

Displaced & Urbanized

Or Why We Build

By

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Author's Declaration

I hereby declare that I am the sole author of this thesis.
This is a true copy of the thesis, including any required
final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically
available to the public.

Abstract

I embarked on this research with the aim to study the relationship between the city and the flood, understanding the waterfront as some blurred edge where wild and human forces mix. My hope was to propose a design strategy for urban waterfronts, which define a critical border between the order of the city and the chaotic, disruptive force of the flood. Initially, I wanted to outline some toolkit which could be applied to the unique conditions of any urban waterfront of the world. It became clear that I would need to choose a site amongst hundreds of cases, otherwise my brief studies of the globe's urban watersheds would remain relatively shallow. For a number of anomalous reasons, I settled on the Indus Valley and its watershed, together composing one of Earth's most violent landscapes.

The more I studied the valley for symptoms, like a doctor looking for the underlying conditions of a place, the more I realized that the kind of design method I initially hoped to uncover would be impossible. To adequately frame the chaotic valley would prove to be enough of a challenge. Any constructed timeline would have its gaps, and any design to solve the plethora of urban or water issues in the Indus would need a plan of execution which would border the fantastical or horrific, for the valley consists of a series of wicked problems which generate further anomalies with any solution. Any prescription is temporary and comes with much uncertainty, especially in the Indus where the average economic value of each citizen is measured under \$6000 per year, leaving many citizens with little agency and room for long-term investment.

The desire for a design was replaced with a desire for answers, then a desire for the right questions. I began trying to re-conceptualize the valley through its history of catastrophe, constantly reconfiguring fragments until the gaps in the valley's narrative became the main markers of an alternate history defined by anomalous forces that re-structure society. This research unifies fragmented histories of the valley towards a critique of dominant paradigms of space-making, identifying the need for alternative practises of architecture that can anticipate or cultivate the transformative and anomalous nature of civilization.

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I understood the importance of history and story-telling from the very first week I began my undergrad thanks to the iconography course of Dr. Robert Jan van Pelt. His intelligence, pragmatism and depth of historical knowledge were among the reasons I wanted Robert as an advisor for this research. Robert challenged my research with critical questions to reflect on, and gave invaluable tips during every discussion.

My third committee member, Dr. Anne Bordeleau, made me deeply consider the relationship between architecture, memory and history through her lectures and research. Some of the questions that emerge from this relationship are central to this research.

Finally, my external reader. Scott Sorli who provided incredible resources for conceptualizing the role of the architect in an anthropogenic age, and broadened my view of the future practise.

To my Family, all of this was for you. For what we have gone, and are going through. To my mother, who raised me on her own, and my two older sisters Sanaa and Yumna, who always supported me, and helped me grow beyond my age. To my niece who inspires me everyday with her kind heart, and my nephew who never stops asking questions about the world.

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For us.

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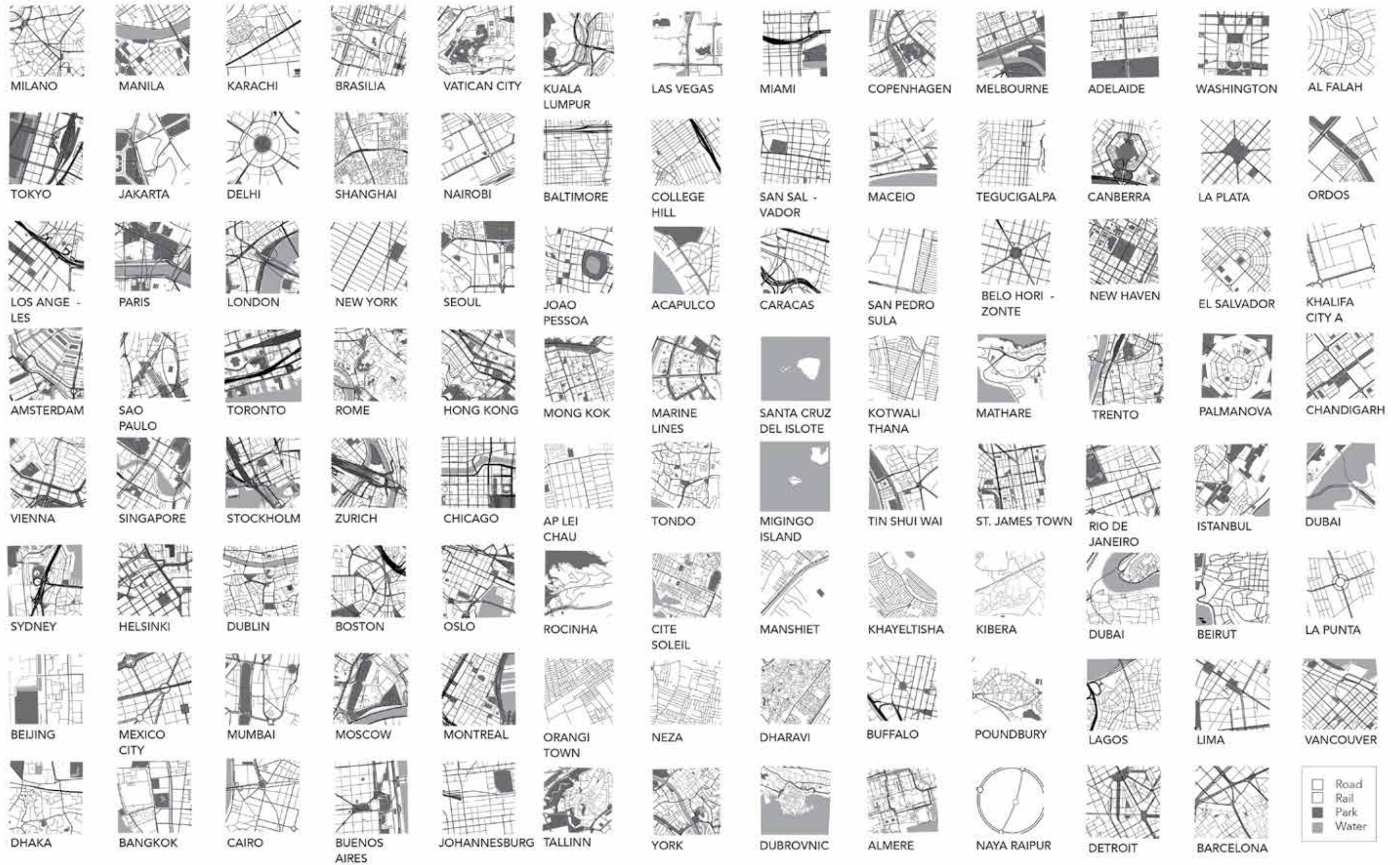


Fig. 1 — Urban Study (By Author)

Displaced & Urbanized

Or Why We Build

I

The Anomaly

The following began as a study on the relationship between the city and the flood.

A series of anomalous forces have carried and established global society as it exists today. The anomaly may present itself in countless media: storms, natural disasters, economies, political bodies, borders, roads, invasions, tribes, wars, migrations, development, and so on. There is an equivalent anomalous force that architecture needs to embrace given the transformative nature of our environments and the great unknowns we face in the near future; a counter-practise to the status quo belief in resilience where instead the transformative nature of our world holds primary importance. This architecture carries force that can shape and evolve a culture rather than be subject to it.

Unknown Unknowns

Anomaly

Animals build out of instinct. The nest, the hive, the dam, and the burrow are simply extensions of the bird, the bee, the beaver and so forth— any plan of their architecture exists completely in the abstract, emerging from interactions between the organism and some initiating forces in its environment, much like how the organism itself emerged. Our buildings and cities can be traced along these same lines of force. The pre-architectural human experienced a wilderness that pushed and pulled them toward certain places and architectures for survival. The city was initiated by *anomalies*, collections of *forces* which produce moments of *displacement*, *migration* and *resettlement*.

Everything we build is derived from something else. Though the city began from some pre-urban wilderness, or collection of percepts, today it stands as the dominant environment of humanity, and the globe in measures of influence. The city has formed a feedback loop, deriving new spaces from environmental cues of its own production, simultaneously producing an *other* environment. As the city becomes an echo chamber, its foundations lie on a thorough, closed system engineered towards maintaining established functions, structures, identities and feedbacks. Though the city will be resilient and internally consistent with greater degrees of resolution, it will always be threatened by external forces which *transform* the *functions*, *structures*, *identities* or *feedbacks* of its environment.

As the world's urban population continues to boom, and anthropogenic climate issues compound, the future of the city becomes increasingly important yet indeterminate. It becomes critical to question just what happens when development and resilience no longer hold the answers; when the closed loop of the city encounters an *anomaly*?

An anomalous event carries a disruptive force whose presence must be reworked into a renewed understanding of reality, thus redefining the city. Anomalous events, moments of collapse, or paradigm shifts, carry the root forces of civilization, across which one can map new, persistent and lost spatial types. Such events lift the veil of the city and reveal what a space affords and how it relates purely to transformative forces.

We carry force, but also swim in it. The entire universe is a push and pull, forces colliding and coalescing, ebbs and flows at various velocities. Nothing is stationary or absolute. The forces of the city, and those that run through its people and its buildings emerge, fluctuate and dissipate like the forces of the greater cosmos.

We observe the presence and patterns of forces only when they flow through a conduit. The force of the flooding riverbed is most apparent when it brings forth the blooms of spring, or breaches the city's walls. Fragments of the city display force. A force flows through the dam when it first displaces or crumbles. A force moves through the road and border when we migrate or are invaded.

Forces outline territories before our arrival, compelling us to settle and build out societies that collect more force as they grow, like a tinder catching flame. Periodically, the city is overwhelmed by force, disruptive floods both real and metaphorical. Such anomalous events ripple into new cultures, manifesting as stories and structures drawn from a refrain on an experience that transcends the internal structure of the city. Whether divine or traumatic, these events must be reconciled by the people and their city.

Force

Place

*To take a place or to give up a place, that is the whole question.*¹

In his book *Genesis*, French philosopher Michel Serres argues that space is saturated by *places taken*,² creating two distinct groups: those who give up space and those who take it. Similarly, in his philosophical novel *Ismael*, American author Daniel Quinn recounts the origins of modern culture following the division of humanity into two types, the leavers and the takers.³

Urbanization unfolds as a process of giving and taking space: development, war, territory, migration, displacement, resettlement, the dam, the well, trade, the road, the valley, the mountain, the event and the flood are all fragments that hold this fundamental swing of force that pushes and pulls humanity. The urban process becomes unpredictable as each fragment carries force that intensifies in relation to other fragments, as in the relation between the border and the river, the dam and territory, the planned city and those the plan overlooks. This swing of force can be traced in every fragment of the city, often in several ways.

Though we can easily hold the view that a city is mostly static, a slow development from some historical or mythical birth, this of course is hardly true. Even the best planned cities become incredibly messy. However, the typical practise of architecture and urban planning require the city to be held in a mostly static framing, as fragments of the city must be curated to sell a vision of its identity and future. The story of a city or society goes beyond the reality projected through its buildings and streets, lying in the ecological and anthropogenic forces which generate and dismantle it.

The city is paradoxical.

Paradox

The city relies on a tumultuous relationship with water, its fundamental source of life, death and rebirth. The flood deposits rich sediment leaving fertile land which can support dense settlement. Cultures across the world tell the myth of a flood that destroys the land, leaving the world to be rebuilt anew. The flood both *establishes place* and *disrupts context*, carrying the forces of both life and death.

The value of the flood could soon be exploited, extending our ability to cultivate the land and develop the city. Agriculture enabled society to support a dense urban population that could begin experimenting in art, craft, architecture, and language. As the city grew it attracted more exchange, greater invasions, and more advanced systems of administration and politics. Centralized governments and a military were established to fight shared threat and build shared infrastructure.

Soon the city overshadowed the valley. More people began migrating from rural farms for new opportunity, soon overwhelming the city. The balance between cultivated land and the dense urbanity it supports was slowly teetering. More and more people began fleeing to the city for refuge and opportunity. Once they arrived they found all the land had been claimed, the migrants were a flood of their own, building camps on the peripheries of the city. The city repeated the flood. It established *territory*, and was cause for both *migration* and *displacement*. In establishing *place*, the city also established *placelessness*.

Development

The forces behind urbanization and development are building a flood that overwhelms the landscape. As we continue to develop exceedingly dense and consistent forms of urbanism and settlement, we will continue to develop economically poor cultures out of existence and cast away the longer narrative from which modern humanity could emerge. The success of a city, a culture, an idea or any individual ultimately hinges on the capacity to undergo the displacement-migration-resettlement cycle.

Indian anthropologist Shiv Visvanathan conceptualizes *development* as a “slow genocide”⁴ resulting in the death and displacement of local and rural cultures in favour of a globalist paradigm. By 2050 the world’s urban population is projected to increase by 2.5 billion people, approximately 90% of which will be in Asia and Africa.⁵ By this time, an estimated 2/3 of the world’s population will be in urban centers. Much of this urban growth will occur in fragmentary migrations, the majority of which will be from disparate rural zones into cities of less than 500,000 inhabitants.⁶

The term development veils an implicit urbanism, a method of building and living upon which to improve and against which lesser forms of building and living are measured. Development functions to continuously elevate the status quo which always entails social disruptions between the invested and the outsiders. Developing regions are doomed to trail the elevating standard of the developed world, unless they cultivate vernacular paradigms. The mythology of development proposes that the material practises of “developed” cultures can and will be extended to everyone across the globe and with greater sophistication as time goes on.⁷ Development implies infinite growth across infinite time, despite the knowledge that 20% of the world’s population consumes 80% of its finite resources.⁸ To extend the same level of convenience, comfort, and service to the remaining 80% simply cannot be supported by Earth’s capacity.⁹ Furthermore, over 60% of global wealth is held in land, real estate, construction and infrastructure.¹⁰ The city not only holds economies, it produces them through development. There is no degeneration in the myth of development, and so it holds all of society in place, even though we know the infinite growth deceptively promised and anticipated by our economic game is bound for collapse. History feeds on history: global paradigms of development monopolize history and culture, and so the mechanisms function not only to consume space, but to hold time firmly in place as well. Modern society has an ambivalent relationship with time: on one hand we obsess over future growth, on the other we only hold the immediate ‘economic reality’ in view— we cast history away.¹¹ As Serres states: “The history of noise covers, with its noise, history.”¹²

Resilience

As the city grows in tandem with threats of displacement, mounting evidence of catastrophic events in our past illustrate the need for pre-emptive strategies. Contemporary approaches of resilient urbanism¹³ come with an implicit ecological bias towards climate consistency. In many ways, resilient infrastructure denies the transformative nature of our environment, applying an approach rooted in the narrow timeline of modern climate data or else operating as pure experiment. After ecologist C. S. Hollings initially presented the concept of resilience in his seminal 1973 paper Resilience and Stability of Ecological Systems,¹⁴ he co-authored a sequel outlining the three attributes of social-ecological systems (SES), addressing confusions in the interpretation of resilience. Hollings explained that three related attributes govern the trajectory of an SES: resilience, adaptability, and transformability.¹⁵

<i>Resilience</i>	—	capacity of a system to absorb disturbance and reorganize while undergoing change so as to retain essentially the same function, structure, identity, and feedbacks.
<i>Adaptability</i>	—	capacity of actors in a system to influence resilience.
<i>Transformability</i>	—	capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable.

If only a precautionary measure of safety, it seems important to consider how design can extend the capacity for individual and species survival beyond models of resiliency, in cases of complete collapse. What happens in the case of a cataclysmic flood, earthquake, eruption, or impact, when resilience and development aren't enough? The work of military theorist John Boyd provides a compelling lens for speculating a transformative urbanism.

Destruction

We cope with shifting environments by extracting patterns and forming them into mental concepts that are constantly destroyed and rebuilt. The theories of U.S. Air Force General John Boyd, initially directed towards developing principles for pilots facing the new and unpredictable dogfight, were rooted in his desire to increase an individual's capacity for survival by understanding the mechanisms through which we build and destroy concepts. It has been argued that Boyd's work influenced military strategy more significantly than any other theorist since Sun Tzu's Art of War, though he was never promoted past the rank of General, often butting heads with superior ranks over his ideas and beliefs.

