The Buffalo Connection: Re-Parameterizing Geographical Space as a Determinant of Health

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The reintroduction of native Buffalo (heritage bison--no cattle genes) to the eastern plains of Montana in 2012 and 2014, after an absence of 130 years, has initiated a process of increasing species diversification, ecosystem resilience and renewed ambitions for Native cultural sovereignty on the Fort Peck Indian Reservation. Buffalo are a keystone species, critical to re-establishing a healthful culture and "...(to reverse) the perception that the current state of (native) culture is a failed attempt at becoming Western; and to realize that the indigenous tribes are a unique manifestation of the human spirit".¹ Paradoxically, as the Buffalo create new possibilities for cultural development, their presence reveals social issues threatening human health: low self-efficacy among youth, limitations in shared cultural knowledge, limited social capital, and unresolved tensions with governing structures.² In addition, the process of creating contiguous land areas for the Buffalo (unlike cattle, Buffalo move while grazing) has emphasized the incongruence between organization systems that prioritize property ownership and systems, such as ecological, that promote interconnected temporal uses. In addition, non-natives own 60% of the reservation area (State of Montana statistics, 2015). This paper presents the first two phases of a collaboration between Architecture, Health and Human Development, the World Wildlife Fund and the Fort Peck Tribes, to re-parameterize the concept of boundaries on reservation land as geographical space: a multi-dimensional environment that interconnects the transformational qualities of sacred sites, ceremonies, rituals, and native values with topography patterns and natural ecosystems. The intent of re-parameterizing the land is to create an environment that actively supports the regeneration of social and

cultural capital. The concept of geographical space includes an extensive interconnection of physical land qualities with cultural actions, activities and meaning. Accordingly, the re-parameterizing process is initiated on two levels: physical-geographic and cultural-intergenerational. On each of the levels, boundaries are considered on an ecological scale and a personal scale. The ecological scale includes land patterning, ecosystems, and rhythms of use that align with endangered aspects of American Indian culture. The personal scale focuses on the design-build of story poles – mediums for building social capital—placed into the ecological scale (story poles are shaped markers embedded with culturally significant features). The emergent social capital space is a process of continual geographical forming, and because it includes social determinants of health (cultural identity, stress relief, literacy) and physical determinants of health (green space, weather, aesthetics), it supports a process of improving overall health.

INTRODUCTION

The Architecture Department joined in the spring of 2016 on-going community work, species re-introduction and cultural agency associated with the heritage Buffalo Program on the Fort Peck Indian Reservation (begun in 2012 and expanded in 2014).³ A graduate level architecture studio was invited to design a Buffalo Honoring site to support more active connections between people and the Buffalo which are a central and critical medium for the Native cultures. Through a Community-Based Participatory Research process (CBPR), the charge evolved into designing a geographical space that leveraged the Buffalo ecology to extend and relink natural systems with social systems. The intent of an interconnected natural and social environment is to increase the depth, density and frequency of Native cultural activities connecting with the people's buffalo "relatives." The development of this plan became Phase I. The CBPR process that was used to develop the design concept emerged from a long standing working relationship between the University and the Fort Peck Tribes. Faculty in Health and Human Development utilized the CBPR process because of the emphasis that it places on communities producing their own knowledge and the insurance that the research has relevancy for the Assiniboine and Sioux tribes.⁴

Phase II was established to further develop a component and create a "proof of concept." The component is a topological "pole"–one that parametrically varies according to location and use. The design-build studio, among other partners, is setting up a working relationship with the Fort Peck Community College Building Trades Program to collaborate on resources and to align design proposals with skill sets that are being taught at the college.

