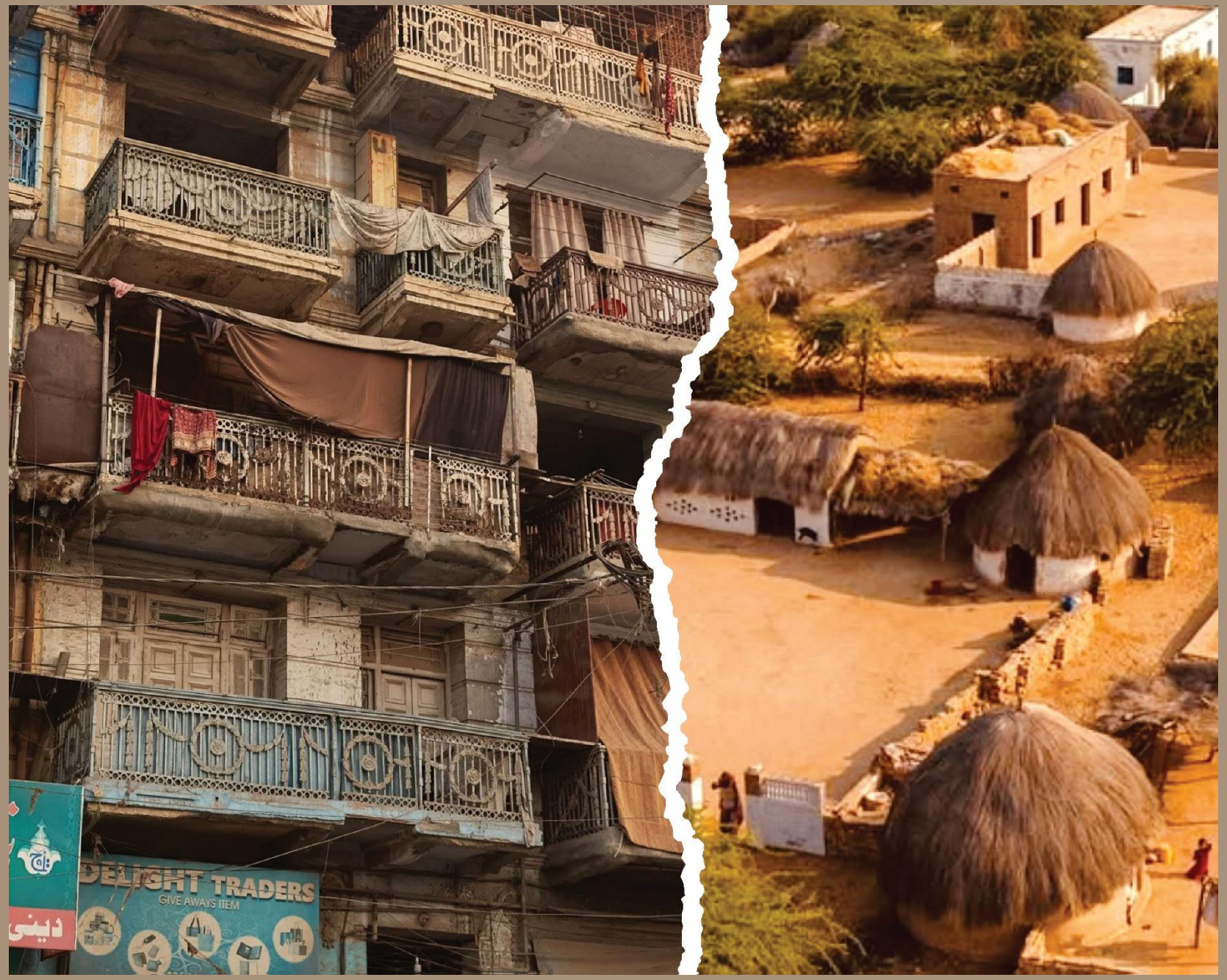


THAAP
RESEARCH : PRACTICE : SERVICE

Blending Climate Resilience & Traditional Architecture in Pakistan: Towards an integrated approach

Sajida Haider Vandal

Seminar of the AKU Institute for Global Health & Development and Sustainable Development Solutions Network Pakistan

28-29 November 2025

Sub-theme: Climate Change and the Built Environment: Promoting Resilience & Adaptation in Low Income Settings

1. Introduction: Reframing the Crisis

There is a continuing degradation of cities & rural habitats, with major disasters occurring more frequently that reminds us of the need to completely rethink and reimage our approach; but soon we retreat back into our routine comfort zones to find solutions with the tunnel vision in which we have been trained. The failure of over-specialization, the inability to converge knowledge in an integral whole and find solutions which are ecologically, culturally and spatially grounded is the bane of our educational systems.

Comparative Disaster Metrics: Pakistan 2005, 2022, 2025			
Metric	**2022 Floods**	**2025 Floods**	**2005 Earthquake** (magnitude 7.6)
Geographic Spread	Nationwide, esp. Sindh & Baluchistan	Punjab, KP, GB, Sindh	Northern Pakistan (KP, AJK, GB)
People Affected	~33 million	~4.9 million	~1.2 million
Deaths Reported	~1,700	946 (including 255 children)	1,083 (including 312 children)
Homes Damaged	**~2 million**	**~229,000 (mostly in Punjab)**	~185,000 (mostly in Muzaffarabad, Swat)
Economic Losses	$30 billion	$2.9 billion	$1.6 billion
International Aid Received	$600 million (vs $30B in damages)	Minimal; government opted for domestic recovery	~$120 million pledged, mostly from UN and OIC

Thus

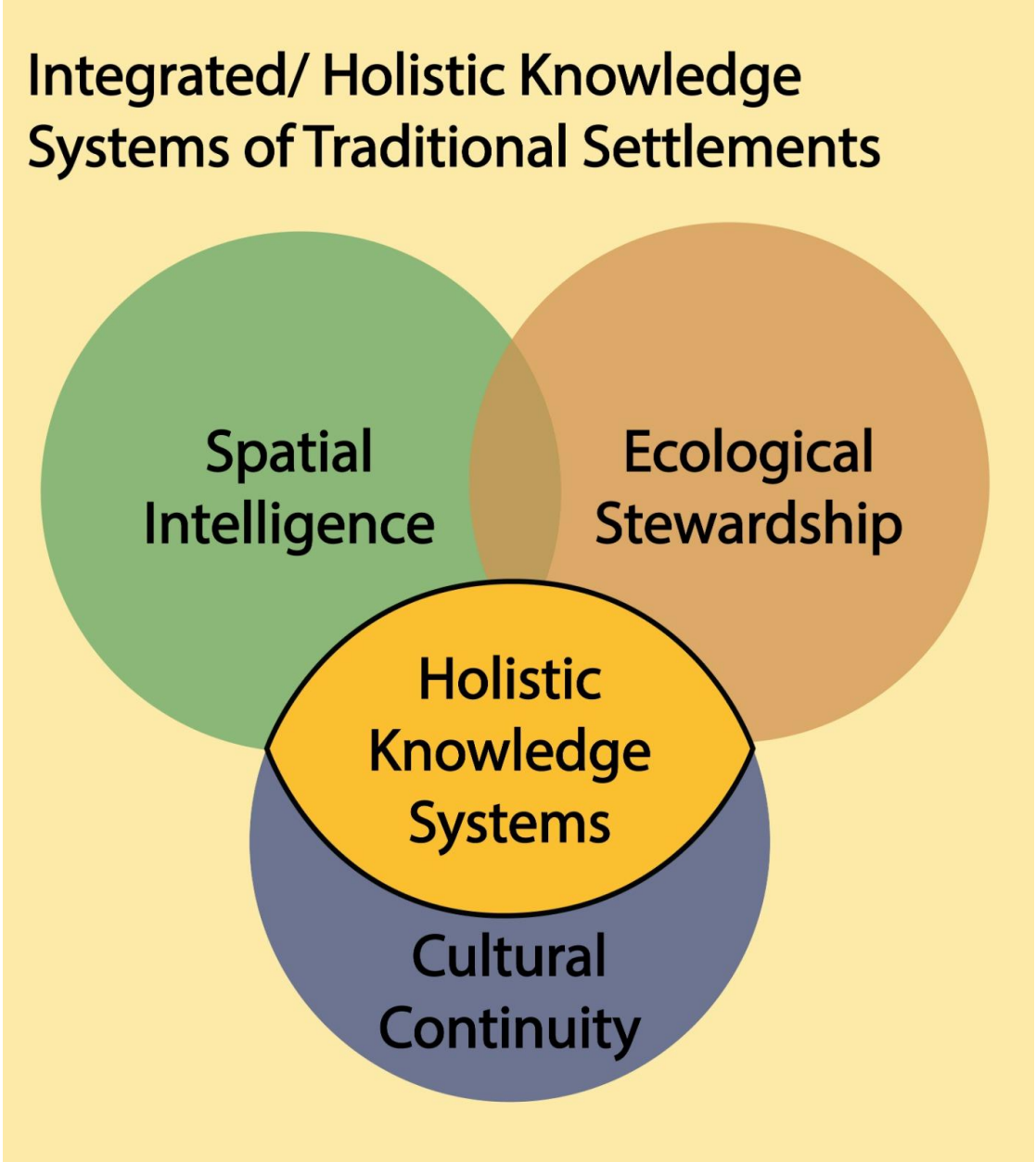
a) *Climate resilience in Pakistan cannot be engineered solely through technical fixes or imported models. It must be cultivated through an integrated approach that honors the interdependence of spatial, ecological, and cultural knowledge systems embedded in traditional settlements.*

b) *These systems are not discrete domains but holistic knowledge frameworks, where architecture, landscape, water management, and communal governance form a single continuum of resilience.*

c) *Intervening in such settlements therefore requires more than conservation or modernization—it demands recognition of their composite logic as living, adaptive infrastructures.*

d) *By situating traditional practices and settlement design within this integrated framework, we demonstrate how* indigenous community engineered systems *provide both ecological sustainability and social continuity.*

e) *This reframing positions traditional wisdom not as nostalgia, but as a vital epistemology for reimagining Pakistan's built environment in the age of climate crisis.*



