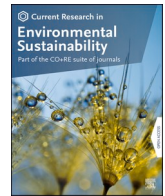




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Developing arts-based participatory research for more inclusive knowledge co-production in Algoa Bay

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ABSTRACT

This paper outlines the development of an arts-based participatory research (ABPR) methodology in the context of marine spatial planning (MSP) in Algoa Bay, South Africa. Exploring participatory research approaches where Indigenous and local knowledge holders are engaged co-researchers, this research investigates how contextualised photovoice and digital storytelling can offer a creative platform for alternative knowledge systems to be conveyed and eventually included in ocean governance processes. This paper is a reflection on the processes of developing these methodologies in a transdisciplinary research team and the importance of contextualising, incorporating aspects of social learning, reflexivity and 'slowness' in the unravelling, meshing and ravelling processes of knowledge co-production in ocean sustainability research. The study finds that the use of photography and storytelling can support the coming together of different ways of knowing the ocean and coast, necessary to produce contextually-oriented approaches to more inclusive area-based ocean management. The characteristics of ABPR, being conducive to aspects of social learning, slowness and reflexivity have been helpful in contextualising and learning ways in which we can reimagine ocean and coastal management in Algoa Bay. The study concludes that people involved in knowledge production need to unlearn historically colonial methodological processes and ways of producing research, and rather encourage methodological advances that better collaborate with Indigenous and local knowledge holders in contextually relevant sustainability research.

1. Introduction

There is growing consensus that to reach the United Nations (UN) sustainable development goals (SDGs), and specifically a 'sustainable blue economy' it is urgent that ocean governance strategies recognise the needs and interests of local communities and stakeholders (see Sowman and Sunde, 2018; Okafor-Yarwood et al., 2020; Saunders et al., 2020; Woodall et al., 2021). This is specifically highlighted by the *UN Decade of Ocean Science for Sustainable Development (2021–2030)*, emphasising the need to move towards knowledge-to-policy from science-to-policy by developing new co-designed research practices and strategies (UNESCO, 2020).

Current approaches to integrated ocean management such as marine spatial planning (MSP), which is a process aiming to provide overview

and political priorities to economic, environmental and social objectives in marine areas (Ehler and Douvère, 2009),¹ have been found to pay little attention to social and cultural aspects (Stephenson et al., 2021). This is a problem because we exist in interconnected social-ecological systems (SES), where no sector, whether it be the economic, ecological or social, exists in isolation, and natural and human systems are inextricably linked (Virapongse et al., 2016). Social and cultural interactions with the coast and the ocean will impact ecological and economic aspects of these systems, and vice versa, and must therefore be considered at an equal basis to make sure ocean governance efforts reach their objectives. This paper explores how contextualised arts-based participatory research (ABPR) approaches can be used for knowledge co-production with Indigenous and local communities as a strategy towards improved understanding of complex SES and therefore better

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¹ MSP processes often seek to provide conflict resolution mechanisms for different sector priorities and ensure sustainable uses of the ocean space and resources. It is important to emphasise that these processes are political and social, influenced by power relations and priorities of the implementing nation or authority (see Flannery et al., 2018; Rivers et al., 2022).

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inform how to sustainably manage them (see Mauser et al., 2013; Galafassi et al., 2018a).

Participatory research methods refer to processes where the 'research participant' is involved in every step of the research process, from informing the research objectives to defining the methodological approach and analysing results. 'Research participants' in this study are therefore rather referred to as 'co-researchers'. ABPR has the potential of challenging historically colonial research methods and allowing for knowledge co-production and research co-design where knowledge holders have ownership of their narratives (Leavy, 2020). As highlighted by Leavy (2020:29) valuing 'non-academic stakeholders' as 'full, equal collaborators' can result in 'crumbling the traditional researcher-researched hierarchy'. This paper reports and reflects on the use of ABPR in a particular context of sustainable ocean governance in Algoa Bay, South Africa, recognising that we need to move towards knowledge co-production for sustainability research that goes beyond mere 'participation' and 'action' research and is 'organic to the contexts' (Nhemachena et al., 2016:15).

ABPR methods can allow for different ways of knowing, creative thinking and the coming together of transdisciplinary research teams. In this paper, transdisciplinarity is defined as knowledge co-production processes that move beyond interdisciplinary² approaches and engage non-academic co-researchers in the formulation, development and execution of research (see Manuel-Navarrete et al., 2021). Arts-based research employs methods where modes of art play a central role in knowledge production and data collection processes. The art itself is not the end product, but rather a means of communicating diverse narratives and knowledge (Barone and Eisner, 2012). This is important, as this study recognises the implications of the white, Western and privileged positionality of the principal researcher and authors of this paper that will impact the analysis of the art products, therefore rather aiming to facilitate a space for co-researchers to share their art and knowledge directly with policy-makers (Rivers et al., 2022, in prep).

Aiming to explore different ways of knowing the ocean and coast that can inform MSP in South Africa, this research develops a context specific ABPR methods approach making use of digital storytelling and photovoice. In this study, digital storytelling refers to audio recordings of co-researchers' self-narrated stories, experiences or anecdotes, whilst photovoice refers to a process whereby co-researchers take photographs to understand or explore a particular place, issue or connection that is important to them with regards to the coast in Algoa Bay. The co-researchers remain the owners of the photographs and stories. As applied in this study, the use of digital storytelling and photovoice expands on the different understandings of the importance of the ocean and highlights the need to protect and recognise cultural interactions and connections that people have with the coast (see Strand et al., 2022).³ The paper elaborates on the development of these methods, and emphasises the importance and usefulness of flexibility, reflexivity and 'slowness' in transdisciplinary research projects, how knowledge co-production for inclusive ocean management is in fact a rights-based issue and discusses the opportunities of ABPR approaches to challenge both historical and current asymmetrical researcher-co-researcher relationships.

2. Context

Although the importance of integrating Indigenous and local

² Interdisciplinary research refers to collaboration and integration across different disciplines, such as marine science and anthropology, whilst transdisciplinary research is driven by stakeholders' needs and collaborates with non-academic knowledge holders such as local community representatives, government and private sector (see Mauser et al., 2013).

³ A report is currently being written with co-researchers, which delves deeper into the results of the ABPR.

knowledge systems (ILKS) in area-based ocean management has been acknowledged (see Flannery et al., 2018; Okafor-Yarwood et al., 2020; Saunders et al., 2020; Williams et al., 2020), existing literature does not detail strategic and practical guidelines for how best to do this. This often results in the exclusion of the perspectives of Indigenous and local communities in ocean planning and management efforts (Saunders et al., 2020:2). In the context of South Africa, the government is currently developing and implementing a MSP framework aiming to integrate knowledge from different sectors and ocean uses to achieve a 'sustainable blue economy' (DEA, 2017). MSP refers to the ways in which a country or entity decides to plan, organise and manage coastal and marine spaces, and is recognised as a 'means to achieve cross-sectoral, rational and harmonious spatial patterns of sea use' supported by institutional and legislative arrangements (Tafon et al., 2019:754). MSP approaches have often been celebrated for their role in promoting sustainable blue development by recognising multi-sectoral interests, but this is not without its shortfalls and challenges (Flannery et al., 2019; Saunders et al., 2020). To this date, area-based ocean management in South Africa still perpetuates top-down approaches and ignores ILKS in informing spatial management (see Sowman and Sunde, 2018).

Algoa Bay, in the Eastern Cape province, is the first pilot site to inform the national MSP framework in other coastal areas of South Africa and this is where this study is situated. Algoa Bay, mainly comprising Nelson Mandela Bay Municipality and the city of Gqeberha (formerly Port Elizabeth), spans from Sardinia Bay in the west to Cannon Rocks in the east (see Fig. 1). The Bay is known for its marine biodiversity and was selected as the pilot site due to the substantial data available to inform ecological priorities and mapping. The area is home to a population of more than 1 million people, with a large proportion living adjacent the Swartkops River up towards Kariega (formerly Uitenhage) (NMBM, 2020).

Like the rest of South Africa, the historical context of colonialism and apartheid which institutionalised racism has shaped the current demographics of the Bay, with the latter resulting in the forced removals of Coloured and Black populations from the city centre and coastline further inland (Rasdien et al., 2008; Roux, 2021). This is important to acknowledge when aiming to understand people's past, present and future relationship to the ocean. This research forms part of the Algoa Bay Project, which aims to provide an integrated, ecosystem-based approach to MSP that considers all stakeholders and sectors (Dorrington et al., 2018).