FORT PECK GEOGRAPHICAL SPACE AND ECOLOGICAL SYSTEMS

The Fort Peck Indian Reservation is approximately 2 million acres of western plains in the extreme northeast corner of Montana. The confederated tribes as well as Assiniboine, Sioux, and non-natives individuals share ownership of this land. The legal framework for parceling the land, like the rest of the United States, is the Jeffersonian grid. Although the history of land acquisition, allotment, appropriation and re-appropriation by the US Government is well known, what is lesser know is the fragmented ownership of property within the reservation. At the Fort Peck Indian Reservation 1,200,000 acres (60 % of the land) is owned by nonnatives—a pixilated field of homesteads allowed by the 1913 and 1917 Federal Proclamation Settlement Acts that opened up "non-allocated" land to non-natives. The Native owned land, although fragmented, tends to follow topographical land formations such as the network of creeks and coulees throughout the reservation.

The pattern of intertwined ownership, disconnected but proximate uses, and contrasting cultures create boundary conditions that inhibit the creation of an extended natural ecology. The difference between land that can support native flora and fauna and an ecology that can host active patterns of flora and fauna is the boundary condition—active ecological patterns are nomadic, interconnected with climate and topography, and responsive to events (natural or other). The constant "becoming" of the ecology emphasizes the need for extended spaces that allow for flows of flora and fauna. One indicator of a healthy ecosystem is wildlife. Not long ago, this land was an exemplary wildlife ecosystem. In 1805, Lewis and Clark traveled through the area that is now the reservation, noting: "...saw immence herds of buffaloe today also Elk deer wolves and Antelopes".⁵

The geographical space—a synergy of physical place, on-site actions, and connected networks (virtual-real, micro-macro, recurring-unique)—of the Fort Peck Indian Reservation includes historical indigenous travel routes, spiritual connections to the landscape, heritage artifacts (tipi rings, rock formations) and, now/again, Buffalo habitation. In surveys, interviews, informal discussions during gatherings, and social media feedback (note: forums described later in paper) over the last three years, a significant number of Fort Peck tribal members cited the importance of the land, identifying specific features that held significant cultural value. These included: the likeness of a buffalo in the aerial pattern of rivers running through the reservation; the fact that Box Elder creek (component of a north-south water tributary network) is a

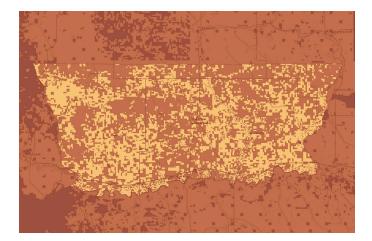


Figure 1: Fort Peck Indian Reservation and surrounding area. 2,100,000 total acres, 60 % non-native private and government (dark), 40 % native (light).

historical Native trading route reaching from Canada to Mexico (tipi rings hundreds of years old, are situated along the boundary rims); sacred ceremonial and ritual (Sundance) locations; and spiritual rock formations in the likenesses of sacred entities (such as Buffalo). Also, survey participants stated that the Buffalo were inaccessible in a meaningful way given the difficulty the tribal people have of visiting their Buffalo and seeing the Buffalo up close. One of the factors that compromises a deeper connection with the Buffalo, and some of the other features and events, is discontinuity of space (contorted travel routes, fragmented spaces). Another is the evolution from active type of use (tipi camping) to historical marker. In design meetings for the Buffalo Connection project, participants always emphasized a desire to fully integrate the holistic qualities of the environment, ecology, and history with new types of space. The new space differed in form from past strategies, but not in the intent—a defining participation with the ecology. Geographical space has the capacity to do this because it interconnects large ecological patterns, contemporary social practices, historical beliefs, and aspirations in a manner specific to Assiniboine and Sioux cultures-expanding opportunities to strengthen cultures.

