes that the later decision to situate the SKA astronomy project in Africa (and South Africa in particular) after considerable diplomatic struggle enables the South African state to portray a favorable image of “modernity, international standing and validation for African scientific and intellectual capabilities” (see also Gottschalk 2005; Wild 2012). In the words of Science and Technology Minister, Derek Hanekom, the subsequent SKA project hosted from South Africa would bring “major benefits for Africa” as a whole, and that “not least, it will transform perceptions of Africa” (Campbell 2014). These narratives reflect the co-constituted nature of ontological security-making between states and the wider continent: Achievements in space exploration at state level are seen as indissoluble elements of wider continental progress, allowing for the formation of congruent narratives of a shared identity founded on mutual progress.

The importance of space exploration for affirming identity is shared with other African states, even where they are in much weaker political and financial positions of power. Ghana, the first country among the eight African partner countries registered for SKA, has also significantly increased STI investment, and there has been a discernible shift to-

ward integrating STI into national development agendas. The Ghana Poverty Reduction Strategy (2003–2005), the Ghana Shared Growth and Development Agenda (2014–2017), and the 7-year Coordinated Programme of Economic and Social Development Policies (2017–2024) emphasized the importance of STI across all productive sectors to achieve Sustainable Development Goals (SDGs) (Government of Ghana 2003, 2014, 2017). An emphasis on space exploration as part of this wider STI agenda culminated in the launch of Ghana's National Space Policy (Government of Ghana 2022).

The launch of the Kuntunse telescope in Ghana in 2017 was described by national leadership as the beginning of a new era, with “its purpose being to propel the country to the enviable league of countries pursuing space science” (Graphic Online 2017). Ghana also launched a satellite for the first time and has recently announced plans to develop a rocket in the coming years as part of its bid to become a “space faring nation” (Ghana News Agency 2017). Ghana's president argued that:

This new era will not only witness the deepening of knowledge and skills development... of Ghanaian scientists. But also enhance their capacity to contribute to the world body of knowledge in the ever-expanding field of astronomy and space science... It is a compelling example of the pan-African collaboration which we see as the solution to the problems of development and progress. Ghana abounds in talent, and we are pleased to see our talents shining with even greater promise for the future.

This search for a positive role and identity for the state, framed in aspirational terms to “join” an elite group of nations and to “contribute to the world body of knowledge” reflects ontological security-making as a “constant state of becoming,” rather than a necessarily realizable end point (Ralph 2024). The pursuit of elevated stature by both South Africa and Ghana is bound up in struggles to fulfill a wider biographical narrative about Africa as a whole, once again reflecting the co-constitutive nature of African ontological securities depicted in the porous nature of the boundaries between African states and the wider continent in Figure 1 above. However, as we can see below, these narratives of African progress are also rehearsed in the everyday spaces of space science projects by individuals who see their own biographical narratives tied with state and continental identities.

Individual Ontological Security

While IR literature has applied the concept of ontological security to the state, what we argue here is that the realization of ontological security of African states is intertwined not only with notions of wider continental identity but also with its material realization on the ground with individuals. If we recall the views of regional leaders like Mbeki, or Ghana's president, the manifestation of a positive continental identity was dependent upon the “rebirth” of African knowledge production so that a continent that “abounds with potential” can contribute on its own terms to the “world body of knowledge.” This reminds us of Antonia Witt's argument that the extent to which pan-African identities can be consolidated is dependent upon people's “variegated experiences” of pan-African initiatives and “their tangible effects on people's everyday lives” (Witt 2023, 1).

Looking into the case study of students and scientists involved in the SKA and DARA space astronomy projects, it was clear that leaders on the program, as well as its partici-

pants, had ambitions for the project far beyond its immediate benefits for space astronomy itself. This is regularly rehearsed in project gray literature (DARA 2024) and by its leadership. For example, DARA project lead, Melvin Hoare reflected in an interview that this was about making the continent central, not peripheral, to astronomy development, and that:

Due to the SKA project, Africa is where radio astronomy will be in the future. We believe SKA should not be some giant project dropped on Africa and used by wealthy nations across the world. We want to ensure Africa has the needed talents for the project [and to] create a bunch of jobs and high-tech industries. (Hoare 2020).