In the context of this paper, Indigenous knowledge refers to values, beliefs and culture of communities that identify with the original inhabitants of a specific area, and often have different cultural identities than the rest of the given society in which they exist (Gadgil et al., 1993). In Algoa Bay this can refer to Khoisan communities descending from the Sangoan people group living along the South African coast, and settling in the Bay approximately 100,000 years ago (Barnard, 1992). However, as highlighted by Boswell and Thornton (2021), Khoisan communities 'are not isolated from modernity' and 'identities are hybrid, multiply-situated, situational and intersectional'. Carstens (1966) and Bernard (2010) also argue that there has been a merging of values, culture, practices and kinship between different ethnic groups of South Africa, such as the Indigenous Khoi and San, the amaZulu and amaXhosa, where the two latter descends from Nguni communities arriving in the Bay approximately 8000 years ago.⁴ Local knowledge refers to values, beliefs and culture of people living in, around and identifying with the area of Algoa Bay, and this can be anyone from youth to fishers, bait collectors

⁴ This is a very short and simplified explanation of Indigenous communities and ethnic groups in and around Algoa Bay, which in no way can be shortened, simplified or generalised. The paper therefore encourages the reader to look to the work of Carstens (1966), Barnard (1992), Bernard (2010) and Boswell and Thornton (2021).

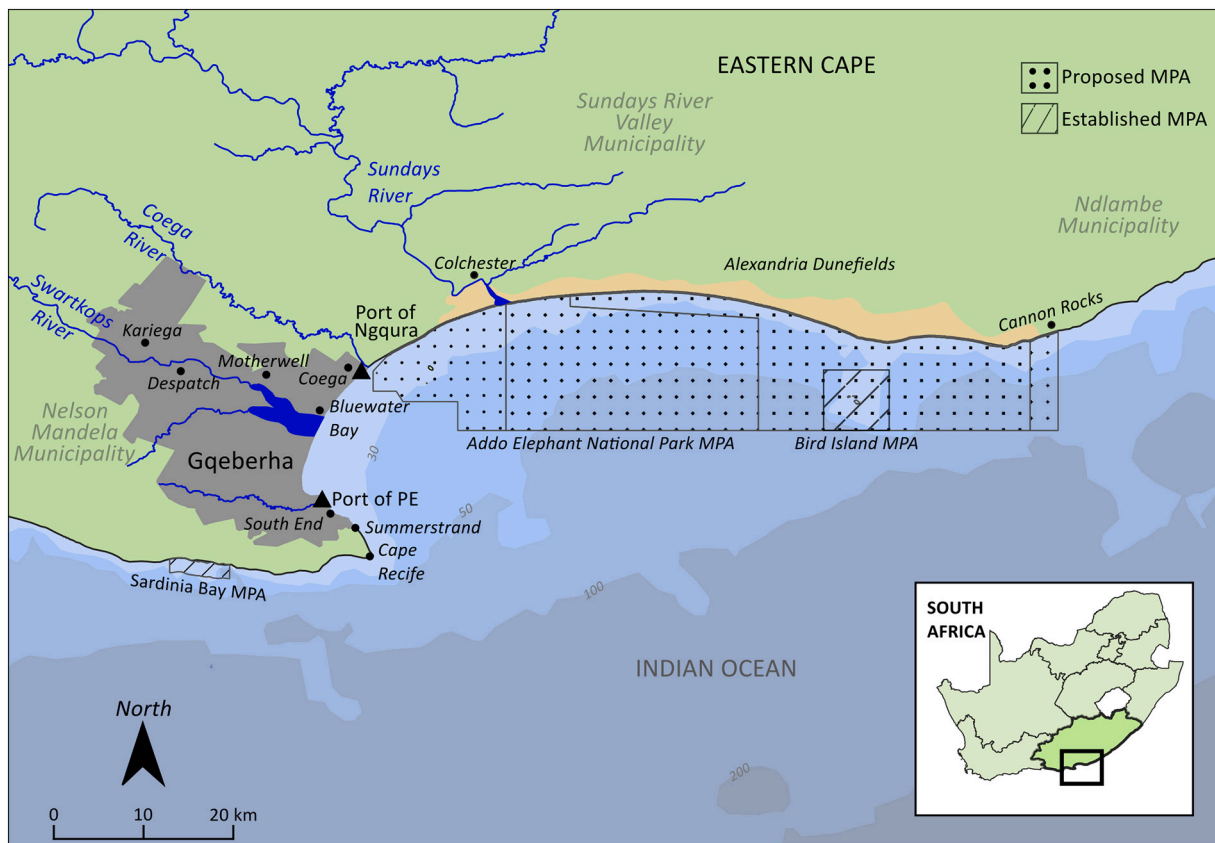


Fig. 1. Map of Algoa Bay, spanning from Sardinia Bay in the west and Cannon Rocks in the east (from Strand et al., 2022).

and recreational ocean users such as swimmers and surfers. Broadly, ILKS can be defined as culture, values and beliefs that are ‘handed down through generations by cultural transmission about the relationship of living beings, with one another and with their environment’ (Gadgil et al., 1993:151).

Despite the praise MSP has received in recognising several sectors, a growing body of research criticises MSP for inadequately incorporating socio-economic and cultural aspects, social justice, and representation of Indigenous and local communities in MSP processes from planning to implementation (see Tafon, 2017; Gee et al., 2017; Flannery et al., 2019; Saunders et al., 2020; Stephenson et al., 2021). Research has found that area-based management efforts in South Africa often come at the expense of social and environmental justice, leading to more socio-economic inequality and environmental degradation (Sowman and Sunde, 2018; Sunde and Erwin, 2020). In Algoa Bay, there are several Khoisan and local communities that have lived along the coast for centuries and have experienced exclusion from fishing grounds, cultural practices and ocean-related activities through area-based management processes (Barnard, 1992). By failing to understand cultural interactions with the environment and the cultural dimensions of ecosystem challenges, ocean governance strategies hinder collaborative management and can instead reproduce social inequalities (Poe et al., 2013; Saunders et al., 2020; Stephenson et al., 2021).

The importance, therefore, of co-producing responses to ocean management with Indigenous and local communities goes beyond the challenges of ‘buy-in’ and ‘compliance’, and is in fact a rights-based issue as recognised in the 1992 Convention on Biological Diversity (CBD) which requires countries to ‘respect, preserve and maintain’ Indigenous and local knowledge [Article 8j] and ‘encourage customary use of biological resources’ [Article 10c] (UN, 1992). The co-production of knowledge is also important as it can advance co-management and shared visions of protection and benefit-sharing. In the context of Algoa

Bay, South Africa, benefit-sharing cannot be underestimated as it is linked to both the right to resources for socio-economic development and the right to a healthy environment (Constitution of the Republic of South Africa, 1996). Furthermore, within the ‘post’-colonial and ‘post’-apartheid context of South Africa, the right to resources for socio-economic development and wellbeing needs to be reviewed and recognised in the light of restorative justice and can provide opportunities for addressing historical injustices influenced by policies such as institutionalised racism and forced removals.

3. Materials and methods

This study has developed and utilised an ABPR approach within a transdisciplinary team consisting of social scientists, a photojournalist, an art historian, a podcaster and co-researchers to co-produce knowledge with Indigenous and local knowledge holders that can inform more inclusive and representative ocean governance in Algoa Bay, South Africa. This section provides a rationale for selecting an arts-based methodological approach, elaborates on the concepts of photovoice and digital storytelling, expands on the concepts of unravelling, meshing and ravelling knowledge, and outlines the step by step research process with Indigenous and local knowledge holders. Throughout this section the importance of social learning and reflectivity is highlighted.

3.1. Arts-based participatory research approach

Galafassi et al. (2018a:1) argue that to achieve transformations in complex SES we need approaches to knowledge co-production that are open to creative innovation and foster inclusivity. To adequately respond to unpredictable and “wicked” socio-ecological problems in sustainable ocean governance, we need to develop new knowledge that can inform ‘user-useful’ approaches to environmental management

(Raymond et al., 2010; Moon et al., 2021:2). There is a need to co-produce knowledge through transdisciplinary research approaches, which bring together people and groups from both within and outside academia, to consolidate values, beliefs and cultures that should be included in current area-based ocean management processes (see Mauser et al., 2013).