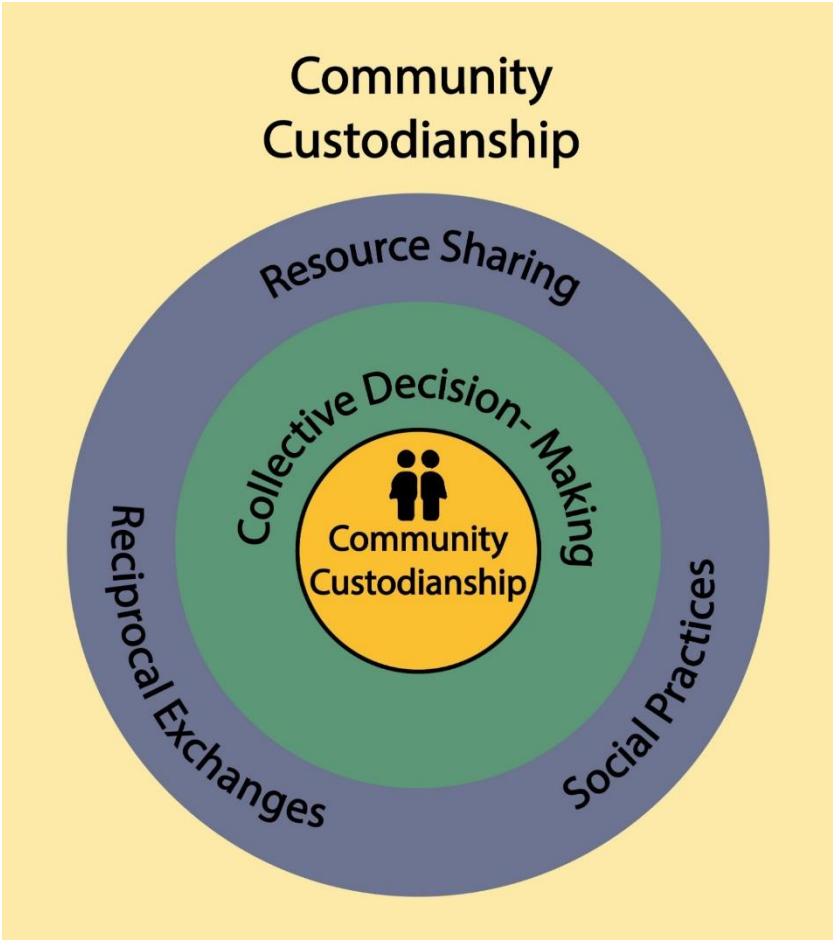
2. Conceptual Framework: A Holistic Integration

Follow an Integrated Approach to understand, build and develop Human Settlements which are ecologically sound with a high degree of livability & contextually appropriate. There is no "one solution that fits all"

The Vertical & Horizontal Diversity provides opportunities within our traditional Knowledge systems to understand tried and tested ways that have evolved over centuries if not millenniums.

Two parallel streams of knowledge exist in our country. Both, the indigenous community engineered and the contemporary scientific-technical engineered system, offer solutions to innovate as we stride ahead to find solutions to our current problems. This firstly requires that a nexus be formed between two streams.

A Paradigm shift is needed which moves away from the merely technical-western inspired, derivative "solutions" towards one grounded in our realities and experiences



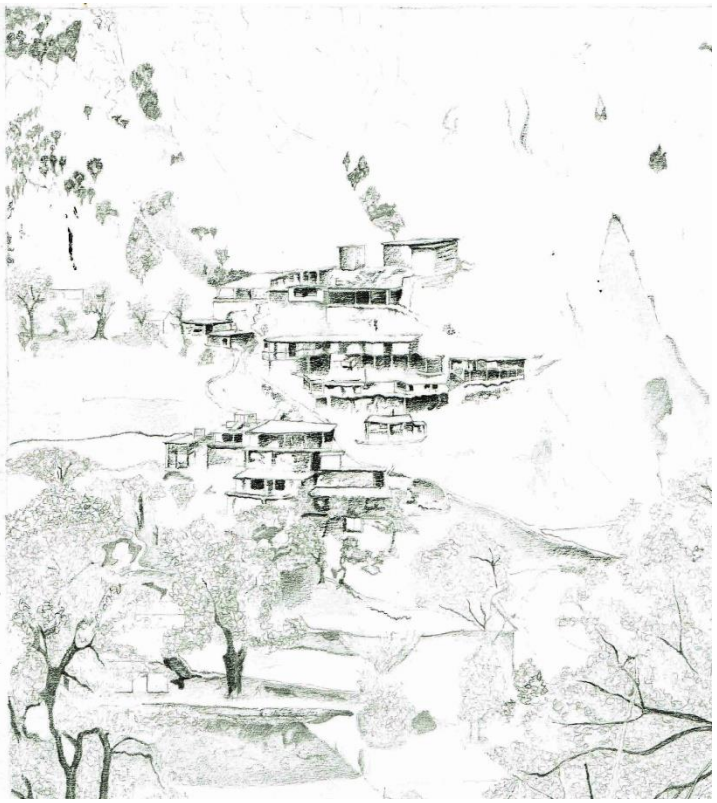
Reimagine architecture not as a neutral backdrop, but as a vessel of resilience, memory, and justice. Pakistan's vernacular traditions—mud houses in Punjab, stone masonry in Hunza, and mud compounds in Cholistan—offer climate-adaptive wisdom rooted in centuries of lived experience. These forms are not relics; they are blueprints for survival.

3. Core Pillars of Traditional Settlements

3. CORE PILLARS		
Pillar	Traditional Wisdom	Climate Resilience Contribution
Community Custodianship	Oral histories, communal rituals, local governance	Adaptive knowledge transmission, stewardship of resources, collective disaster response
Settlement Patterns	Compact layouts, shared courtyards, shaded alleys, communal thresholds	Passive cooling, reduced heat island effect, thermal comfort, social cohesion
Material Ecology	Locally sourced mud, lime, timber, stone, reed, and thatch	Low-carbon footprint, breathable structures, regenerative and biodegradable materials
Water Systems	Tobas, kunds, baolis, johads, karez, stepwells.	Groundwater recharge, flood mitigation, water security, equitable access and seasonal storage
Nature-Based Solutions	Sacred groves, riverine buffers, native flora, agroforestry	Biodiversity conservation, erosion control, microclimate regulation, carbon sequestration
Social Infrastructure	Shrines, chauk, gendered communal spaces	Social cohesion, intergenerational knowledge sharing, emergency coordination
Economic Opportunities	Craft economies, agro-ecology, women-led enterprises, seasonal migration	Livelihood resilience, circular economies, reduced urban migration

SPATIAL INTELLIGENCE AND SOCIAL LOGIC: FOUNDATIONS OF RESILIENCE

The presentation explores the morphology of the Traditional Settlement Pattern to understand how the spatial configuration, the social practices and the culture merge to produce environments that are inherently resilient.



- Traditional settlements in Pakistan are not merely clusters of buildings—they are spatial expressions of ecological wisdom and social logic.
- Their design reflects a deep understanding of terrain, climate, and communal life, cultivated over generations.
- These settlements demonstrate vernacular spatial intelligence: a capacity to read and respond to landscape, seasonal rhythms, and human needs.
- Traditional Settlements exemplify adaptive construction, material wisdom, and spatial orchestration. Topography-sensitive siting to multifunctional domestic spaces, every element serves both ecological and social functions.
- The spatial logic is inseparable from cultural rituals, livelihood practices, and collective adaptation strategies.

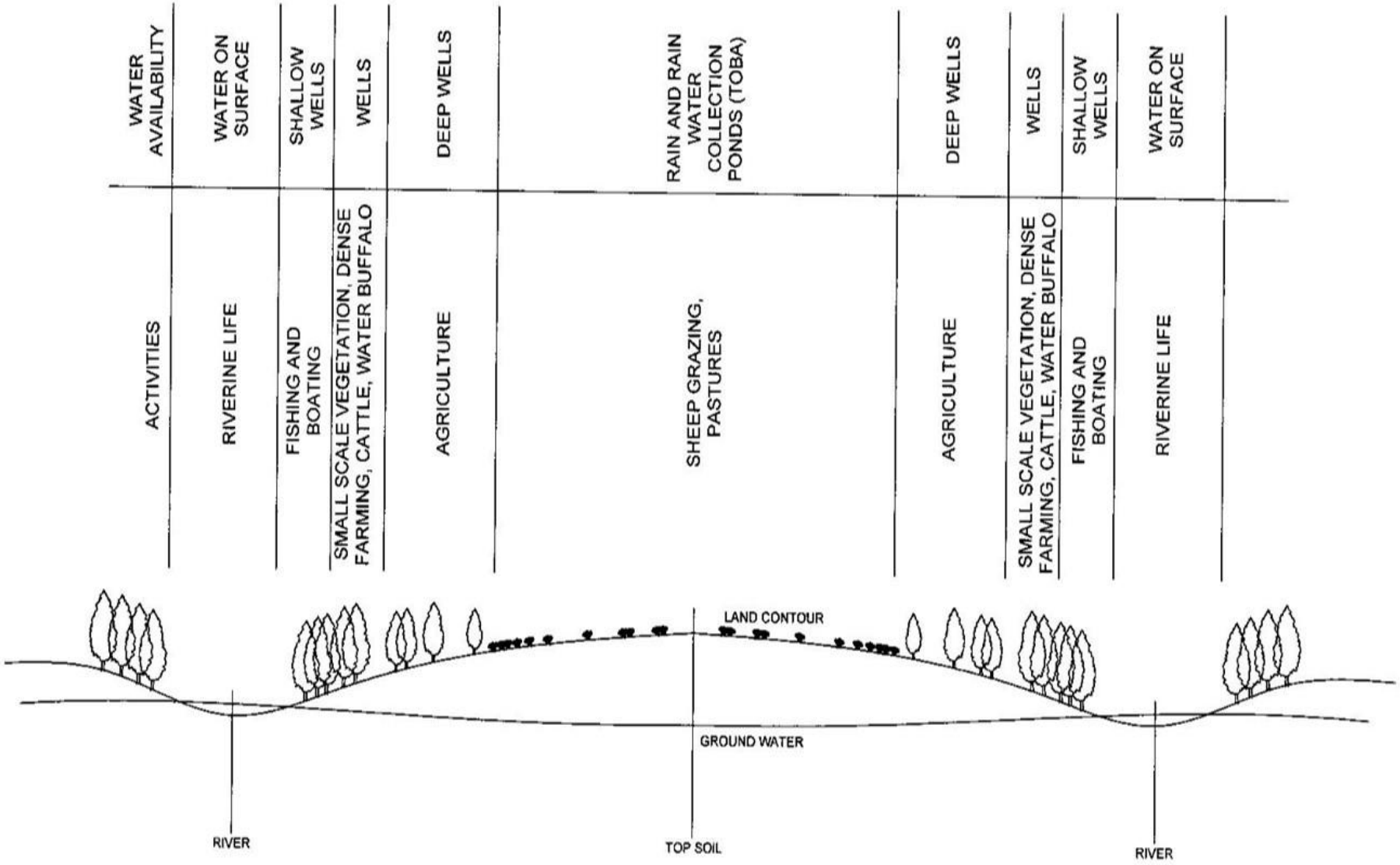
Table 1: Settlement Level Spatial Logic and Climate Resilience (Macro Scale)		
Settlement Principle	**Spatial Logic / Pattern**	**Resilience Outcome**
Watershed-responsive siting	Settlements nested within catchments, aligned with natural drainage and aquifer zones	Reduces flood vulnerability, enhances groundwater recharge, and preserves hydrological integrity
Climate-calibrated orientation	Street grids and building clusters oriented to optimize shade, airflow, and seasonal sun paths	Improves thermal comfort, reduces energy needs, and supports passive cooling
Ecological zoning and land-use layering	Functional zones for habitation, cultivation, grazing, and ritual use arranged by terrain and ecology	Maintains biodiversity, supports food sovereignty, and prevents land degradation
Clustered morphology with shared commons	Dense housing clusters around courtyards, wells, and threshing grounds	Fosters social cohesion, enables microclimate regulation, and facilitates communal resource management
Mobility and access patterns	Pathways and thresholds designed for pedestrian flow, animal movement, and seasonal migration	Supports inclusive access, ritual processions, and adaptive use across time
Embedded livelihood infrastructure	Integration of workshops, granaries, and livestock shelters within residential fabric	Sustains household economies, reduces transport emissions, and strengthens resilience to shocks
Temporal layering and ritual cycles	Settlement spaces adapt to planting, harvesting, festivals, and seasonal shifts	Aligns built environment with cultural rhythms and ecological cycles