This sense of confidence—both that astronomy could elevate Africa's international scientific standing while also empowering South Africans and Ghanaians to get jobs in other sectors—resonated strongly with those involved in the projects. First, involvement in the projects offered individuals a material basis to support their biographical narrative. (This is who I am as part of the project, and this is where I am moving to.) Beneficiaries of the human capital development program for both SKA and DARA felt that acquiring skills that are versatile to fit in the future improved their prospects for social mobility. As one of the PhD students under the DARA program put it,

Aside from all the excitement and intriguing findings about our origins, astronomy has transferable skills and is on the gateway to other technological applications like data analytics applicable to other sectors of the economy like finance. (Interview 1).

Second, this sense of individual trajectory, in terms of escaping from their current predicaments, was intertwined with where they felt the nation—and wider continent—needed to go to avoid being “left behind.” These conversations reverberated in the meetings observed in the project, where those engaged mingled with other scientists and policymakers to share ideas about the wider development of the country and continent. At one of these meetings a participant reflected on a common concern about the outsourcing of basic scientific processes in research and development, meaning that local scientists were disengaged from day-to-day scientific innovation. They argued that

If Africa continues to think in this way around bread-and-butter issues, thinking that we are not prepared to break the bark and do things ourselves, our [international] peers will think [these tasks] are well beyond the scope of our comprehension. This will maybe expose our stupidity [and] our development may be dithering. (Field notes).

This echoes the sentiment of many respondents directly involved with the projects, who argued for the importance of being “in” rather than “out” of space science, with the danger being that not being involved would leave them—and the wider African scientific community—behind. For example, students who attended the basic training in radio astronomy and went on to enroll in master's programs felt that it affirmed that they were capable of doing what was previously the preserve of “advanced” nations. As one student reflected,

I want to use my knowledge of astronomy to inspire young people and build a stronger science education system in Africa, showing them that we have the potential to be leaders in this field. (Interview 2)

The sense of confidence these programs imbue makes an important contribution in affirming identity. In one of the

interviews, a student who had just received basic training in radio astronomy stated that

I am inspired; I now have the 'I can do mentality'. Astronomy opened my brains to wider and deeper thinking. I now have the confidence to build our own telescope. I am praying that next time we are constructing a telescope in Ghana I will be among the engineers contributing immensely not only for my country but even towards the growth of astronomy in Africa. (Interview 3)

It was clear that students and scientists on these programs felt a sense of purpose and responsibility regarding the wider development of their state and the continent, and that their progress was bound up with that of wider national and African advancement, reflecting again the co-constitutive nature of African ontological securities depicted in those porous boundaries between our levels of analysis depicted in Figure 1. The effect of astronomy at the individual level thus goes beyond the development of the individual's skills and knowledge acquisition: It contributes to generating and sustaining narratives and routines to realize a confident self-identity as an African-in-the-world. It is, nonetheless, a precarious and contingent ontological security.

The Precarity of African Ontological Securities

Nina C. Krickel-Choi (2022) has argued recently that we need to consider ontological security and physical security as fundamentally intertwined. Contrasting her argument to that of Mitzen, she asserts that we must understand

ontological security as "security of the self-in-the-body" as opposed to "security not of the body, but of the self" (Mitzen 2006a: 344). Doing so reveals a genuine two-way relationship between physical and ontological security, as a consequence of which one cannot practically separate the physical from the psychological, physical well-being from psychological well-being, physical security from ontological security. (Krickel-Choi 2022, 176)

Some of the most significant and influential work in OSS has acknowledged that the physical capabilities of states could have an impact on their ontological security, arguing that states with larger capabilities might struggle to wrestle with the additional expectations placed on them by other actors. In the EU's case, Mitzen believed this risk could be mitigated by rigorous routines and narratives (Mitzen 2006a). Steele, however, argues that the weight of big expectations is not so easily overcome because powerful states are "somewhat imprisoned by their ability to influence more outcomes in international politics" and that this can result in these actors falling short and becoming dogged by anxiety and "shame" (Steele 2008, 69–70).