In his essay *Destruction & Creation*, Boyd outlined two ways through which we develop and evolve mental concepts to fit observed phenomena: from the general-to-specific, or from the specific-to-general.¹⁶ The general-to-specific implies analysis, unstructuring, or destructive deduction, whereby a greater concept is broken into its fragments. Proceeding from these unstructured fragments, a new concept can be formed from common patterns running through the constituents. This re-structuring from specific-to-general, from fragments to a new whole, is synthesis, or creative induction. These processes form a loop, as concepts are constantly shattered and rebuilt to better fit observed reality. Three revolutionary discoveries underpinned Boyd's work: Godel's incompleteness theorem, Heisenberg's uncertainty principle, and the second law of thermodynamics. Godel proved that there are true statements within a system that cannot be deduced from the system's postulates. Secondly, he showed that the consistency of a system cannot be demonstrated from within, proving that any system is incomplete. The need to go outside a given system in order to demonstrate its consistency was further indicated in Heisenberg's uncertainty principle, which highlighted the indeterminacy of measuring the position and velocity of moving particles. Heisenberg showed that uncertainty increases relative to the degree of intrusion by an observer. For Boyd, this uncertainty represented the inability to determine the nature and characteristics of a system from within. Finally, the second law of thermodynamics, which indicates that entropy increases in any closed system, relates to the potential for doing work and the degree of disorder within a system. Together these three ideas supported Boyd's ultimate argument that any closed system is doomed to fail, and must therefore be consistently challenged and strengthened by generating new concepts from outside.

Boyd envisioned an increase in "unexplained and disturbing ambiguities, uncertainties, anomalies, or apparent inconsistencies"¹⁷ dismantling our closed systems, arguing that our tendency is to allow current concepts to guide future inquiries, leaving our picture of the world incomplete yet internally consistent.

The deduction—induction model is useful in investigating, rebuilding, and strengthening our concepts in order to extend our capacity for survival in shifting environments. Through an investigation into the violent and fragmented history of the Indus, the valley is broken apart into key moments of cataclysm, displacement, and reconstruction which together conceptualize the emergence of the global city as a layering of anomalies carrying disruptive force.

Creation

II

The Indus Valley

Soon everything we had built, all we had fought over, would be trivial. History, territory, status, class; all were suspended. We have been displaced.

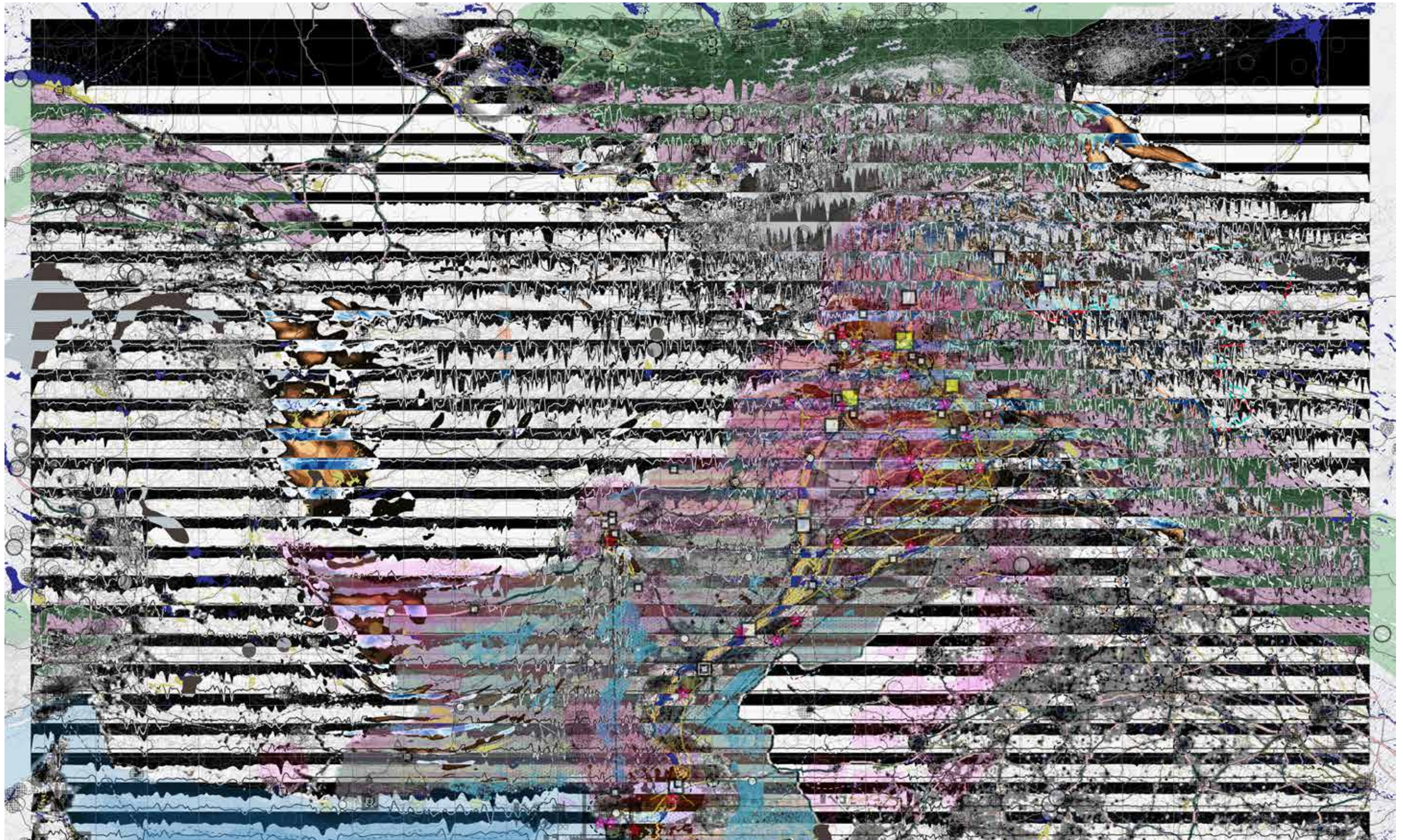


Fig. 2 — *Tapestry of Forces, Indus Valley after the flood* (by Author)

The Valley

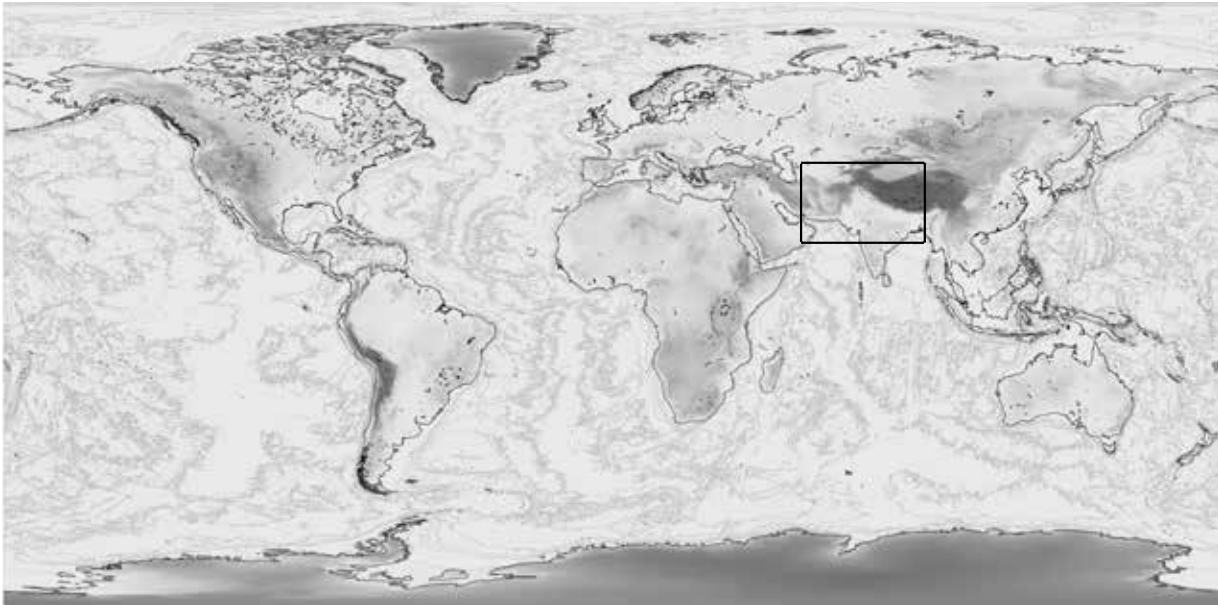


Fig. 3 — *World Digital Elevation Model: darker areas indicate higher elevations. The Indus Valley study area shown in Fig. 4 to the right is outlined by a frame, showing the stark contrast between the valley and the Himalayan-Karakoram mountain ranges of the Tibetan Plateau in the North, and the Kush mountains to the East.*



Fig. 4 — *The Indus Valley is defined by the surrounding mountain ranges, with limited access points determined by narrow mountain passes, most notably the Khyber Pass and the Bolar Pass. The dotted lines indicate major faultlines, which leave the territory open to inevitable disruption. The Potohar Plateau and Vale of Kashmir, smaller valleys among the northern mountains of the Indus Valley are highlighted and discussed in further chapters.*

The Valley

Meandering lines from the Northeast cut southwest towards the coast, defining natural borders imposed by the Hindu Kush, Karakoram and Himalayan mountains. Only a few passes exist allowing access from the mountains into the vast valley of the Indus. The landscape at this edge is stark, desolate, and violent. The scars of a thousand floods and battles reveal themselves in the river corridor as it passes between the two great mountain ranges. Several fault-lines create potential for earthquakes throughout the land. These land movements illicit shifts in topography and the river system, posing great threat to life in the valley below. The valley is defined by the imposing wall of the mountains.

The Indus Valley has an incredibly rich ancient and modern history, standing as the gateway into the Indian subcontinent and the major link between the East and West. There is evidence of post-tribal settlements as early as 7000 BCE, and mature state-level sites belonging to the early Indus Valley civilization dating as far as 4980 BCE.¹⁸ Slowly a pattern emerged: humans easily collect in the valley, which is subject to periodic moments of disorder— flooding, landslides, earthquakes, and so on, at which point more mobile tribal groups move down from mountains to resettle the valley, appropriating certain aspects of the village culture and mixing their own. This pattern is not unique to the Indus Valley. Giovanni Botero demonstrated back in the late 1500s that necessity forces how people gather. In the face of imminent danger we need secluded places: the cave, the shelter, the island, the mountain. At opportune moments, those in secluded places will once again gather on the plains to build dwellings “until the fear of the arms and the invasion and terror of cruel, savage peoples forced them to flee once more...”¹⁹

Today, the Indus River and its tributaries are severed by the *Line of Control* between India and Pakistan, and the *Durand Line*²⁰ between Pakistan and Afghanistan. The valley is predicted to become a “zone of chaos”²¹ by 2030, being an alleged center for terrorist recruitment and training. The watershed overlaps areas of conflict and conflicted territories in Pakistan, Afghanistan, India and China. Given the territory’s violent situation, it is best to rely on the impressions of the first Western explorers into the valley in order to gain a sense of its spatiality.

I had never seen any valley that compared to it either in kind or in dimensions...it was floored with the strewn ruin of countless floods, bleached and blasted by the suns of countless summers; it was walled along by rocky cliffs; a maze of precipices and gullies, untrodden by human foot, bare of vegetation ... Conway²²

A wilder, grander, more desolate, and more colossal rift cannot occur elsewhere on the earth's surface...a dominant sensation in this land of fear and abhorrence; ... There, always there, is that monstrous flood below, slowly, ceaselessly moving. Collie²³

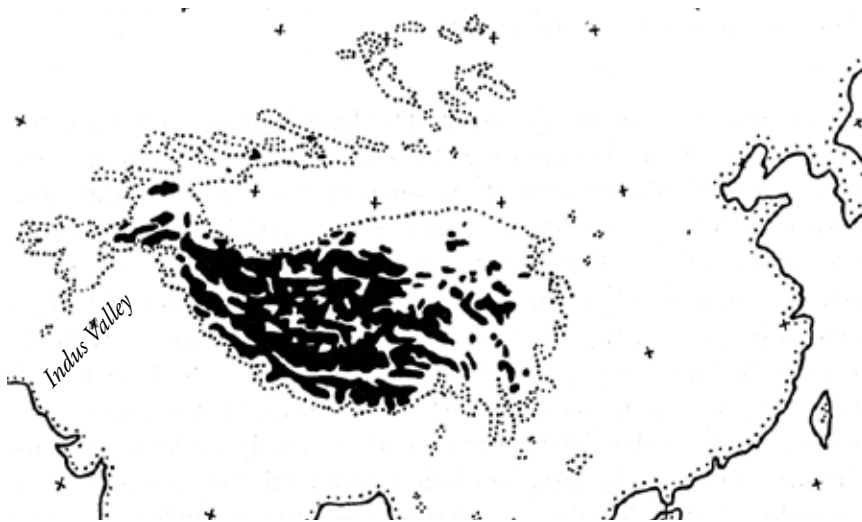


Fig. 5 — Topographical map of the Tibetan Plateau. The dotted line marks elevations above 2500 m , the solid black areas mark elevations above 5000m, 'a similar map of any other continent would be nearly entirely white'.

The River

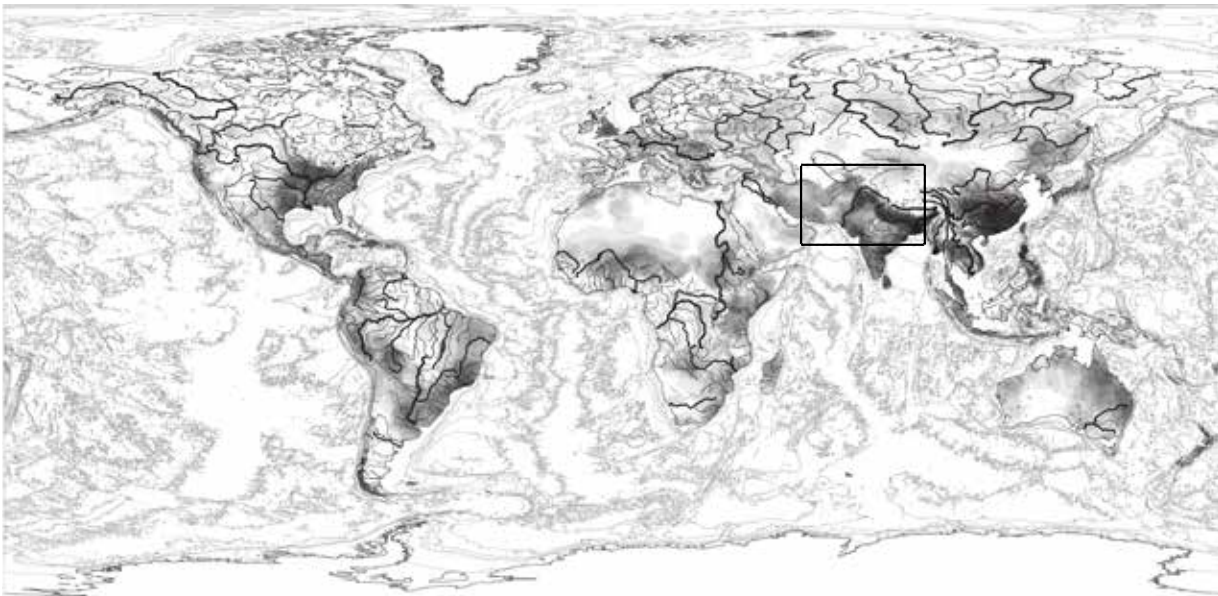


Fig. 6 — *Major Watersheds of the World and World Flood Archive overlaying major floods from the past century. Note the flooding in the Indus Study Area and Tibetan plateau.*



Fig. 7 — *The Indus Watershed is mostly fed by glaciers high up in the Tibetan plateau. Several small streams converge into rivers that flow down between the two mountain ranges before spilling into the open valley. Five major rivers travel through the province of Punjab before merging into the Indus River.*

Ancient river courses are shown as dotted lines.

