



Living the life of floods: Place-based learning in an Anthropocene harmscape

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ABSTRACT

This article explores how place-based learning and the development of landscape literacies unfold in a place suffused with a complex set of risks resulting from inter-operating and intersecting sociohistorical, political and environmental factors. By analysing assemblages of images and accompanying texts produced through a photovoice process undertaken by co-researchers in an informal settlement in South Africa's Cape Flats, we show that residents are embedded in an ongoing process of embodied place-connectedness that has extensive pedagogical impact. We suggest that the learning that takes place in this harmscape may enable residents' survival at the cost of allowing for either hope or the possibility of transformative change.

1. Introduction

The decolonial and posthuman turns in social and human geographical research have seen a welcome increase in the valorisation of indigenous and local knowledges (Barker & Pickerill, 2012; Briggs and Sharp, 2004; le Grange, 2017; Mercer, Mohan & Power, 2003; Rice & Burke, 2018), along with a recognition of the pedagogical affect of place and landscape (Gruenewald, 2003; Gruenewald, 2014). In the following, we continue the development of these ideas by connecting them with the concept of harmscapes (Berg and Shearing, 2018), which we use to describe the landscapes of intersecting risk and harm that persist in climate-stressed, precarious regions such as South Africa's Cape Flats. We operationalize these concepts by putting them to work within a Deleuzian perspective on both learning and assemblages in an analysis of photographs taken by co-researcher residents in one settlement in this region, Sweet Home Farm.

Proponents of local knowledges and place-based approaches, and

place-based learning in particular, highlight the ways in which place can benefit research, policy and action:

Place in other words, foregrounds a narrative of local and regional politics that is attuned to the particularities of where people actually live, and that is connected to global development trends that impact local places' (Gruenewald, 2003, p. 3).

According to Gruenewald (Gruenewald, 2014), '[e]ach one of us is a product of a lifetime of environmental and cultural education that includes our embodied experience of places' (p. 147). Although the term "place" has been used in different ways (e.g., Agnew, 1987; Ingold, 1993; Massey, 2008; 2012), a significant amount of recent scholarship in the area (e.g., Barker & Pickerill, 2020; Burgh & Thornton, 2021; Butler & Sinclair, 2020) aligns with the two conceptualizations put forward by Johnson (2012):

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first, place as a way of understanding, knowing and learning about the world; and second, as the embodied location of everyday struggle for meaning; political, cultural and economic. (n.p.)

These scholarly moves are critical to achieve a much-needed de-centring of Western thinking that has largely followed the traditions of the Enlightenment in not only setting up a particular form of scientific method as the only true path to knowledge generation, but also in attempting to expunge emotion from human rationality and decision-making.

The value of local, place-based learning and knowledges has often been raised in research relating to indigenous peoples in lands colonized by the historical powers of the Global North. In such contexts, researchers are encouraged to '[read and understand] places as political texts within Indigenous peoples' daily struggles' (Johnson, 2012, np.). Similarly, Somerville (2007) suggests that 'place, that is, both a specific local place and a metaphysical imaginary place' can present 'an alternative lens through which to construct knowledge about the world' (p. 149). She also describes how place learning has three key characteristics. It is 'necessarily embodied and local'; it communicates our relationship to place through stories and representations; and it involves 'a contact zone of contested place stories' (p. 153).

At the same time, others have described a phenomenon of "non-place" or "placelessness", seeing a disconnection between humans and their sociohistorically constituted physical and natural environments as a primary characteristic of the modern Western condition and as responsible for a profound loss of access to the knowledges inscribed within those environments (see, e.g., Arefi, 1999; Augé, 2009; Casey, 1993; Relph, 2008). This can be linked to work on the impact of climate change on connections to place (Devine-Wright and Quinn, 2020) and on the role of relationships to place in shaping engagement with climate change (recently reviewed in Nicolosi & Corbett, 2018).

We believe that, as part of the process of de-centring Western thinking, it is crucial that we recognize not only the power of place and landscape to shape human actions and generate local knowledges, but also how place and landscape are and have been produced by real and irreversible sociohistorical pathways. The (human, social and ecological) world remains riddled with inequalities of resources, agency and possible futures, which have been arrived at through the complex interactions of many factors and influences, but which are nevertheless real. The pedagogical affects of places are thus also not evenly distributed or uniformly positive. In certain sociohistorically produced environments, rather than seeing the development of placelessness or non-place, it may be that the knowledges generated through embodied experience of landscape and country can be destructive or contribute to exacerbating inequalities.

One such context may be the informal settlements that increasingly surround major cities of the Global South (Carrilho & Trindade, 2022; Satterthwaite et al., 2020). Resulting from population growth, rural-to-urban migration, inward migration from neighbouring countries and regions, and growing economic inequalities, informal settlements are growing in both number and overall population. Informal settlements are mostly built on land that has previously been designated as unsuitable for development and that offers little possibility for productive agricultural (or other) work. They often lie outside the sphere of local authority provision of the basic services that urban residents expect, but have some of the characteristics of urban centres, including competitive economies of space. In the informal settlements of the Cape Flats region of South Africa (Cinnamon & Noth, 2023), the pre-existing environmental hazards associated with the local topology, geography and climate are exacerbated by the current global Climate Crisis. South Africa is already experiencing clear consequences in terms of changed weather patterns (Ziervogel et al., 2014), leading to disrupted rainfall patterns, more frequent and more extreme flood events, and more frequent and prolonged periods of drought and high temperatures. Such changes are also impacting the ability of rural populations to continue

farming, driving further inward migration. On top of this, the Covid-19 pandemic created significant unemployment and financial insecurity, driving ever-greater numbers of people out of expensive, relatively well-provisioned housing and into informal settlements.