ABPR have shown to create spaces for creative thinking, telling 'alternative' narratives and challenging hegemonic knowledge production by decolonising the research process and supporting bottom-up knowledge creation (Foster, 2016; Capous-Desylla and Morgaine, 2018). Arts-based approaches can potentially balance out power dynamics between researchers and knowledge holders and build the capacity of co-researchers (Castleden et al., 2008; Leavy, 2020). Art can also provide avenues for people to express themes and topics that may be difficult to articulate or speak openly about, and criticise the status quo without necessarily exposing or damaging one's reputation. Using approaches such as sculpture, graphic design and photography can encourage us to see potential, or even beauty, in what is otherwise seen as waste, destruction or decay, by converting these into artworks and objects of value.⁵

Foster (2016) argues that collaborative arts-based research has the potential to promote social justice when working with marginalised communities, as they are encouraged to share 'alternative' stories that are often excluded from Western hegemonic knowledge production and therefore create space for excluded narratives and lived experiences. Applying arts-based approaches to climate change research in the Iberian Peninsula where participants attended arts performances, Galafassi et al. (2018b:1) found that this supported the exploration and introduction of 'new ways of seeing, feeling and interpreting the world' that is needed to collectively address climate change. This highlights the ways in which arts-based methods can allow us to see from different perspectives as well as formulate and communicate in different forms and shapes.

One of the primary challenges of both interdisciplinary and transdisciplinary knowledge co-production is the representation, valuation and integration of different ontologies and epistemologies (see Raymond et al., 2010; Moon et al., 2021). Ontologies refer to how one perceives reality and the world, whilst epistemologies refer to how one values something to be true or valid.⁶ This has been another rationale for choosing arts-based research methods in this study. By 'working with' materials such as photos and recorded stories instead of just 'doing' theory, we can build or weave together alternative narratives and 'prioritise process over product' (Ingold, 2011:10). As this research has sought to highlight and explore connections with the ocean and coast that are usually excluded in current management approaches, an underlying aim of the ABPR has been to accept and recognise different ways of knowing the ocean as equally valid. Furthermore, although the focus of this study has been on process, we cannot ignore the importance of also attempting to impact the product, which in this instance is an integrated MSP for Algoa Bay (see Section 5.1).

3.2. Photovoice and digital storytelling

In this study, photovoice is utilised as a method whereby co-researchers take or orchestrate photographs using smartphones. Photovoice employs participants' photographs to engage discussions and dialogue between stakeholders from different backgrounds, ontologies and with different positions of power (Castleden et al., 2008; Budig et al., 2018). Photovoice has previously been referred to as 'reflexive photography', 'photo novella' or 'auto-driving', signalling a process in

which the photographs are used as a 'catalyst' usually between participants with relatively less power and participants endowed with a lot of power, to engage in dialogue about social change (Wang and Burris, 1997; Castleden et al., 2008:1395). Social learning is a way to facilitate social change, as we change by learning, therefore bringing about systemic change. Leavy (2020:240) highlights how visual art can:

'propel people to look at something in a new way, which is critical to social change. Visual art can transgress racist and sexist ideologies and has a resistive and transformational capability. Visual art can jar people into seeing something differently. This kind of consciousness-raising, unleashed by images, may not be possible in textual form.'

Digital storytelling, in this study, refers to a 2–10 min long audio clip that co-researchers either record themselves or that is recorded through conversations using a smartphone or audiorecorder. Storytelling can be a powerful tool and provides the opportunity to engage a wide range of stakeholders and audiences. It also makes different narratives more accessible by opening up space for people to share their stories beyond strict academic protocols and disciplines (Ettinger et al., 2021). Digital storytelling is therefore created with and for communities as much as for the research purpose and enables the knowledge holder to control the process of self-representation. Complementing the movement of decolonising our methodologies (see Smith, 1999) and the need to subvert the imperial gaze,⁷ Indigenous digital storytelling is a method that enables Indigenous communities to reverse the gaze of colonial researchers by 'constructing their own visual media, telling their stories on their own terms' (Prins, 2004:518). The use of storytelling aims to expand on the ways in which we can convey and identify Indigenous ways of being, doing and knowing and making sure that these are reflected in community practices, rules and laws (Powell et al., 2007; Leclair and Warren, 2007), or in current management practices.

The rationale for developing a context sensitive ABPR in this study has therefore been the ways in which arts-based research offers the opportunity to represent, convey and open up the conversation for different ways of knowing, and therefore move us closer to knowledge co-production through unravelling, meshing and finally ravelling different knowledges⁸ (see Fig. 2 below).

3.3. Unravelling, meshing and ravelling knowledge

According to Galafassi et al. (2018a), knowledge co-production starts with 'unravelling' what we know and exploring different narratives, lived experiences and assumptions from different knowledges, ontologies and epistemologies. Marine science literature generally does not discuss different epistemologies (or ways of knowing the world) and the implications these have on how we investigate and understand the world around us and our assumptions about reality (ontology) (Galafassi et al., 2018a; Norström et al., 2020). To conduct successful and effective transdisciplinary research, we have to recognise that people from different disciplines, sectors and backgrounds will have different ontologies and epistemologies. People perceive the world in different ways and understand things based on different assumptions. Arts-based approaches and social learning can play an important role here, encouraging the questioning of concepts and narratives we take for granted and deconstructing what we know and why we know it (see Leavy, 2020). Social learning refers to the bringing together of multiple perspectives,

⁷ Tamale (2011) defines the imperial gaze as the ways in which racist and imperialist policies have been justified through the framing of African cultures and customs as different and inferior.

⁸ This paper refers to knowledges, as this speaks to pluriversality and deconstructing the myth of universality (Mignolo, 2000), providing an inclusive approach that recognises that knowledges built on different cultures and that no culture is universal (see Gwaravanda and Ndofirepi, 2021 for an extensive analysis of pluriversality in African Universities).

⁵ See the Mmogo-Method (Roos, 2012), using visual projections through the use of straws, clay and beads.

⁶ See Moon et al. (2021) for an extensive discussion on how to understand the influence of epistemology in interdisciplinary marine research.

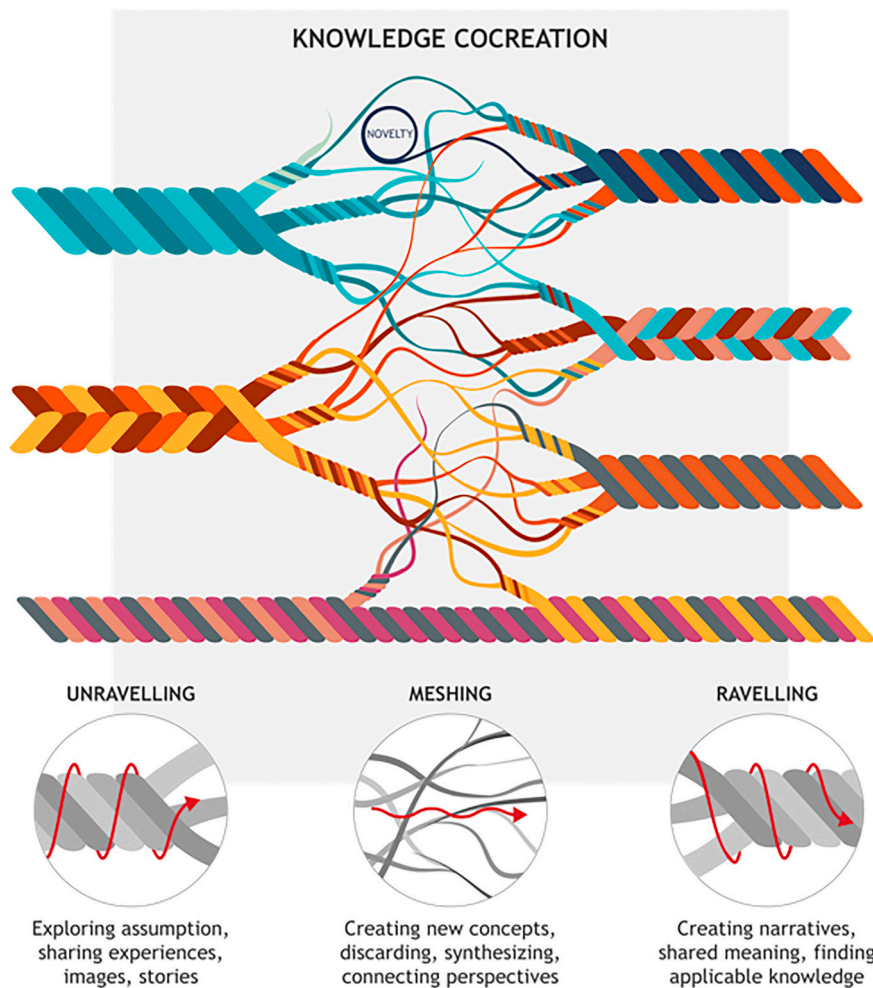


Fig. 2. Three necessary steps in knowledge co-production (from Galafassi et al., 2018a replicated with permission).