LOCATION, LOCATION, LOCATION

The Fort Peck Indian Reservation tribal settlement is divided between the Assiniboine and the Sioux tribes. The west side is inhabited, by and large, by Assiniboine tribal bands and includes the towns of Wolf Point, Oswego, and Frazer. The east side is, by and large, inhabited by Sioux tribal divisions and includes the towns of Poplar, Brockton, and Fort Kipp. The "cultural" Buffalo herd (this term differentiates their source from the Yellowstone Park reservoir of heritage Buffalo, from the Tribes' meat Buffalo herd which has introgressed cattle genes), which is culturally significant to both tribes, is fenced on 1,000 acres approximately half-way east to west and 18 miles north of the south boundary of the reservation. The two largest towns are Wolf Point and Poplar, about 20 miles apart from each other in the lower center of the reservation. Three positions-Wolf Point, Poplar and Buffalo herd land, are the initial locations for spaces designed with the capacity to build social capital. The design locations create a larger triangle of space at the scale of a Jeffersonian grid square, but it relates to geographical systems instead of abstract divisions of property ownership. This is important because by tying into larger and dimensionally different types of space that reference ecological and cultural processes (such as migrations, seasonal cycles, weather patterns, rituals), the human scale spaces, such as the story pole area, are given a culturally unique and supportive context.

The architectural project proposes the same design for the Wolf Point and Poplar locations: an urban ceremonial space characterized by movable walls arranged in concentric circles spaced and sized to allow for small to medium sized gatherings or performances, with acoustic shells to enhance focus and benches for seating. The Buffalo herd land design is a five-mile "Buffalo Connection" trail through the heritage rich Box Elder Creek area and the plains that the cultural Buffalo herd now roam. The trail is conceived as an infrastructural spine to host traditions, family events, recreation, prayer, Buffalo viewing, exercise and Buffalo hair collection (the hair of the Buffalo is a valuable medium for prayer). The three design locations will have parametric versions of the story pole. The interactive design process generated the idea of story poles as vehicles of communication (story telling) among people, instruments of connecting with the Buffalo (for example, as structures they rub against), and as markers of Buffalo connections across spaces within the reservation, for example, between the urban and ranch sites. Story poles integrated into the urban sites will be markers designating and conveying cultural traditions used for larger gathering activities. The story poles along the "Buffalo Connection" trail will be oriented to individual and more intimate activities.

CULTURAL UNIQUENESS - THE POSITIONAL DIMENSION OF TIME

Time consciousness, as Fixico⁶ states, informs a culture's world view in a determinant way-how linkages and connections are perceived, the relation of activities to events, and causality. However, an oversimplified categorization of time's nature (i.e., cyclical), risks limiting or misguiding design decisions that are based in, or reference it. For example, one of the story pole designs proposes a theme related to the cycle of day/night by creating a daytime phenomenon of sunlight points that display a pattern of significant star constellations. The transposition of a nighttime phenomenon to daytime emphasizes the cyclical nature of days, solstices, and seasons. Interestingly, in discussions about materiality of the poles, the concept of natural degradation came up as an opportunity to incorporate the pole's decay in a way that embraced change and disappearance—concepts more directly related to linear views of time. The nature of time is not wholly cyclical or linear, or even non-linear, as much as it is performative-associated with natural cycles or directly causal or opportunistically modifying a repeating phenomenon. This interpretation recasts time as an integral and dynamic component with flexibility. This became critical in the design process because the design recognizes a continual evolutionary process that is culturally actualized—and therefore emergent.

The interpretation of time as a malleable entity emphasizes that it is a medium for creating meaning, not only holding meaning. As such, time doesn't determine meaning as much as it allows meaning. This is in contrast to western interpretations of linear time and linear causality. Linear causality—present conditions determined by past events—is many times used to justify and rationalize decisions. In addition, a past occurrence

sometimes gains validity from the fact of its occurrence-interpreted as a previous consensus or alignment of relevant values-without regard to why it occurred. In linear causal thinking, the story pole, as an artifact, never existed in Assiniboine or Sioux cultures. However, the conception by tribal elders is a historical approach and medium for orally conveying important meanings and traditions. The future appearance of the story pole is sequenced into the past by conceiving of time as a cyclical continuum—components of the story pole operated in the past, but the form they took was not as important as their performance. Since the performance of the future story pole is aligned with an ongoing process, it is conceived in a way that finds continuity with the past. Past manifestations of this process, although not exact, share qualities. Talking sticks and totem poles, from other Indigenous cultures, were used as visual prompts for stories and conveyance of symbolic meaning. The story pole is a dynamic living entity that acts as a medium for cross-generational cultural communication.