These factors combine with South Africa's complex sociopolitical history, including the legacies of colonialism, the racist apartheid regime in place for much of the second half of the 20th century and the influence of competing tribal, ethnic and cultural interests. Together with the effects of weak post-apartheid governance (e.g., Ferreira & Signé, 2014; Haque, Lemanski & de Groot, 2021; Koelble & Siddle, 2018), these combine to create a socioenvironmental landscape that might best be characterised as an Anthropocene harmscape (Berg & Shearing, 2018; Simpson, Shearing & Dupont, 2019). Berg and Shearing (2018) first used the term harmscape in discussing alternative conceptions of crime and the governance of crime, in a South African context. In that work, they described the emergence of

a proliferation of both old and new harms that disregard fixed boundaries—temporal, spatial, and conceptual—and where new landscapes of local and global harms or what we have coined harmscapes (for instance, the hypothesized multifarious harms associated with climate change) further challenge our understandings of "safety" and the conventional notions of discrete public and private entities producing public and private goods, (p. 75)

The idea of the harmscape is introduced to shift the starting point of governance approaches to crime 'by focusing on the social causes of harms or the "big problem" rather than only on individual agency or "the smaller problem" of finding who committed the crime and assigning blame accordingly' (pp. 78–9). A harm-focused approach is intended to change the triggers for the mobilization of state resources – here, in the form of

its criminal justice assemblage ... [that] ... operates as a governing pathway that can be mobilized by victims seeking assistance in responding to harms they have suffered, provided these harms are crimes (p. 77).

We suggest that not only is the notion of a harmscape a useful way of understanding the web of social, environmental, physical and economic risks that the inhabitants of some landscapes face, but that it also reminds us that the purpose of identifying harms and the causes of harms is to mobilize resources and governance in order to assist those who are being harmed.

In the following, we aim to bring a Deleuzian perspective into conversation with the notions of place-based learning, landscape literacies and harmscapes. We seek to do this through both a conceptualisation of learning as grounded in repetition and difference, and through an assemblage analysis approach to photographic images and accompanying texts produced by local co-researchers as part of a larger project that aimed to explore local experiences of and responses to climate-change-exacerbated environmental risks in marginalised settlements in the Cape Flats. The larger project enrolled local participants in a series of research activities including surveys (Ncube et al., 2023) and Digital Story Telling (Mpofu-Mketwa, Abrams & Black, 2023) in order to identify and articulate "resilience actions" that were presented to City officials and others as potential local priorities. In the present work, we use photographs generated in a photovoice activity explore the material landscapes in which these experiences and responses unfold. In so doing, we hope to understand the profound impact of place-based learning in a context where place comprises a complex harmscape, and thus to better understand and be able to act to change the nature of that harmscape.

2. Sweet home farm: A watery harmscape?

The photographs and accompanying texts analysed below were created by seven co-researcher residents in Sweet Home Farm in the



Fig. 1. Sweet Home Farm location.

Cape Flats region of South Africa. The photographs were taken within and illustrate the Sweet Home Farm landscape. Sweet Home Farm (Fig. 1) is an informal settlement established in 1992 and bounded by two major highways and a railway track. The 2011 census estimated the population of Sweet Home Farm to be approx. 17,000 (certain to have increased now). The resident population is culturally and linguistically diverse. Work opportunities in and close to the settlement are extremely limited and unemployment is high (38 % in 2014).

The Cape Flats overlay a shallow unconfined aquifer, and mean groundwater levels during the rainy winter season are often at the surface. This means flooding is a real problem in many informal settlements (Drivdal, 2016; Fox, Ziervogel & Scheba, 2023; Jordhus-Lier et al., 2019; Ziervogel et al., 2016). Sweet Home Farm is particularly vulnerable. The settlement is located 13 km from the coastline in a low-lying floodplain with a shallow water table. The area was originally agricultural land, then used as a dumping site for building rubble before being occupied by informal settlements residents (Pharoah, 2014). It is a natural wetland with many springs or sprees, as they are known locally. Heavy rains can fall during the winter season and, as the world's climate changes, increasingly often at other times of the year too. Flooding is also driven by a rising water table in the winter months. Lack of drainage channels to direct the water away from the settlement makes the situation worse.

The land it is built on has mixed ownership: some parts belong to the government whilst others are privately owned or are the property of Transnet (a national railway company) (Sacks, 2014). While some stormwater channels and drains have been installed by the City of Cape Town, their effectiveness is undermined by poor connectivity to the piped stormwater network system outside the settlement (University of

Cape Town, 2019). In addition, waste collection services are extremely limited and frequently delayed. This leads to the accumulation of litter and piles of household waste (Drivdal, 2016). This waste mixes with runoff, household greywater and unmaintained sewers, creating stagnant pools between dwellings and blocking stormwater pipe in/outlets.

It is not hard to see why the notion of an Anthropocene harmscape might be usefully applied in describing the Sweet Home Farm environment. Viewing it as a space with no potentiality (Amin, 2013), the City as authority largely absents itself, with locals 'forced to ... create and fund their own environments through informal processes' (Kotzen, 2014, p. 2). Governance is left to those willing and able to exercise control. Residents experience the intersecting and inter-operating risks of poverty, crime, exclusion from the social and cultural resources of the wealthy and developed City of Cape Town, unemployment, flooding and public health issues (Swartz, Harding & De Lannoy, 2012). Here, we explore how place-based learning and the development of landscape literacies can unfold in such a place.

3. A Deleuzian ontology of assemblage, difference and desire

To explore place-based learning in this Anthropocene harmscape, we adopt a theoretical framework that allows for an integrated understanding of both place-based learning and of the analysis described below. The framework draws on the philosophy of Deleuze (1994) and Deleuze and Guattari (1988), especially as described and operationalised by Feely (2020) and Wilson (2021). It is based on the connections between difference, repetition and learning; and the related concepts of assemblage, lines of articulation and lines of flight.



Fig. 2a. Sweet Home Farm co-researcher photo assemblage.



Fig. 2b. Sweet Home Farm co-researcher photo assemblage continued.



Fig. 3. John's photograph, "Houses on water".