values and interests in order to creatively work on stubborn practices that lead to unsustainability (Wals in Lotz-Sisitka, 2012). The point of social learning is not so much what people should know or be able to do but rather is a process that uncovers what people want to learn, how they learn, how people overcome personal biases and group thinking and how people can become more sensitive to alternative ways of knowing, valuing and doing (Wals, 2007). Wals and Heymann (2004) proposed a process for designing social learning processes which includes several activities: orientation and exploration, self-awareness raising, deframing or deconstructing, co-creating, applying/experimenting and reviewing. This process is by no means linear but cyclical, requiring reflexivity and reflection throughout the social learning process (Wals and Heymann, 2004). Much commonality exists between these steps and the methodological steps followed for this study (see 3.4 below).

The second stage in this knowledge co-production process focuses on the 'meshing' of these different knowledges, and identifying pathways to thread these ways of knowing together (Ingold, 2011; Galafassi et al., 2018a). Both in the unravelling and meshing processes, reflexivity is essential. Reflexivity is defined as the process of critically examining the researchers' predispositions, biases and positionalities that inform the research, theoretical dispositions and meaning-making (see Waghid, 2002). It involves critically examining one's own positionality and relationality to others in the knowledge production process, to be able to deconstruct existing power structures and dominant epistemologies (Chilisa, 2019). Although one can argue that reflexivity is necessary in all social science research and knowledge production processes, we find

that this is often done as an afterthought or after the fact.

Finally, after novel concepts and ideas have emerged from the meshing, we come to the 'ravelling' stage of the process, in which 'shared meanings can shape new social-ecological narratives in the collective process of finding better ways of navigating transformations' (Galafassi et al., 2018a:9). This process is particularly important when it comes to knowledge co-production, as this will be the result of successful unravelling and meshing of knowledge systems, narratives and ideas to form new or renewed understandings of a specific problem at hand.

3.4. Arts-based knowledge co-production process

To adequately unravel, mesh and ravel knowledge to inform more inclusive ocean governance in Algoa Bay, the study was guided by the following six research steps: i) initial outreach and defining objectives with co-researchers; ii) arts-based workshops in photography and storytelling using smartphones; iii) field visits to places or spaces of significance to the co-researchers to take photographs and record stories in-situ; iv) analysis workshops exploring the ways in which the outputs convey knowledge and discuss how this can and should affect ocean governance; and v) an exhibition showcasing the final photographs and stories for public discussion and informal conversations around integrating different ways of knowing the ocean and finally multi-stakeholder workshops with local managers, policy-makers and co-researchers to explore tangible pathways to make sure ILKS is represented in area-based ocean management (see Fig. 3 below). The rationale and process of following these specific steps are fleshed out in the

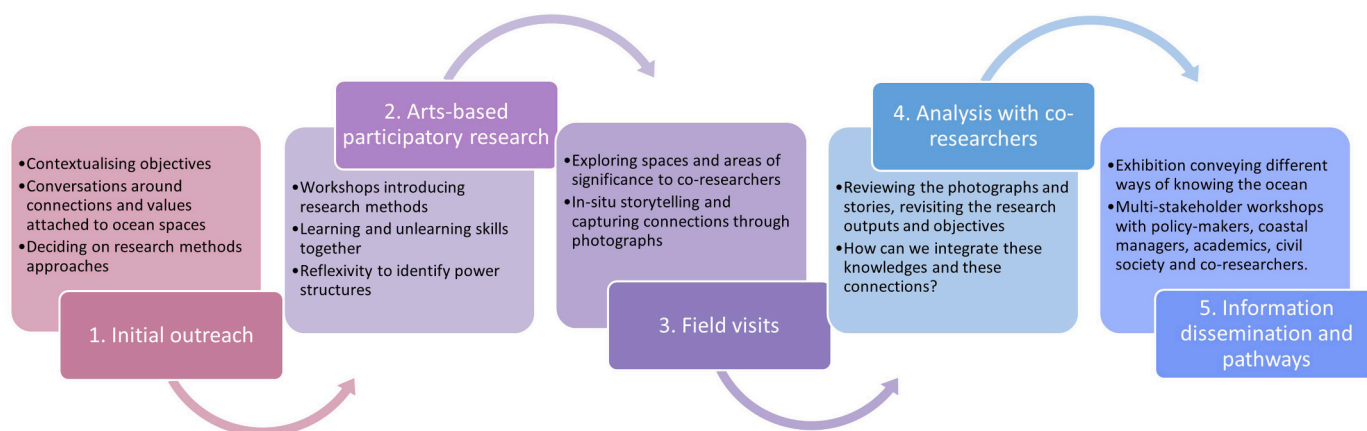


Fig. 3. Five steps in the arts-based participatory research methodology for exploring different ways of knowing the coast and ocean.

following section.

Firstly, in an attempt to encourage processes of social learning, this research began with initial outreach to Khoisan community representatives, subsistence fishers and bait collectors, youth, recreational ocean users and residents in Algoa Bay to discuss the potential of the research and share stories of our relationships with the ocean and coast. These workshops, online conversations and phone calls asked open-ended questions about people's relationship with the ocean and coast, and introduced the overarching ideas of the research. The workshops were organised as a round-table discussion and encouraged conversations around the methodological approaches and objectives of the research.

These initial outreach conversations highlighted Indigenous and local knowledge holders that continue to be excluded from ocean governance and knowledge production processes, particularly identifying Indigenous representatives, subsistence fishers, traditional healers, recreational ocean users, as well as women and children. Because this project seeks to elevate these marginalised voices and knowledge systems, the study specifically approached people and knowledge holders that felt excluded from these processes whilst trying to maintain acceptable representation of residents from different areas across the bay. The final 24 co-researchers therefore consisted of a broad group of ocean users and relations, ranging from Indigenous representatives and knowledge holders, small-scale and subsistence fishers, youth, spiritual and traditional healers, marine educators, and people who enjoy spending time near or in the ocean. Half of the co-researchers identify as women, approximately two fifths as Indigenous representatives and one fifth as youth. All the co-researchers have a past, current or aspire to a future relationship with the ocean and coast.

Secondly, once we had explored different ways in which people know and value the ocean and coast, and identified the 24 co-researchers, we organised workshops on photovoice and storytelling. The arts-based participatory research workshops brought together an art historian, photojournalist and podcaster with the research team to jointly learn how we can convey our experiences, narratives and knowledge through photography and storytelling using smartphones. We chose to use smartphones as they are more accessible and affordable to most people than large and complicated cameras. The aim of these collaborative learning workshops was to introduce the opportunities afforded by 'photovoice' and digital storytelling to share significant areas in the bay and what they meant in the past and could mean in the future. The workshops were therefore kept to small numbers to allow every co-researcher time to share, reflect and discuss their process through round-table conversations.

Wals (2007:498) highlights the significance of dissonance and deframing in social learning, where the former can be understood as exploring and engaging with contrary beliefs, and the latter is becoming aware of one's own hidden assumptions and deconstructing the ways in

which our ideological underpinnings can obstruct other ways of knowing and seeing the world. In order to create conducive environments for dissonance and deframing we organised workshops close to where people live and interact with the coast and ocean, and facilitated alternatives to how people might want to share their narratives by organising translators and giving out notebooks for drawing or writing down ideas or using smartphones to record ideas and reflections. The workshops and storytelling sessions were organised in, within and in close proximity to places or areas of significance to the co-researchers.