Spatial Intelligence

WATERSHED RESPONSIVE SITING

- The Terrain and the River Systems of the Punjab which guided development of the human settlements
- The Doaba (Land between two rivers) formed a terrain resonating the habitation pattern, the sources of water availability, and the activities and livelihood of communities from the fishing, agriculture, pastoralists rearing cattle in the once fertile pasture land
- The Riverbanks was the Bela and beyond that a dense plantation of forest land, a system which kept the floods at bay.
- ORAL TRADITIONS, SONGS, POETRY, STORYTELLING & PERFORMATIVE ARTS KEPT THIS MEMORY ALIVE THOUGH LONG FORGOTTEN BY OTHERS

The Pattern of Human Habitation consequent from geography and the environment created by the River system of the Punjab



Multiuse Rooftops, Walled City Lahore

Table 2: Architectural Features and Climate Resilience (Micro Scale)

Spatial Principle	Design Feature	Resilience Outcome
Topography-sensitive siting	Structures aligned with terrain and water flow	Minimizes flood risk and supports water harvesting
Orientation and layout	Buildings positioned for climate comfort and communal interaction	Enhances thermal regulation and social cohesion
Integrated cycles	Architecture embedded with water, waste, food, and ritual systems	Supports sustainability and cultural continuity
Clustered housing and shared courtyards	Dense housing with communal open spaces	Enables mutual aid, shade, and microclimate regulation
Livelihood-ecology integration	Homes as multifunctional spaces (e.g., workshops, granaries)	Strengthens circular economies and food security
Cultural rituals and seasonal adaptation	Built form accommodates festivals, planting cycles, and migration	Aligns architecture with climate rhythms and resilience

5. Bridging the Gap: Dialogue Between Ancestral Wisdom & Contemporary Knowledge

Vernacular Planning — Community Engineered

- Indigenous knowledge systems
- Oral mapping and community custodianship
- Climate-responsive architecture
- Ritual and ecological integration

Contemporary Engineered Planning
(based on specialization)

- GIS mapping and climate modeling
- Structural reinforcement and material science
- Policy frameworks and zoning codes
- Digital participatory platforms

Nexus Points — How They Converge

- Documentation tools capture oral knowledge, creates databases, archives etc. and acknowledges sources making the invisible visible
- Traditional knowledge systems & contemporary sources strengthen the knowledge base
- Climate models identify vernacular resilience and gaps for innovation
- Engineers, Architects translate community practices into policy language
- Shared custodianship through co-design & co-creation platforms

Toward a Regenerative Future :
Training planners in heritage-sensitive design
Institutionalizing community custodianship

5. Bridging the Gap: Dialogue between 2 Stream

6. Case Studies: Traditional Settlements and Architecture in Pakistan

Cholistan : Track to Basti Qilla Dingarh and Basti Qilla Bijnot

Cholistan Desert, South Punjab 1

Leepa Valley, AJK : 2

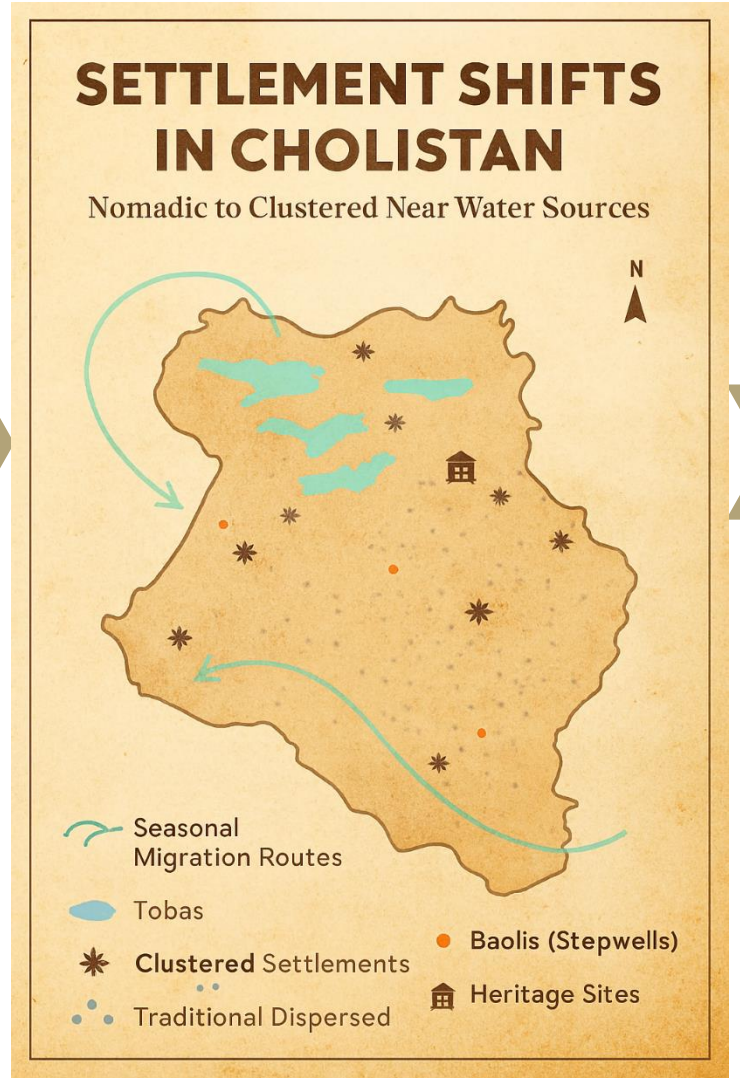
Kalash Valley, District Chitral 3

Walled City of Lahore, the Historic Core 4

6. Case Studies: Traditional Settlements and Architecture in Pakistan

Climate Change Impacts in Cholistan

- **Rising Temperatures:** Studies show significant variability and upward trends in temperature, intensifying heat stress in this hyper-arid desert temperature max 55
- **Water Scarcity:** Climate-induced hydrological changes are worsening already scarce water resources, threatening agriculture, livestock, and human survival.
- **Ecosystem Degradation:** Desertification and loss of vegetation cover are accelerating, reducing grazing lands and biodiversity.
- **Livelihood Threats:** Dryland farmers and pastoralists report declining productivity and greater vulnerability.
- **Migration Pressure:** Increasingly, families forced to move seasonally or permanently toward canal-irrigated areas, urban centers, and on vulnerable Bela lands. increased risk during extreme events.



Impact on Communities

- **Erosion of Cultural Knowledge,**
- **Diminished Resilience**
- **Loss of Cultural Identity**
- **Mental Stress due to displacement;**
- **Social Disharmony;**
- **Communities pushed further below the Poverty Line**

BASTI BIJNOT

NEAR ZERO CARBON FOOTPRINT

1. One of the few nomadic/ semi-nomadic Settlements in Deep Cholistan near Fort Bijnot.
2. A mix of the Gopa, (Round Shaped, Structurally Stable Construction), and flat roofed Structures. A few thatched rectangular “Sal”

Settlement Pattern

3. Dispersed Clusters: Bijnot exhibits a scattered settlement pattern, with small clusters of homes built near water sources like tobas but at a distance to avoid heat intensification.
4. Orientation & Layout: Houses are often oriented to minimize sun exposure, with entrances facing away from prevailing hot winds. Open courtyards and shaded verandas are common.

Multiple Water Sources

1. Tobas: Rainwater Harvesting Ponds
2. Kunds: Rainwater and surface runoff
3. Wells: Subsoil water (brackish)
4. Water pipeline laid in the desert drawing water through turbines from the sub-soil along the dried bed of the Hakra River was functional in 2012. It was meant to mitigate the water scarcity issue

BASTI BIJNOT: MIX OF GOPA AND FLAT ROOFED MUD STRUCTURE

1. **GOPAS**: mud walls covered with locally sourced gypsum mixed with clay, lime, and sometimes animal dung to create a white, reflective plaster. Thatch Roofs of **LOCALLY SOURCED MATERIAL**. Minimum windows. Raised plinth

2. **FLAT ROOF STRUCTURES**: A later intervention influenced by the Canal Colonies

3. **THERMAL COMFORT**: Achieved by wall thickness, plaster/wash, material to reduce heat intake. Thatch roof is a weak conductor of heat and adds to the thermal comfort. Overhang of Roof casts shadows which help in reducing heat intake.

Walls

The gypsum-lime mix is prized for:

1. Thermal insulation (keeps interiors cool)
2. Reflectivity (reduces solar absorption)
3. Smooth finish and aesthetic brightness

Roofs

1. Roofs are constructed using khap bushes, reeds, or branches arranged in a conical form.
2. These are then covered with mud plaster, which provides insulation and wind resistance.

CASE STUDY CHOLISTAN

Kunds & Sweet Water Wells

Two types of Kunds

1. Purely rainwater kunds about 8’-10’ deep. Water used for human consumption. These have covers

2. Sub-soil water and Rainwater Kunds for drinking water for cattle. These are with *Khurles* (troughs) . Depth about 80’. Rainwater dilutes the brackish sub-soil water.

Kund showing the top/opening 2’ to 3’ above ground-level and, 4 to 5 holes at ground level to receive rainwater. The top opening is kept closed with a lid.

Shadoof or Shaduf at Basti Bijnot

Key Stages For Water Resource

Location: Finding the Appropriate Site

Construction: Material Collection, Scheduling the Event and arranging community participants

Management of the Water Resource to ensure equitable distribution, conflict resolution, protecting and safety of the resource, and it’s upkeep including the dredging of tobas, cleaning of kunds etc.

To maintain the long-term ecological balance and to check over-use

CASE STUDY CHOLISTAN

Gov. Interventions

- Under Tobas and Kunds rehabilitation program, many government depts. started interventions adopting some of the traditional "non-engineered" systems with "scientific: improvements".

- Some of the improvements became untenable for example

a) Increasing depth of Tobas from the traditional 6-8' to 20' made traditional water purification, access and ineffective.

b) Modifying the management system resulted in acute unhappiness. While the Tobas were brimming the change from community management to a top down approach.

PCRWR

- **Rainwater Harvesting Interventions**

Tobas and Kunds Rehabilitation:

Traditional *tobas* and *kunds* wells) have been desilted and some reconstructed using ferro cement expanded to improve water retention.

