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Depoliticising Square Kilometre Array and Vanwyksvlei in the anti-politics machine

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This article follows the study of the anti-politics machine that explains why and how developmental projects fail, in the context of a little drought-stricken Karoo town called Vanwyksvlei, Northern Cape. The five (corporate) social responsibility programmes, under the Square Kilometre Array (SKA) in South Africa, can be considered a failure and this reveals 'mismatches' and contradictions in what is considered 'development' between Vanwyksvlei's residents and SKA. With ethnographic methods, semi-structured interviews and textual analysis, the 'anti-politics machine' is useful in deconstructing and depoliticising the relationship among developmental actors involved in the five programmes. Firstly, deconstructing and depoliticising the five programmes attempts to explain the success–failure binary of development that points to critiquing the development discourse from problem-orientated to a problem-solving orientation. Secondly, Habermas' theory of communicative action aids in the quest of consensus through deliberative and negotiation strategies between local people, national governments and global organisations. Lastly, the significance of the anti-politics machine goes beyond accounting for the five failed corporate social responsibility (CSR) programmes and extends to the recognition of local sphere, not only to depoliticise the politics of astronomy knowledge with indigenous insight, but also assist in the urgency of water supply.

Keywords: development; mismatches; anti-politics machine; Square Kilometre Array (SKA); astronomy; Vanwyksvlei.

Introduction

Vanwyksvlei is 1 of 16 Karoo towns affected by the Square Kilometre Array (SKA) in the Northern Cape, South Africa. The SKA project is a huge international collaboration to advance the education of astronomy, science and technology through radio astronomy and optical astronomy telescopes in the Karoo, with the additional participation of 8 African countries (Walker 2019; Walker et al. 2018). Although the primary mandate of the SKA intervention is to answer questions related to dark matter, gravity, testing Einstein's theories on relativity and understanding the formations of stars and planets (SpaceRef 2021), the peripheral mandate of corporate social responsibility (CSR) aims to mitigate social, economic and environmental impacts.

This article falls in line with discussions on the contrast in astronomy between SKA's 'big science' and the Karoo's grassroots knowledge of science (Binneman & Davis 2020; Dubow 2019; Wild 2019); the ongoing conflict between local towns and the SKA project (Atkinson 2019; Gastrow & Oppelt, 2019; Walker & Chingo 2018); and the problem of communication between Karoo residents and SKA (Atkinson 2019; Gastrow & Thelma 2019; Walker & Chinigò 2018). This study stems from a 2019 Honours Research Study in Vanwyksvlei and uses qualitative methodology, such as semi-structured interviews, textual analysis and brief ethnographic accounts, to assess the impact of the SKA's five CSR programmes in the little Karoo town. The five social responsibility programmes are as follows: Investment in the Youth, Nurturing Learners' Young Talent, Supporting Community Upliftment Programmes, Developing Small to Medium Enterprises (SMEs) and Ensuring Community Connectivity. They aim to enhance economic prosperity and adhere to education and vocational training needs. Findings suggest that no participant from Vanwyksvlei had heard of the programmes, and this results in a conflicting understanding of what is considered 'development' around the five CSR programmes. Therefore, the concern of this article thus unravels these meanings of what is considered 'development' to both Vanwyksvlei residents and SKA in the context of CSR, social development and astronomy.

The objective of this article is to use Ferguson's (1990) anti-politics machine to depoliticise and deconstruct the failed development of the five CSR programmes of SKA. This study is not a full ethnography of the five programmes because of financial, time and project scope constraints. Instead, brief ethnographic methods such as observation and semi-structured interviews provide a glimpse of what the anti-politics machine looks like in Vanwyksvlei around the five CSR programmes. On one hand, the process of deconstructing the development of the five SKA programmes in Vanwyksvlei shows why and how it is failing leading to unintentional results. This process focuses on the participation of local government towards global projects, as well as the unhealthy relationship between SKA and Karoo residents because of the lack of collaboration, as well as support for or recognition of indigenous knowledge around astronomy and science. On the other hand, the process of depoliticising the development of the five programmes problematises the notion of CSR. In the context of SKA, depoliticisation shows how corporate and global interests take preference over social needs and improving local livelihoods. Depoliticisation also shows the misalignment between the SKA's CSR mandates and local developmental needs, which has negative effects on service delivery, social development, knowledge production and economic prosperity. This article firstly begins with introducing the five CSR responsibility programmes, followed by a literature review on the CSR and the development discourse in the Africa context. Methodology thereafter follows with ethnographic methods and textual analysis, which is used to expose the contrasting meanings of development between written intentional objectives and its unintentional reality. Results of spatial, temporal and functional mismatches in development are next, and the article ends with conclusions and recommendations.