The hatched area indicates the extent of the last major flood in the valley in 2010.

The River

The River is Mountain, the Mountain is River

Among the mountaintops, sun, wind, moisture and frost work to break even the hardest stone, sending fragments of the mountain tumbling and rolling down its own sides, leaving clouds of snow and dust in its wake. Under all these forces, the mountain is constantly ground into aggregates and powder that fall and flow into the river. ... “The ponderous mixture of solid and semi-solid bodies move and with all the freedom and facility of a liquid, but with greater devastating power.”²⁴ Although the mountain is becoming river, its immense force reveals itself abruptly, sometimes conquering the river entirely.

The Sarasvati was a river first referenced in early Vedic mythology. Located in Indian Punjab (five rivers), the area was then known as the “Land of Seven Rivers”²⁵. In modern times, the river’s former existence has been confirmed through evidence of its ancient bed²⁶. Its disappearance likely occurred after tectonic activity in the Himalayas blocked the river’s outlet into the valley. The Kallash mountain range forms the great divide between Asian watersheds, and rivers are known to shift and conquer one another even without tectonic forces simply due to the detritus they carry from the mountains.²⁷



Fig. 8 — A satellite image highlighting the Tibetan plateau in white and the Indus Valley. Lighter areas indicate higher topography. The Indus River is sourced from Lake Manasarowar in a northern section of the Tibetan Plateau, which supplies the Indus, Brahmaputra, Yangtze, Yellow, Mekong, Salween, and Tarim Rivers amongst others.⁴

A Wild River

Rivers naturally form in a meandering S-shaped pattern as they slalom back and forth across a landscape. The largest sediment aggregates carried along the river's course are deposited in the earliest straight sections, between two opposing curves of the 'S'. As these aggregates are pushed forward by the flowing river, they inevitably encounter an embankment whose edge they are pulled down and along in a spiralling along the edge of the land, digging the riverbed deeper as if each rock is the tip of an invisible corkscrew. This movement causes the outer bank along each river turn to erode and deepen while the inner bank accumulates sediment. The wild river is a dynamic continuum, serving diverse ecologies along its trajectory from source to mouth.²⁸

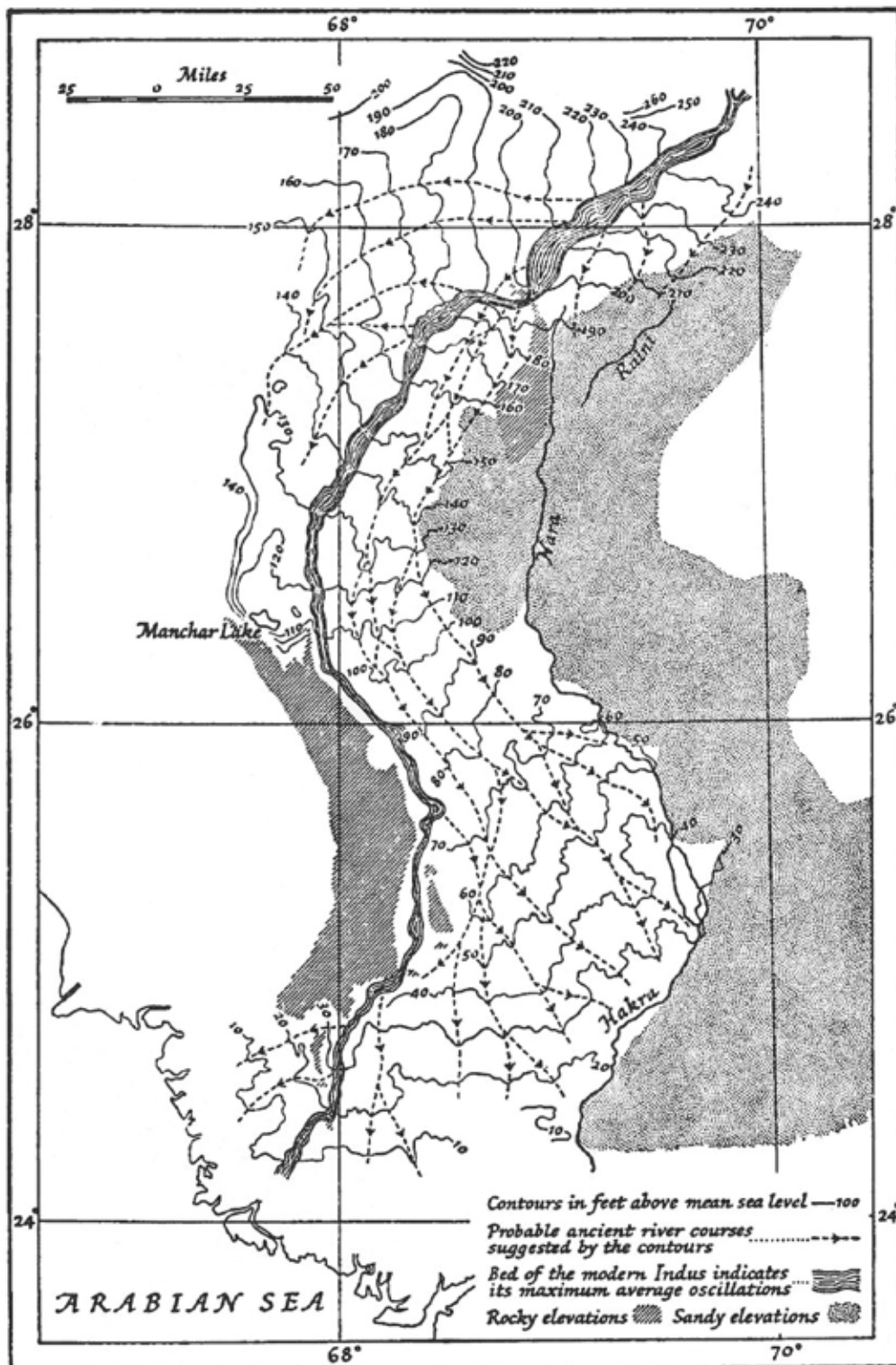


Fig. 9 — Modern and ancient beds of the Indus River

An Ordered River

The Indus was once a free river running through a fertile valley, the catalyst for a mysterious ancient culture. Today, the river has become a political device controlled through a complex series of dams, barrages, headworks, link canals, transformation stations, cantonments, reservoirs, power lines, highways, policies, treaties, contracts, and innumerable other pieces of infrastructure. It is a living, complex apparatus, an assemblage of our haunted experience with water.²⁹ Hydro-infrastructure now disrupts the natural flow of all of the world's major watersheds, impacting sediment transport, species migration and the natural movement of the river. Urban life unfolds in the shadows of the dam.

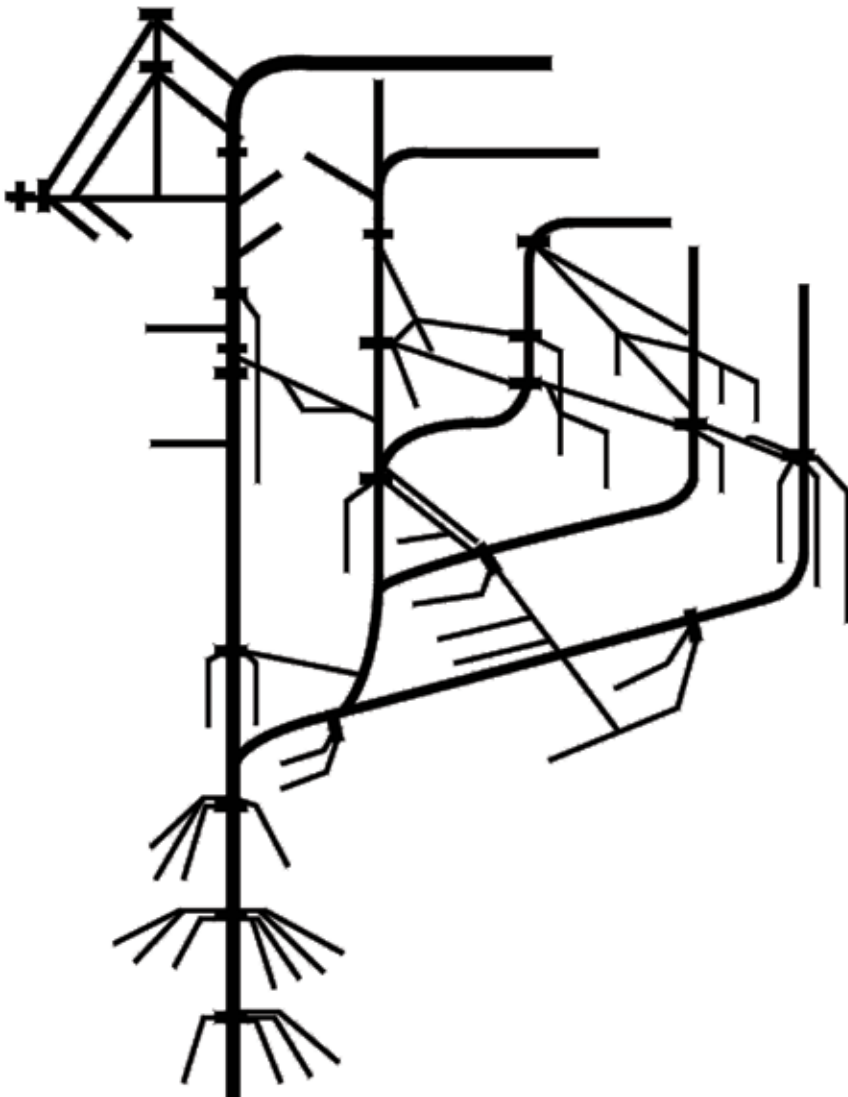


Fig. 10 — *The Indus River system under the administration of the Water and Power Development Authority of Pakistan.*

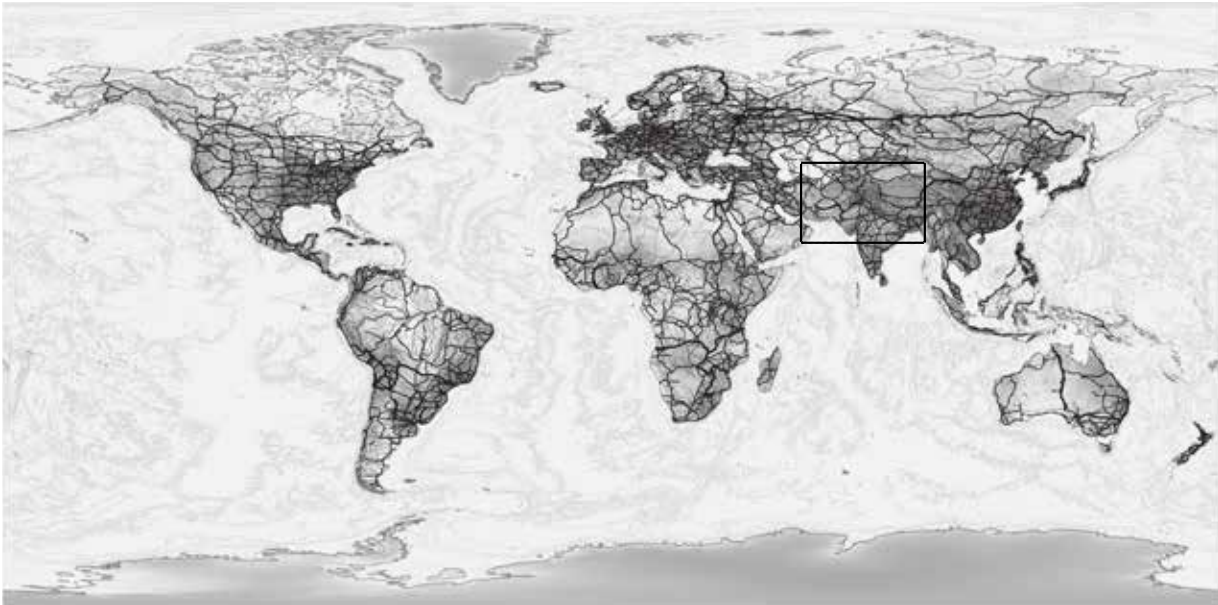


Fig. 11 — *Major Roads and railways of the globe are mostly determined by geographic constraints. Human traffic flows over the surface of the Earth much like water, moving along paths of least resistance.*

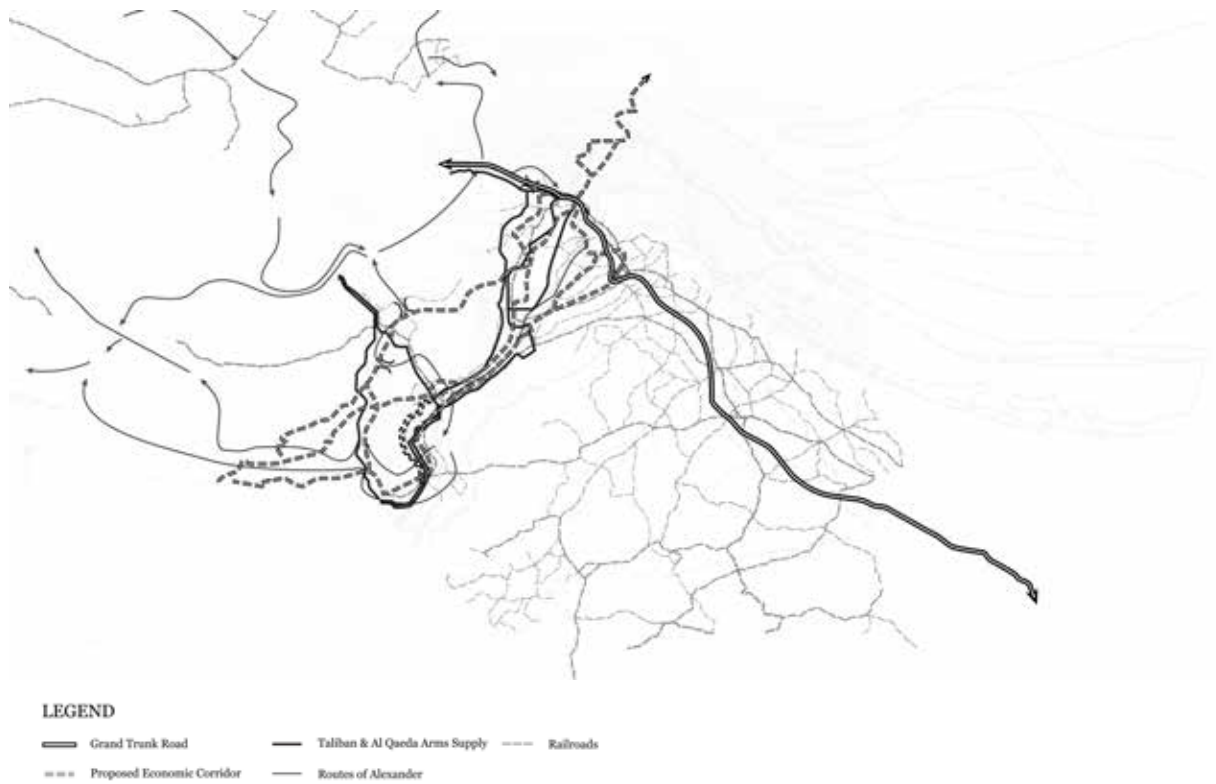


Fig. 12 — The Grand Trunk Road runs along the edge of the mountain-valley border, through the Khyber Pass. This route, and other less major routes have been used by invaders throughout the history of the valley. The movements of Alexander the Great align exactly with terrorist arms trafficking routes. The dotted road highlights the proposed Chinese-Pakistani Economic Highway, which will cut across the Himalayan-Karakoram mountains.