Underground tanks & roof-based rainwater harvesting systems introduced

- Dune Stabilization
- Rangeland Management
- Grassland Development
- Saline Agriculture

Provides Innovative Technical Solution only while eroding community agency

Upgraded Tobas & well for improved community access

Traditional Toba

Planted around Tobas:
"Pillu. Much mentioned in songs, poetry and stories. Khawja Ghulam Fareed popularized "Pillu" through his Kafis

Medicinal Use:
"Ak": A Sacred plant, an antidote to Snake Bite. Also used for treatment of water borne diseases

Knowledge of Trees to Support Tobas

Tree Species	Local Name	Medicinal Uses	Ecological Role Near Tobas
Salvadora oleoides	*Pilu* or *Jal*	Antibacterial; used for oral hygiene (miswak), skin infections, and digestive issues	Roots stabilize soil; leaves and bark may have mild purifying effects on water; shade reduces evaporation
Tamarix aphylla	*Farash*	Bark used for treating wounds and fevers	Deep roots prevent erosion; canopy provides shade and windbreak
Capparis decidua	*Kair*	Fruit and bark used for rheumatism, cough, and digestive ailments	Grows in saline soils; helps prevent siltation and supports biodiversity
Acacia nilotica	*Kikar*	Bark and pods used for diarrhea, skin diseases, and as antiseptic	Nitrogen-fixing; provides shade and fodder; reduces water evaporation
Prosopis cineraria	*Jand*	Bark and pods used in traditional medicine for asthma and joint pain	Deep-rooted; stabilizes dunes; provides shade and organic matter

CASE STUDY CHOLISTAN

Community Custodianship

Community custodianship, in the context of traditional settlements and heritage-sensitive planning, refers to the **collective responsibility and agency of local communities in safeguarding, managing, and transmitting their ecological and cultural systems.** It goes beyond "participation" — it is about ownership, stewardship, and continuity.

Pastoral Water Management Systems relies on a set of rules which have been enshrined in the Honor Code, social customs, & behavioral mechanism of the communities in Cholistan.

Key Features of the Honor Code

1. **Hospitality (Mehmani)**
   value generosity and guest protection
1. **Land and Water Rights**
2. **Kinship Loyalty**
3. **Conflict Resolution**
4. **Justice & Revenge (Badal)**
5. **Ethics (Sharing)**
   fosters mutual dependence & sharing,

The semi nomadic tribes when forced to leave their desert abode due to the drying up of their Toba

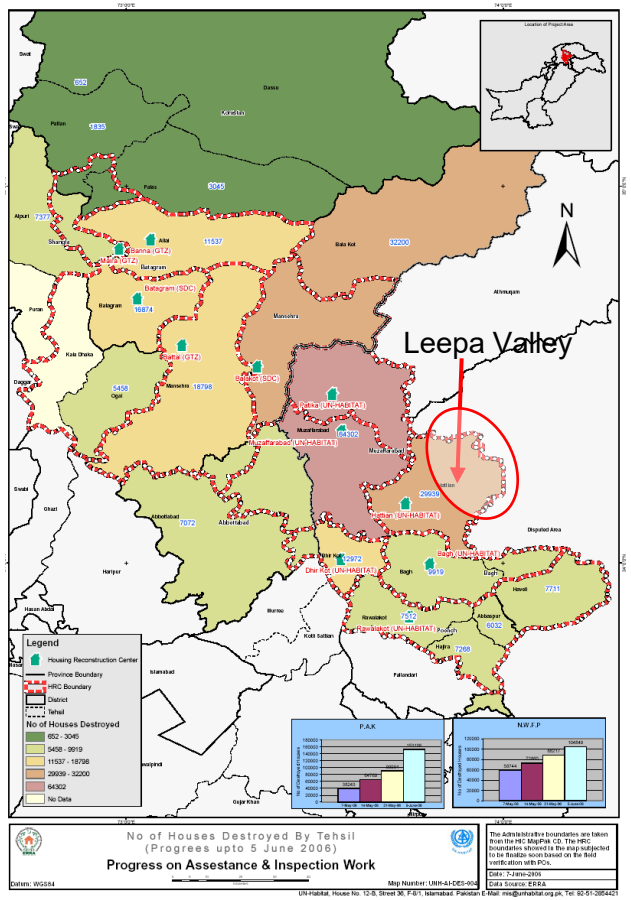
- They first go to the neighboring toba, along with their cattle where they cannot be denied water for themselves or their herd as is the customs
- At times they may stay there for weeks. If the Toba dries then everyone moves further to the next toba
- Eventually when the desert becomes unbearable the nomads move out to the periphery, in search of water and livelihood at the farms and construction sites.
- This is customary and enshrined in their Honor Code-1. 2 and 6

Community Custodianship

Why Community Custodianship Matters

- It challenges top-down, extractive models by foregrounding **community sovereignty**.
- Custodianship ensures **continuity of knowledge systems** across generations.
- It **Strengthens the Intellectual Property Rights** of communities as being the rightful owners of the Intangible Cultural Heritage.
- It anchors resilience in **collective agency**, not just material interventions.

Leepa Valley, AJK



Right: **Bee Hives** in the wall of a house – a common feature in Leepa Valley -**Honey Production** managed by women

Above : Water Mill in Nokot-harnessing the natural resources

Due to its remote location and restricted access, the Indigenous Knowledge Systems & Life Style Features have largely survived.

Indigenous Knowledge & Lifestyle Features

- **Medicinal Plant Wisdom**: Over 100 plant species are used for healing. Remedies target digestive, dermal, hepatic, and respiratory ailments.
- **Ecological Stewardship**: Locals maintain sacred groves and practice rotational grazing to preserve biodiversity.
- **Oral Transmission**: Intergenerational Knowledge is passed through storytelling, seasonal rituals,
- **Craft & Cuisine**: Handwoven wool textiles and herbal teas reflect both ecological adaptation and cultural continuity. Bee Honey production
- **Spiritual-Ecological Nexus**: Many practices blend spiritual beliefs with ecological care, such as planting rituals tied to lunar cycles.
- **Settlement Planning & Architecture**: Earthquake resistant, accessibility to basic needs, water, food, social clustering

Leepa Valley: Settlement Pattern

- **Terraced Clusters**: Villages are built on terraced slopes to optimize land use and prevent erosion. Homes are often clustered for mutual support and thermal efficiency.
- **Linear Riverine Orientation**: Settlements follow the contours of the Leepa River and its tributaries, allowing access to water and fertile alluvial soil.
- **Wood-Stone Architecture**: Traditional homes use locally sourced timber and stone, with sloped roofs adapted to heavy snowfall.
- **Seasonal Migration**: Some families practice vertical transhumance—moving between lower and upper elevations depending on season and agricultural cycle.

23 Villages & 9 Hamlets built on Terraced Clusters following the land contours.

Dhokes, the mountain farms and pasture land where women migrate during the summer months for vegetable medicinal herb farming, cattle herding,

They are well known as Sites for Cultural Transmission and Empowering Women due to their economic contribution

NOKOT: Ghulam Mustafa House Listed as completely damaged

The House was out of Plumb and was being restored through a simple pulley system

EQ 2005: 75,000 lives lost, 3.5 million displaced

Performances of Houses & Other Structures in Leepa Valley after EQ 2005			
Category of Structure	Number	Completely Damaged	Partially Damaged
Total No. of Structures	3253		
Total No. of Traditional Houses listed as *Katcha* (Temporary) in official records	3251 (99.94%)	10.15%	71.39%
Total Number of Concrete Structure	2	100%	

NOKOT: House of Rashid being reconstructed as a traditional house using salvaged material.

Leepa Valley: Architectural Knowledge

Leepa Timber Architecture: A Resilient Heritage

- **Post-and-Beam Construction**: These homes use a flexible timber frame with vertical posts and horizontal beams, allowing the structure to absorb seismic shocks without collapsing.
- **Raised Plinths**: Elevated stone or masonry plinths protect the wooden base from moisture and snow, enhancing longevity and stability.
- **Stone Masonry Back Walls**: Often built with through-stones and corner-stones, these walls are thick and tapered to resist lateral forces.
- **Lightweight Upper Story**: Timber-framed upper floors reduce the overall mass, minimizing seismic load and improving flexibility. Dhajji infill sheds energy, protects main frame
- **Other Earthquake Resilient Features:** Ring beams, joinery detail and symmetrical 3x3 bay layout

Master Craftsman Ghulam Hussain of Nokot

He heads a lineage family of artisans of 25 skilled persons and about 10 students [2007 data]. His brother Abdul Latif is also an acknowledged Ustad

Leepa Valley Chumula:: House of Ashraf, by Master Craftsman Ghulam Hussain's father [Sept. 2007]

Earthquake Performance

Earthquake Performance

During the 2005 earthquake, **Leepa traditional houses remained largely intact**, while modern concrete and brick structures collapsed. This resilience was attributed to:

- The **ductility** of timber
- **Low mass** and **flexible joints**
- Use of **local materials** and **traditional knowledge** in seismic zones

NOKOT: Malik Ghulam Ahmed **5 Story House**: constructed by Master Craftsman Ghulam Hussain's father , ***circa 1940's***

NOKOT house **after EQ: repair of knocked out ground level infill stone wall**

Leepa Valley: Reconstruction

ERRA's approved house design stipulated a " single story structure with varied options for walls (masonry-stone or brick, cement block and in-situ concrete) and steel reinforcement, sloping lightweight roofs in timber or steel trusses. Later two additional walling options were approved i.e. *Bhatar* (timber reinforced masonry and *Dhajji* Timber frame with inbuilt masonry."

Leepa Valley, Chumula : The later addition on the right shows the change in roofing material whereas the earlier was fir shingles. After Official recognition this trend was arrested

Institutional Recognition

- Based on a Report prepared by UNESCO, ERRA and UN-Habitat documented and promoted traditional designs post-2005 as models for safe rural housing.
- Guidelines were developed to ensure compliant reconstruction using traditional techniques, integrating seismic bands and improved plinths without compromising cultural integrity.

Houses usually 3 storied post and lintel timber structures foundations of dressed stone with stone infill walls at Ground Level and *Dhajji* on upper floors

Earthquake Performance

JAMIA MOSQUE, NOKOT: Constructed by Master Craftsman Ghulam Hussain's father, *circa 1952, Roof replaced by Ghulam Hussain in 2000*

A outstanding example of a large structure constructed with locally sourced material and traditional construction methodology

It survived the 2005 EQ. Only damage was the ground floor stone infill wall which was knocked out. (Bottom Left illustration.