The five corporate social responsibility programmes

The five CSR programmes were stipulated in 2017 and their material implementation began in 2018. Analysing the underdevelopment of these programmes in 2019 complicates the simple binary of measuring development as a success or failure because these programmes are still young and novel (Moodley 2019). The chief mandate of the SKA project objects to the progression of astronomy, astrology and cosmology, not addressing local issues. In Vanwyksvlei, there are no banks, diesel, doctors, high school, proper road infrastructure or water supply (Moodley 2019). These empirical observations attribute to the paradox of success and failure in development, in the form of the SKA's five programmes in Vanwyksvlei. Although the SKA's five CSR programmes are not mandated to address local challenges, they also cannot holistically improve every local livelihood in Vanwyksvlei pertaining to water service delivery, infrastructural investment and economic prospects. To some residents, the expectations and needs were unsatisfying regarding road infrastructure,

educational investment, social upliftment and basic services, thus, the five programmes are labelled as failures. Nevertheless, it was somewhat of a success based on the few residents who benefitted from the CSR initiatives through jobs, bursaries and learnerships.

The first programme, Investment in the Youth, aims to increase employment, educational and career, and opportunities through scholarships and internships for youth members, including school learners. This programme seeks to advance mathematical, technological, scientific and astronomical knowledge by enhancing skills, expertise and careers. However, there are three SKA learners with SKA bursaries who are currently studying in South African universities, but there is a problem because the bursary standards are high and learners struggle, resulting in a loss of bursary placements (Moodley 2019).

The second programme, Nurturing Learners' Young Talent, also aims to enhance knowledge of astronomy and mathematics through work and career opportunities. This programme identifies talent, fosters skill building and boosts knowledge of robotics and science. There are some work and career opportunities through internships and training courses, and residents who partake are required to relocate from Vanwyksvlei to Carnarvon, Kimberley or Johannesburg. This programme has also offered robotics in Vanwyksvlei's only school, where the highest grade is Grade 9. The robotics programme has had valuable effects like technological exposure that increases the self-image and confidence of school learners. Talent and robotic competitions are also held between Carnarvon and Vanwyksvlei (Moodley 2019:21).

The third programme, Supporting Community Upliftment Programs, aims to improve community networks through talent shows, art competitions, and information and computer centres. This programme is considerably unrealistic because it conveys empty promises of a computer centre when most residents are technologically illiterate (Local Council, pers. comm., 11 September 2019). Information centres are unrealistic because of conflicts with radio interference.

The fourth programme, Developing SMEs, highlights the financial investment in local construction companies, contractors, businesses and subcontractors. This collaboration was special in the 2016 road construction among the SKA core site, Losberg and Johannesburg. There was also a once-off catering prospect but influenced by political nepotism and party politics (Karim, Jimmy, Rudy & Gift, pers. comm., 13 September 2019).

The fifth and final programme, Ensuring Community Connectivity, points to the clash of radio frequency intervals between local domestic appliances and the SKA's radio telescopes. The radio telescopes seize a large amount of radio frequency bandwidth and require complete radio silence. This majorly impacts social and economic livelihoods, because of the use of electricity, Internet and cellular networks, which also affect emergency contact to police and ambulances.

The anti-politics machine in the discourse of development

Denoting these programmes as failures using the binary success–failure term is argued as too simplistic and uninformative for an anthropological study on developmental projects. The slow, systematic process of development is more interesting compared to the product of development. Although the latter is statistically quantified, numerically represented and against economic valuations, the former is qualitatively insightful, because it shows how the developing process results in unplanned outcomes (Sharp 2006). The slow, systematic process of development exposes the 'why' and 'what' of developmental initiatives, which unfold either intentionally according to their stipulated planned outcomes, or unintentionally with undesired results (Nustad 2001:480). This is the anti-politics machine, which comprises political performances that deconstructs and depoliticises the unfolding process of development.

The two columns in the anti-politics machine are depoliticisation and deconstruction. Depoliticisation means to 'remove the politics' from developmental interventions, meaning the aversion from political and administrative affairs. Deconstruction follows from 'removing the politics' among developmental actors, and thereby deconstructing respective and unique ideas, mandates, beliefs, values, ideologies, needs, wants, desires, goals and dreams among stakeholders or development actors (Agamben 2009; Ferguson 1990:17). Deconstructing and depoliticising development involves the actors responsible for how primary objectives and mandates are achieved through administration, logistics, financial budgets and constraints, management, governance, stakeholder engagements and distribution of resources (Agamben 2009; Ferguson 1990). Ferguson's anti-politics machine thus becomes useful. Firstly, by deconstructing the mismatches in development that expose the roles and responsibilities of developmental actors who are accountable for the materialisation and realisation of the five CSR programmes; and secondly, to depoliticise the relations among Vanwyksvlei's residents, local government and the SKA.

Gerber and Haller (2020) deconstruct the meanings of land as a commons where Large-Scale Land Acquisitions (LSLA) interventions fall under CSR objectives, reflecting new investments but commercialising old land as a commons. Flinders and Buller (2006:296) show how the application of depoliticisation becomes political, which creates conflicting situations, influencing technical and apolitical procedures on social realities. This emphasises politicians and policies, two main developmental actors who reconfigure depoliticised relations into political and biased dynamics. Furthermore, feeding into Lewis and Mosse (2006), politicians and policies activate and legitimise the developing processes from written stipulated mandates to empirical results. The anti-politics is thus useful in the discourse of development because of the

accidental 'gap' between theory and practice. This refers to a comparison between intended objectives and unintentional outcomes, which assists in understanding the ripple effects in policy-making and planning, that impact implementing these development projects on the local ground (Lewis & Mosse 2006:2).