Deleuze's ideas about learning are perhaps a natural fit for discussions of place-based learning and the development of landscape literacies. In Deleuze's (1994) work, he relates learning to experiences of difference and repetition, where difference is understood as a positive relationship rather than a lack or absence. Deleuze describes learning as taking place through three different types of *synthesis* arising from experiences of repetition and difference (Deleuze, 1994; Williams, 2013). The simplest of these is the passive synthesis exemplified by habit. This is the synthesis of a series of repeated actions or experiences, which might be related to learning in a continuous present. The second type of synthesis is that of pure memory, which creates relationships between temporally separated events: 'it implies between successive presents non-localisable connections, actions at a distance, systems of replay, resonance and echoes, objective chances, signs, signals, and roles that transcend spatial locations and temporal successions' (Deleuze, 1994, p83). Both passive syntheses arise from our capacity to notice or become aware of similarity within a repeating but varying series of similar events, observations or experience. In contrast, Deleuze's third type of synthesis relies on pure difference: '[i]t is a synthesis that produces a break, that erases the past and creates the possibility for a radically different future' (Wilson, 2021, p.909).

In Deleuze's ontology, an assemblage is a collection of humans and things through which knowledge, desire and energy can flow. What connects elements into an assemblage is affect – that is, *capacity to affect or be affected*: an assemblage can be understood as a 'confluence of elements in affective relationship to each other which changes their states, and their ability to act' (Fox, 2015, p.306). Such confluences may come together only fleetingly; they may persist longer but with changing internal relationships or dynamics; or they may achieve significant degree of stability and longevity. In the following, the concept of assemblage

applies on many inter-operating levels, including to describe: the collections and connections of our co-researchers and the physical objects and features in their environments; the collections of photographic images and texts created by our co-researchers; and the connections between distanced researchers and the images and texts in the process of analysis.

The dynamics of knowledge and affect circulating within these assemblages can be understood using the notions of lines of articulation and flight, or the related notions of striated and smooth spaces (Deleuze & Guattari, 1988). These help to understand why knowledge and affect can flow easily between some elements of an assemblage but are perhaps blocked or lost between others. Lines of articulation are like deep grooves or striations worn into a surface; they may allow easy passage from start to end point, but they constrain and direct. They are associated with repetition. Lines of flight, in contrast, occur when the space being traversed is smooth and the direction of travel therefore more unpredictable and more uncontrolled. They are associated with difference and differentiation (Deleuze & Guattari, 1988; Dewsbury, 2011; Martin & Kamberelis, 2013). That is, lines of articulation can be associated with the first and second, passive syntheses. They may be produced by repeated experiences, social norms, our own past histories, and any forces that lead us to respond to an experience in a constrained way. In contrast, lines of flight may be created by the uncertainties and contingencies that give opportunities to respond in new and unexpected ways – to experience the third type of synthesis.

4. Creating place-based image-text assemblages

As noted above, the data described here were generated as part of a larger project that aimed to 'mobilize local knowledges' through



Fig. 4. Amanda's photograph, "Blocked drains".

'democratic' co-research processes (UKRI, n.d.). This stage of the project was conceptualised as a form of photovoice, a method that has been increasingly used in participatory action research with marginalized communities (Sutton-Brown, 2014). It also has resonances with body/place journal writing (Somerville, 2011), a process that seeks to 'creates a space between grounded physical reality and the metaphysical space of representation' (Somerville, 2007, p.150) and which thus has the potential to bridge different disciplines and ways of thinking in was that are 'imperative in addressing questions about human interventions in ecological systems' (ibid.).

In this case, seven community-based co-researchers were asked to use digital photography to describe their experiences of local flooding. In the following, the co-researchers are identified by either their first names or pseudonyms: Amanda, Anele, John, Ncebakazi, Nobuntu, Nomtha and Themba. The co-researchers had been recruited earlier in the project and had already participated in a Digital Storytelling process in which they had been asked to recount a particular flood event. They were now given digital cameras and asked to take photos in their neighbourhoods that explored their experiences of and responses to

recurrent flooding. Specifically, they were asked to document causes, factors that increased or decreased risk or damage, and factors that helped or hindered recovery following an inundation. In the prior Digital Storytelling process, they had been explicitly asked to reflect on the lessons they had learned from the episode they had chosen to narrate, thus although "learning" did not figure in the guidance for the photovoice process, it formed part of the background of the project.

After a period of seven days during which the co-researchers took photographs in Sweet Home Farm, they attended a participatory workshop facilitated by members of the project team who worked for the local NPO "Sustainable Livelihoods Foundation" and who had been coordinating fieldwork across the project. During the workshop, the co-researchers were asked to select up to 30 of the photographs they had taken and assemble them into an "album" including titles and captions for each image. In this paper, our focus is on the insights that an analysis by a distanced researcher of the resulting assemblage of approximately 200 images and texts can offer into the embodied, continuous place-based learning experienced by residents of Sweet Home Farm. The project's focus on flood events inevitably shapes this assemblage into a



Fig. 5. John's photograph, "Leaking tap".

partial and thematic account of the landscape literacies being developed by residents: nevertheless, a powerful pedagogy of place emerges.

5. Analysis

We take as our starting point the challenges inherent in attempting to adopt a decolonial stance while simultaneously adopting the position of expert, distanced researcher. The lead author, who was largely responsible for this analysis, lives and works in the Global North, employed as an academic in a Russell Group university (the self-proclaimed leading universities in the UK). Although several of her co-authors have, she has not been to – let alone lived in – Sweet Home Farm. We therefore deliberately sought an approach that would enable such a literally and metaphorically distanced researcher to develop valid and perhaps useful knowledge and understandings of experiences that she has not shared.

To achieve this, we build on previous work using assemblage analysis approaches (Feely, 2020; Wilson, 2021). Underpinning such approaches is a recognition that assemblages (co)operate at several levels in the research process. On one level, multimodal texts such as the

albums created by each co-researcher are themselves assemblages of images and written texts that connect different places, times and experiences and through which currents of knowledge and affect flow. On another level, when brought together, these individual assemblages network into something that is more than (or different to) a collection of the different parts, as new connections form across collections and new series of repetition and difference emerge. On yet another level, assemblages are formed between researcher-image-text and between researcher-images-texts as individual researchers engage with individual and aggregated images. When assemblages include researchers who are not already familiar with the subjects of the images and texts, the knowledge flowing within them is likely to take on different forms and dynamics as the researcher brings their own cultural resources into play in acts of interpretation, analysis and judgement.

