Assembling Indigenous Climate Observatories

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ABSTRACT

Indigenous communities, highly vulnerable to climate change and biodiversity loss, often find their knowledge excluded from climate research and policymaking. This Situated Action is the finale of the project, entitled; Indigenous Climate Observatories: local knowledge for Local Action, which addressed this contradiction. This project was done in parallel by 7 different Indigenous communities, in collaboration with (local) researchers and other societal actors. Together we explored Indigenous Climate Observatories as a conceptual entity which is focusing on 1) defining local change indicators, 2) using those change indicators to observe and track change, 3) reflecting on this change and 4) collaboratively planning for action in relation to this change. Through the Situated Action, where we assemble the project outcomes, we aim to further reflect on what Indigenous Climate Observatories can be, after which we co-create a Climate Observatory as a representation of these reflections and different perspectives.

CCS CONCEPTS

• **Human-centered computing** → Interaction design; Interaction design process and methods; Participatory design.

KEYWORDS

Indigenous Knowledge, Climate Change, Citizen Science, Adaptation & Mitigation, Reflection

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1 INTRODUCTION

In the project Indigenous Climate Change Observatories - Local Knowledge for Local Action, we focused on the question: How can we learn together to better understand local climate change? Over the past two years, we have been working with different Indigenous communities in different places in the world on shaping Indigenous Climate Observatories. Concretely 7 different climate observatories were shaped: Two in Borneo, Malaysia (focused on connections to the river/forest), three in Eswatini (focused on biodiversity), and two in Lesotho (focused on weather patterns). Within those climate change observatories, we brought together researchers and institutions who are working to understand climate change (biodiversity and climate change experts) and Indigenous communities who experience climate change in their daily lives. Those Indigenous Climate Observatories are strongly connected to place, each addressing different themes, based on what was locally relevant. Central in the manifestation of the observatories was the understanding of indicators of change: How can we understand change and what indicators do/could the communities use to observe or reflect on change? In broad lines we followed certain steps: we explored what local change indicators can be, we created expressions of hope regarding those change indicators, we recorded change through the indicators, and we had reflective sessions on what this change means and how we can think about action to counteract it. Each of the Indigenous Climate Observatories manifested in a way responsive to its locality, as each brought together local communities, their concerns, and their interactions with the local researchers and introduced different specific indicators of change thereby each morphing into something unique.

The Situated Action we propose is meant as a closing ceremony of the project, showing and furthering the notion/notions of what Indigenous Climate Observatories can look like. How they can be understood; how such a 'space' can be facilitated; in which context we consider space, not just as a concrete place, but as sets of relations between individuals and groups and we extend: localities, other localities, and knowledges.

2 BACKGROUND

Indigenous communities are amongst the most vulnerable to the impacts of climate change and biodiversity loss, yet their ways of knowing are often excluded from climate research and policy-making. Turner and Clifton [6] state that empowering Indigenous communities to leverage their traditional knowledge is key to their successful adaptation to the local impacts of climate change. This is, however, contradicting the current practice in climate adaptation and mitigation. As Nightingale et al. [4] stated, the knowledge currently produced around climate change often does not connect to local traditional knowledges, and other ways of knowing and thus becomes just data, rather than an everyday foundation for local action. We, in this project, therefore, saw special potential in exploring ways to, as Verran [7] phrases it: "work knowledges together", by which we respectfully learn together and accept diverse forms of knowledge systems as equitable. In the Participatory Design field this respectfully learning together and accepting diverse knowledge systems as equitable, could be understood as taking a pluriversal approach to design. Pluriversality has been popularised through Escobar [1] and Mignolo [2]. A pluriverse abandons universalist claims and is inspired by the Indigenous Zapatista movement which allows us to enter a "world in which many worlds fit" – thereby interconnecting diversity and differences. To facilitate the exchange between knowledge systems, we need to acknowledge that knowledge itself is power, meaning that those who share knowledge should stay in control of the process [3] and that special care to avoid harm to already vulnerable communities should be taken [5]. The processes of shaping the Indigenous Climate Observatories are manifestations of how we approached 'working knowledges together'.

