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THE CHALLENGES OF USING PUBLIC LAND SUSTAINABLY IN MEXICO FOR OUTDOORS RECREATION: CAN SERVICE DESIGN HELP BRIDGE THE GAP?

Ivan Osorio Avila

Bahía de Pescadores 3, Veronica Anzures, Mexico City, Universidad Autónoma Metropolitana, ivanoavila@gmail.com

ABSTRACT

Keywords:

Design, Sustainable tourism, Conservation, Public land

1. PURPOSE: THE MAIN PURPOSE OF THE PAPER SHOULD BE PRESENTED

This paper explores the case study of the Mexican Iztaccíhuatl-Popocatepetl National Park and its interactions with its visitors. The fact that there is a structural void in how the park operates creates an area of opportunity for service design strategies to be developed and implemented hand-in-hand with park users, service providers, local community members and social organizations. This paper analyses the history, causes and social and cultural implications of creating this solutions through service design in order to reconnect the population with the importance of the park, thus, fostering a more sustainable lifestyle for individual users and promoting a conservation of the park.

2. RESEARCH PROBLEM/GOALS

The research towards understanding the history and current situation of the park and its users has had the goal of visualizing what the interactions between multiple stakeholders are like and what they entail. The challenges of this research have been, among others, the remoteness of the area, the decentralization of current stakeholders and lack of accessibility to historical documents and evidence to build a record and profile of the case study. Working with plural sectors (public, private, social) has proved challenging since many of these stakeholders are adamant to work with projects that try to build new strategies towards conservation and building an outdoors community. Many of the goals, however, have been reached or are close to being reached.

3. THEORETICAL BACKGROUND AND CONTRIBUTION

The author's background, an intersection of design, entrepreneurship, project management and outdoors and wilderness training and skills, have allowed the project to grow and advance in the past 10 months. Along with these skills, the strategic partners such as NGOs, local community service providers, local historians and public sector advisors have contributed to build a panoramic view of the current situation and create a solid argument for how service design can affect positive change and foster better practices for sustainable tourism in the park.

4. RESEARCH METHODOLOGY

The methodology for the research on this topic has been a combination of field, archival and public access document retrieval. The constant contact with on-site users, providers and residents has led to many insights that highlight and strengthen the hypothesis that a service design platform can help foster sustainable tourism practices in the area. Meanwhile, the discovery and retrieval of historic material such as documents and photographs have allowed to create a structured visualization of the history of the space and its stakeholders, leading to a better understanding of the current situation of uninformed users and ill-equipped service providers.

5. RESULTS AND ANALYSIS

The results and further analysis of this research and feedback of hypothesis and proposals, through a keep it simple, make it happen design approach have allowed the author, in collaboration with his colleagues, to reach a Minimum Viable Product and prototype a digitally-based solution that adds value to both the users, service providers and the park itself by allowing a higher accessibility to information on the use and expectations a visitor to the park can have, and how this fosters conservation and sustainability through specific actions.

6. IMPACTS ON SUSTAINABILITY

The implementation of this platform will lead to a higher local economy impact by visitors to the park, better prepared users with higher awareness of the importance of the park and its ecosystem to the environment and their individual lives and health, as well as the fostering of a more inclusive outdoors community in Central Mexico, making outdoor activities more accessible for other demographics beyond the higher-class population and foreign tourists. This platform, called Tribu, is also designed to be scalable and replicable, in order to be implemented in other public lands with the same potential to be both a place of preservation and recreation, which do not need to be mutually exclusive. Thus, the impact on sustainability is potentially very high, by using service design digital solutions developed through design methods in order to foster an interaction between users and public, natural spaces.

It's a clear day in Mexico City, a metropolis of over 20 million people. From the 35th floor of the Torre Reforma Latino -one of the city's highest skyscrapers- the valley of the city seems obvious. From here the horizon is a chain of hills running from southeast clockwise to the northern tip, illuminated by the telecom towers on top of the Sierra of Guadalupe. In the distance, to the southeast, peeking through the incoming clouds the outline of the Popocatepetl and Iztaccíhuatl volcanoes peek like a postcard scene, overlooking the city.

These volcanoes are a fundamental part of the prehispanic, colonial and modern history of central Mexico.

They have influenced the weather for centuries, they divided the Great City of Tenochtitlán from the eastern establishments of Cholula, Tlaxcala and Tajín, all the way to the Gulf of Mexico. During the Spanish Conquest, Hernán Cortés and his army trekked the same path between both mountains, the same path native communities had used for centuries, but still, the current road leading to the saddle between Popo and Izta bears the Conquistador's name.