The third step of the research process involved venturing to sites and areas of importance to the co-researchers to take photographs and share their stories in-situ. The principal researcher (MS), sometimes assisted by a translator, accompanied the co-researchers to a place or several places where they wanted to record stories and photographs, spanning areas of the bay from Sardinia Bay Marine Protected Area (MPA) to the Sundays River Estuary. Whilst some co-researchers used the smartphones to take their own photographs and record their stories, others wanted the principal researcher to take photographs of them and share their stories through recorded conversations. The time spent on the in-situ photographs and storytelling varied from co-researcher to co-researcher and in some instances several trips to sites of significance were necessary to ensure the co-researchers were satisfied with the final photographs. All photographs were shared with co-researchers for them to have and to later be part of the process of selecting their favourites for the exhibition.

We then organised analysis workshops where everyone came together to review and discuss the final outputs (photographs and recorded narratives), identify themes and share insights to how they experienced the research process so far and what co-researchers experienced as both rewarding and challenging. These analysis workshops brought together several co-researchers, but kept numbers limited to ensure everyone had opportunities to engage and participate on a deeper level. As an attempt to build reflexivity into the ABPR research process, these workshops began with revisiting the original research objectives and discussing in plenary whether people still agreed with these, wanted to amend or remove any wording or whole objectives. The workshop then unpacked themes emerging from people's narratives, photographs and experiences. Finally, the co-researchers gathered around a printed map of Algoa Bay and used different coloured markers signifying the identified themes to circle areas in the bay according to their connections, experiences and priorities. The analysis workshops concluded with conversations around how management could respond to these themes and ocean connections, particularly where there were overlapping uses and priorities.

The final steps in the travelling process brought together the co-researchers, Indigenous and local community representatives, local managers and policy makers, private sector and civil society to an

exhibition of the final selected photographs and narratives that the co-researchers decide to present to convey ILKS that should be integrated in area-based ocean management in Algoa Bay. This also included a multi-stakeholder workshop with local managers and the co-researchers to explore how to integrate the cultural, spiritual, recreational and traditional connections and knowledge of the ocean in spatial management tools. The aim of these processes was to facilitate spaces where dissonance and deframing can take place amongst stakeholders with different ontologies and epistemologies related to ocean and coastal management and values to explore more inclusive and equitable ocean futures. The aim of the exhibition was also to ease people into new ways of knowing the ocean and coast, whilst the aim of the workshops was to bring together different ways of knowing the ocean and coast to identify pathways to integrate this knowledge in decision-making (Rivers et al., 2022, in prep).

4. Results

4.1. Arts-based methods encourage social learning, unravelling and meshing

The process of developing ABPR with co-researchers in Algoa Bay has highlighted the importance of context, provided greater ownership of the research process, and emphasised opportunities of unravelling what we know about people's connection to the ocean.

Firstly, applying ABPR in a context where people have a lot of responsibilities and limited time for engagement beyond work and family has been challenging, particularly when we as researchers are discouraged from providing remuneration to co-researchers. We found that although we were seeking to do participatory research where all co-researchers were actively involved in the research process from beginning to end, some people have more or less time to participate than others, and might not have seen the direct benefit of engaging in all the different stages of the research. Although the study provided airtime and data to co-researchers to access and review all their photographs prior to the exhibition, not everyone had time to do this or were happy for the principal researcher and curator to propose alternatives to them. That being said, the underlying aim of impacting ocean management processes, in which all co-researchers have a strong say, interest and opinion, resulted in nearly all co-researchers taking part in the initial scoping workshops, in situ field visits, the analysis workshops and exhibition. We therefore found that coming together around common objectives has been very important (see Section 4.3).

Secondly, when utilising photography in this research, we found that Indigenous and local knowledge holders maintain greater ownership of their knowledge product as co-researchers remain the owners of their photographs and stories. Although this paper reflects on the development of the methods, and a recently published paper expands on the opportunities of arts-based methods in envisioning different futures (Strand et al., 2022), the 'results' from the ABPR processes, knowledge and stories will be published as a report that is co-written by the co-researchers as co-authors. The photographs also support the storytelling aspect by adding further outlets for the imagination and ways of conveying both the past and possible futures. According to Leavy (2020:3), arts-based research presents information in different 'shapes', allowing us to see the world in different forms and from different perspectives. This has also been the case with how co-researchers have wanted to share their knowledge of the world in different forms and from different perspectives. For example, whilst some co-researchers depicted the past, others imagined the future, and whilst some highlighted problems and challenges, others conveyed wonders and beauty.

We find that utilising photography and storytelling can allow for both the dissonance and deframing introduced by Wals (2007) above, in creating alternative ways of engaging with and expressing knowledge. For example, the process of discussing photographs and stories amongst co-researchers during the workshops and with coastal managers and

conservation authorities during the exhibition resulted in several people exclaiming they 'learned something new', 'had no idea', or that they felt 'surprised' others experience or connect with the ocean in the same way as them. Examples of dissonance emerged when some people realised the discrepancy between the legal framework and the implementation of managing maritime cultural heritage, or when discussing economic development plans for important cultural heritage sites which could negatively impact people's cultural connection to the ocean and coast. The process has remained iterative in the way it explores problems from different angles through dialogue to collaboratively respond to complex challenges, which has proven useful in co-researchers' experience of both learning and unlearning. By opening up the space of knowledge sharing and discussing ways of seeing the world through art forms like photography, ABPR helps facilitate processes of social learning in which meshing and ravelling of diverse knowledge systems can take place.

Specifically, this study has found that arts-based methods can be particularly useful when it comes to:

- Providing different perspectives and ways of seeing;
- Activating the imagination and encouraging empathy;
- Allowing navigation of potentially sensitive topics and offering criticisms without necessary offending, hurting or humiliating people;
- Encouraging us to slow down and reflect on ourselves in relation to our everyday environment and practices; and
- Providing tools to communicate in different shapes and forms.

4.2. Acknowledging the importance of flexibility, slowness and reflexivity

One of the main results from developing the methods and reflecting on the processes of transdisciplinary knowledge co-production has been the realisation that it is difficult to plan transdisciplinary research. You always have to make sure that the research process is as flexible as possible to suit everyone's schedules, responsibilities and own research objectives. This means that the more open you are to uncertainty, ad hoc decision-making and changing the course of the knowledge co-production process, the better equipped you will be to adapt, although planning for different scenarios is still helpful. In this research, for example, we had to account for Covid-19 restrictions and protocols by minimising the number of people in each workshop and changing plans last minute to prioritise the safety and individual schedules of co-researchers. For example, some fishers could not attend the initial workshops as the fishing season had just opened and they were therefore out at sea, whilst other co-researchers suddenly had time for workshops and field visits as their work situation had changed. One of the practical results from this research process has therefore been the usefulness of keeping a longer period of time open for workshops and in situ field visits, to ensure the time frames suited all the co-researchers. Another learning from this process has been to ensure research partners, venues and catering services, amongst others, are aware of and available for flexible and ad hoc plans. In practice, this sometimes meant organising ad hoc field visits when co-researchers had an unexpected day off and incorporating unplanned photography practice sessions during workshops to adjust to the wishes and needs of co-researchers.

Reflecting on the development of the methods approach this paper argues that we have to accept a degree of 'slowness' in our knowledge co-production process to make sure co-researchers are given ample opportunity to guide and mould the research objectives and sharing of perspectives. The concept of slowness and slowing down refers in this paper to the need to resist the call of society for quick solutions which might not have a deep enough understanding of the problem it is trying to solve. On a practical level, we found that in order to create a safe space for people to share their experiences and stories, adequate time must be set aside. For example, practicalities like encouraging everyone to speak in their preferred language and allowing for translation means that extra time must always be factored into the research process. This is

a step towards more inclusive knowledge production to ensure the research process is not limited by academic structures which continue to uphold power imbalances and asymmetries. Manuel-Navarrete et al. (2021), studying Ecuadorian biologists working with indigenous communities, found that one of the main factors affecting researchers' intentions towards knowledge co-production was the 'pressures in academia to do more in less time'. By failing to give 'equal consideration' to different ways of knowing and being, academic culture can easily perpetuate 'colonial patterns of behaviour', instead of promoting more horizontal and collaborative production of knowledge (Manuel-Navarrete et al., 2021). In this paper we argue that one of the ways in which we move towards horizontal co-production is to embrace the aspect of slowness alongside flexibility.