By comparison, Steele (2008, 69–70) contends, less powerful and materially capable states lead a "more emancipatory existence, in the sense that their levels of anxiety are reduced due to, ironically, their state of constrained agency" because ultimately "we feel less anxiety not about those things that are outside of our control, but about those we perceive to be in the realm of our possible agency." Steele argues the point about powerful states forcefully, but the relationship between constrained agency and anxiety in African cases is far less straightforward. Parallel work on roleplaying, such as that by Sebastian Harnisch, proposes the inverse of Steele's argument, contending that a source of internal conflict for actors emerges when a lack of resources makes it difficult for them to fulfill a role. This leads to questions about why they have taken on such a role or had it assigned

to them in the first place (Harnisch 2012, 50). Indeed, as Krickel-Choi notes in their work on OSS, where an actor's physical security is threatened and/or violated by another actor, this can provoke anxiety about their identity and role in the world, and that "the possibility that a physical threat can also generate significant anxiety has not been sufficiently explored" (Krickel-Choi 2022, 160–1). Taking up this challenge, our fieldwork illuminates how physical security threats, which manifest in external dependency and underdevelopment, directly jeopardize African ontological security by reinforcing tropes about the supplicant roles African actors play in international politics.

To begin with, the funding architecture of space exploration circumscribes the capacity of African agents to sustain a confident, aspirational identity as knowledge leaders. For example, the AU notes that "Developing an adequate regional space capability has been hampered by the capital-intensive nature of the space sector and the lack of a formal governance structure to advance a collective effort" (African Union 2019, 6). They further note that Africa had been responsible for "less than 0.2 percent of the global space budget" and that even the continental leader on satellite technology, South Africa, accounts for only 0.87 percent of scientific publications in this area. Such deficiencies, they claim, "highlight significant underinvestment and suboptimal activities in the space sector, which limit Africa's potential in a fast-growing sector that can make a vital contribution to addressing the continent's challenges" (African Union 2019, 7).

On the one hand, space science and exploration are usually internationally collaborative efforts, secured through pooled (though often very unequal) international financial contributions. On the other hand, however, the fact that most cutting-edge space technology, infrastructure, knowledge, and experience are concentrated in a small number of countries outside of the continent, coupled with the relative lack of African finance available for Africa-based projects, means that African space projects are acutely dependent upon external collaboration (Oyewole 2017). Moreover, where partnerships have been struck, such as between Nigeria and China, these have been premised on highly unequal power relationships in which African scientists are marginalized and the scientific benefits/outcomes are hoovered up by the external powers (Cashman and Abolarin 2024).

In this respect, if we recall the South African minister above claiming that the SALT telescope will establish the country as "the launching platform that takes the world to the stars and beyond," he immediately cautioned that this was dependent on partnerships grounded in very unequal power relations. He argued that their strategy is

...to secure international partnerships to develop new science and technology infrastructure in our country by harnessing South Africa's natural, geographical and knowledge advantages. For example, in astronomy we have good access to the Southern skies ... The trick is to offer what the world wants in order to get what you want (Mangena 2008)

Even South Africa remains reliant on international funding secured through offering "what the world wants," namely science capacity and the convenience of its southern geolocation for astronomy. Despite securing SKA, its rivalry with Australia based on who can offer the best astronomical vantage point is being rekindled as the latter seeks to reinvest heavily in its "renewed push for the stars" (Wei Sooi 2024). South Africa's "offer" of uninhibited access to Southern skies also reproduces African insecurity at local levels, where securing optimal field locations for astronomy infras-

structure required the upheaval and dislocation of local populations in the Karoo desert (Walker, Chinigò, and Dubow 2019, 3–4).

External dependence can also limit the role of African scientific agency in critical projects. For example, Ghana's first space satellite was dependent upon funding and support from the Japan Aerospace Exploration Agency. Designed in Japan and assembled and tested by students in Ghana, the satellite was carried by a SpaceX rocket launched from a NASA site, and the satellite was eventually launched into orbit from the International Space Station by a Japanese astronaut (BBC News 2017; Bright 2017). As AU policy makers concede, Africa needs to significantly enhance the scope of its own autonomous space capacity to reduce this dependency, although in the same breath they bemoan chronic shortages of funding relative to international programs and the seeming lack of political will to follow through on ambitions (*Space in Africa*, 2024).

To take the example of radio astronomy, the SKA is inherently an international project, drawing its funding from its members across the world. African contributions to the SKA project are largely driven by South Africa, which is hosting a significant portion of the SKA telescope infrastructure. However, compared to the larger international contributions from actors such as the United Kingdom, Australia, and the EU, African financial contributions are more limited, and the vast majority of the project funding comes from external sources. This dependence at the level of an umbrella project like SKA is replicated in the sublevel DARA project and impacts upon its mission to ensure that the educational downstream benefits of the SKA are realized for African universities and students. The DARA project is primarily funded through UK-based funding. When cuts were announced to the UK government's official development assistance (ODA) budget in 2021, this undermined the flagship funding vehicle at the time—the Global Challenges Research Fund (GCRF)—and the government research body announced the part or whole cancellation of ongoing projects (UKRI 2021). The DARA project was impacted directly, and as the cuts took hold, scientists on the project faced the prospect of their roles and identities associated with space exploration being placed in immediate jeopardy.¹ One Ghanaian MSc student studying in the United Kingdom, for example, lamented that he had lost hope of continuing onto a PhD project because:

The sudden cuts to ODA funding in 2021 were devastating. As a student from Ghana working on a DARA-related project in the UK, I found myself uncertain about the future of my research. My project, like many others, faced severe delays and disruption. (Interview 4)

Another Ghanaian PhD student emphasized how these cuts directly affected students' ability to complete their studies:

These cuts didn't just affect projects but also impacted the students involved. Many of us from Africa, including myself, relied on these funds to complete our training in advanced science fields like radio astronomy. The cancellation of funding left us in a difficult position, unsure of how to proceed with our work. (Interview 5)

There was regular concern raised about the vulnerability this external dependency generated for African scientific

advancement, and this manifested in frustrations about how, as one civil society activist put it, “we shouldn't accept just any solution or funding that comes our way” (Interview 6). These concerns were shared by those on the projects themselves, who bemoaned that “the funding situation of the SKA and DARA projects in our country for now does not give us independence” (Interview 7).

This lack of autonomy reproduces colonial identities that inhibit more confident, independent identities from emerging. Respondents believed that, owing to their dependency, many African governments maintained unhealthy ties with former colonial powers and that, as one space policy analyst put it, they were always forced to “seek approval of our former colonizers in everything that we do” which meant that as a result “a former colonial master can't look at you as a force to reckon with. It's high time we start breaking away from such a mentality. (Policy Analyst, Ghana).² Such sentiments reflect wider concerns raised by decolonial scholars and activists like Fanon (2001) and developed by Ndlovu-Gatsheni. They have argued for “worlding beyond the West” (Biti 2023; Ettinger 2023), advocating for Africans to “decide not to imitate Europe” but to instead “tense our muscles and our brains in a new direction” (Ndlovu-Gatsheni 2020, 17). Such independent, new directions are hard to sustain where material dependence on external sites of finance and capacity for knowledge production remains so acute.

Narratives rehearsed by the Ghanaian government (detailed above) about harnessing “abundant” national talent were also at odds with how scientists on the projects felt about their treatment, which in turn threatened the consistency of their own biographical narratives of self-advancement. This often centered around the continued outsourcing of scientific jobs and inputs to external countries, which in turn bred resentment. As one of the master's graduates from the project put it, even their own government was still looking to recruit science expertise from overseas rather than harnessing the skills of those trained up on space astronomy programs:

The problem of our government is outsourcing skills, a tendency of hiring external individuals, teams, or companies to perform tasks, provide services, or handle specific functions from outside the country that would traditionally be managed from within and relying on internal expertise. [Whereas] we know that people are healed by their own soil. (Interview 8)

This perceived lack of confidence in local African talent meant that many of these scientists felt they could not be certain of long-term job security that could sustain the very routines of everyday scientific practice that can underpin ontological security. Scientists lamented that space programs did not offer a sustainable future and that identities forged in the routines of astronomy projects would quickly be lost if they were transferred to other sectors.

These dynamics generate variance, rather than congruence, in the narratives emerging from each of our levels of analysis—potentially undermining wider narratives of continental progress. They highlight, as we conclude below, the material dependency of ontological security: if physical resources are not there to adequately sustain identities, they will be inherently precarious and potentially transient in their nature.

¹Although it should be noted that the academic institutions concerned often stepped in to cover these costs themselves and the projects continued, albeit with some reduced scope.

²The policy analyst worked for UNECA and participated in the review of the science policy in Ghana.

Conclusion

The mysteries of the universe have always provided a romantic trigger for the wider contemplation and reimagining of ontological securities. The first pictures of Earth from outer space provoked reflections, at a planetary level, about all of us as human beings-in-the-universe, to paraphrase Giddens. Initially coming at the height of the Cold War, they invoked anxieties about humanity's shared frailties and also conversations about how the very worst threats to humanity, such as nuclear war and, more recently, the climate crisis, could (and should) be contemplated afresh.