The communities around the volcano are still alive and kicking. They have a spiritual and cultural lifestyle and worldview deeply rooted in the volcanoes and its history, legends and heritage. For centuries they have fed of its soil, drank from its springs and glacier streams and protect it vehemently. Many of them are incorporated into municipalities like Amecameca, Mexico State, where the per capita GDP is \$1520.80 USD and the daily minimum wage is \$2.95 USD. ¹ Today, Doña Toñita and her husband Don José Carmen, serve tacos, quesadillas and tlacoyos to families, cyclists, bikers and other visitors that drive up the 23 kilometer road to Paso de Cortés from Amecameca, Mexico State. They have driven up to the small shack made of wood every day, of every week, 365 days a year, for 45 years. They are locals from San Pedro Nexapa, the last town on the way up to the volcanoes, serving hand-made food with local ingredients they prepare at home and reheat on the brick and steel stove top in the wooden hut off the side of the road. A visitor can expect to pay \$1 USD for a taco, quesadilla or tlacoyo, and \$.75 USD for a half-liter soda. ²

Like Doña Toñita and Don José Carmen, many of the locals from these communities make a living from selling food and services to visitors to the mountains, many others are farmers or handle cattle. Most corn farmers still use horses to plow the land and it is common to see decades-old pickup trucks -some with US license plates, brought back by returning migrants- hauling hay and harvest. In contrast, many of the visitors to the park are middle-class families from Mexico City, Cuernavaca (Morelos) and Puebla (Puebla), the biggest neighboring valleys and cities around the mountains, coming to enjoy the scenic views and food the volcanoes offer. Some others are foreign travelers or students studying abroad, hoping to catch a weekend or day trip to the lesser-known Mexican outdoor landmarks, and another group, which seems to be growing steadily, are the new wave of mountaineers looking to summit the 5230 meter-high summit of Iztaccíhuatl.

These visitors pack a plethora of gear. Boots, crampons, lightweight tents, rainproof jackets, ropes, harnesses and many other gadgets that seem to come right out from an REI or MEC catalogue. Some are descendants and pupils of the old school of Mexican mountaineering and climbing. Ever since the first -recorded- ascent of the Popocatepetl in 1519 by Diego de Ordaz, one of Hernán Cortés' men³, many people have sought to reach the top of both Popocatepetl and Iztaccíhuatl. When President Lázaro Cárdenas signed an executive order rendering the mountains a national park in 1935, many alpine clubs and independent explorers followed suit, and gave birth to a regional and national climbing community that also sought out the peaks of nearby Pico de Orizaba (Citlaltépetl), Nevado de Toluca (Xinantécatl) and Malinche (Malintzin).

THE "NATIONAL PARK"

To this day, every weekend, specially during the peaks' snowy season, thousands of people flock to the trailhead seeking the perfect Instagram shot, many unofficial and seemingly unregulated tour companies have started operating in the area offering -and sometimes guaranteeing- getting thrill-seeking visitors to the summit. The parking lot at Paso de Cortés welcomes visitors to the "Iztaccíhuatl-Popocatepetl National Park" and is at times full with buses, vans and family SUVs carrying all types of gear.

Many urban dwellers venture into the park without fully understanding its size, location, services, regulations and challenges. Some get lost on the way or endure an hours-long logistical maze of public transportation to Paso de Cortés, others opt to pay for tours offered by small companies based in the city.

The thousands of dollars people pay for these sometimes unreliable and uncertified tours², along with the individual equipment and gear that more seasoned mountaineers own and use, create a stark contrast with the lifestyle of locals further down the road. It is a very illustrative example of the contrasts and social and economic gaps that plague Mexico on many levels, here exemplified in outdoors recreation, the public lands where these activities take place and the people who live there and those who use it as a weekend attraction.

The term "national park" has different perceptions around the world. In most western countries it depicts images and memories of panoramic scenes of the outdoors, people engaging in outdoor activities, it is related to a culture's history and heritage through its geographical context and environment. In the United States for example, the term has evolved from Theodore Roosevelt's initial decrees into both a quintessential American family experience and a place for outcasts to form tribes of climbers and backpackers (as depicted in Peter Mortimer and Nick Rosen's 2014 film *Valley Uprising*) to having the National Park System partner with Accenture to design and create a better user experience for park visitors through digital strategies¹. These are examples of the evolution in the management of natural protected areas and the interaction the public has with them. The Accenture NPS case is one of many that argue in favor of education and regulation, proving that user recreation and public land conservation are not mutually exclusive. It demonstrates how designing a service is much more effective than prohibiting the use of these places for the sake of conservation.