3 ASSEMBLING INDIGENOUS CLIMATE OBSERVATORIES

As a situated action, we will build a tangible Climate/Biodiversity Observatory and bring together representations of the Climate observatories that were shaped during the project, which will result from collaborative situated actions in each of the different communities. As a red thread through the project, we have made use of stamped blankets (see collage of the project work, Figure 1, Figure 2, and Figure 3), as initial meeting spaces. Therefore, we give shape to the situated action through blankets to facilitate space for reflection. There will be three types of blankets. The first will contain the initial change indicators (extracted from the academic research) that were used as a trigger to explore the relatedness of these indicators in our partner Indigenous communities. The second type of blankets will contain the change indicators as documented and shared by the communities during the project duration. The third type of blanket will be the blanket that we create within the Situated Action. The Situated Action will serve as an opportunity to exchange knowledge from the different Indigenous communities involved in the project with the Indigenous participants attending PDC 2024 Community Track and other sessions. Therefore, the Situated Action will be hosted alongside the Community Track with the Community Track participants, outside of the official program. The combined result - the new blanket - will then move to the main venue to become an exhibition introducing a plurality of Indigenous Climate Observatories.

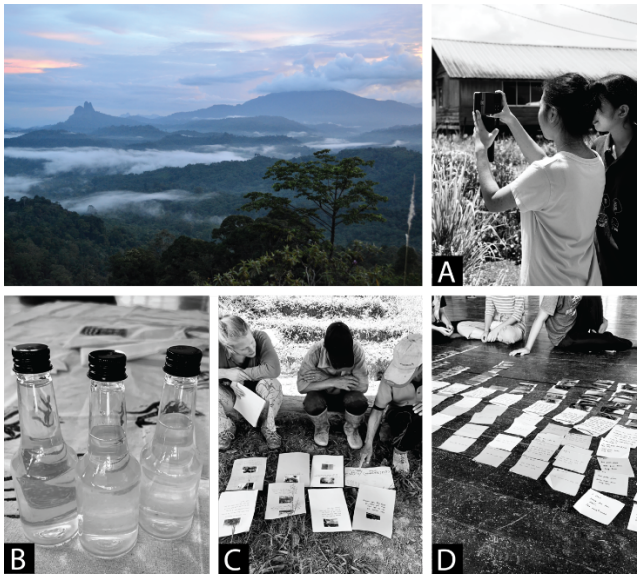

Figure 1: In the Climate Observatories in Borneo, we observed changes in the Rivers and Forests and how these changes impacted life in the different communities. A) Polaroid cameras were used to take pictures of change indicators. B) Water samples were taken to explore what the water looked like and what we could say about that. C) The change indicators were divided so that everyone became in charge of recording changes for 'their' change indicators. Every two weeks, for the duration of three months, pictures focusing on the change indicator were captured. D) These, with the connected dates, were then brought to the reflection session where we collaboratively explored what we could say about the recorded data. This then became material that the community could use to inform adaptation to change (where needed).

4 THE PLAN

Our session will be observational and performative in nature and comprises of two parts (3 hours). In the first part, which is observational, we will invite the participants of the Community Track to observe the process, indicators, and depiction of change on the blankets presented and collected by the partner Indigenous communities of the project. The second part, which is performative, consists of a stamp-making station and new blanket(s) that we can shape together (Figure 4). For this, we will bring all the stamps that were made for the project as well as create new stamps with specific Indicators of Change which will be contributed by the participants and visitors. The participants will be taken along the process of observation and performance and will be invited to contribute to the final blanket(s). The last part of the performance will be individual reflection of the participants which they can write and depict on the Knowledge Tree (Figure 5). The Knowledge Tree comprises

Figure 2: In the Climate Observatories in Lesotho, we focused on understanding weather patterns and Indigenous weather forecasting methods. The local communities use these methods to forecast, but with climate changes, it becomes important to understand whether this knowledge is still relevant to those changes. A) We focused on different weather types and the indicators that could be used to forecast such weather. B) The weather indicators were then divided so that the community members who were part of the climate observatories became in charge of recording 'their' weather indicators. Diaries were used for recording the weather over the period of one month. We then came together to reflect on what was observed by the communities. C) We then brought in 'Scientific' weather measures (such as rain meters, rulers to measure snow, and thermometers), to understand whether the forecasts matched the actual weather. D) We developed a card game to understand which indicators are still used, useful and when to focus on certain indicators over others.

Figure 3: The Climate Observatories in Eswatini became Biodiversity Observatories as the focus became the Pepper-bark tree, Indigenous to Southern Africa, including Eswatini. This tree is an endangered and highly sought-after species in the medicinal plant trade, particularly because of its extensive use in traditional medicine as well as its significant cultural value in ritual ceremonies. A) In our explorative sessions, with elders and traditional healers, we mapped out the issues that cause the endangerment of the tree. B) With youngsters, we held field expeditions, where we looked for the tree and aimed to understand what a healthy tree versus an (over)harvested tree looks like. We then established wishes for the project concerning the tree, which then informed later action. As highlighted by the communities, this problem was a problem that needed to be addressed, but that they could not solve alone. Therefore, other societal actors were involved to provide training, and education and to collaboratively reflect on whether overharvesting could be prevented by for example putting in place regulations or education. C) The tree population was mapped over 1,5 years using mobile phones. D) This mapping was complemented with 'walking sessions' during which we revisited the trees and reflected on their status and health.