Earthquake Performance

NUMBERDAR HOUSE

POSH MAHAL , Nokot: House of Ghulam Muhammad Qadir, Numberdar by Master Craftsman Rustum Hussain, *circa 1992*

SURVIVED THE EQ 2005 WITH NO DAMAGE

Kalasha: Mumburet Valley

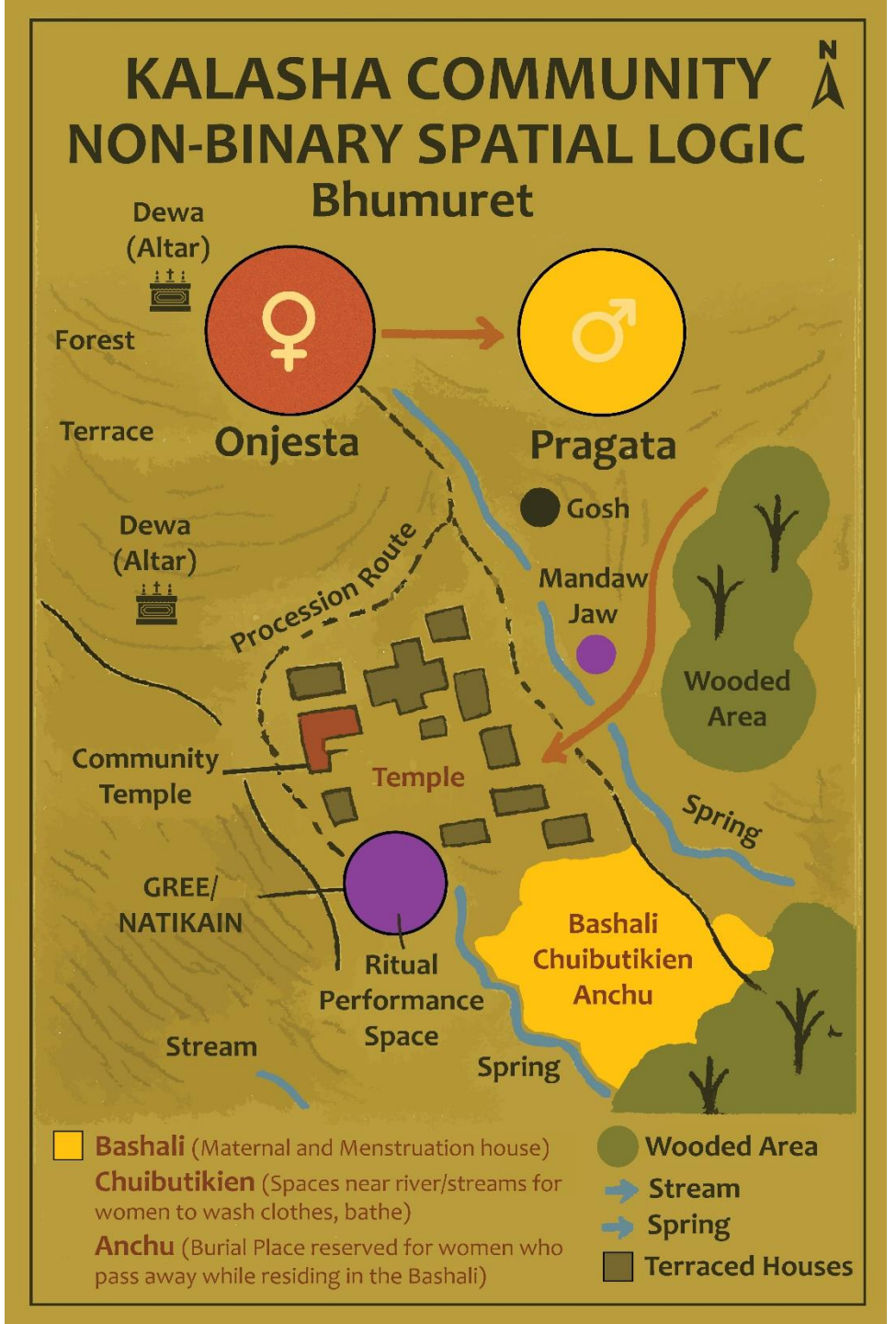
Spatial syntax of the Kalash Valley

Kalasha: Settlement Pattern

The Kalasha people, numbering around 4,000, inhabit the valleys of **Bumburet, Rumbur, and Birir** in Chitral District, KPK. Their lifestyle reflects a deep integration with the mountainous ecology and spiritual traditions. Knowledge is passed orally and through ritual practice

Basis for the Layout

- **Topography & Ecology**
  - The steep terrain dictates terraced construction, preventing soil erosion and maximizing usable land.
  - Proximity to water sources (streams and springs) influences house placement.
- **Social Cohesion**
  - The Kalasha emphasize communal life, so clustering supports kinship ties, shared rituals, and collective defense.
  - Settlement density reflects the importance of maintaining close interaction among households.
- **Cultural Identity & Continuity**
  - Architecture and settlement design are not just functional but symbolic, reinforcing Kalasha identity through spatial continuity.
  - Traditional layouts resist change, preserving cultural memory despite external pressures.

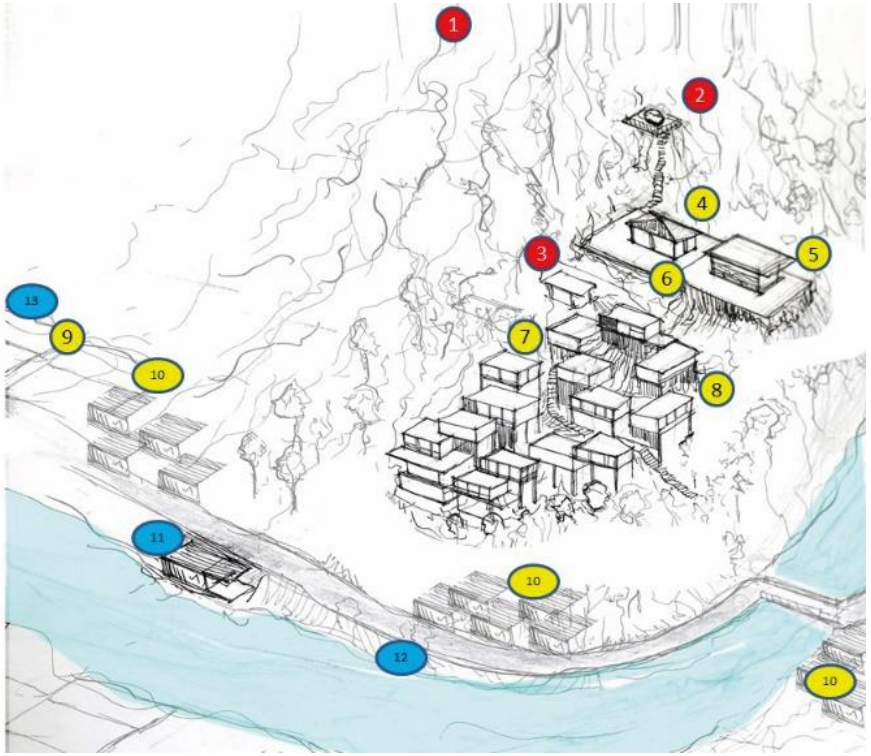


CASE STUDY BUMBERET VALLEY KALASH, CHITRAL

Kalasha: Settlement Pattern

Settlement Pattern of the Kalasha

1. **Clustered and Terraced Layout**
   - Houses are constructed on steep mountain slopes, arranged in terraces to adapt to the valley's topography.
   - This creates a *nucleated* settlement, where homes are grouped tightly rather than dispersed.
2. **Wooden Architecture**
   - Structures are traditionally built with timber and stone, reflecting the valley's forest resources.
   - Flat roofs often serve as extended living spaces and connect households vertically across terraces.
3. **Centrality of Ritual and Social Spaces**
   - Community temples, ritual sites, and dancing grounds are integrated into the settlement, often centrally located.
   - These spaces reinforce collective identity and are essential for festivals and ceremonies.



Village Grom, Rambur: Building located in accordance with Kalash Spatial Logic

Kundarik - effigies placed at the entrance of Bron village in Mumuret valley.

Stone masonry of external walls is strengthened through a ring beam.

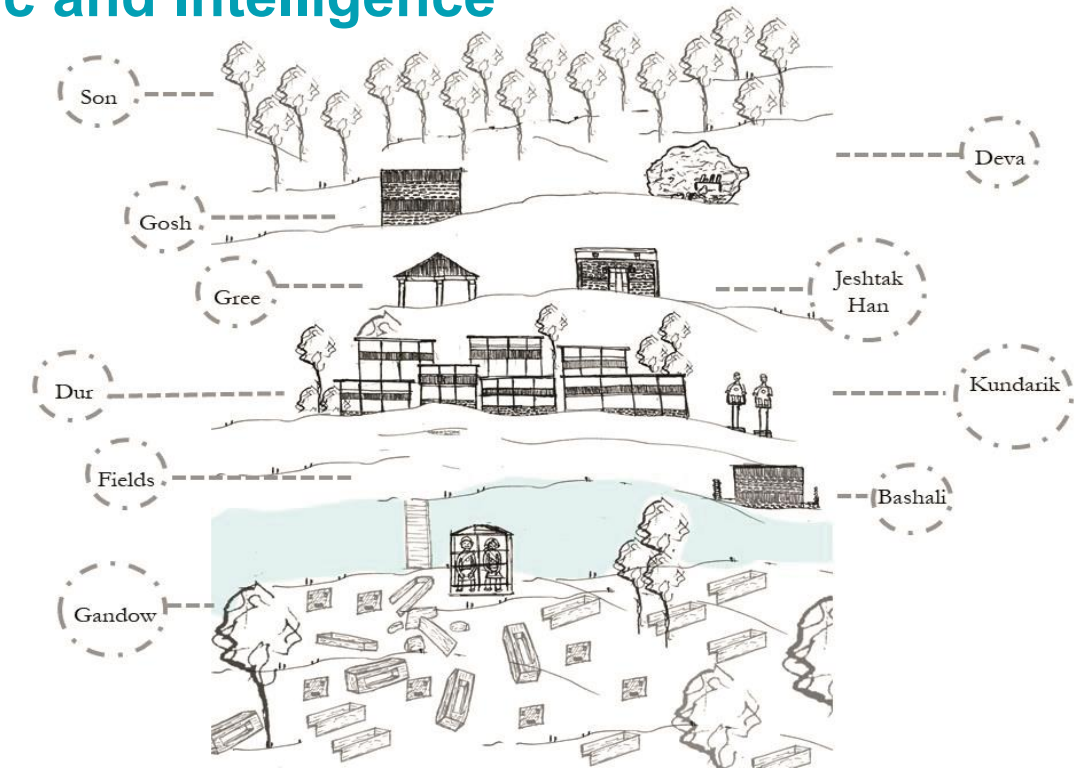
CASE STUDY BUMBERET VALLEY KALASH, CHITRAL

Mumburet Settlement Pattern : Spatial Logic and Intelligence

Kalasha spatial logic operates through **dynamic, relational categories**. It is **non-binary and** embraces a fluid, cosmologically grounded logic of space. **Onjesta** (Pure) **Pragata** are fundamental concepts. It is based on.