The assemblage analysis approach developed here largely draws on Wilson (2021)'s work on assemblage analysis of images, which in turn drew on elements of visual social semiotics (Jewitt and Oyama, 2001). This approach involves spending time with the images that had been generated by the co-researchers, during which the researcher



Fig. 6. Nomtha's photograph, "Sweet Home Farm is a joke to prove political ideas".

experiences three stages or modes of engagement: becoming sensitive, becoming affected and becoming analytical. In the first of these modes, the researcher becomes sensitive or attuned to repetitions and differences. In the second, she allows the images and written texts to affect her – that is, to exercise their power to affect – in an acknowledgement that the human/mammalian emotions that are produced in that affective interaction are important elements of learning. In the third mode, the researcher attempts to trace the complex and intertwining influences that lead to interpretations and new understandings. Although mode 3 is inevitably preceded by modes 1 and 2, this is neither a linear nor irreversible process, as new elements of the images increase in salience and new affective response arise in response to new configurations.

In the following sections, we explore how repetitions and differences between and among the image-text-assemblages reveal lines of articulation and flight as the residents of Sweet Home Farm, including the co-researchers themselves, are taught by and learn within this pedagogically powerful place.

5.1. Analysing image-assemblages

Images selected by the seven co-researchers for inclusion in their albums are shown together in Figs. 2a and 2b.

In the first mode of the assemblage analysis, we – the distanced researchers – note repeated patterns of content, layout and colour, becoming sensitive to the repetitions and differences within the series of images. The images show roads and paths, buildings and open ground; some include people, and a small number show the interiors of buildings. They are dominated by two colours: greyish browns and blues. The greyish browns are the colours of mud and dirt – unpaved roads, earth backyards, construction materials including wood and rusty zincs, and pools of murky water. The blues are dominated by the bright, cerulean blue of a cloudless South African sky. However, as our sensitivity increases, we become aware also of the characteristic blue of chemical toilet units and communal taps, and then again of the lighter blue of

refuse sacks, all provided by the City of Cape Town authority.

What strikes hardest, though, and triggers the strongest and most complex affective responses and so also the second mode of analysis, is the almost ubiquitous rubbish. The landscape is strewn with litter and waste, half-submerged in standing water, piled up next to containers or consigned to an open dumping ground. There is no escaping a feeling of disgust. The captions written by the co-researchers to accompany images featuring this detritus indicate that this bodily response is shared and that, for them, disgust mingles with loss of dignity, frustration and resentment:

This container is supposed to be used to put some garbage but sometimes people just throw their rubbish outside because the container is locked. Even when it is open it is not even easy to go close to it as there is so much garbage around. How can you walk on top of that? When it rains, the movement of water is blocked by this mass of garbage, and it pools all around the outside. This is in a place with lots of houses. (Nomtha)

This water turned to be black with plastics, papers and tires but we staying still on this mess. It's hard and its disaster, it's even dirtier now. These are the things we face after the disaster. Outside we breathe bad smell and it's been long like this and there's no change. (Nobuntu)

As well as the mixture of waste and water, the images highlight the flimsiness of residents' homes and reveal a place in which external and internal, domestic environments are never truly separate. Filthy water lies in close proximity to floors, furniture, clothes and kitchens. The disgust experienced by the distanced researcher turns rapidly into a rising sense of outrage at such visible inequality, coupled with irony as the rubbish builds up on her own city's streets as a result of industrial action by refuse workers.



Fig. 7. Amanda's photograph, "Bricks and cement".

5.2. Developing literacies of landscape hazard

Continued engagement with the images leads to the third mode of assemblage analysis, in which meanings start to emerge.

The repeated images of roads and paths are illustrations of routes that should enable the movement of people and transport of goods, but that instead are transformed, even in this bright sunshine, into boggy barriers as the nature of this place as a wetland reasserts itself. This is not the rainy season.

Fig. 3 shows a typical example of the series of images of wet roads, taken by John. The frequent inclusion of such images in the albums suggests that wet roads teach residents of Sweet Home Farm a certain kind of landscape literacy, summed up in John's caption to this image:

The water here come from underneath the ground. These are brick houses in the developed area but still the water is coming through. In winter this becomes a difficult street to walk on as it becomes filled with water. (John)

Everywhere, taps drip, water seeps from broken pipes and drains are

blocked by solid waste, adding to the spring or spree waters that rise naturally to the surface of what should perhaps be a storm pond rather than a settlement. And everywhere, there is rubbish. Dozens of images focus on rubbish – filling ditches and drains, piled around bins and the haulage containers provided by the City authorities in the absence of a domestic waste collection, covering an area of ground used as an open dump. Fig. 4 shows a representative image from this series, taken by Amanda:

As Amanda's caption to this image indicates, this waste-strewn landscape teaches lessons about the relationship between waste and flooding:

Drains that are overflowing due to the disposing of nappies, food and bricks increases the risk of having floods in Sweet Home Farm. (Amanda)

For some, this awareness leads to a dynamic of responsabilization and blame, as is evident in captions to other images that focus on rubbish. For example, Themba states that:



Fig. 8. Anele's photograph, "People throwing the rubbish".

Community members are blocking the drains by throwing dirty stuffs and when water can't flow to the drains, it will come to their houses and fill the roads. (Themba)

John goes a step further:

The waste removal services are doing their best, but the people of Sweet Home Farm are not educated about waste. There is this stigma of people, if I am a cleaner it is okay for someone else to throw things around, because they think they are creating a job for me. It is just stupidity. (John)

In a connected series, dozens more images focus on the chemical and portable toilets provided by the city in the absence of a waterborne sewerage system. Fig. 5 shows a photograph that combines the repeated series of leaking taps with the series of toilets.

These images and their captions illustrate the development of landscape literacies that recognise difficulties and dangers, as expressed by John's caption to this image:

The tap is not decreasing the chances of the water drying up. Going to the toilet is also difficult especially in winter. And it's not healthy for people to be exposed to these conditions. People get sick and kids play in the dirty water. Running tummy, rash and skin problems affect the kids. (John)

Captions to other images from this series reveal an awareness of additional risks and dangers:

As you see the green house has dirty water in front of it. The water is mixed with sewage and urine. People of this house are in trouble because they are being attacked by big rats and mosquitoes bother them. And when there is a flood the water floods all over the house.