The Road

The various civilizations that conquered, settled, or made trade within the northern Indus Valley tend to share a common path that was concretized as the Grand Trunk Road, running through the famous Khyber Pass, the main passage between Pakistan and Afghanistan. The road connects a string of capitals including Calcutta, Lucknow, Delhi, Lahore, Islamabad, Peshawar and Kabul. Geographic formations clearly provided a level of determinism in the movement and settlement in the Indus Valley, with the intersection of the east-west mountain pass and the bisecting river corridor becoming a historical focal point. It is at this intersection that the stories of natural, prehistoric, and modern Indus entwine. Invaders from Alexander to Genghis to the Taliban share a common path through the valley. A path carrying force from its formation and throughout the countless migrations and invasions that flow upon its bed.

The Grand Trunk corridor through Pakistan and Afghanistan is currently rife with political and sectarian conflict. Osama bin Laden was found in the town of Abbottabad along this same corridor, and the section running through the Khyber Pass is one of the main outlets for the Taliban's arms supply between Afghanistan and Pakistan. This passage has served as the entry point for rebels, traders, barbarians, and conquerors throughout history. When the British arrived to India, they were solely interested in control of the Grand Trunk Road. Thus independent kingdoms could operate in pockets off the road as long as they didn't disrupt British ambitions.

Today, the Grand Trunk is severed by the *Durand Line* and the *Line of Control*. The construction of a new highway is underway following an economic agreement between Pakistan and China. The proposed highway will cut through the Himalayan and Karakoram mountain ranges to enable direct overland trade between the nations.

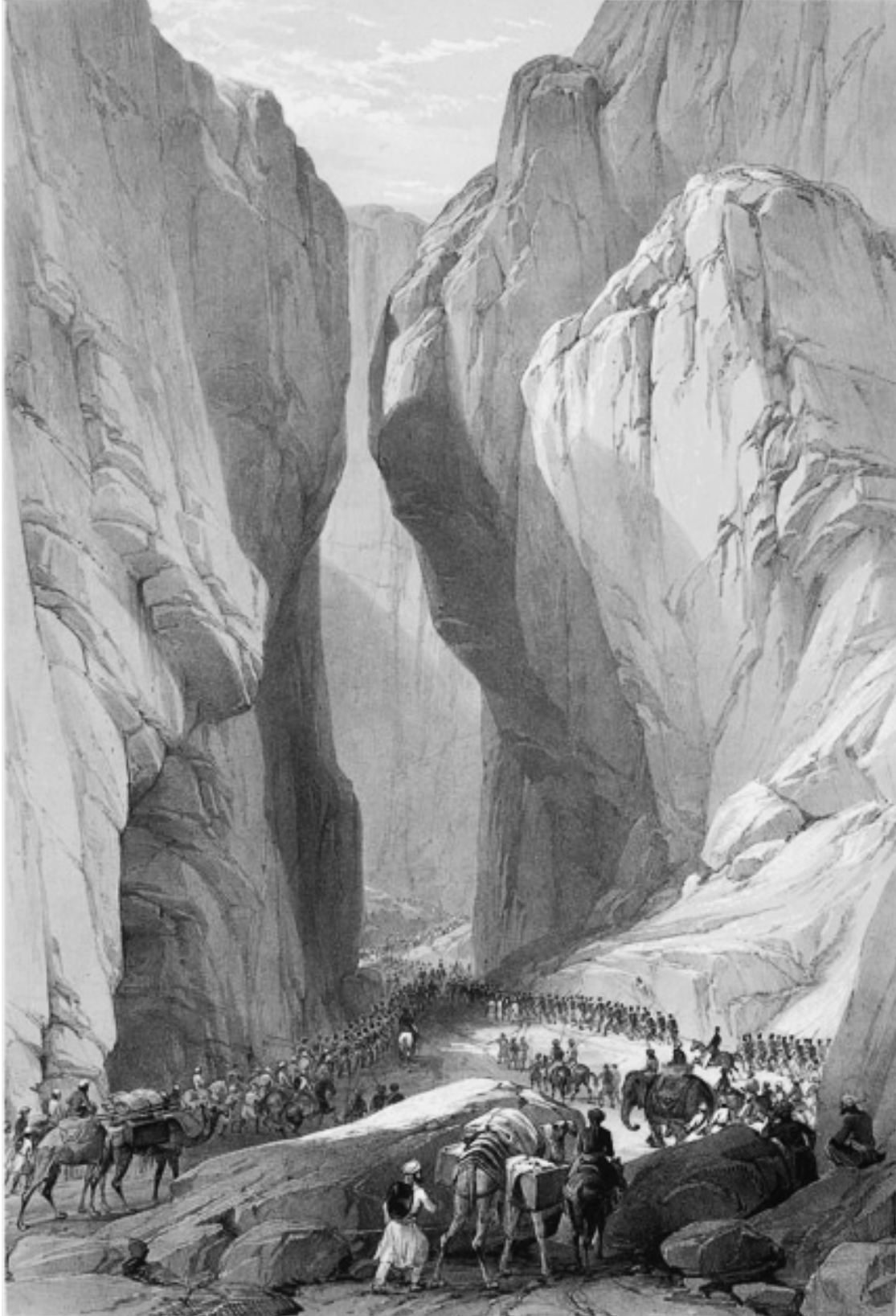


Fig. 13 —Sketch of the Bolan Pass in the Balochistan province at the Southwestern edge of the Indus Valley

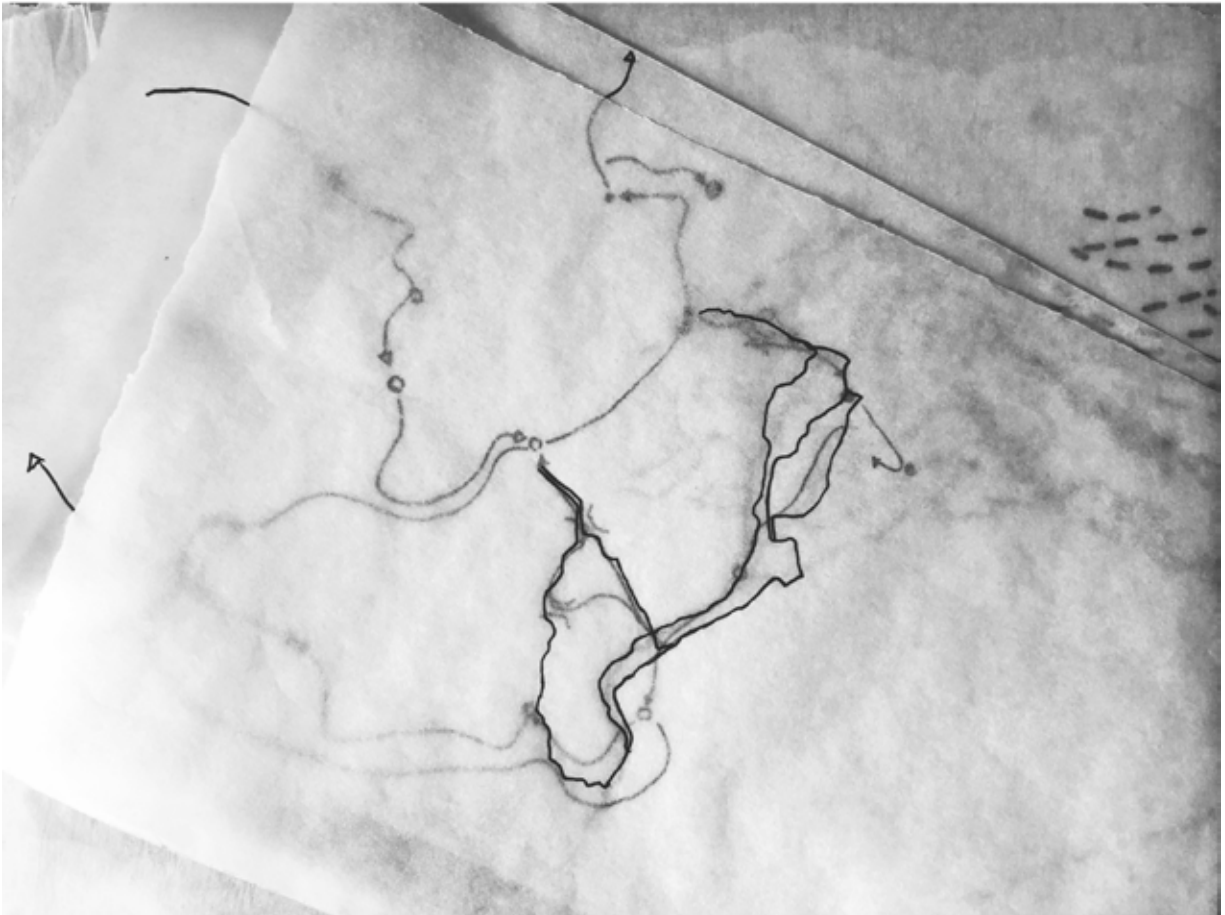


Fig. 14 — *Al Qaeda/Taliban Arms trafficking between Afghanistan and Pakistan shown over Alexander's invasion in India. The highways of the valley have been outlined over countless migrations and invasions sharing this route. Drawing by author.*

The Border

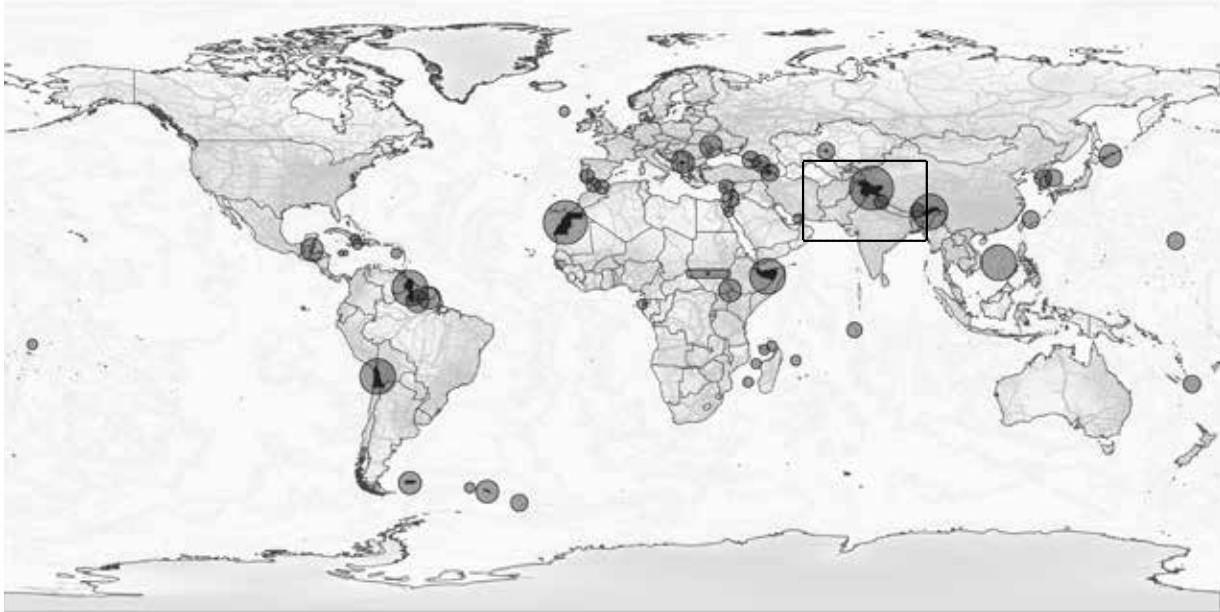


Fig. 15 — World borders with disputed territories highlighted.



Fig. 16 —*The Durand Line and Line of Control now capture the valley and sever the Grand Trunk Road. The province of Kashmir in the Northern valley hosts a variety of territorial disputes between Pakistan, India and North-central Kashmir.*

Border

River as Border

Though rivers are roads, they are also borders. The ancient Indus Valley Civilization thrived and fell mainly because of their reliance on the river as the only major highway. The Iranic people and Indic people, distinguished by ethnic and linguistic anomalies, share their border at the Indus River. The natural division imposed by the river reinforced the separate development of two distinct cultures.

Mountain as Border

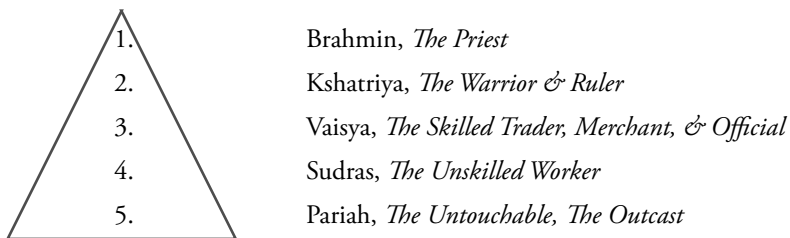
The first political border in the Indus Valley was established in a series of contracts beginning in 1893 between the Afghan Amir and the Government of British India in order to define the extents of their respective territories. The series of agreements specified a boundary to supplement the de facto, yet imprecise boundary of the Kush Mountains. The Durand Line, the border between Afghanistan and Pakistan, is still named after the British signatory of the agreement, foreign secretary Sir Henry Mortimer Durand.

Following partition, Pakistan inherited the Durand Line as its border between Afghanistan. Both nations contest the Durand Agreement, which has no time limit. The border thus remains unsettled. The Pathan culture is stuck straddling this border, and other borders in the heart of the valley.

Borders from the Other

The first fundamental division in the valley was amongst tribes who aligned themselves with the movement of the sun, and those that aligned themselves with the movement of the moon. This is previous to any practise of Sikhism, Islam, Buddhism or even Hinduism, first articulated in early Vedic mythology around 3500 years ago, though likely beginning much earlier. Eventually a caste system emerged in ancient India, imposing further divisions amongst groups based on occupation.

It has been argued that the caste system correlates with the arrival of the so-called Aryan people, although it is more reasonable that the system either emerged following whatever anomalous forces dismantled the earlier Indus Valley Civilization, or was inherited from the previous society itself. Whatever the case, the following class divisions were formalized in ancient India, and exploited by colonial powers in modern India.



Though two families may both be of the Kshatriya, or warrior caste, they could be fundamentally divided along lines of worship between Suryavanshi (Sun People) or Chandravanshi (Moon People).

Line of Control

The partition of British India led to the greatest mass migration in human history. Over fourteen million people crossed the newly established border running through the rivers of Punjab and the Thar desert. Upwards of 300,000 people were killed during migration. Much of the tragedy could have been avoided with proper foresight, and the subsequent development of Pakistan stands as a critical case for understanding the implication of ongoing urban migration.

Today, the Pakistani side of Punjab is now over 97% muslim, with the majority identifying as Sunni; the Indian side of Punjab is over 97% non-muslim, with 60% identifying as Sikh, and 37% as Hindu. Sikhism began after Guru Nanak emerged from the river to proclaim *there is no Hindu, there is no Muslim*, though today a border serves as a filter between the two. Sadly, his message of spiritual unity was lost amongst the forces of the valley, and today the majority of the Sikh culture is caught between the division of an Islamic nation and a Hindu nation.

A Partition Commission and Partition Council was established by the British to deal with the separation of India and Pakistan. Borders were drawn and independence declared within a hasty six weeks, and the so-called Boundary Awards were not publicized until August 17, 1947— two days after colonial independence.³⁰ The public was left in confusion, increasing tensions between the divided groups. To add to the mayhem, the British Indian Army was split haphazardly during the transfer of power, leaving no way of ensuring a safe migration.³¹ Moreover, both the Commission and Council only dealt with British India, so the Princely States, which were independent kingdoms never under British dominion, could not be assigned to India or Pakistan, though they were suspended within newly independent territory. Each state was left to choose between India and Pakistan, or to remain entrenched in dispute.

Lord Mountbatten was able to convince most of the Princely States to accede to either Pakistan or India by August 15, 1947, except for three: Hyderabad, Junagadh, and Kashmir. The only state still contested, Kashmir was under the rule of a Hindu Maharaja but occupied by a majority muslim population. The Maharaja didn't formally accede to India until October 1947, when faced with growing violence from muslim rebellions.³² Indian military forces were immediately brought into Srinagar to push the rebels out of the Vale of Kashmir— a large, fertile bowl amongst the giant mountains. Pakistani forces committed themselves to the defense of what was proclaimed *Azad Kashmir*³³ since the spring of 1948. It is here that Pakistan built its first mega-dam, staking claim on its territory with the construction of Mangla in 1967.