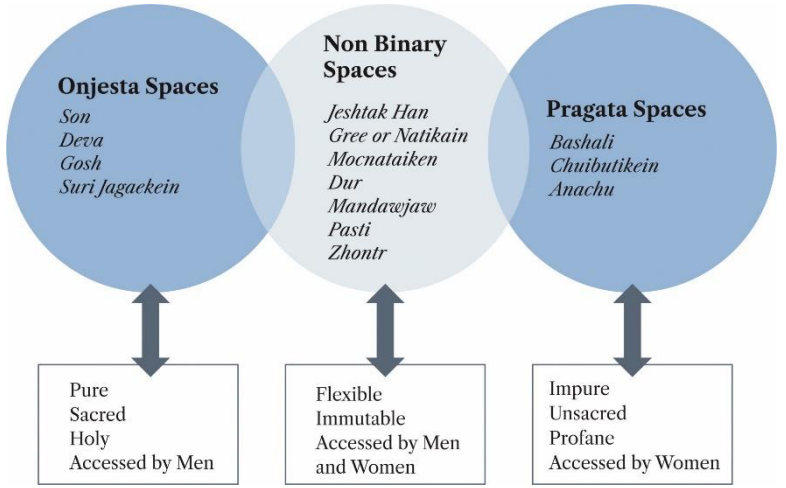
- **Contextual**: Their meaning shifts depending on ritual timing, social roles, and ecological conditions.
- **Cosmological**: Rooted in Kalasha beliefs about purity, ancestral presence, and the flow of life. **Onjesta** (Pure) and **Pragata** (Impure)
- **Performative**: Activated through ritual, movement, and seasonal cycles—not fixed by walls or ownership.

Type of Space	Example	Gendered Access	Ritual Status
Onjesta	Temple, shrine, forest edge	Restricted to men (in some cases)	Sacred, pure
Pragata	Bashali, Chuibutikien, Anchu	Restricted to women	Segregated, impure
Non-binary zones	Ritual performance space, procession paths	Mixed or shifting	Contextual, performative



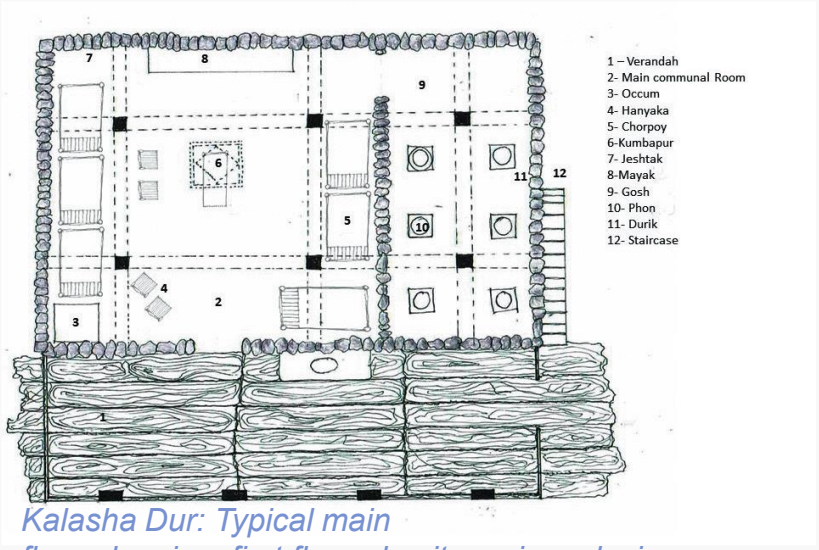
Traditional settlement pattern of Kalasha villages showing Onjesta & Pragata spaces at top & bottom and non-binary spaces in between the two.

Kundarik - effigies placed at the entrance of Bron village in Mumuret valley.

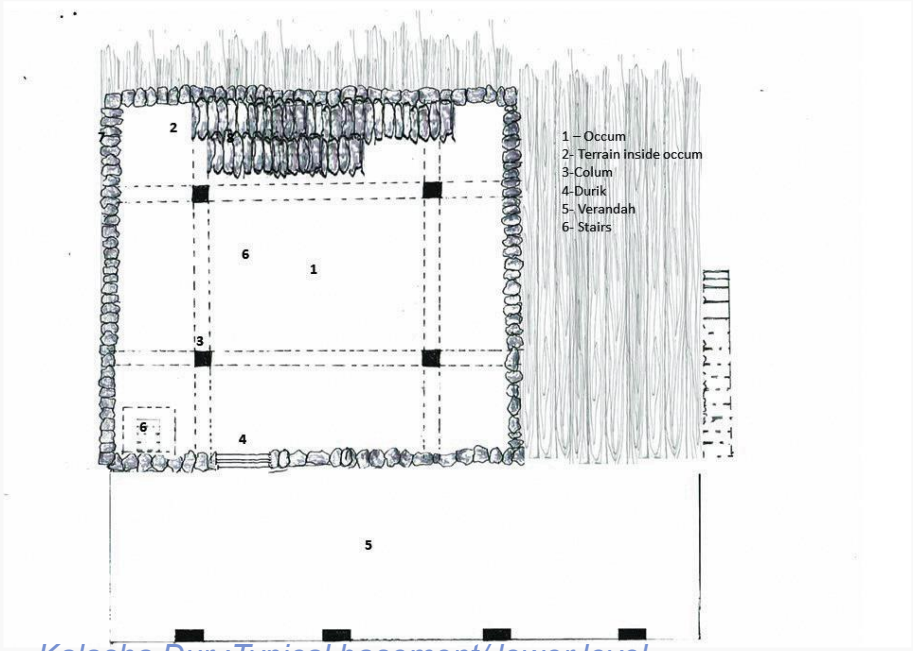


CASE STUDY BUMBERET VALLEY KALASH, CHITRAL

Kalasha Architecture

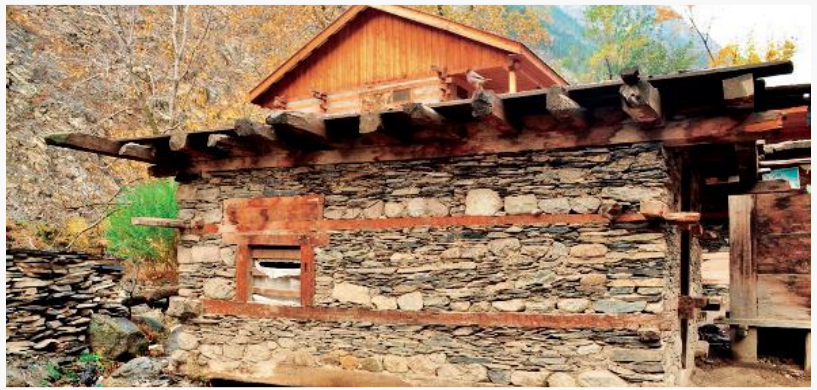


Kalasha Dur: Typical main floor plan, i.e., first floor plan its various design components.

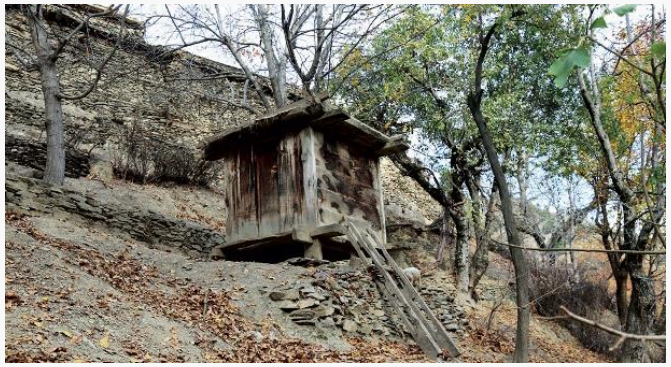


Kalasha Dur :Typical basement/ lower level

Traditional design of Kalasha Dur (house) with flat roofs.



Zhontr: a shaded water-powered mill used for grinding grains



Pasti: Food Storage, at lower altitudes Brir & Rambur. Located in Neutral space, maintained by women

CASE STUDY BUMBERET VALLEY KALASH, CHITRAL

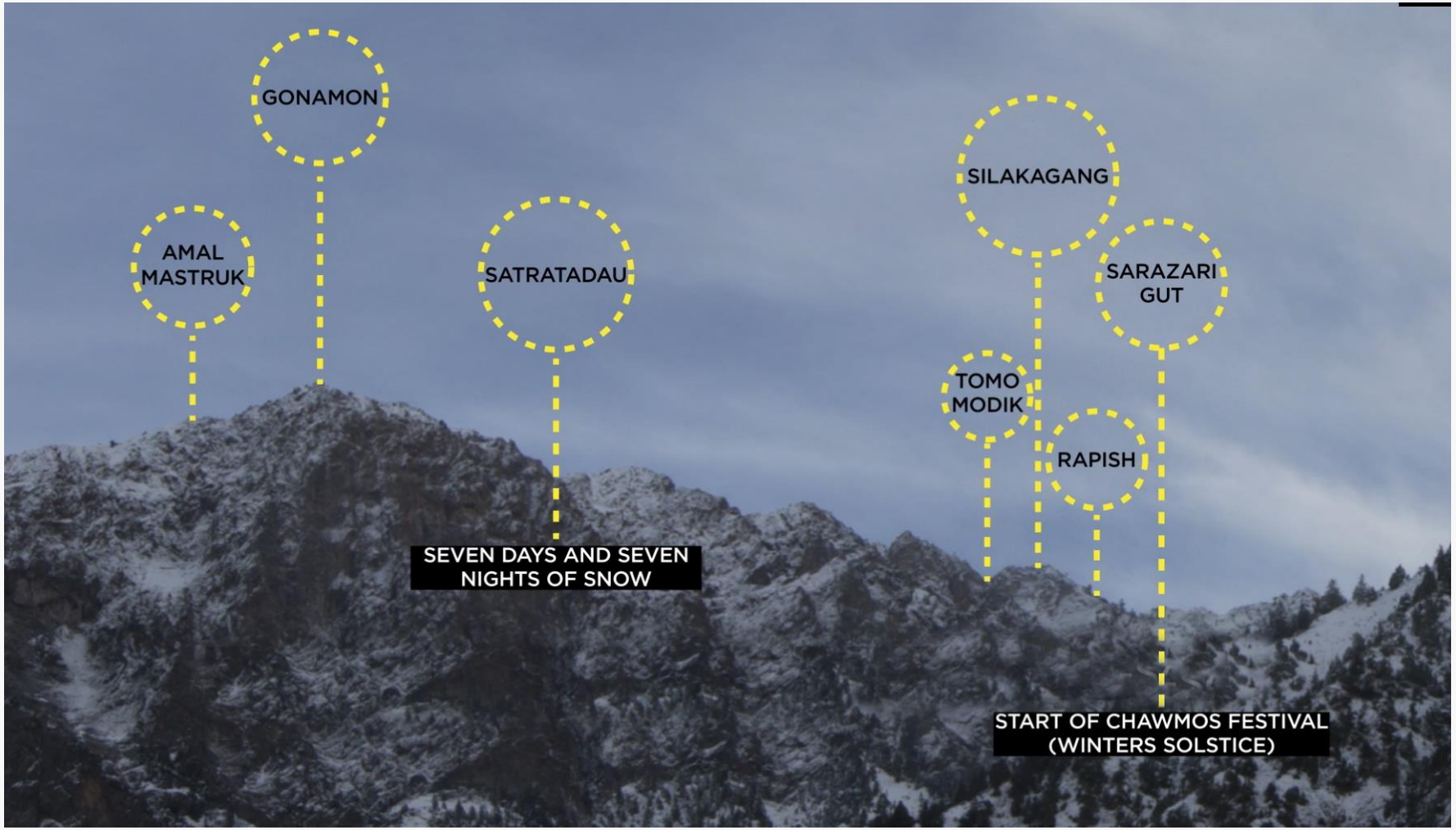
Suri Jagek: ICH element - "Knowledge and practices concerning nature and the universe"