The seventh of the seven directions in Assiniboine and Sioux cultures is "those yet to come." It is a conception of time as a direction, not a dimension. The remaining six directions are: the four cardinal directions; up (sky); and down (earth).⁷ For the story pole designs, the seventh direction was interpreted as the description of a happening-not the subsequent event of a determinant preceding event—but a perspective in space: a possible location with proximity to other locations. In this way, the seventh direction became a way to conceive of the story pole as a "prompt" for remembering and creating direction. Time as a direction offers new types of opportunity and influence, as a process of positioning. This view emphasizes the quality and content of context as a probability field. The capacity to make choice in this field can be increased through experience and education, consequently increasing the probability that some "yet to come" directions—ones that are culturally meaningful and constructive become more desirable than other directions which may be instantly gratifying but culturally destructive.

THE LURE OF CULTURAL DESIRE

"...for Native people, the history of human-bison interaction extends back to time immemorial, to creation itself...the collective memory of many Natives recalls an existence in which there were always bison".⁸

Many organizations and individuals worked together, over many years, to restore the Buffalo to the plains of the Fort Peck Indian Reservation. A documentation project of the oral history began in 2015.⁹ The documentation presents an assemblage of perspectives, processes, and results that demonstrate how an initiative develops into a cultural resource.

"... the project has been documenting ... the legal, political and institutional barriers to hosting buffalo at Fort Peck. ...(it) considers what systems and strategies the tribes have deployed to work with the buffalo upon their return...(it also considers strategies of resilience that) include cultural adaptations, levels of social and financial capital, personal coping mechanisms, governance processes that facilitate social learning, among many other social and cultural characteristics of communities and their members. Buffalo restoration ... played out over many years and required persistence and leadership from a number of individuals and communities".¹⁰



Figure 2: Story pole proposals, (I) constellations revealed in daytime sunspot patterns, (r) wind pipe poles (collage image, Ritoque pipes) around tipi ring.

The "Buffalo Values" survey, done by the World Wildlife Fund (WWF) and Fort Peck Fish and Game to evaluate the reintroduction program, identified cultural opportunities and accompanied the formation of a group of Fort Peck cultural advocates whose aim is to support the return of the Buffalo with community-based initiatives and educational curricula that deepen generational understandings of the Buffalo.¹¹ They formed in 2015 and named themselves the Pté Group (Pté translates into female buffalo in both the Dakota (Sioux) and Nakoda (Assiniboine) Languages) and developed an outreach agenda. Their initial event, in partnership with the WWF and Montana State University, was the organization of traditional buffalo related craft practice classes and gatherings in summer and a "Buffalo People Summit" in September 2015. Over 1,200 youth and adult community members attended Summit events. Feedback from the events identified a desire to learn more about buffalo-centered Native cultures beyond the summit. The initiatives and their evaluations continually point to the same tribal issues—widespread cultural interest contrasted with limited cultural knowledge on the part of many tribal members, especially younger generations.