roots (cause), trunk (problems), and fruits/leaves (impacts) and will be depicted on a Knowledge Tree (Figure 5). The whole process will lead us to better understand what Indigenous Climate Observatories can look like from the Indigenous communities' perspective. The co-created blanket(s) and the Knowledge Tree will be moved as an exhibition piece to the main venue of the conference to share the outcomes and process of the Situated Action. This Situated Action will be facilitated by three of the authors. A researcher who has been part of all the Indigenous Climate Observatory processes, as well as two community representatives who have been part of the project from different Indigenous communities.

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REFERENCES

[1] Arturo Escobar. 2018. Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.
[2] Walter Mignolo. 2012. Local histories/global designs. In Local Histories/Global Designs. Princeton University Press.
[3] Paul Nadasdy. 1999. The politics of TEK: Power and the" integration" of knowledge. Arctic Anthropology, 36, 1-18.

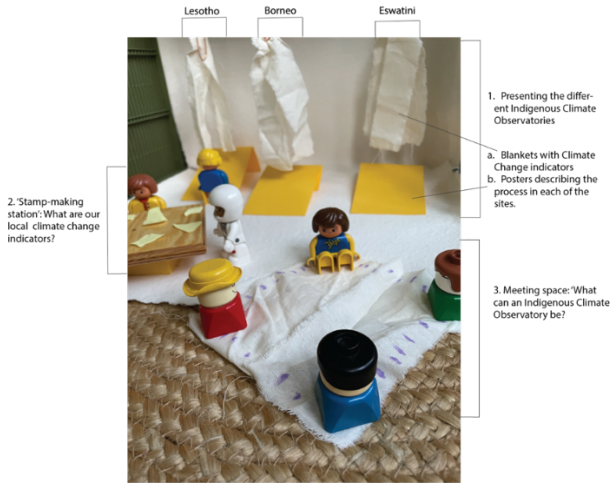

Figure 4: The setup of the Indigenous Climate Observatories Assemblage.

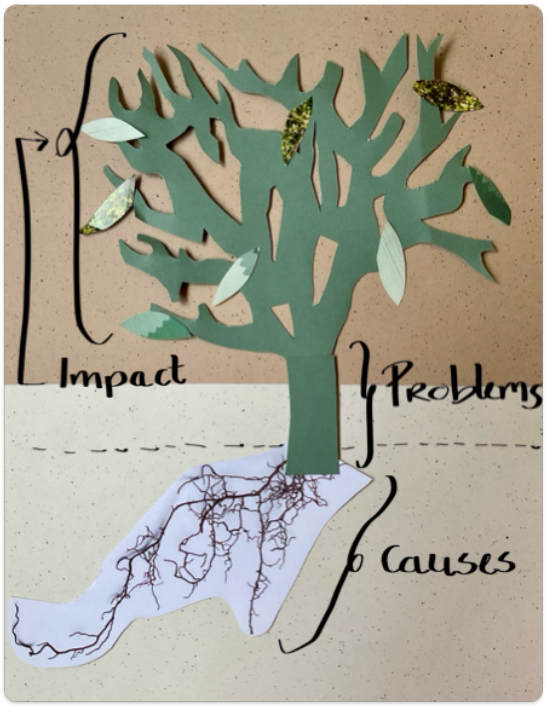

Figure 5: Knowledge Tree for Reflection

[4] Andrea Joslyn Nightingale, Siri Eriksen, Marcus Taylor, Timothy Forsyth, Mark Pelling, Andrew Newsham, Emily Boyd *et al.* 2020. Beyond Technical Fixes: climate solutions and the great derangement. Climate and Development, 12(4), 343-352.
[5] Maria Tengö, Rosemary Hill, Pernilla Malmer, Christopher M. Raymond, Marja Spierenburg, Finn Danielsen, Thomas Elmqvist, and Carl Folke. 2017. Weaving knowledge systems in IPBES, CBD and beyond—lessons learned for sustainability. Current opinion in environmental sustainability, 26, 17-25.
[6] Nancy J. Turner and Helen Clifton. 2009. "It's so different today": Climate change and indigenous lifeways in British Columbia, Canada. Global Environmental Change, 19(2), 180-190.
[7] Helen Verran. 1998. Re-imagining land ownership in Australia. Postcolonial Studies: Culture, Politics, Economy, 1(2), 237-254.