Suri Jagek (observing the sun), traditional meteorological and astronomical practice based on the observation of the sun, moon and stars in reference to local topography

Based on empirically observed knowledge to develop the **AGRI-CALENDAR** and **RITUAL CALENDAR.** Managed by a Council of Elders at Rambur

Pakistan first single state element inscribed under UNESCO "Convention 2003 for the Safeguarding of Intangible Cultural Heritage" & only one to date

Suri Jagek : Making of the Agri & Ritual Calendar



Mitigate Climate Change Effects…..a time to sow and a time to reap

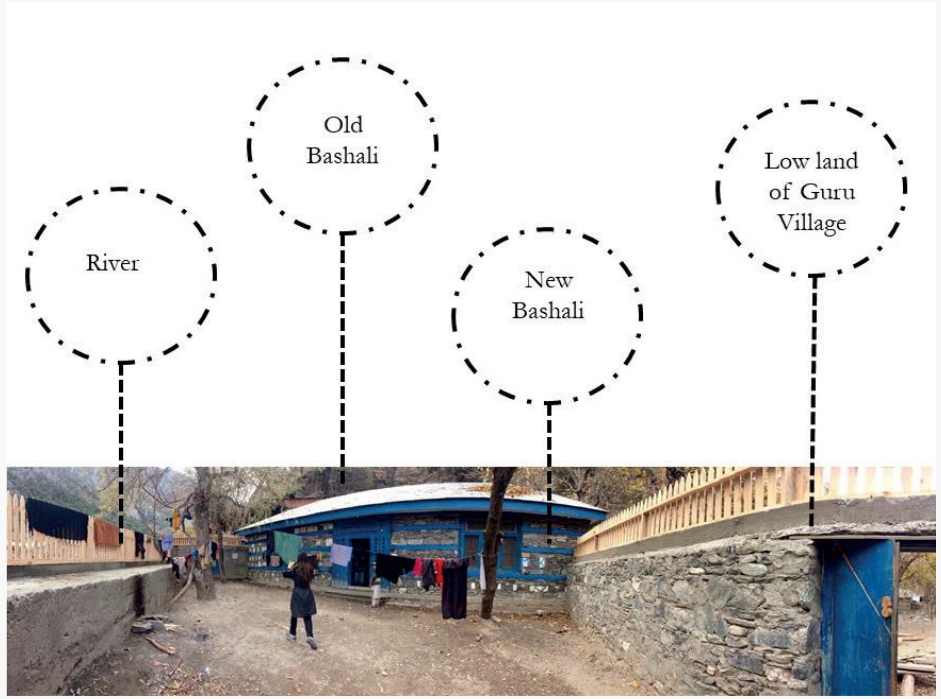
Sarazari, celebrated at start of the Chawmos festival, coinciding with the winter solstice.
Start of the empirical evidence for the Agri Calendar

Council of Elders Members

Celebrations and Rituals to welcome Balmain their principal diety

CASE STUDY BUMBERET VALLEY KALASH, CHITRAL

Kalasha Architecture: Tradition v/s New Forms



The newly constructed Bashali in Guru village, Biriu valley is underutilized.

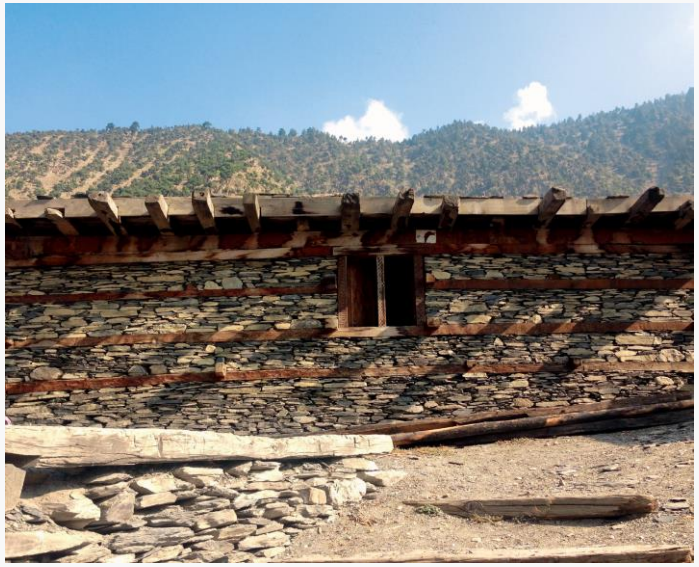
In the last decade or so, the Kalasha Valleys have received a lot of attention from within and outside Pakistan, funding has poured in upsetting the power structure. The affect has been detrimental to the spatial intelligence, the ecology and the cultural continuity

Architecture : The traditional Bashali from its siting, to the layout, the construction material and technology to the services has been unwisely changed. This is diluting its original logic and accumulated knowledge system.

Kalasha Ritual and Agri-Calendar: Is now tailored to the needs of tourism. Dates of festivals are pre-determined, the sowing & harvesting period has weakened affecting food security and subjected to adversity of climate change

Conservation of Temples: The symbols and patterns which are integral to the belief system of the Kalasha changed since their importance was not understood, causing unhappiness

The Traditional knowledge system will soon the lost.



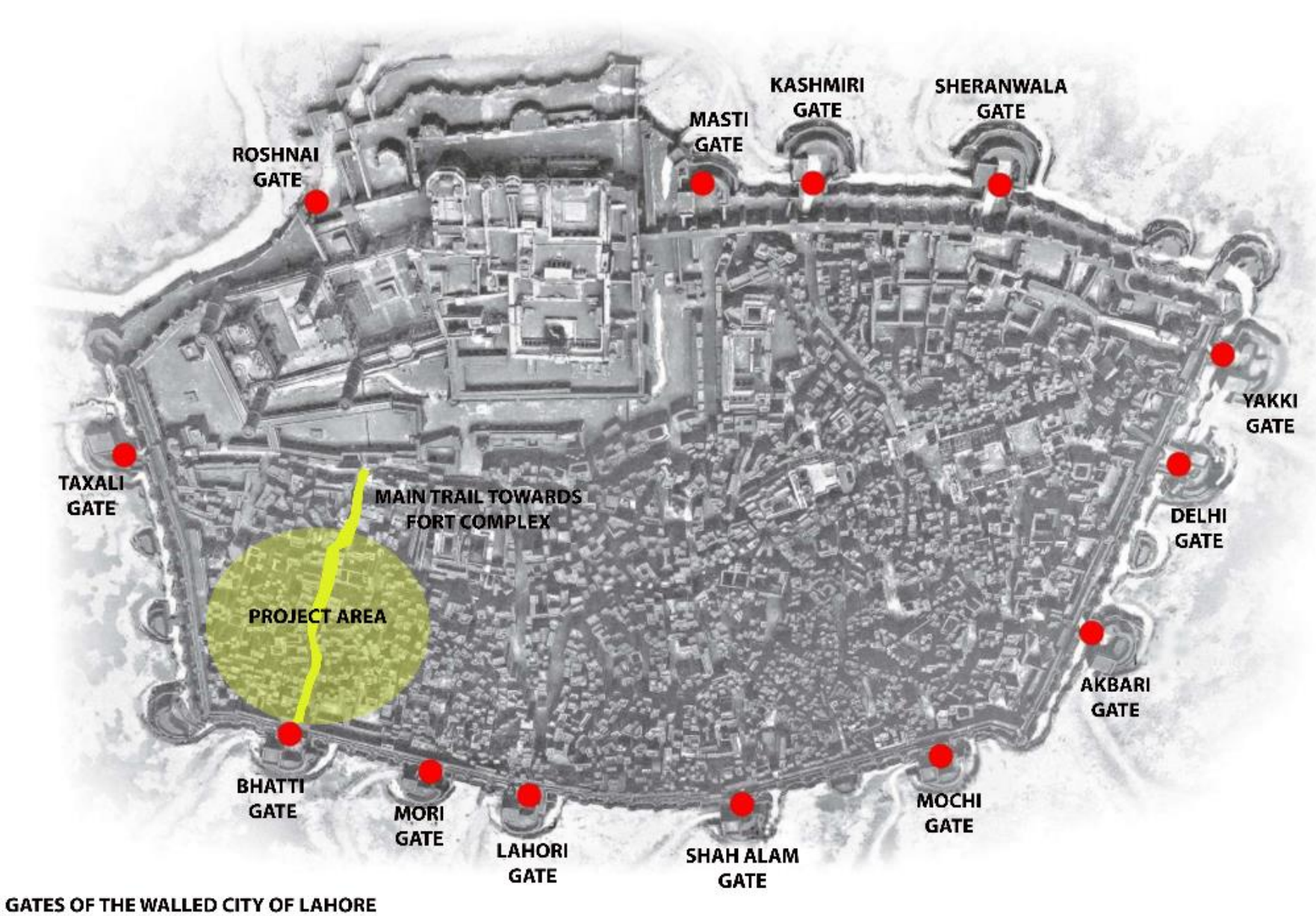
Bron village: New temple with a window. Traditionally temples were designed without windows due to security and climatic challenges.

Gand'aw installed in the graveyard of Bron village in Mumuret valley.