Fig. 17 —An Indian couple migrating during partition. Though this partition image is popularly floated around, it is an alteration of the original image released by Time Magazine.

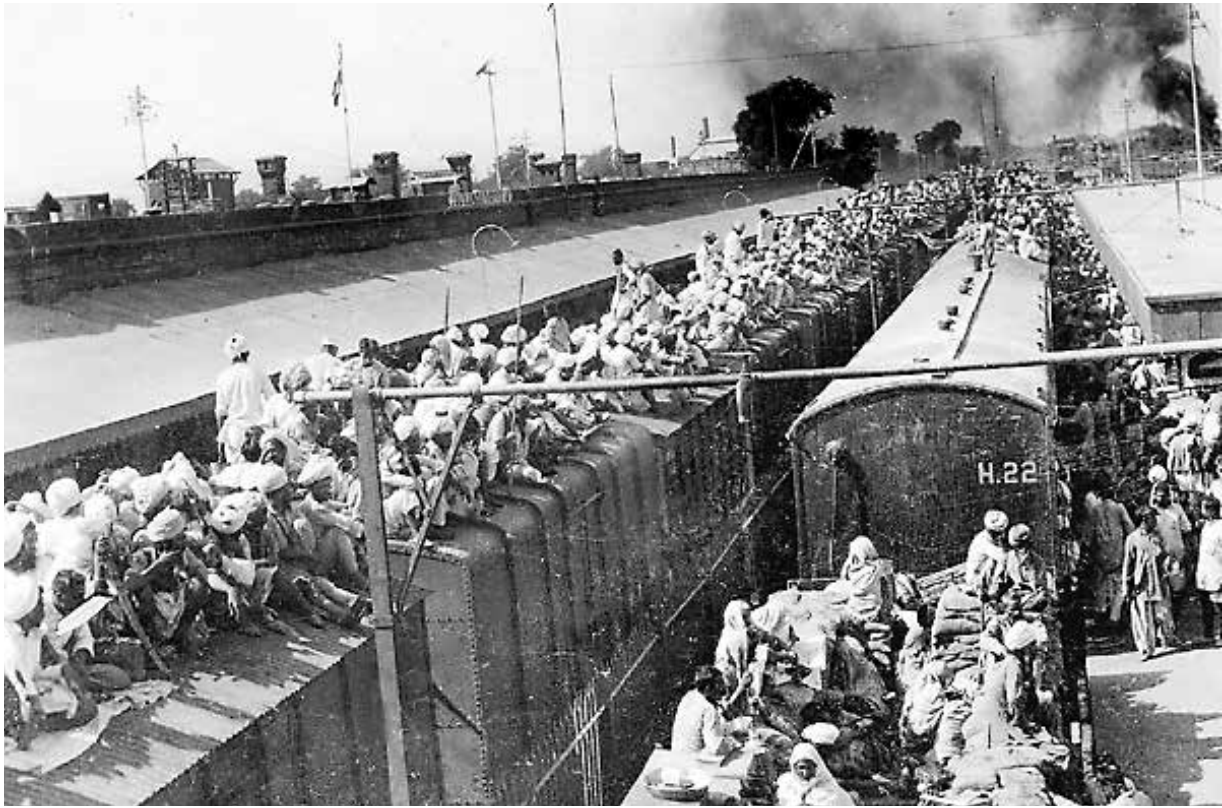


Fig. 18 — *Migration in Lahore, 1947*



Fig. 19 — *Bodies in the Street, Lahore, 1947*

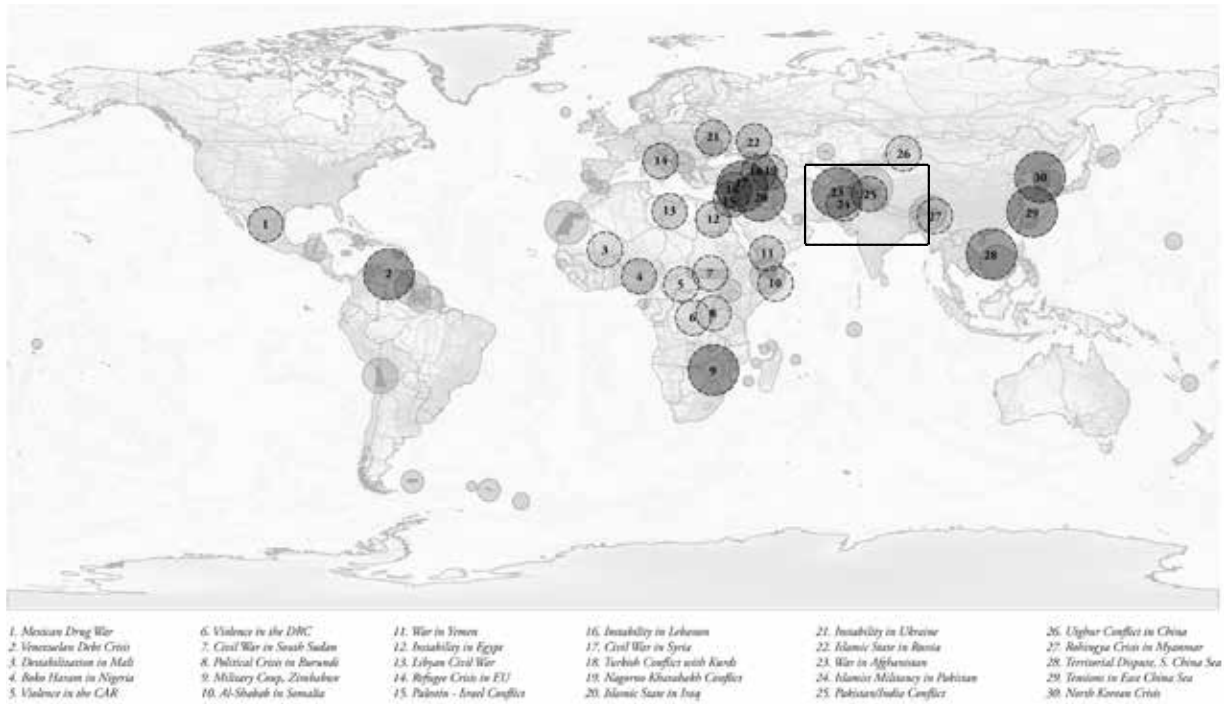


Fig. 20 — *Thirty ongoing conflicts of greatest influence to the interests of the “developed” world*

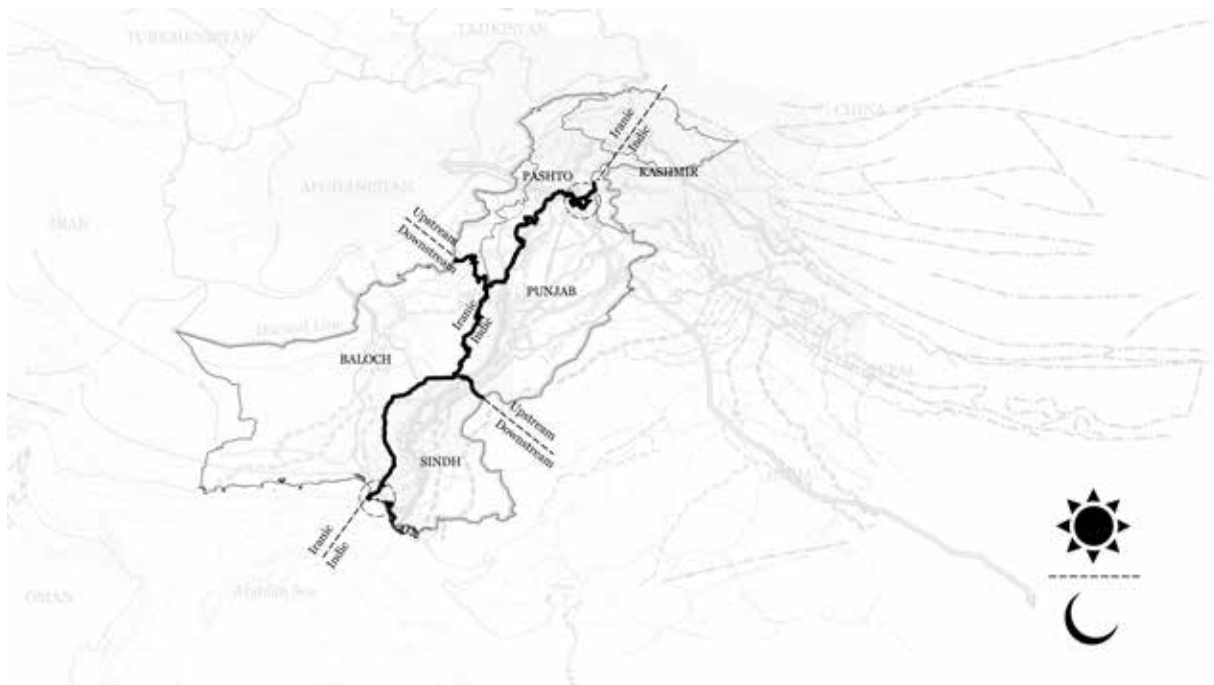


Fig. 21 — Tribal provinces and divisions in the contemporary Indus Valley. The Pathani or Pashto culture of Iranian origin and the Punjabi culture of Indic origin, dominated the ranks of the British Indian Army. Consequently, once Ayub Khan rose to lead the nation, he established the Federal Capital Territory to house the new capital of Islamabad, placed on the intersection of the Grand Trunk Road and the border between these provinces. The Federal Capital Territory houses Pakistan's capital and military headquarters, encircled above.

The Tribes

Tribes are territorial-social collections of humans. As they grow, mix with other tribes, and require more sophisticated forms of governance, tribes become states, and states become nations, but the line of growth is never as simple as it seems.

The two dominant tribal cultures residing in the Grand Trunk corridor as it cuts through the Indus valley, are the Pashto (Psthun, Pathans, or Afghani) of Iranic lineage, and the Punjabis of Indic lineage. The mighty Indus river was the original border between these cultures, who still maintain their regional territories. These two tribes were preferred recruits to the British Indian Army, sharing an ancient history that proclaims their emergence from the warrior caste.

It is often mistakenly claimed that the name Pakistan was derived from the words “Pakh” or pure and “stan” or place of, translating to “Land of the Pure”. In fact, Pakistan first appears during the very early stages of an Islamic National movement in pre-partition India. The first documented explanation of the term is in a pamphlet written by Rahmat Ali Choudhary in 1933 and distributed to his peers at Cambridge University in the United Kingdom. Now deemed the Pakistan Declaration, Choudhary proposes a Muslim nation derived from the primarily muslim provinces in northwestern India. The proposed nation PAKSTAN is a reference to the constituent tribes: Punjab, Afghan* (now known as the Northwest Frontier Province and Federally Administered Tribal Areas), Kashmir, Sindh, and Balochistan.³⁴ The spelling was later changed to Pakistan because it sounded better. Nonetheless, the very name of the nation thus lays claim to Kashmir, a critical piece to the nation’s identity from its very earliest conceptions and the main theatre for Pakistan’s war with India. Confronting internal conflicts amongst Pakistani provinces alongside the external conflict with India, the military regime of Ayub Khan had a vision to unify Pakistan. Influenced by his education in England, Khan saw his new nation connected by the mighty river corridor of the Indus Valley and undertook a massive project to transform it into one grand piece of infrastructure, through which Pakistan would be unified.³⁵

Three of the most significant modern developments in Pakistan’s history are all sited on the historic Pothohar plateau, and all happened under Ayub Khan’s reign as leader; his supporters proudly dubbed it the “decade of development”.³⁶ The three projects are strategically aligned, with the national capital Islamabad flanked on either side by the massive reservoirs of the great mega-dams: Tarbela and Mangla. It is certain that dams have great benefits, but such measurements are generally based on the benchmarks of a modern society. The construction of modern hydro-infrastructure also predicates modern settlements, utilities, and

social structures that further disrupt local cultures. A series of dams, barrages, link canals, and pumping stations control the flow of water between river and streams. A subsequent form of community is established at each of these junctions: the power colony, the military base, the engineering campus, and so on. These various communities function to convert the river into an apparatus, controlled down to single plots of farmed land and centrally administered by WAPDA, the government's hydro authority that scoops up engineers from the nearby military and academic facilities. Instead of unifying the fragmented nation of Pakistan through the transformation of the river into a single piece of infrastructure, the creation of a hydro network heightened the internal cultural divisions within the valley.

The mountain-dwelling Pashtuns were further separated from the valley-dwelling Punjabis. The Punjabis, who benefited most from the construction of dams, were further divided from the Sindhis downstream. Issues of water management became increasingly complex; the Indus River sits at the heart of the conflict between India and Pakistan, but also internal conflicts between distinct cultures within the valley.

إِنَّ اللَّهَ لَا يَغَيِّرُ مَا يُقَدَّرُ حَتَّىٰ يَغْيِرُوا مَا بَانْفُسِهِمْ ط

NOW OR NEVER.

ARE WE TO LIVE OR PERISH FOR EVER?

At this solemn hour in the history of India, when British and Indian statesmen are laying the foundations of a Federal Constitution for that land, we address this appeal to you, in the name of our common heritage, on behalf of our thirty million Muslim brethren who live in PAKSTAN—by which we mean the five Northern units of India, viz.: Punjab, North-West Frontier Province (Afghan Province), Kashmir, Sind and Baluchistan—for your sympathy and support in our grim and fateful struggle against political crucifixion and complete annihilation.

Fig. 22 — *The Pakistan Declaration, distributed at Cambridge University in 1933 by Rahmat Ali Chaudhary*

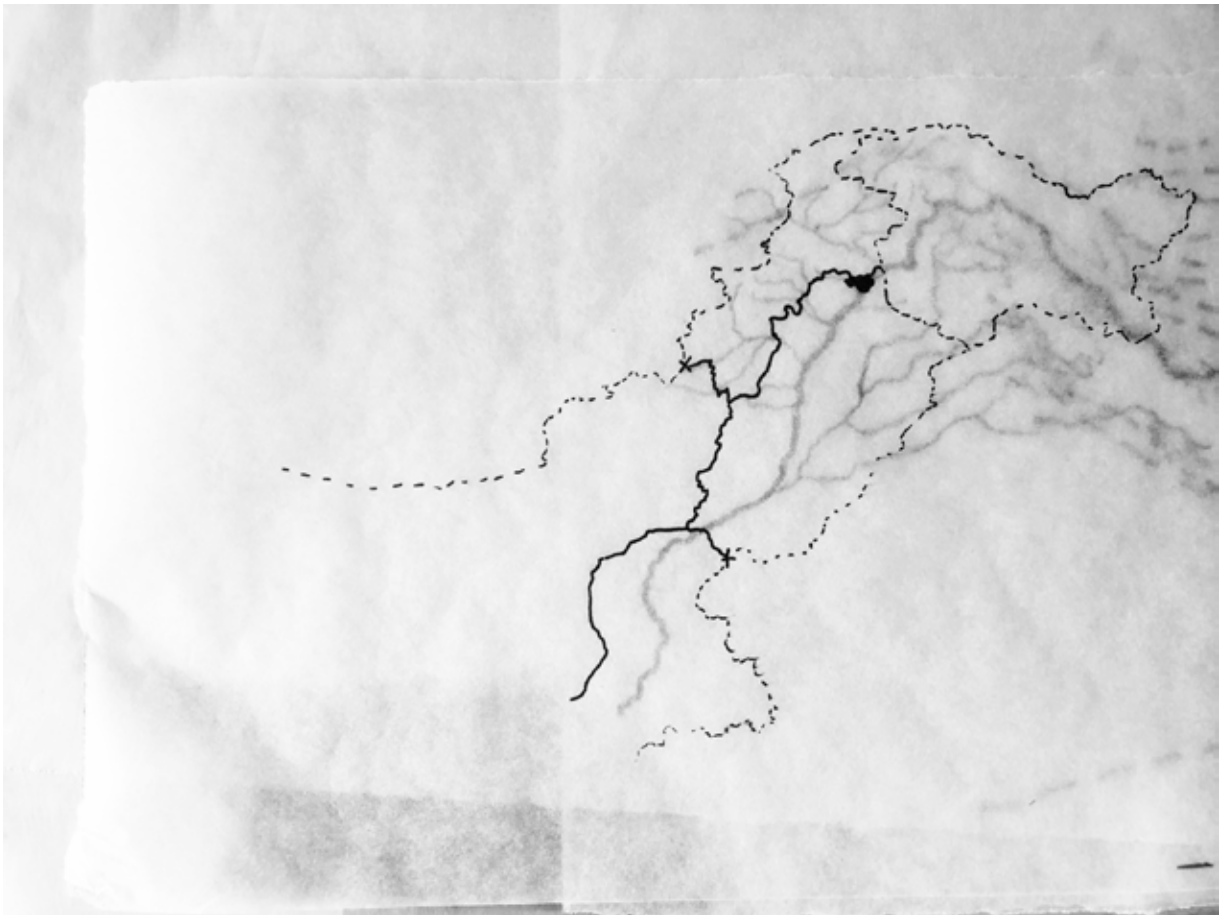


Fig. 23 — Sketch showing tribal borders and the watershed. The black region indicates Islamabad and the so-called Federal Capital Territory, nestling the border between the upstream Pashto and Punjabi tribes which dominated the ranks of the British Indian Army before partition. Notice the proximity of the Federal Capital Territory, and the nation's military headquarters to the conflict region of Kashmir in the Northeast.