THE CASE FOR MEXICO

Mexico has over 62 million acres of public land designated as natural reserves by the CONANP (Comisión Nacional de Áreas Naturales Protegidas “National Commission of Protected Natural Areas”). This land is divided into 9 regions and 43 subregions, of which 12 are considered National Parks. These parks, are part of the 67 national parks in Mexico. However, the CONANP catalogues them alongside other area designations such as “Sanctuaries”, “Natural Reserves”, “Natural Resource Protection Areas”, “Natural Monuments” and “Biosphere Reserves”. This adds up to a total of 182 “Natural Protected Areas”.

However, these areas, the CONANP itself and its parent federal agency; the SEMARNAT (Secretaría de Medio Ambiente y Recursos Naturales “Secretary of Environment and Natural Resources”) fail to communicate to the population what each of these titles mean, or the difference between them (Section 9 , Chapter 1, Article 46), beyond the scope of this piece of legislation. Even though the Federal Environmental Law (Ley General del Equilibrio Ecológico y la Protección al Ambiente), and its Rulebook (Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente) state that there is a “Natural Protected Area System” (Title 3, Chapter 1, Article 37), and states that the “ecosystems are heritage and assets of society”, “its elements should be used in a way that ensures optimal and sustained productivity, compatible with its balance and integrity” and that “authorities and private citizens are to assume responsibility for ecological balance” (Chapter 3, Article 15), there is however, no mention as to the tools and resources to make this information accessible, nor any communication and education strategy for the general population. This leads to a lack of a real, effective national park system, and the effects of this organizational anomaly. These symptoms can be seen throughout the interaction of the Izta-Popo National Park (now Iztaccíhuatl-Popocatepetl Natural Protected Area) and its visitors/users.

A survey conducted by earlier this year to recurring visitors to the park revealed that only 12.1% of users are fully aware of the areas rules, regulations and general use information, while 17.2% said they had little-to-no information or knowledge about this information. The majority of 37.9% came in the middle (3 on a scale of 5) on how well informed they are about the ways they can use the national park, its rules and regulations.

In contrast, potential visitors who have never been to the park, where asked if they know of its existence, only 44.7% answered that they do, and 54% revealed that they have not visited the park due to lack of information.

These results might be surprising considering the historic, cultural and environmental presence of the volcanoes that make up the park, however, even if a landmark such as this exists in the collective social identity of the population, it does not necessarily mean there is an interaction happening. This begs the question, should there be an interaction? If so, how should it happen? What should it look and feel like? What should it entail?

BUILDING AN OUTDOORS COMMUNITY

The argument to be made is yes, there should be an interaction. These natural areas are not only witnesses and main characters in our history, culture and environment, but they are a window and space to be enjoyed, to be used as a therapeutic tool into the values we hold closest to our individual and collective identities and philosophies.

The contrast of having one of the world’s most populated cities less than 100 kilometers away from these thousand of acres of preserved land highlights the need for urban dwellers to reconnect with the natural environment. The activities that visitors are able to engage in within the park are not only recreational and promote health on an individual level, but also represent a strategy and resource to enlighten the public and raise awareness about the importance of preserving these spaces in a plural, collective level.

By allowing, regulating, and inviting the public to engage in these activities, a sense of belonging can be created, leading to a mindset of conservation not through prohibition or discouraging of visiting, but through relating with the space and what it represents.

In this sense, it must then be defined how this interaction should happen. What are the parameters of users visiting the park in order to exercise their right to use public land in a recreational way, while not creating a further environmental impact? Case in point: The main trekking route to the summit of Iztaccíhuatl, the Joya-Portillos route is a roughly 6.8km route starting at La Joya basecamp (accessible by car most of the year) at around 3,800 meters above sea level and finishing at the summit at 5,220 meters above sea level. This is undoubtedly one of the most challenging trails in the park, with a gain of over 1000 meters in less than 7 kilometers. This trail is also one of the most used, and is currently over capacity on most weekends.

Situations like this lead to the current challenge: How can we reach a balanced and sustainable UX model for the park where accessibility, belonging through being [in the park] and conservation coexist to foster an outdoor culture?