Temple of village Grom: 3 wooden statues of the goddess Jestak dedicated of 3 clans

CASE STUDY MUMBERET VALLEY KALASH, CHITRAL

Walled City of Lahore: Bhatti Mohallahs



GATES OF THE WALLED CITY OF LAHORE

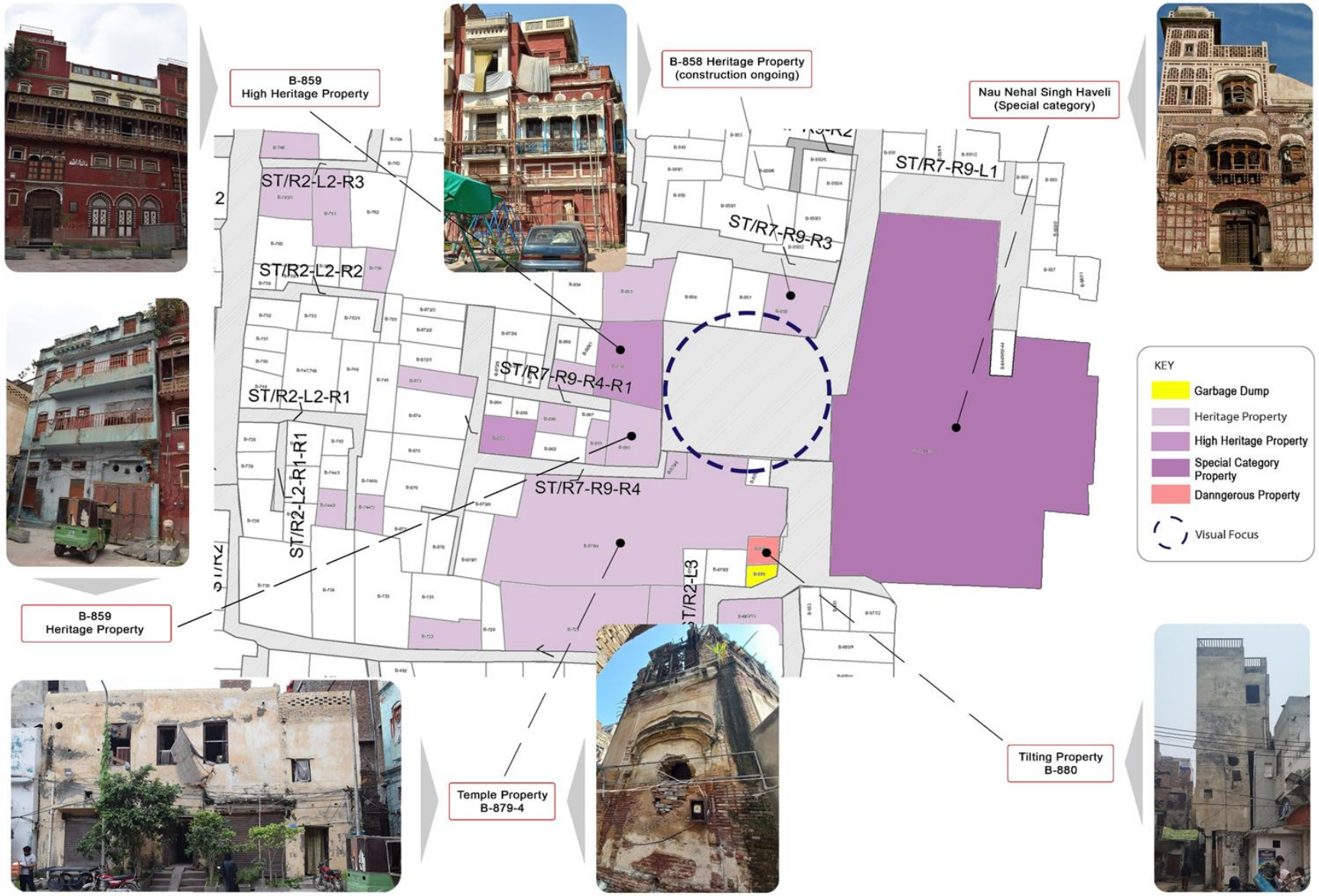
Androon Shehr is an outstanding Cultural Heritage. A national asset.

It has organically grown and sustained human habitation for more than 1000 years.
The Spatial Intelligence and Logic, supported community life and social cohesion to a high degree.

Though earlier the communities were kinship & trade based, now they are mixed, however the community spirit prevails in the shape of "*mohallah dari* "

The city is facing multiple issues and problems. Community custodianship which was the key factor has weakened.

Urban Transformation Space and Meaning: The Bhaiyon Wala Maidan



The Bhatti Project
Understanding the Context

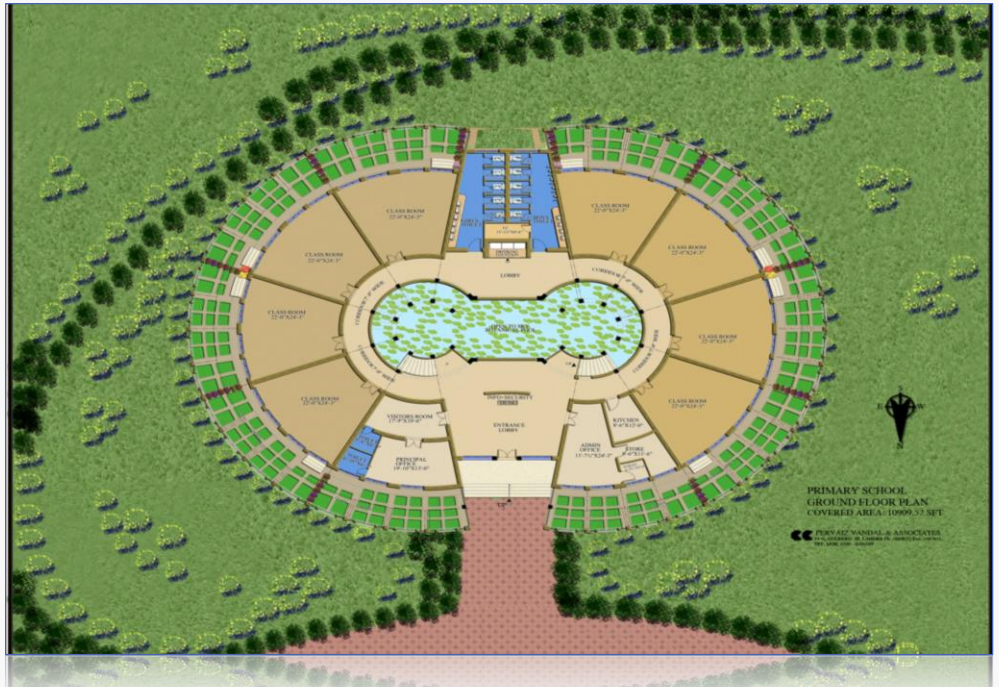
- The Popular Narrative, actively promoted by the dominant clan in the area emphasises the connection & quasi ownership of the Kambo clan. (land belonged to them; temporarily leased to the Maharaja for the construction of the Nau Nihal Singh Haveli.)
- The tilted 4 Story building has been declared " Dangerous" , a misnomer since it allows government to demolish even heritage premises under this.
- Bhaiyon Wala Maidan named after 4 Brothers is one of the few secular Urban Open Spaces in the Walled City

Walled City of Lahore: Bhatti Mohallahs

Layers of History
The Haveli Nau Nauhal Singh

Spatial Intelligence of the Walled City of Lahore	
Morphology	• **Organic street layout***:* Narrow, winding galis follow topography and social clustering, organic growth, not geometric. • **Mohallas**: Clustered around communal wells, mosques, and shrines, forming micro-ecologies of kinship and trade. • **Squares (Chowks)**: Serve as nodes of exchange, ritual, and political discourse — often evolving over time. • **Mixed-use layering**: Residences, workshops, and retail spaces are vertically stacked, reflecting spatial economy and privacy.
Hierarchy of Privacy	• **Street Progression**: from Private to Public: • **Threshold logic**: Entry into domestic space is marked by progressive thresholds — *street → courtyard → verandah → inner rooms*. • **Andaroon vs Baharoon**: Distinction between the inner private (andaroon) and the outer public accessible spaces. • **Gendered spatiality**: Women's movement is structured through concealed passages, rooftop networks, and inner courtyards. • **Visual privacy**: High walls, jharokas (overhanging balconies), and angled entrances prevent direct sightlines into homes.
Spatial Memory & Custodianship	• **Shrines and havelis** act as anchors of spiritual and cultural continuity. • **Craft clusters** (e.g., metalwork, wood carving, hakims) are spatially embedded in specific galis, preserving occupational memory. • **Water infrastructure**: Baolis and wells are spatially tied to communal and ritual life.

Construction Material which are known for being climate resilient are used by some architects (lime motor, kankar lime, fair faced brick etc.)



Daanish Schools Punjab: Primary schools located in the desert climate of each district of Bahawalpur Division, Non-rectilinear rooms were arranged around an open space on two floors; a perforated screen ran on the outside of the classrooms to protect from the heat. Upper roof was doubly protected with insulating layers of mud, On the ground, classrooms opened out to green patches to be maintained by the students as part of learning. Built 2009

The Way Forward : Key to a Sustainable Future

- Paradigm Shift : Integration of Traditional Knowledge Systems & Contemporary Knowledge Requires
  - Acceptance of the value of the "community engineered knowledge system"
  - Acknowledgement of the Tradition Bearers as Ustads & Build partnerships
  - Understanding the Complexity & Integration of the Traditional Knowledge Systems through inventorying the Intangible Cultural Heritage , Documentation and Research. Creating Databases
  - Supporting ICH through Legislation to protect Intellectual Property Rights of Communities, the rightful owners and halt the escalating appropriation of their knowledge. Make the Invisible Visible!
- Innovate, Co-Design, & Co-create Knowledge to address new challenges. Inclusive Capacity Building
- Promote & Support Community Custodianship and Local Management
- Include Culture as a Cross Cutting Theme in Development

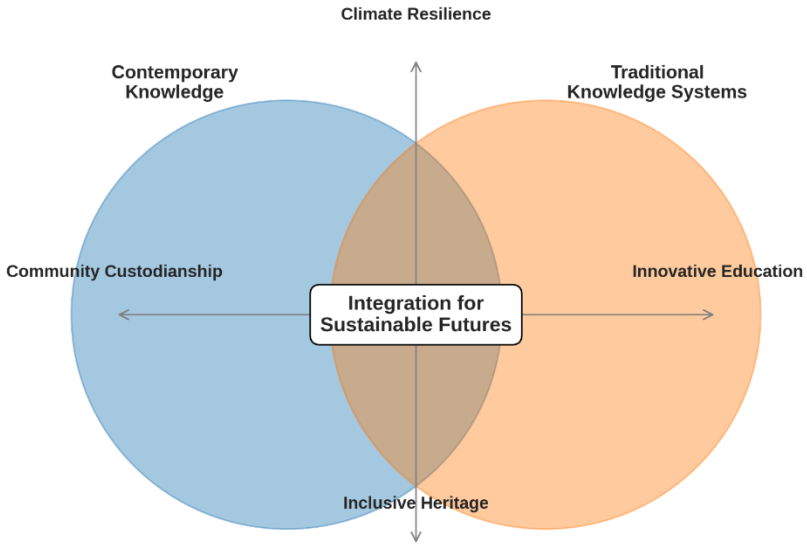
Gullah Mai, Abbas Nagar, Bahawalpur

Amo Mai, Village DB 80, Deep Cholistan

Ustads Malik Mithoo, Quam Kharli & his wife Hajra Mai

Bohar of Jhok/ Toba

Ustad Ghulam Hussain of Nokot



Tradition Bearers of the Suri Jagek

Wali, Sculptor, Rumbur, Kalash

The Bhils of Cholistan, the Keepers of the Oral Tradition in folklore, songs

Towards a Sustainable Future