THE MEDIUM IS THE MESSAGE - PARTICIPATORY DESIGN

Community trust, established by faculty from Health and Human Development at Montana State University over years of community engagement work, allowed the 2016 HiAP design studio a freedom to make mistakes, in turn opening an expanded range of design explorations. In addition, participatory processes had been established for ways of communicating, sharing knowledge, asking questions, and garnering feedback. The Pté Group—the main organizational interface for the studio—continually conveyed optimism and passion for their unique cultures. In this context, the "possible" was not determined by an empirical static reality of the recent past, but by an indigenous reality that emphasizes the cycles and beliefs of long histories and new futures. The significance to the design process was a re-imagining of the design product and that the process of design itself was helping refine a process of interaction that the design would need to support—an engaging process to actualize new experiences. The studio process of learning, organized by the HHD colleagues, included off-road drives and hikes with Robert Magnan, Director of the Fort Peck Fish & Game Department, talks with the Pté Group, informal visits with several cultural knowledge holders, and visits to sacred sites with story tellers. These experiences created personal and individual influences for the students that in turn, structured how they analyzed information. For example, during in-field mapping treks through Box Elder coulee, students used GPS tracking/recording to create digital "lines of desire" that were imported into topography maps of the area. These routes were overlaid with Buffalo migration paths that Magnan had pointed out. This same type of cross-linking approach was done with the mapping of tipi ring densities, waterways and historical Indigenous trade routes. The information and its mapping became one basis for re-parameterizing the geographical space around Wolf Point, Poplar and the Buffalo herd land.

The agenda of participatory design meetings and presentations was purposefully varied across scales, components and topics to encourage interconnections between disparate elements. For example, detailing of symbolic patterns was paralleled with conceptual diagraming of the space of culture and development of story spaces. This approach subverted thinking of objects as independent entities, a consequence of categorizing design into parts, and promoted creative design thinking needed to conceive of interconnections and leave a procedural trail that could be folded back into the design itself. The intent was to design a story pole space that guided, referenced and represented a new type of boundary—geographical—for generating active cultural space. The cohesiveness of the boundary came from deeply held cultural understandings that saw unity in the future of these components performing together. The process helped avoid top down hierarchal determinacy or bottom up reification of a status quo.

The design work at the end of Spring 2016 was presented in several mediums for review by University collaborators and the Fort Peck community: social media formats including Facebook; a bound book; a summer exhibit hosted by the Poplar Community Library and the Fort Peck Community College in Wolf Point. The exhibits graphically



Figure 3: Story pole design proposals, left is scaffolded pole affording distant views, right shows nomadic poles in large wallow.

presented the student design proposals (with references to social media sites) and asked for comments. Prompt questions were hand written on the boards and markers were hung nearby to encourage comments. Questions included: How could this area appeal to the family? What does ceremonial mean to you? Other questions tied back to survey information and interview work done by previous faculty and the WWF.

Common comments on the display boards and Facebook were an enthusiasm for connecting with the Buffalo contrasted with a distinct lack of knowledge concerning the proposed significance and history of story poles. The comments revealed that design and implementation needed to be linked in a more intimate way with education programs, established ceremonies and on-going events in order to create a network for learning and building social capital. The public review of the Buffalo Connection plan emphasized that the network needed to provoke, attract and direct more opportunities for culturally strengthening experiences.

Seemingly subtle, the design direction shifted from the creation of a culturally relevant environment to the design of a medium (story pole) to encourage the emergence of a culturally relevant and healthful environment. In addition, the development, creation and evolution of the medium would link into ongoing successful cultural processes—creating positive feedback.

RE-PARAMETERIZING GEOGRAPHICAL SPACE

The three sites on the reservation Wolf Point, Poplar, and the Buffalo Ranch, are proposed to be connected through geometric orientation strategies that counter the orthogonal grid of property ownership. Specifically, very tall landmark poles in the city sites will create diagonal sight lines across non-native land. However, these lines will only be activated during sacred ceremonies or other gatherings—a re-parameterizing of the geographical space of the reservation by supporting temporal events (e.g., ceremonies that may occur in the specific locations or migration spaces of the Buffalo).