For example, taking time to review and discuss people's photographs during the initial workshops opened up discussions around different assumptions about the coast and ocean, such as its ability to provide healing, learning and a sense of identity. One of the most significant lessons emerging was the fact that everyone experiences a sense of calm when they are near the ocean, and that the importance of the ocean and coast for mental health and wellbeing should be further highlighted in the future. Bhabha (2005:376), discussing the contributions of Edward Said to postcolonial studies, maintains that slowness "articulates the movement that exists between the space of words and the social world, and it strengthens our resolve to make difficult and deliberate choices relating to knowledge and justice—"how, and how not?"—in the face of contingency, silence, and mortality". Slowing down is a critique or resistance in itself, and this research finds that the use of arts-based research processes encourages and opens up the opportunities for this practice. Quite literally, the research adapted to slowness by doubling the timeframe of the research period from six months to twelve months, and acknowledging that the research process does not necessarily have a static, final 'end', as the process of better recognising Indigenous and local knowledge in ocean management is of a dynamic, iterative and ongoing nature. Another practical aspect of slowness in this research was making sure workshops were organised in close proximity to places or areas of significance to the co-researchers, for example near or on beaches where remains of old Khoisan fish traps have been found near Cape Recife Nature Reserve in the southeast part of the Bay or in the Swartkops Estuary near Bluewater Bay where people live off fishing or collecting bait to sell for subsistence (see Fig. 1 above). We found that it is as important to contextualise methods physically as it is theoretically, as this resulted in remembering a different past or imagining a better future, particularly when it came to accessing places of significance and removing barriers to visiting the coast (see Strand et al., 2022).

The application of 'slowness' can also be applied here to further consider ethical and political aspects of the research and reflect on the inherent conflicts, relations and complexities in interactions between people (and our environment). In the context of MSP in South Africa and Algoa Bay, one of the political programs supporting the development of the MSP process is Operation Phakisa, meaning 'hurry up' in Sesotho, launched by former president Jacob Zuma in 2014 to fast track the National Development Plan and 'unlocking the oceans economy' (Findlay, 2018). The program was based on Malaysia's 'big fast results methodology' and emphasised the need for urgency in policy-making (Findlay, 2018). The practice of slowing down therefore also attempts to acknowledge voices that have been and continue to be silenced in the ocean management processes due to the ad hoc nature of policy-making and the now online platforms which systematically continue to exclude people with limited access to internet, data and technology. The ABPR process with Indigenous and local knowledge holders has highlighted the need to engage beyond online platforms and taking the time to listen to people's deep and intricate relationships with the ocean and coast. By asking policy makers and conservation authorities what they felt and experienced from the photostories by the co-researchers, the exhibition and following workshop encouraged decision-makers to slow down and reflect on the knowledge and stories they had witnessed, perhaps

offering a small break from daily expectations of 'hurrying up' for 'big fast results'. We find that arts-based research methodologies require a degree of slowness on the part of the audience. In order to observe and interpret the details of an artwork one must slow down enough to look at it and position it within their own frame of reference and ideally reflect on themselves in relation to that which is depicted in the art object (Tishman, 2018).

In the process of mapping contextual ABPR methods, it was found that it is helpful to establish concrete points of reflexivity in each workshop. In practice this involved unpacking some of our own positionalities and biases, and taking time to discuss how our experiences have shaped our connections to the ocean and coast. In each workshop the principal researcher would offer space and time to discuss the proposed methodological processes, and discuss how everyone felt and thought about what they wanted to share and why. As emphasised by Chilisa (2019), researchers continuously need to consider their role in shaping the knowledge production process, which requires taking a step back and reflecting on how the biases, positionality and experiences of individuals influence the research process. The result of establishing these concrete points of reflective thinking was conversations around *what* knowledge is being produced and *for whom* this knowledge is produced. These discussions also highlighted anticipated conflicts between political and personal priorities, such as decisions to allow oil bunkering in the Bay for economic priorities that conflict with co-researchers' wishes to keep the Bay clean from oil pollution for spiritual, cultural and recreational priorities. When we reach the point of deframing, we want to begin the process of 'reframing', essentially the meshing of different knowledges and ontologies to move towards knowledge co-production.

4.3. Redefining and reframing objectives and process

The use of ABPR was found to increase the co-researchers' control of the direction of knowledge co-production, supporting the existing literature where collaborative arts-based methods are often used to promote social justice issues and challenge the inherent coloniality of research methodologies *with* (as opposed to *on*) marginalised communities (see Smith, 1999; Foster, 2016; Capous-Desylla and Morgaine, 2018; Leavy, 2020). This paper argues that at the core of trans-disciplinary research is the rethinking of how we produce knowledge and shift the invented boundaries between 'researchers' and 'participants'. At the core of this specific research was the rethinking of how knowledge is produced to inform area-based ocean management and challenge the constructed boundaries between 'academics', 'policy-makers' and 'stakeholders', and this was the motivation to pilot ABPR in this specific context. The study therefore highlights the importance of redefining and reframing the objectives of the research together with the co-researchers (see Fig. 4).

This study first set overarching research objectives to direct the mapping of the methodology and to respond to the complexity of the contextual SES in Algoa Bay, where there has been an exclusion of Indigenous and local knowledge systems. These initial objectives were therefore related to both the process of developing the methodology and the knowledge co-production for sustainable and inclusive ocean governance, and can be summarised as: *i) developing a context-specific approach to ABPR to encourage knowledge co-production with ILKS holders; and ii) identifying pathways to integrate ILKS in area-based ocean management and MSP efforts in Algoa Bay, South Africa*. However, the research objectives of the actual knowledge co-production process have to be defined and redefined with the co-researchers to contextualise the research and make sure it is relevant. Initially, the research objectives were drafted as: *iii) exploring how we can learn from each other ways of valuing and knowing the ocean and coast; and iv) imagining ways to convey and represent Indigenous and local knowledge systems to inform area-based ocean management*. Following processes of reframing and redefining these objectives and aims with co-researchers, the two latter were

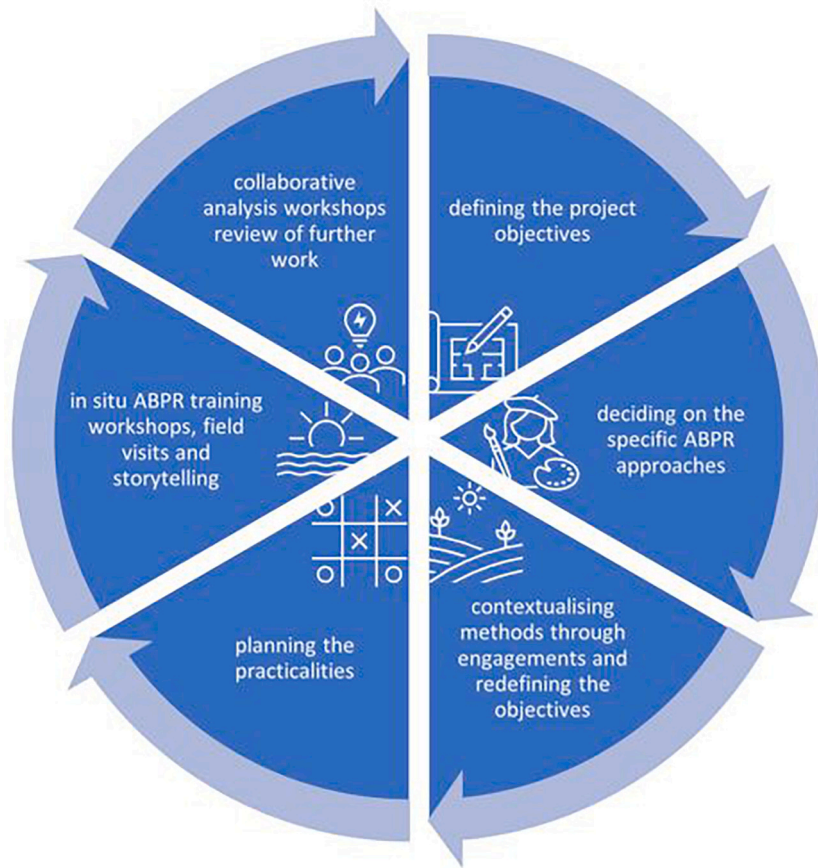


Fig. 4. The current research process of transdisciplinary knowledge co-production in Algoa Bay, South Africa, emphasising the importance of (re)defining research objectives throughout the process.

rephrased to: *iii) using photography and storytelling to convey important ocean knowledge and cultural connections to the ocean; and iv) reimagining ways in which area-based ocean management can better recognise, 'hear' and 'see' Indigenous and local knowledge systems* (see Strand et al., 2022).