Depoliticising 'development' in an Africa context

These five programmes of the SKA in the little Karoo town show the problem of development in an African context. The concept of development is inherently contentious because of its synonymity with Westernisation and modernity (Escobar 2008; Ferguson 2006). The SKA project is described as an 'industrial development' (Karim, pers. comm., 10 September 2019), which points to the distinction between small 'd' development in a Third World context and big 'D' Development in a First World context (Lewis 2019). The 'd'/'D' distinction in Vanwyksvlei takes another discussion outside this article, but the importance here is the debacle between social transformation towards poverty, inequality and hunger, and the capitalistic goal of profit-making through neoliberal and privatised tendencies (Lewis 2019).

It is accepted that the notion of 'development' was a colonial project, imposed by the First World upon the then Third World. In postcolonialism, the entry of foreign aid aims to redress structural inequalities and epidemics of the Global South, such as hunger, war, corruption and poverty, but this ideology resembles a colonial construct, as these issues ought to be solved and saved by the hands and brains of the Global North, specifically countries such as the United States and the United Kingdom (Ferguson 2006:3; Moyo 2009). This is a vein that problematises the actuality of 'development', specifically in the Third World continents such as Africa, Asia and Latin America, of what it means to develop, and whom development is for under the Western and Eurocentric phenomenon of colonial development (Gardner & Lewis 1996:353). Not only are these continents found in the shadows of Western development, creating the north–south divide, but they also marginalise global communities in the postcolonial image of democracy and social justice, jeopardising accessibility and ownership of national citizenship (Escobar 1997, 2008; Ferguson 2015; Moyo 2009).

Depoliticising and deconstructing development, using the anti-politics machine, reveals mismatches that refer to misaligned interests and incompatible relations among development actors who are responsible for development. 'Mismatches' is a simple comprehension that exposes incompatibilities, misalignments and misunderstandings related to food production, managing water resources, astronomical knowledge and human–nature relationships. Mismatches not only produce different understandings of what is considered 'development', but also reasons for the failure and unintentional consequences of developmental projects such as the five CSR programmes of SKA

in Vanwyksvlei (Cumming, Cumming & Redman 2006). According to Vincent (1991), Ferguson does not criticise development but rather evaluates the action process of planning, implementation and application, influencing how depoliticised mandates unfold into politicised webs. Chottray (2007) focuses on the conflicting depoliticised watershed policy in 1994 and emphasises the politicised 'powers of implementation' among institutions, municipalities, practitioners and governments. Gerber and Haller (2020:7) agree that the anti-politics machine is 'problem-orientated' and not focused on finding solutions to problems. Using the anti-politics machine to understand the failure of the responsibility programmes firstly exposes the mismatches in the SKA's development of astronomy in the Karoo. Contrary to Gerber and Haller (2020), the anti-politics machine can be used to drive problem-solving mechanisms. Driving the anti-politics machine thus means to go beyond the depoliticisation and deconstruction processes that reveal mismatches among developmental actors and, additionally, to provide a communication's theory of Habermas to not only improve relationships among actors but also demonstrate where and how developmental projects can reach their intended outcomes.

Habermas' theory of communicative action (TCA) focuses on language and subjectivity that can bridge mismatches in failing developmental projects. The connection between knowledge and self-reflection in dialogues provides subjective perceptions that display individualism and utopic scenarios. The theory of communicative action demonstrates how different epistemologies, interests, desires, needs, wants, history and criticisms can be used to achieve mutual ground for comprehension and understanding (Lemert 2010:386–387; Simon 1994). The theory of communicative action has an element of utopia or idealism, which juxtapositions how communication strategically travels from written, official documentation to pragmatic truthful realities. There is a sense of accountability and trustworthiness in communicating 'development', with sincere dialogues and robust participation. Therefore, there is a social attempt for exchanging and reflecting values, arguments and beliefs, using language and subjectivity in public spheres and institutions. Ultimately, this is a greater encouragement for truth-seeking and justice in developmental initiatives for all stakeholders concerned, which makes TCA useful for the anti-politics machine (Habermas, 1987:5–6; Pigman et al. 2019:4069).

Problematising corporate social responsibility

The SKA project is state-driven, which obscures the understanding of CSR because the SKA is not a corporation. Social responsibility has intrigued corporations since the 1800s, and today, CSR is more concerned with the self-image and legitimacy of huge organisations opposed to social issues of sustainability and citizenship (Banerjee 2006:60). According to Bernard (2020), the linguistic framings of 'shareholder', 'stakeholder management' or 'stakeholder engagement' represent the performance of corporates that lean more towards economic competition and credit value, instead of

ecological harm, local investment and social cohesion. Through content analysis, Dahlsrud (2006:6) demonstrates how the definition of CSR is not universal and therefore problematic because of how CSR is constructed by both business and social worlds. Holding SKA accountable to social responsibility standards is unclear and elusive because SKA is a non-corporate institution hence the pro-poor discourse of SKA providing altruism to residents.

