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Leveraging Indigenous Knowledge, Collaboration, and Emergent Technology

How to Embrace Tensions in Conservation Interventions in a Vulnerable Himalayan Region

Twisha Mehta and Jenny Bentley

Our case study is set in Lachen, a remote village in an ecologically vulnerable Himalayan region in Sikkim, India. Numerous conservation initiatives have been planned and implemented in the region, but didn't necessarily succeed due to the cultural, political and geographical complexities of the place. As a team of designers and an anthropologist, we tackle these complexities through a systems thinking approach, one that has led to designing an interpretation center in the region via co-creation. In the initial stages of our project, we found tensions in perspectives and values within the system that drove us to seek innovative ways to embrace these paradoxes by using ethnographic methodologies and emergent technologies to rapidly reconstruct relations in this system. Through this paper, we ask how we can measure the impact of this resilient model and how we can find ways of improved mutual communication between the multidisciplinary collaborators in order to enhance understanding for the modalities of a systems thinking design approach.

Keywords: Conservation, Himalayas, Systems Thinking, Indigenous Knowledge, Emergent Technologies

Introduction

Climate change is one of this century's most complex and challenging issues. As intersectional macro systems, such global challenges produce place-sensitive impacts and dilemmas (IPCC, 2014; Agrawal and Perrin, 2008). Our case study is located in the village Lachen, in a remote eastern Himalayan region of North Sikkim, India, that is particularly vulnerable to climate change. Here, the median temperatures are rising higher than the global average and glaciers are melting faster than in other mountainous regions (Saluja et al., 2019, 12; Kothari et al., 2017). Subsequent phenomena such as species movement or extinction, disasters like floods, or increased parasite-infestation of livestock threaten natural resource-dependent livelihood and lastly human and non-human well-being (Sharma et al., 2009). Additionally, unsustainable tourism, lacking waste-management, large-scale infrastructure projects, and so forth take its toll on the ecosystem (Kothari et al., 2017). Further, while the regional indigenous knowledge and livelihood practices that shape the interaction with and sustenance of the ecosystems bear high potential to contribute to conservation, we find they feature marginally in interventions; moreover lifestyles and economic activities have fundamentally changed in the past decades (Ingty, 2007; Lachungpa, 2009).

In this space, an array of entities ranging from Sikkim state government, the Indian government, as well as international agencies (UNDP, UNESCO) and NGOs (WWF, ECOSS) push forward well-formed interventions for the large-scale problem of climate change that target the exigencies of conservation. Due to the system complexity and to each project's specific constraints (financing, institution, set targets and so forth) these interventions orientate towards solving determined issues, defined certain goals, and envisioned needs. As a consequence, they contribute little to the understanding of the interdependencies and interactions beyond the specific system element they put focus on.

We argue that a separate systems-driven intervention with the focus on communication between the various conservation stakeholders, knowledge systems, and resultant interactions with the environment is urgently

required in order to make interventions self-organized and improve resilience (Jones, 2018). On this backdrop, within the UNDP-led SECURE Himalaya project, the Sikkimese multi-disciplinary design studio Echostream suggested the formation of an interpretation center in Lachen. To do this, Echostream brought together a team of designers and a social anthropologist in order to combine different methods these disciplines offer and enhance mutual learning (Meadows, 2008). To meet the requirements of the complex, multi-system, and multi-stakeholder services, we use a system design approach (Jones, 2018). The center will curate the different stakeholders' knowledge, specifically including local and indigenous knowledge systems. With this education-based collaborative capacity-building approach, we aim at facilitating co-designed and co-managed conservation interventions, amongst others to protect the snow leopard and its habitat – as defined in the SECURE Himalaya project – that will support the Lachenpa in sustaining a livelihood, protecting their ecosystem, while adapting to the impact of climate change. As such, the center addresses several SDGs in an innovative way (SG 4, 8, 12, 13 and 17).

In the first stages of our research and design process we encountered several tensions between different elements as well as in the relationships between these elements, caused by the complex intersectionality of the macro systems climate change, environmental conservation, and economy. In our paper, we present two of them and lay out our strategy to embrace them with conducive means and without reducing the complexity or valuing one element over the other. This paper is based on an ongoing project and thus builds on initial findings and proposed solutions.