In practice, this process involved asking co-researchers what they wanted the research process to result in and how they wanted to share their knowledge. Whilst some co-researchers wanted to share in many different ways, including recorded stories, photographs and even writing, some only wanted to share a few photos with minimal text to let these speak for themselves. Some co-researchers present several pictures to depict one single story, whilst others convey several stories through several pictures. However, all co-researchers wanted to share their knowledge and ocean connections through photography and storytelling. We find that emphasising participatory methods can challenge current top-down knowledge production by allowing for different ways of framing, sharing and exploring ways of knowing, experiencing and valuing the coast and ocean spaces and places. What we also find is that although you can arrive at joint overarching objectives or goals, there will likely be dissonance between co-researchers when it comes to what they want the process to achieve. For example, whilst most co-researchers seek greater recognition and influence in ocean management, others emphasise the importance of conserving a specific area or increasing access to certain coastal areas that have been closed off through paywalls and fences.

4.4. Cultural, spiritual and traditional connections to the ocean and coast

Initial interactions and workshops with Khoisan representatives, subsistence fishers and bait collectors, recreational ocean users and residents in Algoa Bay identified themes of exclusion from sites of

livelihood practices and access to areas of historical importance, as well as lack of representation in academia and decision-making processes. Activities related to co-researchers sharing stories and experiences of our relationships to the ocean and coast identified a strong sense of cultural, spiritual and traditional connections to different areas of the bay. The co-researchers also expressed a sense of intangible cultural heritage when talking about why and how they value the ocean and coast, such as its role in both shaping and maintaining identities, its spiritual value and contribution to healing, and how it connects people with their ancestors or God (see Strand et al., 2022). Intangible heritage, as opposed to tangible heritage, is not necessarily linked to something concrete or static, whether it is an object, a place or a song (Kirshenblatt-Gimblett, 2004). Intangible cultural heritage is often alive and ever-changing, linked to oral traditions, a system or dynamic spatio-temporal conditions (Kirshenblatt-Gimblett, 2004). The challenge therefore lies in sustaining and representing this system 'as a living entity', which is difficult to capture by the written word (Kirshenblatt-Gimblett, 2004:53), and this is where ABPR has proven particularly important.

The use of photography and storytelling can prove helpful when it comes to conveying and identifying ways of knowing the ocean that might be difficult to meaningfully articulate through an academic journal article or a policy brief. As emphasised by Poe et al. (2013:172), current attempts to define and measure cultural values often fall short by oversimplifying culture, using 'expert' classification systems and adopting non-affective methods that are unable to explain certain values. The development of ABPR aims to avoid the above pitfalls by applying co-researcher-led and meaningful ways of describing what matters, making place for invisible and hard-to-measure phenomena such as spiritual connections, specific cultural values and norms, and

create alternative classifications through iterative processes such as photography, storytelling and open-narrative methods (see Turner et al., 2008). For example, during the analysis workshops, co-researchers identified themes protruding from the photographs and stories that they did not feel had been adequately captured by the principal researcher, such as 'mental health and wellbeing' and 'possible future uses and connections' (see Strand et al., 2022). Furthermore, the study recognises the dynamics and ever-changing nature of culture and therefore recommends that the process of identifying and integrating ILKS in ocean governance mechanisms needs to be continuous and iterative.

The strong sense of cultural and spiritual connections and values attached to the ocean and coast by co-researchers also impacted the practicalities of this research process, further moulding the study objectives to better reflect the challenges and concerns that are important to the co-researchers specifically in Algoa Bay. For example, the study includes an objective to identify culturally significant spaces (see Gee et al., 2017) and adopted an aim of imagining future connections and access to ocean spaces (see Johansson and Isgren, 2017; Strand et al., 2022), as there is a strong sense of lack of access and exclusion amongst some co-researchers. This study has so far found that ABPR has the opportunity to go beyond current imaginations, reflect on what has been and on scenarios that have yet not been but could be possible in the future (see Strand et al., 2022).

5. Discussion

The processes of developing a contextual transdisciplinary, knowledge co-production methodology using photovoice and storytelling has been useful to deconstruct the hegemonic knowledge underpinning current area-based management processes and exploring different ways of knowing and valuing the coast and ocean. While this methodological approach is not novel, this paper demonstrates how to reframe and mould ABPR to a specific context of knowledge co-production for MSP that can help highlight social and cultural aspects of society. By working with ILKS holders as co-researchers, this ABPR approach aims to challenge the current top-down approach to area-based ocean management in South Africa, encouraging innovative methodological advances in storytelling mechanisms, and inform ways of integrating ILKS and ILKS holders in ocean governance processes.

5.1. Social learning or social unlearning?

Wals (2007) argues that the point of social learning is not so much what people should know or be able to do, but rather it is a process that uncovers what people want to learn, how they learn and how people overcome personal biases. It is about learning from each other and exploring how people can become more sensitive to alternative ways of knowing, valuing and doing (Wals, 2007). Integrating processes of social learning in approaches to digital storytelling and photovoice therefore presupposes that the researchers, co-researchers and relevant policy-makers are open to considering, problematising and reframing their ways of knowing in an innovative knowledge co-production space. Although the argument can be made that art and ABPR methods in and of themselves open up spaces for reflexivity and social learning processes, we have to consider the approaches we take to encourage this throughout the research stages and this is where the process of unravelling by Galafassi et al. (2018a) proves valuable.

Another overarching aim of social learning is to transform ineffectual systems by transforming ourselves through transformative or change-oriented learning (Lotz-Sisitka, 2012; Tilbury, 2007). We therefore require epistemological and methodological approaches that will enable us to probe the structural, cultural and political dimensions of the socio-ecological risks facing southern Africa, therefore creating spaces for increased reflexivity, agency and change, which is what this research aims to do. Currently, ABOM approaches in Algoa Bay are not informed

by local and Indigenous communities dependent on the coast and the ocean spaces, highlighting the need to deconstruct the knowledge that underpins ocean governance today. This also highlights the importance of developing more innovative approaches to contextualised knowledge co-creation to address the challenges found within complex SES.

This research finds that storytelling through audio and photographs can identify other ways of knowing the ocean and coast, but that the ways in which people wish to share their knowledge should be completely driven by them as we have seen co-researchers wanting to convey their stories and connections in different frames, such as looking to the past or envisioning the future. The emphasis on 'participatory' methods therefore becomes extremely important, and the significance of making sure stakeholders are engaged as co-researchers to take ownership of the knowledge production process cannot be understated. The issue of 'genuine' participation emerges here, and the principal researcher found that the enthusiasm people showed to participate in every step of the research process, the ways in which co-researchers added their own themes to the analysis and engaged directly with policy-makers and conservation authorities during the exhibition and multi-stakeholder workshop all seem to elude a sense of genuinity. This does not negate the fact that people have other priorities in their daily lives that will always constrain their ability to 'genuinely' participate, but aspects of the research process such as the freedom to express oneself in different ways, speaking in one's own language, choosing places to visit, when to visit these places and choosing one's own photographs all helps the participatory aspect of the research.

This approach takes time, requires a degree of slowness and forces us to 'unlearn' how we are meant to produce academic knowledge with clearly defined researchers and research participants, or predefined research objectives. We have to question our own predefined positionalities, assumptions and biases and reflect on how we can overcome these together by 'transcending' how current methodologies privilege some over 'others' (Chilisa, 2019). In this study, the principal researcher has unlearned biases towards how one is 'supposed' to act 'unbiased' and 'objectively' with co-researchers, again experiencing the importance of recognising one's subjectivity in everything one do, say and feel, and how this influences the research process. Although the principal researcher has experienced challenges when it comes to funding of a project without predefined research objectives, there has been no alternative as the project sought to be participatory. Furthermore, because socio-cultural-political-ecological problems do not abide by disciplinary boundaries, it is reasonable to argue that the processes employed to address complex SES problems necessitates a transgression and erosion of superficial borders too. In orienting this methodology around the dimension of the specific 'problem' of ILKS-exclusion, we find that different disciplines and viewpoints can come together and forge connections where some of these socio-political problems have driven segregation and inequality. Wals (2007:498) reiterates this aspect of social learning when he says:

"Perhaps the essence and success of social learning lies in people's ability to transcend their individual frames, so that they can reach a plane where they are able to find each other and create enough 'chemistry' to feel empowered to work jointly on the challenges they come to share."