The SKA project is similar to a foreign aid conception, because despite being fully funded with billions by the South African government, it symbolises geopolitical commitment for Global South to participate in Global North interventions. Against the corporate background of SKA, the structural cycle of modernity is perpetuated and strikes when corporate interest takes preference over local demands (Banerjee 2006:52). There are two aspects that motivate the alignment between SKA project in South Africa and foreign aid. Firstly, the pro-poor ideology emphasises political and social capital among politicians, academics, bureaucrats and qualified professionals in the scientific community. These apolitical procedures aim to head solutions around inequality and poverty, which are relevant in a little Karoo town that lacks basic water supply and adequate roads. These pro-poor policies are apparent in CSR because of economic prosperity and social transformation that are guided by skilful technocrats and bureaucrats. Secondly, foreign aid as First World investment suggests large-scale developments and alludes to an 'addiction' and 'limitation' (Moyo 2009) of Third World contexts that threaten a transparent and participative democracy, and compromises the independence and autonomous footing for Africa to stand on its own feet. This exasperates geopolitical divides across race, class and gender inequalities by the privatisation and commodification of resources such as land and water (Escobar, 1997:505; Gerber & Haller 2019). The progression of radio astronomy knowledge propels South Africa to lead other African countries in the SKA project, which persists in the logic that Africa is still the site for modernity (Socio-economic Assessment 2017). The imposition of SKA in the Karoo landscape takes a paternalistic perspective that enforces a pro-poor ideology to help the local population.

The role of radio astronomy development in the SKA project is a double-edged sword. It represents an Afro-pessimistic perspective, which undervalues the potential and capability of African research towards innovation and the advancement of science and astronomy knowledge (Wild 2012:103–104). Led by South Africa, the SKA project is a 'continent-wide "African Renaissance"' that highlights Africa's role towards the cutting-edge research in radio astronomy and education and the cooperation of eight African countries in the SKA international organisation (Wild 2012:81). Africa's position in the SKA project and its CSR mandate represents an entanglement between local, national, continental and global platforms, implicating scales of governance, economics, knowledge production, social capital and ecology (Walker & Chinigò 2018). Gastrow and Oppelt (2019) also examine local

development initiatives of SKA pertaining to astronomy and science because of the local capacity of understanding 'big science projects' in the Karoo landscape. The big science of SKA as the Western model of astronomy, in the context of the Karoo, undermines the social and cultural capital of Karoo residents with their grassroots knowledge, leading to inconsistencies in the five CSR programmes.

Methodology

According to a 2016 survey, Vanwyksvlei has less than 4000 inhabitants. Poverty and hunger are rife with drought threats affecting sheep farming – the main economic subsidy in the town. More than half the population experience water interruptions, and the average monthly income is less than R1000.00 (Moodley 2019:8). The SKA's five programmes cannot solve all social, ecological, and economic challenges in Vanwyksvlei, and local residents need the municipal government's ears, heads and hands to cooperate with the SKA to meet the basic standards of service delivery and social development.

To make sense of these contradictions and mismatches in development, a qualitative method was used with semi-structured interviews, brief ethnographic accounts and textual analysis of the SKA's official documentation regarding socio-economic and environmental impacts. In total, 20 interviews were conducted with Vanwyksvlei's residents, Square Kilometre Array in South Africa (SKA SA) and the Kareeberg Municpality. Pseudonyms are used to protect the identity, anonymity and confidentiality of the participants. These three developmental actors are involved in the production of the five programmes and consist of local government officials, religious leaders, non-governmental organisations and community representatives, and liaison officers in stakeholder engagement divisions. Purposive snowball sampling was used to intentionally select participants based on their knowledge of SKA and participation or influence towards local development regarding service delivery and social development. Participants were thus recruited based on referrals from other participants on matters of influence and relevancy to the research topic. Data were obtained through voice recordings and transcriptions, and thematic analysis was thereafter conducted. Written ethical clearance was provided. Textual analysis was also determined based on documents that were most appropriate and contextual to the five CSR programmes and the improving local development in Vanwyksvlei.

Textual analysis was chosen because of the written intentional mandates and objectives that aim for successful development. This method also reviews documents and legislation to understand what is considered 'development'. Textual analysis was used in document review and thematic analysis was conducted for the empirical nature, such as semi-structured interviews and ethnographic methods in fieldwork. 'Authorless strategies' is when intentionality is directed towards developmental actors who are specifically responsible for the realisation of mandates. Corporate documentations strategically become 'authorless' to avoid the accountability of

intentionality among developmental actors, while exposing power relations that inform deliberate planning and utopic scenarios (Bernard 2020; Chottray 2007:1038). The significance of linguistic framings around 'stakeholder engagement' and 'stakeholder management' in CSR highlights these power variations among 'authorless' developmental actors. Hence, the power of content, discourse and text in legislated documentation, as well as the distortion of 'development' between intended objectives in documentation and the empirical consequences of unintended reality and unmotivated results.