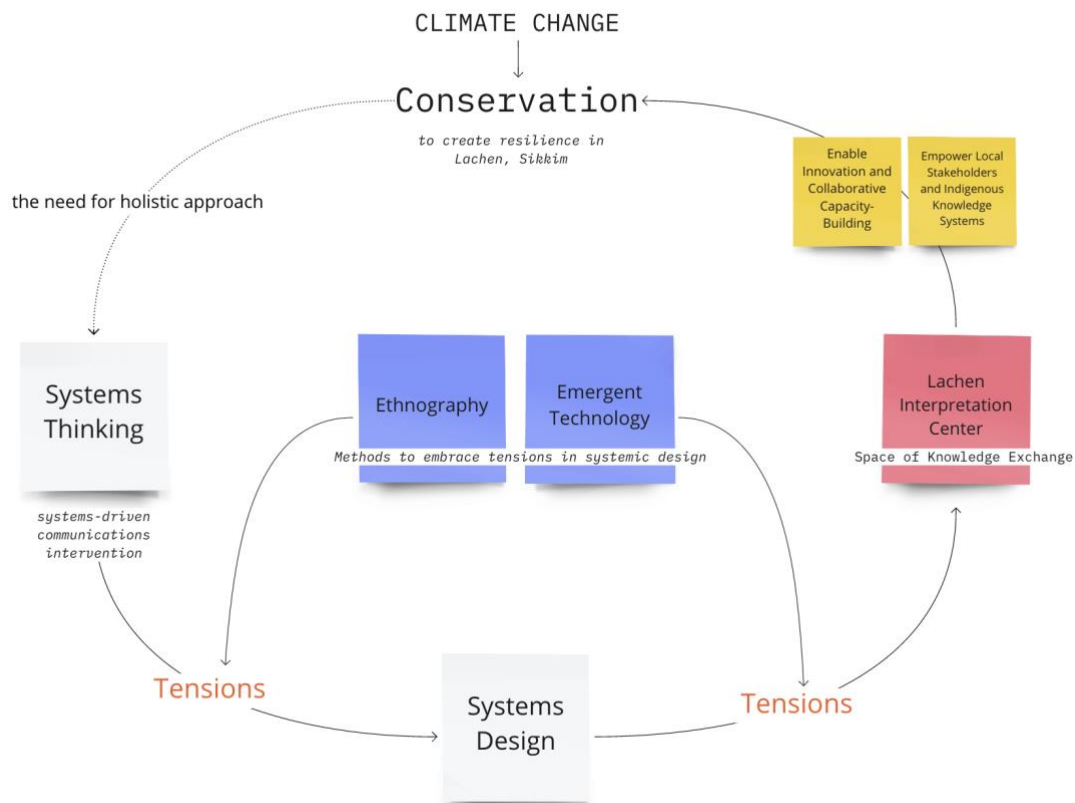


Figure 1. Process of facilitating the Lachen Interpretation Center

Multiple stakeholders and a complex knowledge-scape

The first project-inherent tensions build up along the stakeholders' diverse macroscopic and microscopic knowledge that derive from different ontologies and resultant problem-solving approaches and activities. While it has become accepted that indigenous knowledge systems can contribute to conservation, the inclusion of the diverse cultural, economic, and religious practices as well as belief systems in collaborative approaches remains

challenging (Nadasdy, 2005). An open question is how and on whose terms to break ontological boundaries with regard to indigenous spiritual approach to environment (Houde, 2007; Chandler and Reid, 2018).

In Lachen, the majority of permanent residents are Lachenpa and, in higher pastures, nomadic Drokpa, creating a significant indigenous knowledge base with diverse local conservation experts. Moreover, there is a strong legally recognized indigenous governance system, the *Dzumsa*, consisting of one male representative of each indigenous household (Chettri, 2013; Bourdet-Sabatier, 2004). It holds power over local decision-making, drafts and enforces local laws. Placed under the responsibility of the *Dzumsa*, the center aims at empowering the indigenous institution to contribute a local solution to this important global issue and thus to institutionalize the dissemination of conservation-relevant information. At the same time, many Lachenpa leave the village for education purposes or job opportunities, creating a vacuum in the transmission of indigenous knowledge on exchanges with nature; this disjuncture impedes the inclusion of indigenous knowledge in conservation strategies.