This methodology facilitated a space where chemistry amongst co-researchers could take place by ensuring groups were small, that each and every co-researcher had ample time to speak and share uninterrupted, and spending time together over a longer period. This chemistry has developed relationships that are based on trust, communication and an understanding that no experience, story, narrative or connection is more important than another. Change-oriented learning seeks to identify relationships that can embed change and challenge root causes. It seeks structural and systemic change and is mindful of how social transformation occurs in particular contexts and considers people's assumptions and actions for change. It seeks to go beyond once-off

activities like planting a tree or cleaning up litter and instead encourages critical and systemic thinking skills, aimed at the source of key issues (Tilbury, 2007). Tilbury (2007) identified several pathways that enable learning based change which include mentoring, facilitation, participative inquiry, action learning and action research and are similar to the six steps of the methodology used in this study. In line with this, another aim of this study was that the art products themselves, in the form of photovoice and audio stories, act as transformative social learning tools as they engage coastal managers and policy-makers through different modes, in this case through the exhibition and workshop. It is now up to coastal managers and policy-makers to engage in genuine knowledge co-production for MSP that recognises and incorporates ILKS and ILKS holders.

ABPR can provide a space for the unravelling and meshing necessary for contextual knowledge co-production, and Ingold (2011) highlights that by moving towards weaving and emphasising the process instead of the product, the research process can make sure co-researchers are the ones producing knowledge and that this knowledge is integrated into coastal and ocean management. Nevertheless, there exist great challenges and resistance in the uptake of transdisciplinary knowledge in policy-making, ocean governance processes and even in academia, which should better accommodate for slowness, open-ended projects that develop research objectives with co-researchers, and taking the time to build meaningful relationships. A first step towards changing the narrative from science-to-policy to knowledge-to-policy can be achieved through following the process of unravelling, meshing and ravelling different ways of knowing the ocean and coast through arts-based approaches. However, there is an urgent need to increase the representation of Indigenous, localised and contextualised knowledge in the science we build our academic arguments on and inform policies with (Nhemachena et al., 2016; Chilisa, 2019; Vierros et al., 2020; Belhabib, 2021; Maas et al., 2021). Future research should therefore explore how we can shift what is recognised as ‘evidence’ to ensure Indigenous and local knowledge can directly inform policy.

5.2. Pitfalls of transdisciplinary knowledge co-production

The pitfalls and challenges of transdisciplinary knowledge co-production are many and might seem daunting for some researchers. The processes of ensuring unravelling, meshing and ravelling of knowledge can be time-consuming, political, tedious and might require a lot of resources. However, these challenges are common in most impactful research and are worth their cost as we have seen that contextual and bottom-up transdisciplinary research is necessary to reconstruct current knowledge production processes to respond to complex social-ecological challenges. In this specific research, some pitfalls and challenges that are worth elaborating on is the elitism of certain epistemologies and ontologies, the politics of inclusion (or exclusion) of co-researchers and the possible discrepancy between the knowledge you end up creating and the knowledge you envisioned creating when you start your research.

Firstly, we need to discuss possible elitism or privilege of some epistemologies and ontologies and how this might affect the knowledge co-production process. Although the aim is to somehow reach a consensus that is built on social unlearning, compromise and finally the ravelling process, we need to consider whose epistemology is ‘winning’ or dominates. To reach ‘the science we need for the ocean we want’ within the UN Ocean Decade we need to co-produce and co-develop knowledge with local communities and stakeholders (Howell et al., 2020). In current ocean governance approaches and area-based ocean management in South Africa, we argue that the two primary epistemologies and ontologies have been built on conservation goals and natural science on the one hand, and the argument that a thriving blue

economy will have a trickle down effect on the local and Indigenous populations in the area on the other (Operation Phakisa).⁹ Lombard et al. (2019:2) highlight how ‘an ecosystem-based approach to MSP is founded on ecosystem health, whereas an integrated use approach to MSP is underpinned by economic growth’. These underpinning world-views, or strategies, often silence, exclude or at least fail to benefit less privileged Indigenous and local communities and might even have an interest in excluding ILKS. As we have discussed above, complex social-ecological systems do not abide by disciplinary boundaries, and so neither should knowledge co-production to better understand and manage these systems. The importance of continuously questioning what epistemologies and ontologies are being promoted or privileged can therefore not be understated.

Secondly, to make sure the research process creates a conducive environment for the unravelling, meshing and ravelling of knowledge (Galafassi et al., 2018a), it is important to purposefully include co-researchers from different socio-economic backgrounds, with diverse understandings of the importance of ocean and coastal spaces. It is also important to ensure that researchers have experience with or training in workshop facilitation, where aspects of asymmetrical power dynamics and power relations between researchers and co-researchers is discussed and considered. This is again something that should be increasingly supported by academic institutions, and even the UN Ocean Decade, to promote transdisciplinary knowledge co-production for sustainable ocean governance. Flannery et al. (2019) argues that one of the main flaws with MSP as a practice is the failure in addressing issues of power and politics. The inclusion or exclusion of specific co-researchers is a highly political process, and this study purposefully includes Indigenous community members, women and youth as they have often been marginalised from decision-making and knowledge production processes. The study therefore recognises how it is important to take an active approach in promoting a more pluriversal understanding of what the ocean means to individuals living in Algoa Bay, and therefore how it can and should be managed.

Finally, we have to consider that the coming together of individuals from different socio-economic backgrounds might result in such dissonance that deframing and working collaboratively proves extremely difficult or even impossible. We therefore have to continuously reflect on what knowledge we are aiming to co-create and for whom we are creating this knowledge. Although the ultimate aim of this specific ABPR research is to inform new policy-making, underpinning aims also involve learning and unlearning from different disciplines, epistemologies and ontologies in how we best can advance towards a more sustainable ocean governance that considers the coast and ocean as a system in which people are just as important as the possible economic benefits of ecosystem services or the conservation of specific fish species. We have to do our best to change the research landscape and slightly shift the paradigm in how knowledge is created and what knowledge is valued. Therefore, if the research concludes that MSP cannot advance a systems thinking approach to area-based ocean management that properly integrates ILKS, we have to be prepared to explore alternatives.

6. Conclusions

ABPR can allow for ‘different’ ways of knowing and support transdisciplinary knowledge co-production as it provides avenues for social learning and unlearning, the unravelling, meshing and ravelling of new knowledge beyond different ontologies and epistemologies (Galafassi et al., 2018a). The goal of this study and the use of innovative arts-based research approaches is the process and not the product (Ingold, 2011), where the implementation of the workshops, the analysis and creating pathways for ILKS integration in ocean governance processes will speak to the product (a MSP plan for Algoa Bay) in the future. The study finds

⁹ www.operationphakisa.gov.za.

that innovative arts-based participatory research methods can support the unravelling, meshing and ravelling of different ways of knowing and valuing the ocean and coast, which is necessary to produce sustainable and context sensitive approaches to sustainable area-based ocean management.

Innovative methodological advances in knowledge co-production can support the move from science-to-policy to knowledge-to-policy, and is required to ensure the UN Ocean Decade actually culminates in transdisciplinary research that is built on contextual realities and responds to the historical exclusion of Indigenous and local knowledge systems in area-based ocean management. The importance of social learning and unlearning in these processes cannot be underestimated as we have to unlearn ways in which we have relied and continue to rely on mainly Western notions of marine and economic 'science' to manage our ocean spaces and places. This research therefore encourages efforts to increase the representation and valuation of Indigenous, contextualised and localised knowledge, and particularly knowledge holders, to respond to complex challenges in managing social-ecological systems.

Authors' contributions

All authors contributed to the study conception and design. The first draft of the manuscript was written by Mia Strand, and all authors reviewed and edited the manuscript. All authors read and approved the final manuscript.

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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.

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