Enter service design. By using hybrid design and business development methodologies, a digital platform called Tribu is designed and developed. Tribu is the result of 9 months of research in the field at the National Park, as well as interviews with a number of stakeholders: Current park administrators, the former park director, different park users (hikers, trailrunners, climbers), rescue workers and outdoor journalists. Through mapping the stakeholders needs, activities and impacts and cross-referencing that data with the historical research and conservation needs, as well as benchmark projects and policies, the blueprint for Tribu was sketched.

Tribu was ideated as an information platform that could transform organically into a product-service system.

The requirements were set up in the following way:

- Inform potential users of the existence, history and available activities in the park.
- Inform current and potential users of the best practices to follow during their interaction with the area on both safety and conservation levels.
- Create a catalogue of designated trails for different users (hiking, running, cycling, motorized off-road vehicles) in order to avoid erosion of off-trail areas and user overlap that could lead to accidents and confrontations.
- Create a catalogue of locally-owned and operated hospitality services such as food stands, restaurants, lodging and other sports and activities to boost the local tourism industry and economy.
- Quick links to emergency services contacts (park rangers, rescue groups)

Following these objectives, the second part of the field research was launched. This entailed constant visits to the park, geo-mapping and tracking trails, talking with local vendors through community outreach techniques and learning what their business and service needs were, how they operate and how they can improve said operations.

Afterward, with this data, the decision had to be made of what the best initial platform or Minimum Viable Product would be. The ambitiousness and volume of the project, along with its potential add-ons and expansions kept growing. It was determined that the first, easiest and most organic step would be to create a simple yet intuitive and aesthetically attractive website to concentrate the first batch of data and make it available to the public.

Through the following 2 months, the interface design was sketched, tested and modified to have a cohesive brand identity, intuitive layout and modular design in order to expand content in the future. This involved a cross-disciplinary work with remote teams (Mexico City, Toluca, Mexico and San Antonio, Texas) among industrial designers (the author and co-developer of the project), graphic designer Aldo Barradas (consulting on the project) and programmer Arianna Haradon. A second part of the pilot was the design and fabrication of small memorabilia products to create simple line of merchandise, again using local designers and fabricators to sell them at different local vendor points within the park. These products consist of:

3 models of textile toys depicting park wildlife, offered in two different sizes. These products resulted from the collaboration

MVP Result and Potential Impact

The result of this research, data and design has been uploaded to the website www.tribuoutdoors.mx. The site is still in construction, as funds for the content creation and programming are limited, however, the plan to continue to curate and upload content is underway and gaining traction with users and potential collaborators. By continuing this project, the potential of reaching new and existing users can grow at a steady rate through content creation and event organization with local stakeholders (trail cleaning, workshops and courses hosted by local service providers).

The potential impact of Tribu can be defined on three levels:

Environmental Conservation:

Through the education of current and potential users we can foster better practices and responsible use of the park, such as trail maintenance, zero-waste interactions and leave-no-trace habits. This can be managed through constant information output on both social media and in-real-life events in the park. Educated users equal park preservation.

Social Engagement and Community Strengthening:

By giving current and potential park visitors an information bank and channel through which to learn, prepare and raise awareness of the park and its heritage, Tribu can become a tool to strengthen community bonds and social fabric. Through transparent, trust-based interactions, the antagonism of urban dwellers visiting the park with the local population skepticism of outsiders can be minimized and ideally eradicated.

LOCAL ECONOMIC BOOST

These interactions do not only support the strengthening of the social fabric, but also boost the local economy by fostering the consumption of local goods. Food (prepared on the spot by local families and vendors), drinks, guide services, lodging, fishing and transportation within the park are part of the offer the local economic stakeholders can provide by the creation of a services and products catalogue within the Tribu platform. This creates an influx of cash while exercising an environmentally sustainable business practice. Instead of selling plastic toys, the local trade can be based on services and food, creating a renewable source of income.

Service design and social innovation methodologies have guided this process. The team behind Tribu as well as the local allies created, are still tackling the challenges of funding, logistics and content creation in order to scale, replicate and make Tribu a self-sustainable platform. The potential to scale the platform to other parks and delve deeper into more services and applications (both physical and digital) exists very clearly, since the research and objectives are also based on the SEMARNAT Natural Protected Area Plan. Both this paper and Tribu are a small but clear example of the benefits that can arise from using research, engaging stakeholders and implementing social innovation and sustainability-oriented methodologies in order to create a better interaction between users, public land and the local population, thus creating awareness about the environment and generating a healthy outdoors culture

and community.

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