The following documents were analysed: *Astronomy Geographic Advantage* (*AGA*) *Act No. 21 of 2007*; the Integrated Environmental Management Plan (IEMP) Chapter 1: Introduction (2018); IEMP Chapter 4: SKA Stakeholder Engagement Programme (2018); IEMP Chapter 5: Environmental Management Programme (2018); and the Socio-economic Assessment of SKA Phase 1 in South Africa (2017). These documents are purposively selected because of their legal mandates around CSR goals, planning and decision-making procedures, as well as mitigation strategies on social and environmental impacts. Studying the formal language of CSR documentation, the attention of where the grammatical subject is placed reveals sights of responsibility and transparency; for instance, subjects are held accountable in the active voice, whereas subjects are jeopardised and avoided in the passive voice (Bernard 2020). Also, studying the discursive language of CSR documents hints at managing stakeholder relations instead of engagement and participatory methods (Banerjee 2006). Language used in formal documents, where grammar, logic and rules are stipulated, inform evidence and reality. Because of unintentional outcomes and unplanned consequences, a developmental gap arises between official written mandates and lived realities with personal experiences. To depoliticise development means to unravel the mismatches among developmental actors such as respective ideologies, expectations, interests, desires, needs, wants, objectives, as well as mandates, roles and responsibilities (Ferguson 1990:20; Rossi 2004:2). The usefulness of the anti-politics machine firstly permits the comparison between official documentation and empirical reality that arouse personal perceptions, and expectations, impacting developmental methods and consequently its outcomes (Cumming et al. 2006:1–2). Secondly, the product of mismatches not only reveals individualism and subjectivity of each actor, but also the contrasting meanings of what is considered CSR 'development' for SKA and Vanwyksvlei residents, respectively.

Results
Mismatches in development

This section firstly shows the empirical results of the failing five CSR programmes. This is based on the observation that no participant from Vanwyksvlei, including the local council, had any knowledge or awareness of the SKA's five social responsibility programmes. Secondly, noise–silent mismatches are revealed between the noisy success of SKA compared to the silent struggles in Vanwyksvlei. This section illustrates

how mismatches arise between SKA and Vanwyksvlei because of conflicting interests, needs, wants and desires that produce different understandings of CSR 'development'.

Karoo residents[1] exclaim:

'We are cut off from the world!' (Rudy and Gift, pers. comm., 10 September 2019)

'Two to three days or four days, there is no signal. Then we are cut off from the world and there's nothing you can do. Sometimes there's no electricity. It's bad for us.' (Group interview, pers. comm., 10 September 2019)

Adding to the effect of household utilities, farmers are worse off because of the effect upon drones, electric fences and two-way signals on farming patterns. This implicates predator–prey relations affecting a harmonious balance in ecology between humans and nature. A final point is the dispute of land interests between SKA and Karoo farmers; farmers' land is endangered by the threat of drought and the SKA's land acquisition process, inflicting upon ownership rights (Karim, pers. comm., 10 September 2019). The concept of mismatches is a reoccurring theme because it highlights the complexity of development on temporal, spatial and functional scales and exposes different understandings between SKA and Vanwyksvlei regarding needs, interests, objectives and goals. More importantly, temporal, spatial and functional mismatches reveal the effect on socio-ecological processes, indigenous knowledge and astronomical development, which is significant in deconstructing and depoliticising the development of the five CSR programmes.

Temporal mismatches

Temporal mismatches describe the time-lapse differences between social and ecological structures that mismanages and mistreats the governance of ecosystem processes. Put simply, the influence of bureaucratic incapacity and flimsy social boundaries disrupt ecological harmony and create imbalances with social organisations (Cumming et al. 2006:12). The disjuncture between local and global systems is evident in the needs of water supply compared to the recognition of the SKA project. On the local scale in Vanwyksvlei, water service delivery is precarious and unsatisfying, while there is a severe drought in the Northern Cape province. This negatively affects the behaviour of microorganisms ensuing lamb sickness and endangering livestock farming and agricultural production (Moodley 2019). There is also a tender plan called the Vanwyksvlei Bulk Water Scheme (BWS) Supply rooted from the 1990s of constructing a 70 km water pipeline between Copperton and Vanwyksvlei to supply Vanwyksvlei with permanent water. In 2020, a petition was created by a Vanwyksvlei resident to the Northern Cape premier, urgently calling for the materialisation of the water pipeline (Democratic Alliance 2021). It is also perceived that the SKA uses the little water available for Vanwyksvlei's residents (Karim, Jimmy, Rudy & Gift, pers. comm., 12 September 2019). On the global

1.Karim, Jimmy, Rudy and Gift are pseudonyms to protect the identity, conventionality and anonymity of research participants.

scale, the new SKA radio astronomy telescopes are successful with the discovery of two massive galaxies, which has been widely praised by the international scientific community (Delhaize 2021).