The rats are very big. When they come to the house they eat furniture, clothes and our food. When the rats are inside your house, you cannot sleep as they are making a noise. When you are asleep, the rat will gnaw on you. The babies are also in danger. I am afraid of the rats. They are very big. (Anele)

Most of the taps on the streets are leaking. No one is looking after them. Even the community does not take care of the taps although the water supply is helping them. As a result, there is always mud and mosquitoes around them. That is challenging because it affects the children mostly. They must play on the streets because there is nowhere else for them to play. We do have a high rate of sick children with scabies and different skin problems, and many tuberculosis cases in the area (Nomtha)

Here, Anele makes it clear that she has learned to fear her own place and Nomtha demonstrates how the physical hazards in Sweet Home Farm have taught her to feel not only unsafe but abandoned and uncared for. This learned lack of trust is further expressed in Nomtha's title and caption for an image (shown in Fig. 6) that illustrates the intersection between the two series, waste and toilets, "Sweet Home Farm is a joke to prove political ideas":

In the olden days we use to have a flushing toilet system due to tendering. The City of Cape Town demolished those toilets and have taken us back to Mshengu and the Bucket System. The city gives Tender of Cleaning to their favourites. As a result, they hire their friends and girlfriends using nepotism. Now our area is very dirty as if there are no cleaners. (Nomtha)



Fig. 9. Ncebakazi's photograph, "Dumping sites".

5.3. Learning to use technologies of mitigation

The images also show how the pedagogies of this landscape of water and waste have taught residents to construct makeshift technologies. A short trench snakes across a few meters of ground, going nowhere. Wooden pallets and slabs are used to bridge trenches and foetid water. Builders' rubble forms stepping stones across now-dry sand. Stained pieces of carpet are future sponges, anticipating the next inundation.

Another series highlights potential points of ingress of water into homes: these images focus on roofs, windows, doors and the lines where zinc walls meet earth. These show how residents have learned to use technologies of mitigation against the rising and falling waters. Many images, represented here by Amanda's photograph shown in Fig. 7, show shacks raised using cement, builders' rubble, rocks from the nearby railway track and even tyres.

As Amanda's caption to this image illustrates, this is a lesson learned from repeated experience:

I have experienced floods at my business. I used the cement and bricks to put my salon on a higher level, and made some stairs to avoid being the victim of floods again. (Amanda)

Another series of images shows how residents have learned to seal gaps with sails, plastic sheets, cement and even blue plastic City-issued refuse sacks. As Nobuntu explains in one caption, 'We try by all means to close where it's necessary.' Tubs and buckets also lie at hand, for when attempts to seal interiors fail.

5.4. Dynamics of mutual support and responsabilization

Most of the photographs that make up the co-researcher-generated

image-assemblage focus on landscape features – drains, ditches, dumps – rather than people. However, there are three series in which people are central. The first of these is the relatively short series of images that show reconstruction. In these, people are shown working, and captions indicate the need for mutual support and aid. For example, Nomtha's caption for one such image reads:

Working together as the community help us a lot when a home is affected by floods. People come together and do something to save that family. It's not difficult to collect sand, material and money and break down the affected house and build a safe house. This shows that only Ubuntu keeps us going in the area. (Nomtha)

Thus although Nomtha expresses the clear expectation that the authorities will not help her, she retains faith in the possibility of support and recovery driven from within the community.

However, the appearance of people is more often associated with dynamics of responsabilization. A longer series of images focuses on people throwing things out of buckets, as illustrated here in Fig. 8.

Anele's caption to this image encapsulates the sense expressed by many that it is their co-residents waste disposal habits that are to blame for at least some of their troubles:

In this picture as you can see the sewerage and nappies. This problem of dirt and water mixing is caused by the people who are throwing the rubbish and dirty water here. Rainwater also adds to the problem. This lady is adding to the problem. There is no channel for the water to flow away. (Anele)

In a less well-developed but related series, people are also shown picking through rubbish by bins and in dumps, as in Fig. 9.

As with the previous series, Ncebakazi's caption to this photograph



Fig. 10. Nomtha's photograph, "Unfinished development".

shows how the behaviour of others is thought to exacerbate flooding:

'If the community members can stop digging from the blue bags that are used to put rubbish because they make the rubbish to be all over the place that can decrease the flooding.' (Ncebakazi)

It is hard, though, for the distanced researcher to imagine where people should dispose of their waste, without adequate sewers or bins, regular rubbish removal and a domestic waste collection.

5.5. Lines of flight?

The series of images described above all seem to represent lines of articulation – patterns of behaviour and understanding that are reinforced by each repetition, and sociomaterial features that constrain residents to limited possible response. However, a small number of images stand out as different from the assemblage of images as a whole – perhaps the beginnings of lines of flight, escaping the demanding lessons of life within Sweet Home Farm?

The first of these is an image of houses rather than shacks: slab-built, along a tarred road, surrounded by electrical and light poles. This image, taken by Nomtha, is shown in Fig. 10.

The captions reveals that it is of an unfinished housing development. These "formal" houses are alien elements in a crowded landscape of the makeshift and the ramshackle, perhaps holding out the hope of an alternative. However, as Nomtha's caption makes clear, this is not the positive line of flight leading to escape from the hazardous conditions of Sweet Home Farm that might be hoped for:

Development is what Sweet Home Farm needs the most. There are many poor unemployed people suffering under these bad conditions and raising children in these dirty areas. There is a lot of unfinished building of flats. Their condition is not satisfactory at all and the follow up needs to be done. Sweet Home is forgotten by government

officials. They just remember us during Voting Time for us to vote - nothing more. (Nomtha)

Thus this potential line of flight instead turns out to reinforce Nomtha's sense of abandonment and lack of care.

Two other images stand out from the assemblage, in part because they differ dramatically in colour and content. Both were taken by John, and one is shown in Fig. 11. They are striking in that they are turned outwards, facing away from the crowded shacks towards an almost idyllic looking pastoral scene. Sun shines on a calm stretch of silver water, surrounded by reeds and open stretches of grassland dotted with mature trees. The mountains are visible in the background, hazy beneath a light blue sky.