The State

The State is defined by an internally diverse, stratified society inhabiting space based on occupation and class rather than personal relationship. The State operates by establishing law through a monopoly of force. Punishment becomes a matter of the State rather than the responsibility of the offender's kin as in simpler societies. As Walter Benjamin demonstrated, the state establishes law through acts of violence. Any act of violence is thus inherently law-making and threatens the state, so the state must maintain a monopoly on violence in order to uphold its law. The economic structure of the state is characterized by reciprocal and redistributive exchange in markets typically controlled by a hereditary class of elites³⁷ in the same stratum from which high officers are recruited. Furthermore, through its monopoly on violence, the state can draft soldiers, wage war, collect tax and exact tribute. Though state-level societies are characterized by violence, a state can be transformed without war.

The mechanisms through which a band becomes a tribe, a tribe becomes a chiefdom, and a chiefdom becomes a state are called prime movers. This research has presented the typical prime movers: population growth, natural disaster, warfare, food and energy production, trade, the cooperation/competition dialectic, environmental shifts, technology and religious systems. Art and architecture have the capacity to be prime movers when they go beyond the existing norms of a culture and State. Prime movers carry the force that changes the course of an entire State or culture.

Treaty

After partition, Pakistan and India were immediately engaged in a conflict centred around the five rivers running through the divided Punjab. Although the dispute is ongoing, the World Bank helped mediate an agreement with the warring nations. The Indus Waters Treaty of 1960 was implemented to clarify the use and ownership of the shared watershed. The negotiation divided the river and its tributaries between the nations, with the eastern tributaries of the Punjab going to India and the western tributaries to Pakistan.³⁹ In 1964 a supplementary economic contract, the Indus Basin Development Fund Agreement, was introduced to ensure the successful establishment of major hydro-infrastructure projects across the Indus Valley. Such treaties further commodified water and provided a means for post-colonial exploitation of distant territories. Article two of the agreement summarizes the funding and loans as follows:⁴⁰

ARTICLE II

Increase in Non-Rupee Contributions

SECTION 2.01. Each of the following Parties undertakes, subject to such parliamentary or congressional action as may be necessary, to make a supplemental contribution to the Fund of the nature and in the amount specified opposite its name below:

	<i>Grant</i>	<i>Contributions Re-payable by Pakistan</i>
Australia	£A 4,669,643	
Canada	Can\$ 16,810,794	
Germany	DM 80,400,000	
New Zealand	£NZ 503,434	
United Kingdom	£ 13,978,571	
United States	US\$ 118,590,000	US\$ 51,220,000
Bank		US\$ 58,540,000

(in various currencies)

The problem of partition was difficult enough when the border cut through the five rivers of Punjab, splitting the waters and its people, but it also split the British Indian irrigation system, without which, “the value of water would have been minimal and the prospect of diverting the flows nonexistent.”⁴¹ The splitting of the river and irrigation system is the cause for the continued conflict between India and Pakistan. As the country and its hydro network was split, both sides of the border experienced issues in food supply and transport. Pakistan’s first course of action was to build link canals in a largely unsuccessful attempt to connect tributaries and balance the flow of water in their half of the inherited system. India, on the other hand, lost significant land area in Punjab and sought to develop replacement land in the Rajasthan desert by extending a new irrigation network downstream.⁴²

The hydro network has become a political-economic apparatus for controlling stores and flows of water, and for claiming territory. The warring nations needed hydro infrastructure in order to ensure livelihood for their citizens and to maintain a supply of their most important resource. The dam would afford Pakistan the ability to store water for irrigation, necessary when its enemy had control upstream. Simultaneously, dams would prevent water from leaving India and into enemy territory. One of the world's most intricate and extensive hydro systems links the various river tributaries to balance the flow of water in accordance with the actions of the river upstream and on the other side of the border. The dam also provided a venue through which large corporations, governments, and other organizations could mobilize an economy of development.

The World Bank gained Pakistan's trust in the Indus Treaty by promising funds and loans for the first mega-dams, handing out large construction contracts to international firms. The debt was passed down to the people, as Taj Boro found when she was relocated to Khalabat following the construction of Tarbela, stating in disbelief "Here everything has to be purchased, even water."⁴³

An early reflection of the Indus Water Treaty best captures the implications of such an agreement:

*The purpose of the Indus Water Treaty of 1960 is not to restore the regional economic unity of the Indus Basin nor even to reintegrate the irrigation system. On the contrary, it envisages the permanent division of both the Basin and the system: the Treaty and the accompanying financial arrangements contemplate the construction of two integrated irrigation systems where one previously existed. In so doing, they confirm the economic division between Pakistan and India, and the rupture of the infrastructure of communications, transportation, trade, and finance. By the time the works of the Indus Basin Project in West Pakistan and the initial structure of the Bhakra-Beas-Rajasthan Project in India are completed, around 1980, the partition of the Indus Basin will be impressed upon the landscape in concrete, crushed rock, rolled earth, and brick canal linings— structures as indelible as the Great Wall of China. It may be admitted that this partition of the Basin, like the partition of the subcontinent itself, is economically costly and theoretically indefensible, but it is here to stay...*⁴⁴

The Dam

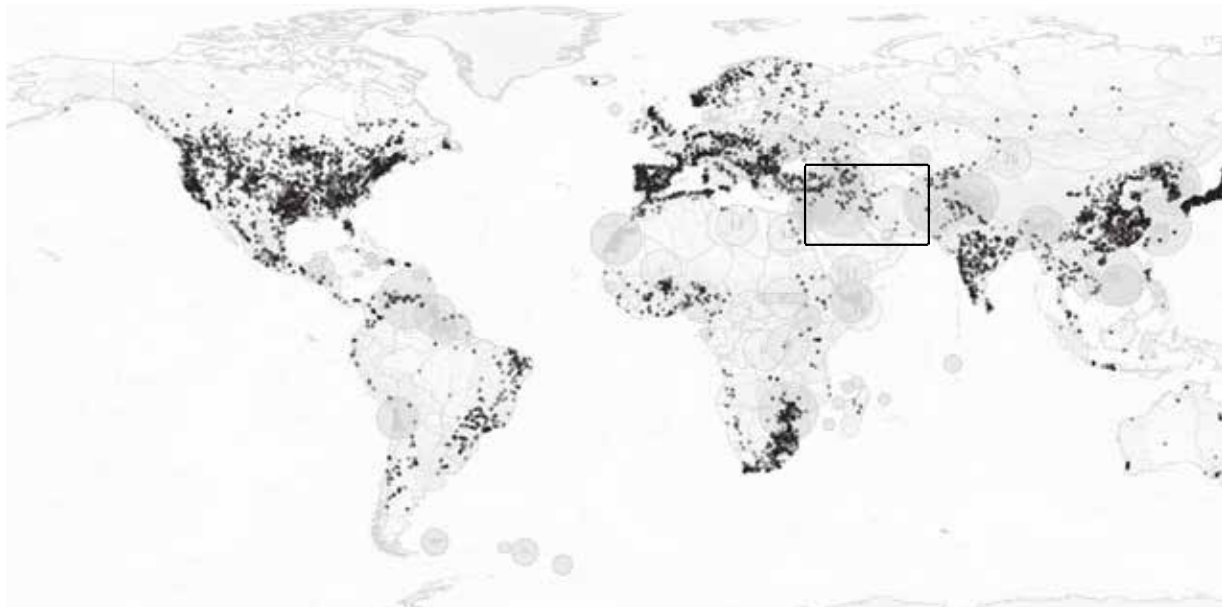


Fig. 24 —*Dams of heights greater than 15 meters*



LEGEND

- ⊕ Tarbela (West) & Mangla (East)
- Major Headworks
- Band
- + Major Dam
- Major Barrage

Fig. 25 — Dams, headworks, and barrages on the Indus. The Tarbela and Mangla Dam sites flank either side of the Federal Capital Territory on the Grand Trunk Road.

The Dam

The Forces that Destroy a Dam

The following three stories come from outside the Indus Valley, though these examples are important to consider as we look into the forces behind the construction of Pakistan's first mega-dams.

(1) Physiogenic

Storms in Mesopotamia usually come from the Mediterranean Sea, through the mountains of Syria, Turkey and Iran, and into the Persian Gulf. As the rivers flow down the mountains, the terrain becomes nearly flat in middle and lower Mesopotamia. Early civilizations settled here due to the fertile land that experienced periodic flooding and rich sediment deposited through the rivers. Recent analysis of sediment deposits indicates a cataclysmic flood having occurred nearly 5000 years ago. A storm surge would breach the river's naturally developed levees upon which most of the ancient cities had developed.

(2) Anthropogenic

Under the orders of commander Chiang Kai-shek, the Chinese Nationalist armies compromised the Yellow River's dikes at Huayuankou, Henan in a desperate attempt to block the advancing Japanese military. Considered the single most environmentally damaging act of warfare in history, the military's actions led to consistent flood issues until the Yellow River's course was fixed in 1947. In the meantime, the flood waters had inundated vast areas of Henan, Anhui, and Jiangsu provinces, spreading 16 kilometers per day, displacing over four million (20% of the nation's population at the time), and killing up to one million Chinese citizens.

(3) Mixed

The original Banqiao Dam was built on the Yellow River and completed in 1952, after just one year of construction. In 1954, three meters were added to the dam to extend its reservoir and to help deal with persistent flooding; and cracks in the dam walls and sluice gates were repaired to make the dam “unbreakable”. Hydrologist Chen Xing criticized the dam policy, warning that overbuilding dams and reservoirs would raise the water table and lead to disaster. He was subsequently removed from the project. Though twelve sluice gates had been designed, only five were constructed, limiting the dam’s capacity to control flow.

Typhoon Nina hit on August 8, 1975, unloading more rain in one day than China’s annual rainfall. The sluice gates were ordered to remain closed to protect areas downstream of Banqiao. Soon after, communication lines failed, the Shimantan Dam thirty kilometers upstream was breached, evacuation orders couldn’t be delivered, and Banqiao was overtopped by about one foot. Once the sluice gates were opened they were already partially clogged by silt, compounding the problems. Banqiao fell that day, along with 62 other dams. In all, eleven million people were displaced, and over 230 000 dead. The collapse of each dam unleashes the fury of a flood.

Between 1950 and the failure of Banqiao, 87 000 reservoirs were built in China alone. The current plan is to increase the nation’s hydro-electric power by 50%.

The Forces that Initiate a Dam

(1) Pre-Urban Force

No structure grips the ground as closely as a Dam. It holds on at its base and its flanks ... in other words the dam is made up of two parts; the artificial dam, man-made and the natural dam which continues it, surrounds it, and on which it is founded. The more important of the two is the latter.⁴⁵

Our first encounters with the dam were when a tree had fallen to block the stream, when a wall of ice formed along its path, when a landslide buried even the river, or when the earthquake took it away. There are diverse and unexpected examples of damming throughout the Indus Valley's long history. The earliest human-made dam in the valley was found at a site occupied by the ancient Amri people, pre-dating the Indus Valley Civilization.⁴⁶ The river's outlet was through a natural gap in landforms which the Amri sealed to form a reservoir. The twenty-five foot thick stone block dam enabled them to divert water into irrigation channels for improved cultivation across the silt plain.⁴⁷

The construction of modern mega-dams across the developing world have become territorial-social experiments. Addressing the Indian Irrigation Commission in 1902, Colonel S. L. Jacob wrote "irrigation is a new and difficult science, and the wonder is, not that mistakes have been made, but that they have not been far more numerous and more serious..."⁴⁸

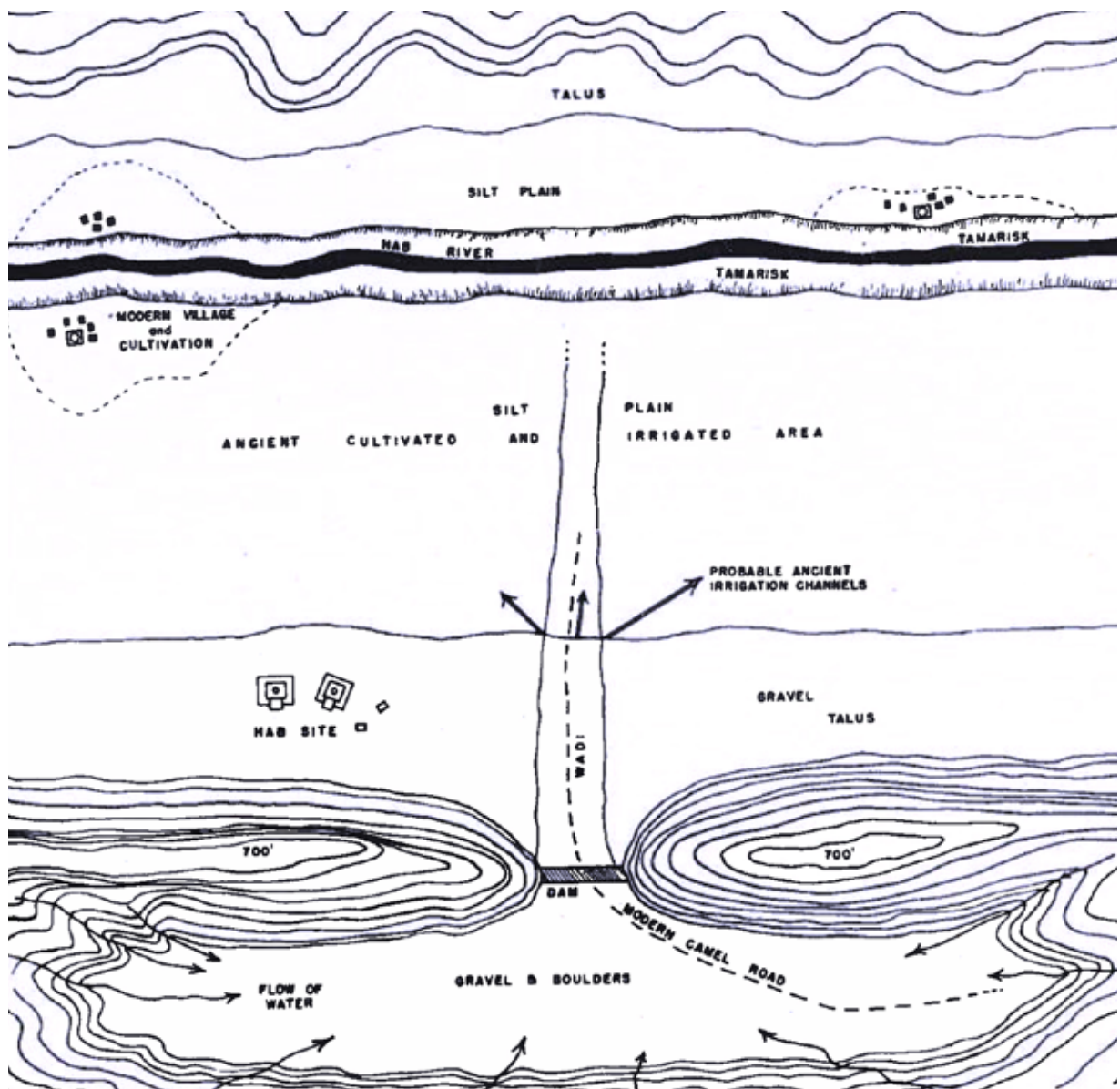


Fig. 26 — Earliest known dam site in the Indus Valley, constructed by the ancient Amri people at Kot Diji, shortly before the Indus Civilization inhabiting nearby Mohenjo Daro

(2) Force of Territory

Today dams transform the territories they inhabit more dramatically than perhaps any other human structure. The primary requirement for a dam site is to find an area that provides natural abutments, hence why the largest dams are located in deep gorges. A great bonus is the presence of a subsidiary valley to serve as a natural spillway, as was the case at Tarbela which saved major construction costs.⁴⁹ Alternatively, the situation of a dam can be primarily for political purposes rather than economic as in the case of Mangla, strategically sited in Pakistani-held 'free' Kashmir. This was Pakistan's first major dam, and effectively established the nation's domain over a piece of the disputed territory.