In order to conserve the local ecosystem and mitigate the impact of climate change, other stakeholders come into play. Lachen is a sensitive border region with a strong army presence and a subsequent lack of local control over vast tracts of traditional lands. Similarly, past regulations have turned some of the Lachenpa's lands into protected forest areas or restricted national parks, rendering them beyond local ownership and governance. Thus, the army and the state forest department are important players. In the tourism sector, most people running the hotels and interacting with the visitors come from outside the state. Further, various scientists with expert knowledge on specific aspects of the ecosystem make important contributions. All these actors have in common that often they are not aware of indigenous practices and belief systems.

Echostream decided to include an anthropologist in order to embrace these challenges. The methodology of ethnography brings in sensitivity to indigenous knowledge systems as well as the abilities and methods to include local resource people and, when necessary, translate their knowledge into the realm, in which the conservation interventions take place. Further, in comparison to an intervention-based approach – as taken by conservation experts and many designers – ethnography focuses on understanding perspectives and positionings without the end-goal of changing them or implementing them as solutions to specific problems. It has an inherently descriptive component (Geertz, 1973). Hence, the interpretation center's goal is not to teach "conservation" or implement "interventions", but uses a multi-vocal approach to visualize knowledge, even if conflicting, on interactions with the environment, with a special focus on indigenous knowledge systems. We plan to look into intersections and commonalities, but also build different scenarios modeling variations of futures based on various existing and envisioned exchanges with nature. The interpretation and learning effect is left to the individual that interacts with the displayed systems. Hence, the center can include different ontologies and bears potential to become a collaborative space of knowledge exchange and multi-directional capacity building. In this way, it will support the development of long-term information and education strategies that integrate the local indigenous knowledge systems and their conservation goals.

Short-term vs. long-term values: The dilemma of mass tourism and sustainability

Lachen is a popular tourist destination, with tourism increasing by a shocking 200 percent each year. Most households are directly or indirectly dependent on this economic sector to sustain their livelihood (Lele et al. 2019). Tourism has undoubtedly brought economic benefits, however, its environmental impact has rapidly increased in the last 20 years, resulting in a heavy urban expansion, an excessive rise in vehicular movement, and issues of waste and pollution (Kothari et al., 2017). Further expansion of such mass tourism will put pressure on Lachen, a village that has already reached its carrying capacity (Lele et al., 2019). Hence, we find that tensions arise between the short-term values of economic benefits for Lachen and long-term values of ecological preservation in the village. Consequently, these tensions interfere with seeking a common ground for conservation interventions.

Moreover, the interpretation center itself intensifies such tensions. While it is conceptualized with the intention of sensitizing on ecological conservation, paradoxically, it will require tourism to help sustain it. Resultant increase in tourist footfall will in turn increase carbon footprint in the region, lastly sabotaging the system's goal in the long run. Using these paradoxes as ground to innovate a model that embraces these tensions while combating the hurdles posed by the second wave of the COVID-19 pandemic, we leverage emergent technology. With a push from the constraints on access due to ever-changing lockdown restrictions, we plan to reconstruct

and prototype this model as a virtual interpretation center, one that will still be linked to the physical space. By adapting augmented reality (Kečkeš and Tomicic, 2017), real-time viewing of 3D Modeling, and Geographic Information System (GIS) this digital space will provide an enhanced experience of Lachen.

By adopting the essence of mass tourism through this digital space, we play with the initial systems boundary (Meadows, 2008) that was restricted to the location and landscape, and invent around it to allow for real-time interactions, critique, and collaboration between the local and global community, increasing the capacity for empathy across borders. This space will be able to engage with millions of “visitors” rather than only thousands of tourists in the physical space that end up burdening the ecosystems. The virtual interpretation center allows for global access to the unique conservation activities and narratives of this Himalayan region. Global acknowledgement will provide important social feedback and validation that will encourage the community to not only continue their efforts but will also propagate using this model in similar landscapes.

Through this remodeling, we are able to interplay the idea of generating income through “virtual tourism” while disseminating knowledge on conservation. Opening the interpretation center to a global audience will aid Lachen in generating revenue and contribute to its local industries. Creating takeaways from these virtual experiences in the form of local souvenirs through e-commerce will be one way of distributing Lachen’s culture and showcase the impact of community-based conservation methods.