These images stand out from the drab, brown, urbanized space of roads and buildings. They seem to offer a glimpse of a different life, where nature flourishes and well-being prevails. But John's titles and captions quickly correct this misinterpretation: these images instead represent contested spaces and the conflicting needs of the city and residents. The image with the title "Playing field" has the following explanation as its caption:

You may see a dam, but this place, this place holds high important [ce] to us the youth of Sweet Home Farm. This is our playing ground, our soccer field. With this year's winter and the blockage of drains, it has really really affected us badly. Kids cannot play there, they have to be on the streets doing things that they are not allowed to do; smoke, ask for money come weekends they are drinking alcohol. It's very very sad to see the youth go through this. In SHF, there is no facility that caters for the kids. Kids that are unactive may find activities in breaking the law. Kids are 30 % of the population of the country, but they are 100 % the future. Let's prioritise them and their talents and nurture it. (John)

The caption to the second image, shown in Fig. 11, expresses John's concerns even more directly:



Fig. 11. John's photograph, "The next Simphiwe Tshabalala can be discover here".

A soccer field is very important to any community as kids express their talents and what they love doing. If they are not given the time to show their talent they will use their time for something else. We need this to be a soccer field, we need this not to be a dam! (John)

6. Discussion

The image-text-assemblages described here reveal the development of landscape literacies, and the experience of a form of place-based learning, that is a sharp counterpoint to the positive pedagogies of land described in Somerville's seminal works on landscape literacies (Somerville, 2007; Somerville, 2013). In that work, Somerville describes the profound and positive relationship with land – and in particular, with the waters of the Narran Lakes in Australia's Murray Darling Basin – that were central to the identity of her Aboriginal co-researcher and doctoral student, Chrissiejoy Marshall. She also asks the question, 'How can places teach us about water?' (2007, p. 153, original emphasis).

Our analysis above suggests one particular way in which places can teach us about water. The image assemblages created by the co-researcher residents of Sweet Home Farm are characterised by repetitions and differences in colour, subject and arrangement. They reveal a landscape of water and trash, leaking taps and blocked drains, crisscrossed by technologies of mitigation and cohabitation. Within these, residents are inescapably engaged in what Johnson (2012) describes as 'being-in-place' (n.p.) in a continuous act of engaged and active learning; the place they are within is confirmed as 'profoundly pedagogical' (Somerville, 2013, p. 151). Together, the images reveal local landscape literacies that are being developed in relation to *unwanted* and *dirty* water. The formal project focus, explored in the previous Digital Storytelling activity, was recurrent flood events; but our co-researcher

photographers independently and unanimously widened this to include the daily and ubiquitous presence of water, seeping up from springs and the low water table, dripping from taps, leaking from broken pipes and stagnating in undraining pools. The presence of water is a problem that is not going to disappear: as John explains in one caption, 'the problem remains: houses are built ON water' (John).

Indeed, in Sweet Home Farm, water has been transformed from life-giving to life-threatening. It saturates the already complex dimensions of Sweet Home Farm's harmscape, making the inherent threats of poverty and inequality even more difficult to deal with.

The image-assemblages also suggest that '[t]hrough place it is possible to understand the embodied effects of the global at a local level' (Somerville, 2013, pp. 150-1). As the global issue of the Climate Crisis modifies weather and water levels and densifies, urbanizes and informalizes settlement, Sweet Home Farm presents a microcosm of the literal poisoning of our own environments. The image-text-assemblages reveal an embodied connection with place that Rose (2002, p. 311) describes as 'ecological connectivity', based on 'dialogical interpenetration between people and place', but in which that interpenetration is not a source of benefit or wellbeing. The topology and geology of the land and increasingly frequent rains combines with poor-to-no drainage and sewerage infrastructure, inadequate-to-absent waste removal services and unsanitary local waste disposal practices to create an ever-present, foul stew of standing water and rubbish. The titles and captions given to the images repeatedly include the word "dirty" – the water is dirty and green, the air is dirty, the whole area is dirty.

These image-text assemblages also reveal perhaps unexpected disconnections (or distorted connections) between place, inhabitants and nature. The blue skies that repeat throughout the assembled images in Figs. 2a and 2b are part of the backdrop to a Cape Town that often



Fig. 12. Nomtha's photograph, "It seems as if SHF never existed on the Western Cape map".

presents itself as a place of nature and natural beauty. However, the greens of grasses, plants and trees are largely absent from Sweet Home Farm, and only figure significantly in images where the gaze is directed outside of the settlement. For residents in this settlement, nature is problematic rather than health-giving, encountered in the form of floods, wind, insects, dogs and rats. The data reveal Sweet Home Farm as a bounded, enclosed space – a highly localised harmscape that may be dramatically different to neighbouring spaces.

7. Conclusions

As noted above, local knowledges and place-based approaches, and place-based learning in particular, have frequently been put forward as beneficial to research, policy and action – that is, as largely positive and health-giving. Our analysis above demonstrates that powerful pedagogies of place are not always uniformly positive. From the Anthropocene harmscape of Sweet Home Farm, residents have learned a variety of mitigation strategies, but as Nobuntu says in one caption, 'It's hard to live the life of floods'. Gruenewald (2003) describes how:

places teach us about how the world works, and how our lives fit into the spaces we occupy. Further, places make us: As occupants of particular places with particular attributes, our identity and our possibilities are shaped (Gruenewald, 2003, p. 621)

Although the pedagogies of this place have provided effective lessons in how to get by, repeated cycles of inundation, damage, repair and rebuilding take time, energy and resources that residents then do not have available for anything else. The very effectiveness of their learning confines them to lines of articulation that reinforce the status quo. It is because of this that local knowledges, which may be so strongly shaped

by place, may not be enough to create change. In addition, it may be necessary for more distributed and varied knowledges to be networked with local ones, as we recognise distributed and varied responsibilities for the environmental, historical and political conditions that have created Sweet Home Farm and similar, risk-ridden places. As Gruenewald (2003) states:

If human beings are responsible for place making, then we must become conscious of ourselves as place makers and participants in the sociopolitical process of place making' (p. 627).