After the construction of Pakistan's first major dam at Mangla, 110,000 villagers were involuntarily resettled.⁵⁰ Over 280 villages and the towns of Mirpur and Dadyal were submerged beneath the reservoir, without an adequate plan for resettlement. The British government offered work permits in lieu of land, for those not properly resettled. Since immigration to the United Kingdom was restricted following the 1962 Commonwealth Immigrations Act, many of the displaced opted for the work permit. Today over 60% of Britain's Pakistani diaspora originates from the submerged Mirpur-Dadyal region of Azad Kashmir.⁵¹

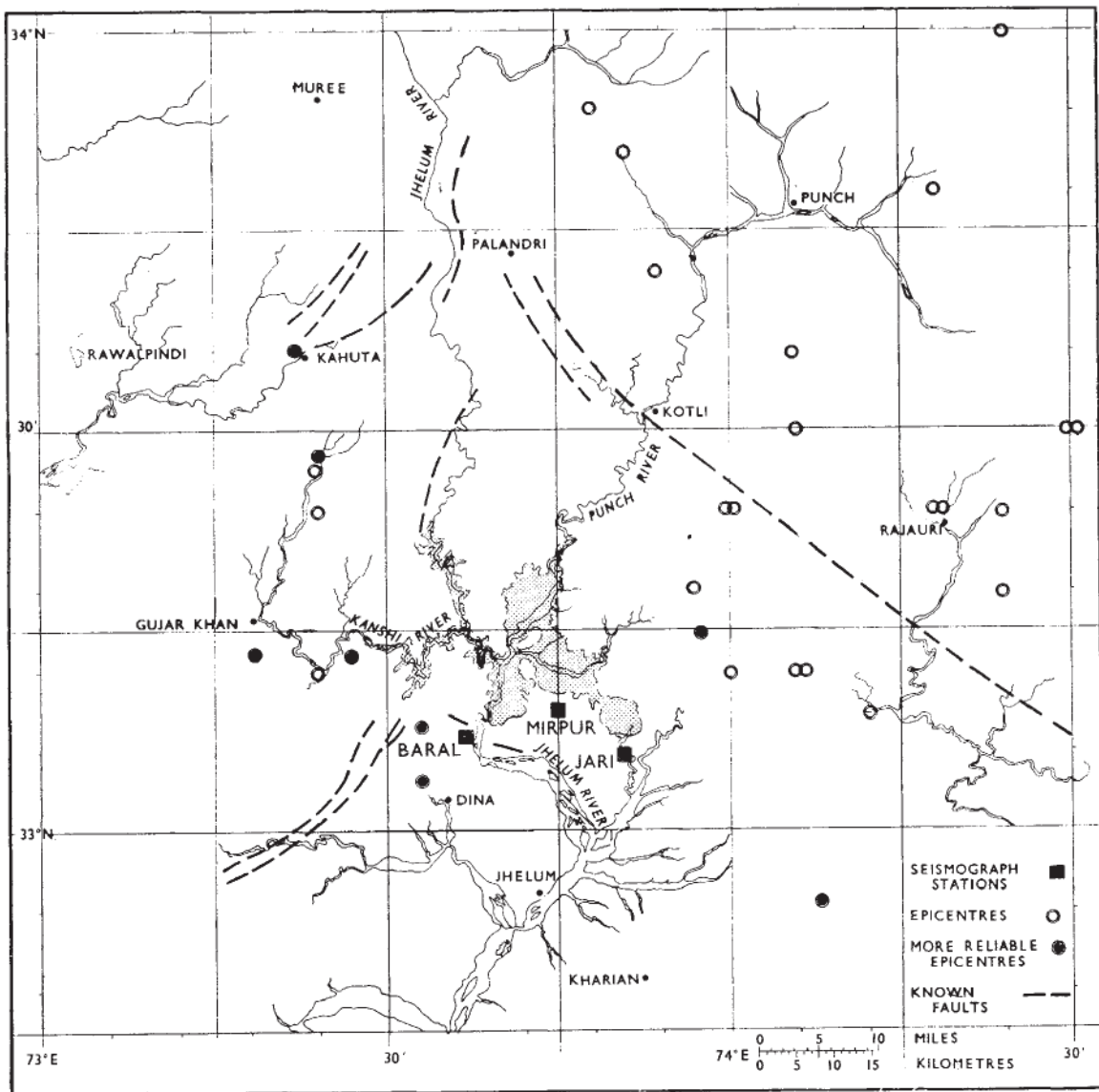


Fig. 27 — Seismographic map of the Mangla Dam Site, showing faultlines and major earthquake epi-centres. The dam site was chosen primarily to establish a Pakistani front in Kashmir.

(3) Force of Development

You will probably have heard a report that was prevalent here about six months ago of the course of the Indus in mountains above Attock having been interrupted. Little credit was attached to this report at the time ... Within the last few days, we have had a fearful corroboration of the course of the river having been interrupted in the devastation it caused, then again, with sudden violence, opening the road for itself. All the country...within ten miles of Peshawar itself, has been overflowed. Some twenty villages as far as we yet know, together with four towns...have been completely swept away by the deluge, and the loss in human life has been frightful. All who stopped to attempt to save their property and in some cases, their families, fell sacrifice.⁵²

The crossing of the Grand Trunk and the Indus River is at Tarbela. Following an earthquake in June 1841, landslides and mud extrusions created a 300 meter dam across the Indus River at Tarbela, killing around 500 Sikh soldiers camping at the riverbank and changing the course of their battle with the British.⁵³ The Indus River Flood of 1841 is the greatest flood in recorded history in terms of amount of water discharged, resulting in extreme flooding throughout the valley. Shortly thereafter, the site was surveyed as a potential dam site by the British Indian Army.

Tarbela is currently the world's largest earth-filled dam, standing at the breakthrough of the Indus river from its encasement in the Karakoram-Himalayan gutter. Running between the world's two greatest mountain ranges, Tarbela exists as the river's moment of expanse, and the area at which the largest river sediment is deposited. The dam's foundations lie in an area with abundant earthquakes, built atop the river's largest aggregate. Since it would not be possible to properly anchor the dam, an impermeable "blanket"⁵⁴ runs under its footing and for another three kilometres upstream along the bottom of the riverbed to prevent leaking at the base. The dam collects virtually all of the inflowing sediment, the large aggregate poses many logistical issues, proving too technical and costly to be removed from the meandering reservoir, which loses capacity annually as a result. There was a 30% reduction in the reservoir's capacity observed by 2009.⁵⁵ Under the continued development of Tarbela, now on the fifth phase of construction, the reservoir's extents will inevitably creep into the vulnerable coastal settlements. The dam affectees and refugees relocated here will be the first to flood, stuck in a cycle of displacement, migration, and resettlement.

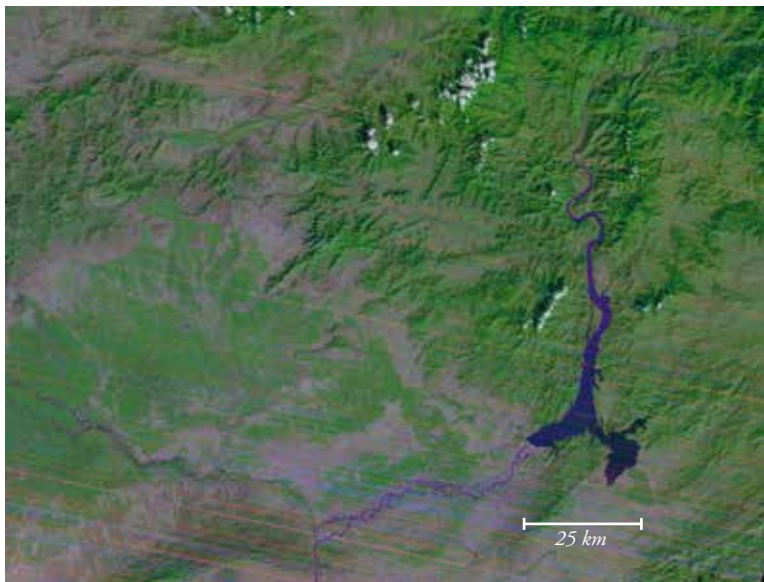


Fig. 28, Fig. 29 — Satellite images of the Potohar Plateau before (1969) and after the construction of the Tarbela dam and reservoir (1979).

The Dam as Anomaly

We often look at a dam's function as the reason for its existence. We build dams to produce power, irrigate, mitigate floods, control the flow of water, etc. What if we instead saw those functions as the by-product of an implicit process? When the Indian National movement began, their first goal was not to liberate Indians from the British, but rather to rescue the British from the concept of modernity.⁵⁶ It was this overbearing obsession that manifested in industrialization, modernism and development that drove the ambitions of the colonial powers. After the partition, India became focused on the immediate border conflict with Pakistan, and both parties found themselves forced to invest in major hydro-infrastructure. The same ideologies they feared were intrinsic to their nationhood. With the line-of-control between the two nations cutting through the Indus watershed and the British Indian irrigation system, the construction of new water infrastructure became a modern necessity that the western nations could provide and both India and Pakistan needed amidst their newfound water conflict. The construction of these infrastructures would provide security for the newly formed countries, and help establish an economy of development.

The world bank appointed Sir Angus Paton's firm as supervising consultant for the entire Indus Basin scheme. Paton previously supervised the controversial Aswan Dam project in Egypt.⁵⁷ In his lecture for the Royal Society, Paton never addressed the outcome of the dam for those displaced, remaining purely focused on the novel material advancements at Mangla, where for the first time sand produced during sandstone excavations was used for inner portions of the dam's shell.⁵⁸ He spoke of the "development of improved materials methods",⁵⁹ in reference to urgent repairs on one of the Tarbela's abutments, where 344,000 cubic meters of river gravel, sand and cement were placed "at a rate four times greater than normal methods".⁶⁰ Paton also mentions Tarbela's role in "developments in embankment construction",⁶¹ noting the dam's sloping core mixture of silt, for its low permeability, and coarse mix for its higher shear strength. Though we gain material advancements, these experiments radically alter all life in the watershed. It is thus crucial to thoroughly question the functions of a space before fulfilling its program.



Fig. 30 — *An auxillary spillway at Tarbela.*

The City

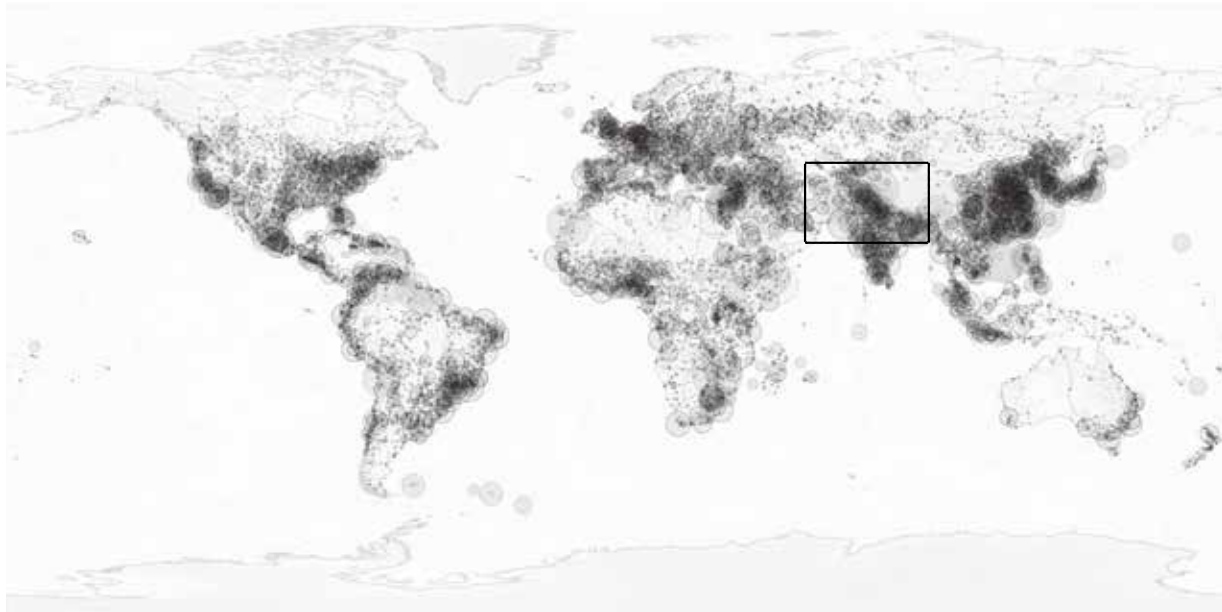


Fig. 31 — *World cities shown by population size.*



Fig. 32 — *Cities of the valley. Extent of the ancient Indus Valley civilization is hatched, highlighting ancient sites and cities along the Grand Trunk Road.*

The City

Planned Resettlement

*The water was coming up so fast that we could not lift all of the most necessary of our belongings...People were trying to load their cattle onto the trucks...we could take only what was most important and left the rest ... submerging in the water...I was totally baffled...I couldn't understand whether it was really waters coming up or just a dream...on the roof of the mosque were dogs, cats, snakes and other animals ... doing no harm ... Every creature was baffled.*⁶²

Tarbela Dam's completion was a milestone for the Pakistani government, but it left the nation with a large number of low-income villagers that required resettlement. Only two-thirds of the affected population could prove ownership of enough land to qualify for replacement land in Punjab and Sindh, hundreds of kilometers away. The remaining landowners were eligible to receive cash compensation at 1968 values once the dam was complete in 1976**.⁶³ Five modern townships were constructed for resettling the Tarbela Dam affectees: Khalabat, Kangra Colony, New Darband Colony, Pehur Hamlet, and Ghazi Hamlet. Like the great migration during the partition and the Mangla dam before it, the Tarbela resettlement was a poorly planned and executed response to mass displacement. The Sindhi government downstream refused to provide more than half of the allocated land.⁶⁴ Many villagers were overlooked for not being landowners, and were therefore never resettled or given compensation. Many poorer families lived in gharran houses, built on land owned by wealthier Pathan families. Those living in gharran houses were never properly compensated, following the construction of the dam.⁶⁵

The dam wiped out the livelihood of the working generation, leaving them to adjust to a vastly new situation for which they were not equipped. The new land given as compensation had higher cultivation costs as well as different soil and climate conditions, leaving many farmers to hunt for work in the new township of Khalabat. Similarly, fishermen and others depending on the river had to find alternative options in the new city. Simultaneously, the youth of the affected areas faced their own issues. Almost half of the displaced population was under twenty years of age.⁶⁶ They experienced a new life that their elders had never seen, the generations were divided: "...the dam has scattered us...Families have disintegrated. And now our children, because of the distance, do not recognize their nearest and dearest. It is the greatest of the losses we have suffered."⁶⁷ Unemployment and drug abuse (typically heroine), were the major problems the resettled youth faced. The