The destitute water situation at the local level compared to the incredible infrastructure of SKA's telescopes show a temporal mismatch based on the material fulfilment of goods and services through the articulation and connection between people, which is built on 'engineered landscapes' (Appel, Anand & Gupta 2018:7). In Vanwyksvlei, the promise of infrastructure is fruitless because of a lack of water service delivery, unsafe roads and SKA's impositions on electricity and telecommunication. In contrast, the SKA's infrastructure of white shiny radio astronomy telescopes shows a modernisation project that is newly constructed and aesthetically pleasing against the Karoo backdrop. Although SKA's infrastructure of radio telescopes is exciting and a novel technology that brings hope for astronomy education, economic prosperity and social growth, it inherently suspends and overthrows water politics in Vanwyksvlei that implicates political authority, resource distribution and democratic leadership (Appel et al. 2018: 20–22). The successful noise of the SKA's functional telescopes, compared to the silent thirst for water in Vanwyskvlei demonstrates the mismatch in infrastructural needs, considering that SKA is a new project while Vanwyksvlei is integral in the Karoo history.

Functional mismatches

Functional mismatches illustrate the consensus of mutual interests that involve social behaviours and environmental alterations (Cumming et al. 2006:4). Functional mismatches are specific to the common need for land for both Vanwyksvlei residents and SKA. Large-Scale Land Acquisitions (Gerber & Haller 2020) can be read alongside the land acquisition processes of SKA in buying farmers' land to construct radio and optic astronomy telescopes. This is a modern image of colonial Africa showing new commercialisations around labour, knowledge exchange, scientific development and modifications – a phony postcolonial creation of 'development'. The SKA's land acquisition process is described as bullying and manipulation by Vanwyksvlei farmers. Monetary valuations, according to farmers, do not compensate for the disruption of livestock and agricultural production in the global chain industry of Karoo farming (Karim, pers. comm., 10 September 2019; Jimmy, 12 September 2019). While the land acquisition process demonstrates the increasing bureaucratic power of the SKA, it also depoliticises land as a natural resource that challenges the development obligation of local government. There are two instances that derive from deconstructing the meaning and interest of land acquisition processes: firstly, the aesthetics of infrastructure and, secondly, the notion of astro-tourism between radio astronomy in Vanwyksvlei and optic astronomy in Sutherland.

The Karoo environment is loud with nature, humans, signal and technology (Walker 2019). It is home to jackals,

sheep, goats, horses, donkeys, cats, dogs, meerkats, lizards, pigs, and springboks, with a rich history of forests, and freshwater dams, also geological fossil formations of fishes, reptiles, amphibians and dinosaurs (Moodley 2019:7). The natural Karoo landscape is a '*national asset*' (Karim, pers. comm., 10 September 2019). On the flip side, this landscape is hushed by the radio silent radio astronomy telescopes with restricted radio interference of SKA. The change in radio frequency bandwidth for farmers impact farming patterns upsetting predator–prey relations between black-backed jackals and livestock such as sheep, goats and pigs, which further disturbs the ecological balance among farmers, livestock and predators. Radio interferences are a big challenge to Vanwyksvlei people – both farmers and residents. The radio silent land imposed by radio telescopes alters the Karoo environment to '*dooi doo dooi land*' (dead doo dead land) (Jimmy, pers. comm., 12 September 2019). The radio astronomy telescopes are described as '*ugly*' and '*aliens*', interrupting the natural beauty of the Karoo landscape (Karim, pers. comm., 10 September 2019).

The aesthetics in astro-tourism is different between optic astronomy in the South African Large Telescope (SALT) and radio telescopes of South African Astronomical Observatory (SAAO). South African Large Telescope, with little light pollution and minimal radio interference, has astronomical imagining of galaxies, stars, the Milky Way and extraterrestrial life in Sutherland. Although SAAO/SKA has strict radio interferences that gathers information on dark holes, dark energy, gravity and planets (Twidle 2019), astro-tourism around SALT blooms with imagination and aesthetics because of the clear night sky that makes astronomical visualisation bright with colours. This pictorial representation of vibrant image-processing in optic astronomy makes astro-tourism renowned with stargazing and galleries, increasing sightseeing and travel in Sutherland (Twidle 2019:780). However, astro-tourism in Vanwyksvlei with SKA is near impossible because of harsh adherences of radio silent land for radio astronomy telescopes. Tourism activity is thus averse, and challenges noise and aesthetic representations. Functional mismatches in land aesthetics, as well as the infrastructure of astro-tourism, speak eloquently in Sutherland with economic prosperity, employment opportunities, attracting non-specialist tourism activities with astronomy education. Yet, astro-tourism in Vanwyksvlei is as quiet as the radio silent land. Aesthetics in infrastructure and astro-tourism reveal functional mismatches that politicises the understandings of astronomy and tourism.