We suggest that in hazardous, precarious places such as Sweet Home Farm, consciousness of the sociopolitical process of place-making requires a recognition that some places may best be thought of as harm-scapes. This not only encourages us to identify the intersecting harms that inhabitants of such places face. Importantly, it also directs thinking towards the ways in which resources and governance need to be mobilized in order to assist those who are being harmed; and reminds us that what is really needed is the transformation of the harmscape into an ecologically health-giving space.

As it is, residents of Sweet Home Farm may look outside for something that might help develop a line of flight, but many are left despondent. We leave the last word Fig. 12 to Nomtha:

As a community there is not much we can do to recover from the damage that is caused by flooding. It seems as if SHF never existed in the Western Cape map. I feel very bad when I think it's almost 27 years since Sweet Home Farm was established. (Nomtha)

CRediT authorship contribution statement

Anna Wilson: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Liezl Dick:** Conceptualization, Investigation, Writing – review & editing. **Sikhulu- lekile Ncube:** Formal analysis, Writing – review & editing. **Jen Dickie:** Conceptualization, Writing – review & editing. **Amber Abrams:** Investigation, Writing – review & editing. **Gillian Black:** Conceptualization, Investigation, Writing – review & editing. **Nicola Blair:** Data curation. **Kirsty Carden:** Conceptualization, Investigation, Writing – review & editing. **Niall Hamilton-Smith:** Conceptualization, Writing – review & editing. **Guy Lamb:** Conceptualization. **Tsitsi Mpfu-Mketwa:** Investigation, Writing – review & editing. **Leif Petersen:** Conceptualization, Investigation, Writing – review & editing. **George Robertson:** Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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References