The intent of a series of story poles is to catalyze, in time and place, a cultural event necessary for maintaining, strengthening and building

the unique Native view. Native stories have a temporal guality that influences interpretation, emphasis, and intent. The temporal quality, however, is not linear. In other words, progressions of complexity do not necessarily flow from easy to difficult, historical significance does not necessarily associate with date, and relevance does not necessarily associate with contemporaneity. Multiplicity, temporality, non-linearity, and coincidence-qualities of the stories-are appropriated in the design strategies to augment their manifestation in a story. This is significant because stories are dynamically manifested—an assemblage of sub-entities brought together through a process of context analysis and judgment. Each of the story's components (characters, motives, relations) has a varying degree of flexibility in what it is and how it operates. The assembling of sub-entities-story components, context, ability of listener—is structured by the performance intent of the story. The storyteller and the space of the story, together, divine what the performative intent of the story will be. A storyteller interprets culture, context, and people. Similarly, story poles can help direct interpretation of context by emphasizing culturally relevant meanings, rituals and beliefs. As both author and messenger, the storyteller gauges capacity of the listener, ability of the context, motive, and point-merging sub-entities into a new entity—effectually building deep social capital.

Eleven story pole alternatives for the Buffalo herd land site were conceived during the design process. Each of them had a varying degree of reference to context, were more to less symbolic or performative, and more or less determinate in their interpretation. Since the space of the story pole augments the building of social capital, the studio created designs and presentations to elicit the sharing of cultural knowledge as a way to partially experience that space. In other words, as Pté members reviewed the eleven proposals, their comments became an educational lesson on the experience of a story, and therefore identified designs that made this possible. This process of design was analogous to how the poles would perform with younger generation tribal members.

The requirement for a story to have a storyteller makes stories inherently communal in Native culture. Verbal communication emphasizes the social dimension, but also empowers a latent ability within the context and content, for the story to be specific, meaningful and individual. This quality of storytelling was leveraged to extend social space. In two of the proposals, a physical distance and space of time were integrated into the relationship between the teller and listener: one created scaffolding that offered a strategic perspective of the land, so that the listener, in this case a younger and more agile person, would climb to the vantage point and call down to a storyteller; the other utilizes removable sticks set into a pattern of holes in the ground surrounding a large wallow, encouraging poles to be used, borrowed or taken, creating an ability for the story pole to be brought to a storyteller.

The difference in vantage between the teller and the listener adds a level of communication and interpretation to the story that further builds social capital. The younger generation will have to be intrigued and want to engage as much as the older generation wants to convey the rich Assiniboine and Sioux cultures.

"The same action might be described one way in one context, another way in another context....destructive in one, constructive in another... and each version may have the same "truth-value" ... The reality of each is not in question, what matters is the most efficacious way in any one context to construct one's interpretive narrative ..."¹²

The second design stage of phase II was done through the use of scaled prototypes, in order to emphasize the physicality of the story pole space. A series of 3"=1'-0" 3D printed versions of the context and pole were iterated and reviewed by the community. In addition to getting valuable critiques on form, the review of 3D printed models initiated a creative exploration of materials. Although the capability of various materials had been considered, such as wood, stone, and concrete, they had not been considered within the context of a geographical space. As referenced earlier, the materials decay, at what rate do they patina, and how their properties change over various scales of time. This consideration will be fully explored through four full-size physical prototypes to be installed on the Reservation, initiating use that can be correlated with goals from previous surveys, design intent and new insight.

HEALTH

The Assiniboine and Sioux tribes on the Fort Peck Indian Reservation in Montana face inequitable societal problems of poverty, disease, substance abuse, mortality, and crime.¹³ The conclusion of survey and interview work related to the Buffalo Restoration initiative identified strong feelings for the land, a generational gap in ways of sharing knowledge, and a lack of space with the capacity to build social capital. It follows to reason that the current limited ability to engage the land in a manner consistent with Native cultures is one determinant of the current harms. Ironically though, it is inspiring to realize that the abstract system (Jeffersonian grid which organizes the system of land ownership) that is a determinant of harm is indifferent to its effects. This means that since interconnections of flora to fauna and people to ecology already exist in the current system of disparities, newly designed Indigenous structures can re-wire the pattern of interconnections for the regeneration of a system of whole health.

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