Space exploration has thus long been hailed as a means by which we can learn about ourselves, our origins, and our potential paths forward (Wild 2012). It is, however, undertaken in a highly unequal world where access to the means to explore and understand space is not distributed equitably. In this sense, exploring the infinite universe provokes the more immediate—but no less prescient—earthly contemplations of what Africa is, what it could be, and who or what stands in the way of this realization.

Ontological security is, to return to Giddens (1990, 92), about our sense of “being-in-the-world.” We offer an understanding of ontological security as being co-constituted across three interwoven layers (individuals, states, and continents/regions). In this respect, we hope that our study might point to the importance of scrutinizing other identities that transcend our traditional objects of focus in OSS (for example, “European,” “Western,” “Atlanticist,” or “Islamic”). Such identities might in turn be vital to understanding the co-constitution of the ontological securities (and insecurities) of international organizations, regional bodies, states, and individuals.

We have illuminated how this co-constitution of ontological security occurs through contestation (where actors' sense of identity and roles in the world are disputed and potentially undermined through variant narratives and alter-casting behavior). However, we also create space to understand how actors might work within and across levels to build congruence in their narratives, crafting a shared sense of purpose, belonging, and roles that may help to affirm their identities or create new ones that upset the global order. When focused, as we are here, on multiple layers of actors in the global South, this shifts our attention away from the established state powers that are often the primary fixation of OSS and instead enables us to contemplate more diffuse sites of ontological security-making and, in so doing, the spaces and alliances in which “anti-colonial world making” (Getachew 2019) might arise.

Developing OSS in this way in turn helps us to understand the importance of ontological security-making in taking forward literature on African agency in international relations. While this literature has done a great deal for understanding African actors' roles in constructing and challenging the global order, we contribute to this by foregrounding the importance of ontological security-making in African agency. It requires a “temporal” understanding of ontological security (Bachleitner 2023) that understands how African identities and contemporary agency are forged in relation to both historic colonial others and also how the legacies of colonial violence are contested in the present through attempts to forge more confident, forward-looking African identities. This requires understanding the agency of African actors in IR across levels of analysis. While actors like the AU and states like Ghana and South Africa wield a strong capacity to propagate particular narratives concerning continental progress, what we have highlighted here is how in-

dividuals also bear at least some capacity to build congruence or variance with these narratives. As we have seen, space exploration can provide a basis for cohering narratives that challenge the “alter-casting” tropes of perpetual African deviance and backwardness. They can support ontological security-making for actors grounded in a more liminal idea of identities associated with a “learning” journey toward an end, or as Ralph puts it, “a constant state of becoming” (Ralph 2024).

However, following Krickel-Choi (2022), we also highlight the interdependence of physical and ontological security-making. Global inequalities that inhibit space exploration permeate from the continental body of the AU, down through the state, and through to the master's student on an astronomy project scouring local job markets. This highlights the need for a policy focus on sustainable independent funding, intellectual property rights, and autonomous science capacity as a way of ensuring African leadership in space exploration amid a growing clamor to control African space activity by external powers. Without sufficient physical resources, space exploration provides only a precarious foundation for sustaining alternative narratives of Africa-in-the-world: Where these projects fail to deliver individual ontological security in everyday spaces, this can inculcate variance with state and AU narratives about African progress that chips away at their integrity. In this sense, we demonstrate how ontological security-making can induce anxieties, particularly where this takes place in an iniquitous global order where, in this case, the desire to “belong” to the “club” of space-faring actors exposes African agents to the reality that they exert little control in a Western-dominated space of agenda-setting and knowledge production. In short, rather than smashing glass ceilings in global knowledge production, at present African space exploration might be best understood as holding a mirror to the inequities that inhibit the full realization of more confident and ambitious African identities and global agency.

Acknowledgments

We are grateful to Professor Melvin Hoare for their co-leadership of our wider project on space astronomy and African development. We want to thank our friends and colleagues Emma-Louise Anderson, Laura Considine, Olaf Corry, Madeleine Le Bourdon, Jason Ralph, and Lauren Smith for their feedback and counsel. We are also grateful to the three anonymous reviewers and the editors for their comments, which were incredibly engaged, supportive, and helpful.

Data Availability Statement

The data underlying this article cannot be shared publicly due to ethical/privacy reasons as per the University of Leeds Ethics Approval reference AREA-19-003. Research participants involved in the space science projects who were dependent on these projects for their employment and/or studies needed anonymity in order that they would speak openly about their experiences and views about the projects. The data can be shared on reasonable request to Jekoniya Chitereka.

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