Spatial mismatches

Spatial mismatches point to the geographical isolation of Karoo towns. Chottray (2007:1037) shows how spatial indifferences influence how municipalities respond to preferential treatment regarding watershed deliveries, based on caste and religion. This notion is similar in Vanwyksvlei with its nearest neighbouring town, Carnarvon, which are both under the Kareeberg Municipality and are impacted by SKA activity. A methodological point unmentioned is that the researcher stayed in Carnarvon because Vanwyksvlei's only guesthouse was closed due to no demand and water unavailability, and this enabled an understanding between Vanwyksvlei and Carnarvon. There is one 80-km road leading to Vanwyksvlei, which is notorious for deaths and capsized cars, and ultimately, roads and water services are better in Carnarvon than Vanwyksvlei. Square Kilometre Array meetings are often held in Carnarvon and Vanwyksvlei's residents are expected to travel, even if after business hours, at night (Rudy and Gift, pers. comm., 12 September 2019).

The spatial reading of this 80-km dirt road between Vanwyksvlei and Carnarvon aligns with Foucault's words, 'visibility is a trap': meaning that because these public participation meetings between SKA and Karoo residents are held in selective spaces, interactions are not productive and there is lack of communication (Appel et al. 2018). Because of the geographical isolation of Vanwyksvlei, SKA favours Carnarvon as the socio-economic hub for local investment (Nolan 2002:269). Square Kilometre Array South Africa established a permanent base in Carnarvon to drive local progress pertaining to municipal and public participation, advancement of astronomy and science education, planning and decision-making processes in stakeholder relations, as well as solidifying transparent networks between SKA SA, local residents and municipal governance (Socio-economic Assessment 2017:10). As the 'heart of the African component', SKA SA in Carnarvon excludes the experiences of Vanwyksvlei residents regarding the communication and participation with SKA (Walker 2019). Despite the geographic nature of isolated Karoo towns, there are still settlements influenced by SKA activity.

Infrastructure, as bureaucratic entities, is the flow of goods, services, ideas and emotions, which are symbolic of the physical and material ability to regulate and order publics into exclusionary and inaccessible measures (Appel et al. 2018). Discriminatory ordeals among Karoo towns conform to different standards of communication and participation between Karoo residents and SKA and effects how publics are ordered based on water and road infrastructure shaping political engagements and infrastructural politics (Gastrow & Oppelt 2019:726; Von Schnitzler 2018:135). The spatial mismatch between Vanwyksvlei and Carnarvon demonstrate how infrastructure can discipline and control publics regarding access and allocation of resources. Carnarvon is noisy with the success of economic growth, social cohesion, tourism activity, as well as political and public participation, whereas Vanwyksvlei is mute with ruined and suspended infrastructure related to service delivery and social development.

These temporal, functional and spatial mismatches are the empirical evidence of the deconstruction and depoliticisation processes of the five CSR programmes. The metaphor of 'noise–silence' mismatches occurs on these temporal, functional and spatial scales and shows the different areas of where success is loud, and failure is silent in what is

considered 'development' to both SKA and Karoo residents. This is seen in astro-tourism, aesthetics in infrastructure, the contention in land and the relations among Karoo towns. Understanding the failure of the five programmes in Vanwyksvlei (the how, where, why and what occurs that connotes development as either a 'success' or 'failure') emphasises the failure of the local infrastructure of service delivery, which is separate from SKA's ordeals. Discussing mismatches against the failure and success of CSR development interventions showcase the 'global assemblage' that twines misaligned interests and incompatible relations, producing an array of contrasting meanings that regard astronomy, social responsibility and local development (Walker & Chinigò 2018:1986). These mismatches not only reveal the political performances between SKA and Vanwyksvlei residents, but the deconstructing and depoliticising processes of the anti-politics machine.

Discussion

Negotiating the development of astronomy in the Karoo

As mentioned earlier, the five CSR programmes are aligned to the SKA's conception of big science. This comes in the form and effect of radio astronomy telescopes that undermines the local conception of astronomy, such as indigenous knowledge, grassroots medicine and starlore stories (Dubow 2019; Wild 2012). Although SKA acknowledges this (Binneman & Davis 2020), it is neither stipulated nor interpreted in any of SKA's CSR objectives. To straighten mismatches and find consensus in incompatible relations, CSR objectives of SKA should not only primarily advance scientific and astronomy education, but also work with national/municipal bodies to confront local issues of service delivery, infrastructural investment and social development. This is where TCA enters in the anti-politics machine: to go beyond deconstruction and depoliticisation processes, and drive towards problem-solving mechanisms using identity politics, grassroots knowledge of astronomy, and communicative action.