- Agnew, J.A., 1987. *Place and politics: The geographical mediation of state and society*. Allen & Unwin, Boston.
- Amin, A., 2013. Telescopic urbanism and the poor. *City* 17 (4), 476–492.
- Arefi, M., 1999. Non-place and placelessness as narratives of loss: Rethinking the notion of place. *J. Urban Des.* 4 (2), 179–193.
- Augé, M., 2009. *Non-places: An introduction to supermodernity*. Verso Books.
- Barker, A.J., Pickerill, J., 2012. Radicalizing relationships to and through shared geographies: Why anarchists need to understand indigenous connections to land and place. *Antipode* 44 (5), 1705–1725.
- Barker, A.J., Pickerill, J., 2020. Doings with the land and sea: Decolonising geographies, Indigeneity, and enacting place-agency. *Prog. Hum. Geogr.* 44 (4), 640–662.
- Berg, J., Shearing, C., 2018. Governing-through-harm and public goods policing. *Ann. Am. Acad. Pol. Soc. Sci.* 679 (1), 72–85.
- Briggs, J., Sharp, J., 2004. Indigenous knowledges and development: a postcolonial caution. *Third World Q.* 25 (4), 661–676.
- Burgh, G., Thornton, S., 2021. *Teaching democracy in an age of uncertainty: Place-responsive learning*. Routledge, London.
- Butler, A., Sinclair, K.A., 2020. Place matters: A critical review of place inquiry and spatial methods in education research. *Rev. Res. Educ.* 44 (1), 64–96.
- Carrilho, J., Trindade, J., 2022. Sustainability in Peri-Urban Informal Settlements: A Review. *Sustainability* 14 (13), 7591.
- Casey, E.S., 1993. *Getting back into place: Toward a renewed understanding of the place-world*. Indiana University Press, Bloomington.
- Cinnamon, J., Noth, T., 2023. Spatiotemporal development of informal settlements in Cape Town, 2000 to 2020: An open data approach. *Habitat Int.* 133, 102753.
- Deleuze, G., 1994. *Difference and Repetition*. Columbia University Press, New York.
- Deleuze, G., Guattari, F., 1988. *A Thousand Plateaus: Capitalism and Schizophrenia*. Bloomsbury, London.
- Devine-Wright, P., & Quinn, T., 2020. Dynamics of place attachment in a climate changed world. In: Manzo, L., & Devine-Wright, P. (Eds.), *Place Attachment: Advances in Theory, Methods and Applications*, Routledge, 226–242.
- Drivdal, L., 2016. Flooding in Cape Town's informal settlements: conditions for community leaders to work towards adaptation. *S. Afr. Geogr. J.* 98 (1), 21–36.
- Feely, M., 2020. Assemblage analysis: An experimental new-materialist method for analysing narrative data. *Qual. Res.* 20 (2), 174–193.
- Ferreira, P.G., Signé, L., 2014. Explaining and Fixing the 'Weak Governance Curse' in Resource-Rich Least Developed Countries. *Southern African J. Policy Develop.* 1 (1), 6.
- Fox, N.J., 2015. Emotions, affects and the production of social life. *Br. J. Sociol.* 66 (2), 301–318.
- Fox, A., Ziervogel, G., Scheba, S., 2023. Strengthening community-based adaptation for urban transformation: managing flood risk in informal settlements in Cape Town. *Local Environ.* 28 (7), 837–851.
- Grange, L.L., 2017. Environmental education after sustainability. In: Jickling, B., Sterling, S. (Eds.), *Post-Sustainability and Environmental Education*. Springer International Publishing, Cham, pp. 93–107.
- Gruenewald, D.A., 2003. Foundations of place: A multidisciplinary framework for place-conscious education. *Am. Educ. Res. J.* 40 (3), 619–654.
- Gruenewald, D.A., 2014. Place-based education: Grounding culturally responsive teaching in geographical diversity. In: *Place-Based Education in the Global Age*. Routledge, London, pp. 161–178.
- Haque, A.N., Lemanski, C., de Groot, J., 2021. Is (in) access to infrastructure driven by physical delivery or weak governance? Power and knowledge asymmetries in Cape Town, South Africa. *Geoforum* 126, 48–58.
- Ingold, T., 1993. The temporality of the landscape. *World Archaeol.* 25 (2), 152–174.
- Jewitt, C., Oyama, R., 2001. Visual meaning: A social semiotic approach. *Handbook Vis. Anal.* 134, 156.
- Johnson, J.T., 2012. Place-based learning and knowing: Critical pedagogies grounded in Indigeneity. *GeJournal* 77 (6), 829–836.
- Jordhus-Lier, D., Saaghus, A., Scott, D., Ziervogel, G., 2019. Adaptation to flooding, pathway to housing or 'wasteful expenditure'? Governance configurations and local policy subversion in a flood-prone informal settlement in Cape Town. *Geoforum* 98, 55–65.
- Koelble, T.A., Siddle, A., 2018. Decentralization in post-apartheid South Africa. In: Erk, J. (Ed.), *Federalism and Decentralization in Sub-Saharan Africa*. Routledge, pp. 72–88.
- Kotzen, B., 2014. *Governance Through the Case of Informal Shebeen Entrepreneurs in Sweet Home Farm, Cape Town. Cities by Design, London School of Economics*.
- Massey, D., 2008. A global sense of place. In: Oakes, T., Price, P.L. (Eds.), *The Cultural Geography Reader*. Routledge, London, pp. 269–275.
- Massey, D., 2012. Power-geometry and a progressive sense of place. In: Bird, J., Curtis, B., Putnam, T., & Tickner, L. (Eds.), *Mapping the futures, 75–85*. London: Routledge.
- Mercer, C., Mohan, G., Power, M., 2003. Towards a critical political geography of African development. *Geoforum* 34 (4), 419–436.
- Mpfu-Mketwa, T.J., Abrams, A., Black, G.F., 2023. Reflections on measuring the soundness of the digital storytelling method applied to three Cape Flats vulnerable communities affected by drought, fire and flooding in Cape Town. *Soc. Sci. Hum. Open* 7 (1), 100407.
- Ncube, S., Wilson, A., Petersen, L., Black, G., Abrams, A., Carden, K., Dick, L., Dickie, J., Gibson, L., Hamilton-Smith, N., Ireland, A., Lamb, G., Mpfu-Mketwa, T., Piper, L., Swanson, D.M., 2023. Understanding resilience capitals, agency and habitus in household experiences of water scarcity, floods and fire in marginalized settlements in the Cape Flats, South Africa. *Soc. Sci. Hum. Open* 8 (1), 100710.
- Nicolosi, E., Corbett, J.B., 2018. Engagement with climate change and the environment: a review of the role of relationships to place. *Local Environ.* 23 (1), 77–99. <https://doi.org/10.1080/13549839.2017.1385002>.
- Pharoah, R., 2014. Built-in Risk: Linking Housing Concerns and Flood Risk in Subsidized Housing Settlements in Cape Town, South Africa. *Int. J. Disaster Risk Sci.* 5 (4), 313–322.
- Relph, E., 2008. *Place and Placelessness*. SAGE, London.
- Rice, J.L., Burke, B.J., 2018. Building more inclusive solidarities for socio-environmental change: Lessons in resistance from Southern Appalachia. *Antipode* 50 (1), 212–232.
- Rose, D.B., 2002. Dialogue with place: Toward an ecological body. *J. Narrative Theory* 32 (2), 311–325.
- Sacks, J., 2014. *Sweet Home: A Preliminary Investigation into the Socio-Political Character of Recent Road Blockades by Protesting Shack Dwellers in South Africa*. *J. Asian Afr. Stud.* 49 (1), 115–125.
- Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., Patel, S., 2020. Building resilience to climate change in informal settlements. *One Earth* 2 (2), 143–156.
- Simpson, N.P., Shearing, C.D., Dupont, B., 2019. Climate gating: A case study of emerging responses to Anthropocene Risks. *Clim. Risk Manag.* 26, 100196.
- Somerville, M., 2007. Place literacies. *Aust. J. Lang. Literacy* 30 (2), 149–164.
- Somerville, M., 2011. *Body/place journal writing*. In: Somerville, M., Davies, B., Power, K., Gannon, S., Carteret, P.d. (Eds.), *Place Pedagogy Change*. SensePublishers, Rotterdam, pp. 15–28.
- Somerville, M., 2013. *Thinking through country: New literacy practices for a sustainable world. Rethinking rural literacies: Transnational perspectives*, 179–196.
- Sutton-Brown, C.A., 2014. Photovoice: A methodological guide. *Photogr. Cult.* 7 (2), 169–185.
- Swartz, S., Harding, J.H., De Lannoy, A., 2012. Ikasi style and the quiet violence of dreams: A critique of youth belonging in post-Apartheid South Africa. *Comp. Educ.* 48 (1), 27–40.
- UKRI. n.d. *Water and Fire: Enhancing capacity and reducing risk through 15 'Best Bets' for transformative adaptation with vulnerable residents on the Cape Flats*. UK Research and Innovation Gateway. Available online at <https://gtr.ukri.org/projects?ref=ES%2F003561%2F1>. Accessed 12/04/2023.
- University of Cape Town (2019) *Community Risk Assessment Report Sweet Home Farm: Department of Environmental and Geographical Science*. Available at: <https://www.radar.org.za/assets/files/Sweet%20Home%20Farm%20Community%20Risk%20Assessment%20Report.pdf> (Accessed: 23 January 2022).
- Williams, J., 2013. *Gilles Deleuze's Difference and repetition*. Edinburgh University Press.

Wilson, A.N., 2021. Learning to see with Deleuze: understanding affective responses in image-viewer research assemblages. *Qual. Res.* 21 (6), 906–922.

Ziervogel, G., New, M., Archer van Garderen, E., Midgley, G., Taylor, A., Hamann, R., Stuart-Hill, S., Myers, J., Warburton, M., 2014. Climate change impacts and

adaptation in South Africa. *WIREs Clim. Change* 5, 605–620. <https://doi.org/10.1002/wcc.295>.

Ziervogel, G., Waddell, J., Smit, W., Taylor, A., 2016. Flooding in Cape Town's informal settlements: barriers to collaborative urban risk governance. *South African Geogr. J.* = *Suid-Afrikaanse Geografiese Tydskrif* 98 (1), 1–20.