Additionally, this innovative approach enhances our possibilities in tackling the first tensions, mentioned in section 2. Interactive technology and the internet enable the interweaving of conventionally disjoint narratives, in this case especially the indigenous knowledge systems and knowledge from modern conservation science. Experiencing information in physical spaces is often limiting, as its linearity creates unintentional hierarchies. Such hierarchies and validating can be avoided by leveraging hypertext and hypermedia. By giving equal importance to the different ontologies through a multi-narrative structure, our use of emergent technology upholds the values of our ethnographic approach. Lastly, this approach is possible because the majority of stakeholders – also those in the remote location of Lachen – have access to a relatively good internet and own smart devices.

Outlook

This project is a co-creation facilitated by a team of designers and an anthropologist. This collaboration led to using ethnography as a methodology and implementing design interventions using emergent technologies in order to embrace tensions, give justice to the intersectional systemic complexities, and offer a place-sensitive approach that empowers local stakeholders and their knowledge systems. Currently, we have indications that our project will, first, create a baseline for better climate action and conservation interventions that include indigenous knowledge systems, institutionalized through local governance, and, second, diversify economic opportunities and thus decrease the dependencies on the initial systems boundary given by the physical space of Lachen.

As our work is in progress, currently we are seeking inputs on how we can measure our success in embracing these tensions and lastly also the impact of our project through innovative means. The measurement of (positive and negative) impact is crucial in order to potentially be able to scale our model and experiment it in different localities. Considering the pressing challenges of climate change in the Himalayan region we see scope for such systematic and potentially interlinked communication-based design interventions.

Further, designing in such trans-disciplinary contexts, we continue to enquire ways to enable a fruitful understanding of systems thinking and design as well as our specific collaborative design process between all the actors – including local stakeholders or conservation experts. We seek to discuss best practices for creating models for communicating complex systems and design approaches.

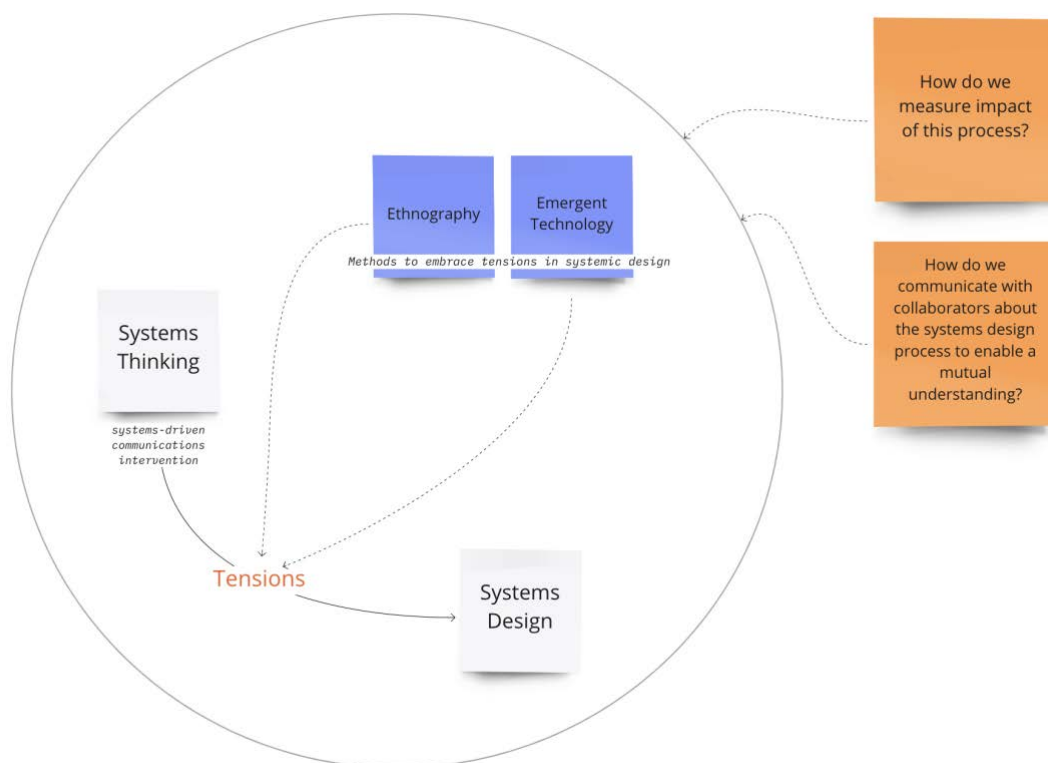


Figure 2. Enquiry into impact measurement and communication methodologies of systemic design processes

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