Communicative action looks at language and subjectivity in mandates, to inform decision-making, ethical, administrative, planning, financial allocation and management processes (Pigman et al. 2019). Ferguson uses a Foucauldian framework and puts power dynamics among stakeholder relations into perspective, causing intentional and unintentional outcomes of developmental projects. Although Ferguson is concerned with the process of development itself, Habermas takes it a step further by introducing language and communication in the development process to achieve the utopic of ideal product of development. Ferguson (1990:10) opens the way to think of 'ideal worlds' in the developing process, by exposing mismatches or incompatibilities in empirical reality and lived experiences, compared to the intentions and objectives as per official documentation. Introducing Habermas and TCA to Ferguson's anti-politics machine pays more attention to communication and subjectivity. This is useful towards improving service delivery in Vanwyksvlei and the participation between SKA and local or national authorities. Communicative action encourages negotiation; this is a potential CSR (re)arrangement in the contexts of both astronomy and stakeholder engagements.

Wild (2012) and Dubow (2019) are few voices that illustrate the cultural and traditional values of astronomy, in the form of starlore narratives and astrology mythology. The local perception of astronomy capacity considers folklore and starlore narrations of hares, heavens, Bushmen Gods, stars and water snakes, as well as personified identities of clouds, rains, land, stars, including the moon and the sun, are a sight for potentiality and creativity beyond the primary mandate of CSR stipulations (Dubow 2019; Wild 2012). Although the SKA does acknowledge these local perceptions of astronomy (Binneman & Davis 2020), there is no conformity in CSR objectives to integrate indigenous knowledge with empirical traditional and cultural values in the developing process of corporate responsibility and radio astronomy. Depoliticising these stakeholder engagements conveys a problem-solving matter that not only deconstructs the meaning of astronomy but also stresses the importance for engagement and participation to mitigate failed interventions (Binneman & Davis 2020; Gastrow & Oppelt 2019).

There is a need to integrate this local capacity of astronomy in the big science of SKA. This also conveys a mediation of knowledge politics between the social sciences and the natural science. Nustad (2001:483) states that by conforming to indigenous local knowledge, development becomes tautological because the pro-poor discourse that must realistically alleviate poverty and not reciprocate structural expectations of modernity in African contexts. Considering that South Africa is at the forefront of radio astronomy in the African continent, it is important to understand failing developmental projects, under CSR mandates, against the geopolitical appeal against Western ontology, and towards Afrocentrism. This shows how TCA can drive the anti-politics machine by not only identifying mismatches in the deconstructing and depoliticising processes, but also using communicative action to inform better outcomes in project interventions. More significantly, driving the anti-politics machine means to move forward: negotiate, reconfigure and balance CSR conducts between central and peripheral objectives to produce satisfying outcomes for all concerned stakeholders across local, national and global scales.

Conclusion and recommendations

Ferguson's 1990 study was generous with time frames, documentary reviews of World Bank reports and longitudinal comparisons of failed developments in Thaba-Tseka. This study in Vanwyksvlei is different with time limitations and word count and scale of an Honours degree programme. Methodological traits are similar, but

this study is not completely ethnographic; therefore, this analysis provides little light – a glimpse – of what an anti-politics machine looks like in the context of five CSR programmes of SKA in the town of Vanwyksvlei. Nevertheless, this project displays unmet expectations and varying interests between Vanwyksvlei and SKA, demonstrating why and how developmental interventions fail. For future reference, the anti-politics machine in Vanwyksvlei can be solidified with more extensive ethnographic research and in-depth fieldwork.

Temporal, spatial and functional mismatches are derived from the depoliticisation and deconstruction processes of the anti-politics machine, and this reveals the incompatible interests and misaligned perceptions of what is considered development between Vanwyksvlei residents and SKA team, regarding the five 'failed' CSR programmes. Furthermore, noise–silence mismatches are breeched outside of the failure of the CSR programmes and speak of the complicated meanings of astronomy and water supply in the paradoxical nature of 'development', especially in the drought-stricken Karoo environment.

These mismatches spill over into the intentionality of CSR objectives, where local stakeholders are managed instead of engaged with. This also conveys the insufficient and uninformative binary label of 'success' or 'failure' in discussing developmental projects, hence the interest of the unravelling and developing process, rather than the final product of development. This therefore provides a deeper understanding of why, where, what and how projects fail. The individualism and unique characteristics of developmental actors between Vanwyksvlei residents and SKA, in stakeholder dynamics, are proven valuable in the task of negotiating and deliberating mandates with recognition of different needs and interests (Ferguson 1990:xiv). This is crucial for the success of the five CSR programmes of SKA in Vanwyksvlei, which means to go beyond the corporate image of impact-related social, economic and environmental activities. More importantly, this means to incorporate local epistemology around astronomy and grassroots knowledge of science to holistically achieve CSR objectives to equally benefit local populations – especially around the dire needs of water supply and infrastructural investment.

There is not enough emphasis on social and historical contexts, and this is problematic for discussing what is considered 'development' in an African context, where Western ordeals of progression and modernity are the norm. Social sciences help to make sense of politicised relations that result in unplanned consequences of developmental projects, and this is the purpose of using the anti-politics machine to expose where, how and why failure happens in the developing process of international initiatives. This is important towards democratic citizenship rights but also supporting African independence in global projects where knowledge enhancement, scientific interventions and astronomical development are concerned.

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Author's contributions

N.M. is the sole author of this article.

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Data availability

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