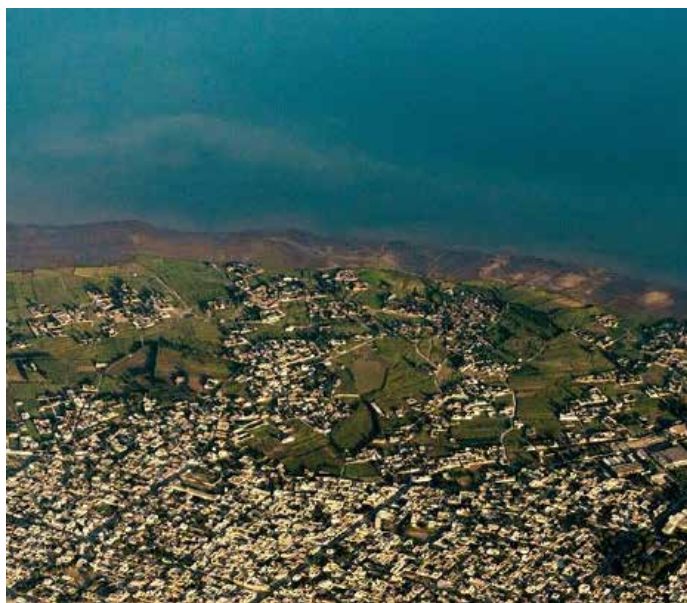


Fig. 33 — *View from Tarbela Reservoir*

Fig. 34 — *Aerial View of Khalabat Township at the edge of Tarbela Reservoir.*

same opium that plagued the younger generation was once a great source of wealth for the region; prior to the construction of the dam, opium was produced in many of the area's villages before being loaded on camels for sale in the town of Tarbela. It provided a decent income for the poor even after land-owners took their two-third share of the yield.⁶⁸

The village relationships were disrupted in the act of dividing resettlement without thought of existing communal relationships, and in the inequality of the entire resettlement plan. Wealthier, land-owning families were compensated well, often bribing government officials for higher property valuations, and could afford the ability to move their belongings to their new homes. Many of the poor could not and were angry to find little help from their former landlords. Everybody was struggling to make sense of their situation; Nazeer, a man displaced at Tarbela told researchers "We were so seriously mired in our own problems that we didn't see how others behaved towards us...who was ruined and who survived. Everyone was busy saving himself."⁶⁹ In the midst of catastrophe, only the deepest social bonds remained.

The arrangements between the wealthy Pathan families and the landless represented a strong bond that disappeared following displacement. It was customary to provide land for the poor to construct a home and employment to keep them fed. Sometimes, a house was even built for them by their hosts, but after the dam that all disappeared, and the government's modern projects failed to properly provide the stability of the lost village.⁷⁰ Most of those displaced by Tarbela's reservoir were resettled in the newly built township of Khalabat, a five minute walk from the banks of the reservoir, amongst other small villages and Afghan refugee camps. These settlements will be inundated in a matter of time, as sediment from the mountains that continues to be trapped in the reservoir will begin to stretch its surface further up the mountainsides.

Though the town was designed to give the displaced villagers a newfound modern urban life with electricity, by 2015 a financial crisis in the municipality placed it under threat of losing electricity and water for failure to meet payments.⁷¹ Those displaced by the dam could not afford to pay for the services it generates. Stories like these are usually, at best, reduced to a data entry on rural-urban migration or urban population growth in developing countries. Otherwise they are lost under shadows of the dam and reservoir.

We feel like guests here, who are bound to return home after a few days. ⁷²

*We had our own culture and customs. We had a set way of life. All that has been disturbed...I still dream of those orchards, streets and fields. We are living in this township for more than 27 years now ...we will always remember that place.*⁷³

[politicians] fail to realize that to a traditional people land is not real estate or a space over which people are moved like objects. Land is memory, a map of one's world, a way of life for which people are willing to die. ⁷⁴

Our men would go to the river to catch fish. We would also catch the wood floating downriver. It was used as fuel...Our village was in a beautiful location, with the river on one side and the mountain on the other...Boats were used to travel between villages...there is no such charm in life now. ⁷⁵



Fig. 35 — New City, a resettlement site for those displaced by the construction of Mangla.

The Big City

Every region has its big city, which for whatever reason maintains a force of attraction. In the case of the Indus Valley, the greatest population density is at the estuary, where the Indus River meets the Arabian Sea. The valley's most populated city, Karachi, stands. Following the partition of British India, the majority of the Muslim migrants headed for Karachi, at the time the nation's de facto capital. Similarly, many of the landless and landlords displaced at Tarbela headed for Karachi, despite it being the furthest major city from their submerged village. Karachi continues to grow due to rural-urban migration, especially as the Sindh province battles against the effects of major hydro-infrastructure work upstream.⁷⁶ The city now stands at an incredibly dense 23,400 people per square kilometer: the third densest mega-city globally, more than 5 times as dense as Toronto.



Fig. 36 — *The Karachi Stock Exchange in 1958.*

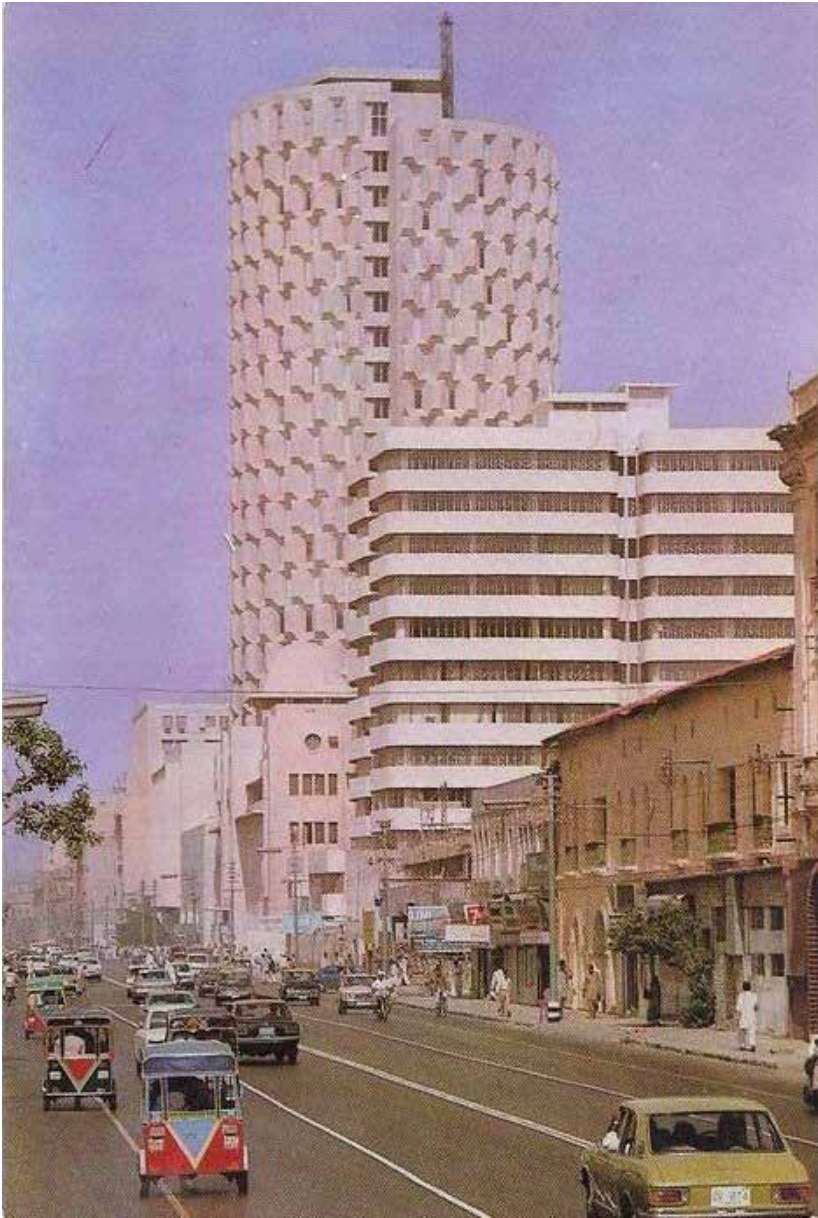


Fig. 37 — The Habib Bank Plaza in Karachi's financial center in the 1970s was an architectural icon of the time, and the tallest building in Asia when it was built.

The Mythical City

Taxila refers to several archaeological sites which indicate distinct cultures now muddled under a shared name. The ruins were established as a modern archaeological site under the influence of Sir John Marshall, a general of the British Army who first visited the site as a young man.

At the site locally known as “Sarai Khola”,⁷⁷ loosely translated as Court of Ideas, a reference to this spot’s claim as the world’s earliest university,⁷⁸ Marshall identified the ruins as Taxila, a city he knew well from Alexander the Great’s journey into India:

...For it was in Taxila that Alexander the Great halted and refreshed his army...; and it was here that Greek kings afterwards ruled for a hundred years and left behind them an enduring legacy of Hellenistic culture...⁷⁹

The local story claims that upon hearing of Alexander’s imminent arrival from across the Indus River, the King of Taxila extended a bridge of boats inviting Alexander and his army to an abundant feast and offerings.⁸⁰ Alexander, unable to be outdone, returned the kindness twofold. The immanent battle was diffused by a gesture of kindness.

Marshall described the location of Taxila relative to the train lines from Rawalpindi, at a junction between the North-Western Railway and a branch line from the Haripur valley.⁸¹ Taxila was first settled because of this strategic location, for the crossing existed long before the railroads, whose lines were laid according to existing geographic routes. In ancient times, three great trade routes converged at Taxila: the ‘royal highway’ from the east, a route into western Asia, and another through the Haripur and Srinagar Valleys, past Kashmir and into Central Asia. Marshall claimed it was primarily the disruption of these trade routes that marked the demise of the great city of Taxila,⁸² although the city was notably attacked by the Huns and Timurids amongst others. As the city disintegrated, the local population migrated and reverted to rural settlements, and eventually a new culture would inhabit the ruined city.

According to ancient records, Taxila was a three-day march from the Indus, leading many to conclude that the city would have likely been built after trade highways were well established. Due to its location at an important junction, Taxila’s historical understanding is unsettled. Depending on one’s position, elements of the city could easily be misinterpreted as being derived from one

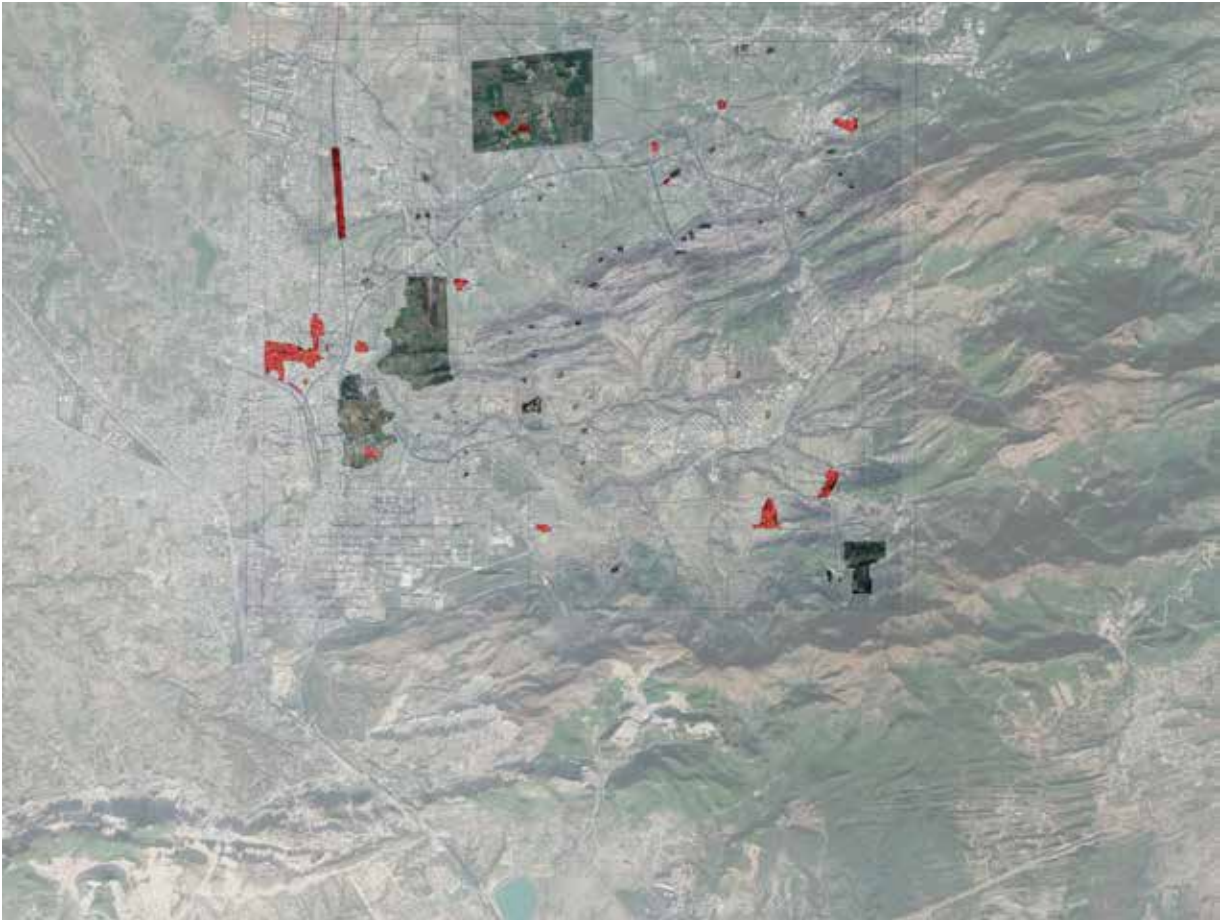


Fig. 38 — *Aerial image showing the various archaeological sites around Taxila.*

culture or another. For example, the practise of exposing the dead to vultures apparently came from Iran,⁸³ although it could also confirm its identity as a mythical Buddhist city.⁸⁴ The city's grid plan could imply Harappan inheritance, or a strong Hellenistic influence. Furthermore, one ruin in particular, Sirkap, references a beheading alluding to the Buddhist myth of a city along the Himalayas where a monk severed his own head. The city is split into blocks along a main north-south axis and several smaller east-west intersections, with a stupa built at the center of every block. The form seems to be a hybrid between Hellenistic and Buddhist spatial sensibilities.

The earliest coins found at the site correlate to a Persian standard, and place Taxila as a frontier post in the Achaemenid Empire,⁸⁵ under whose influence the city was likely built into a fortified settlement at Bhir Mound to maintain power. Simultaneously, Taxila is known as an ancient Buddhist centre of learning, and possesses the oldest recognized university in India if not the world, existing from at least 600 BCE until 250 AD.⁸⁶ The school hosted a broad curriculum, and attracted students from far off lands along the extensive trade routes. The Kharosthi script⁸⁷ is believed to have been developed at Taxila to meet the demands of trade and administration.⁸⁸ The university seems to be from an earlier time, situated outside what Marshall considered the 'Hellenistic' Taxila. Just like the block's relationship to the stupa, the university concentrates at its centre, in which a great stupa stands surrounded by a ring of small dormitories for students. This form is a clear precedent, but presents a very different experience to later dormitories. Due to the converging factors of its location, the university's emphasis on foreign travel, and the attendance of students from Asia Minor, Taxila may have been the first formal place where ideas could be exchanged between East and West.⁸⁹ Despite there being three unique archaeological sites which compose our picture of ancient Taxila, many parts of the story are left to interpretation, as in the scattered ruins of Harappa, the flooded ruins of Tarbela, and the buried ruins of Mohenjo Daro.

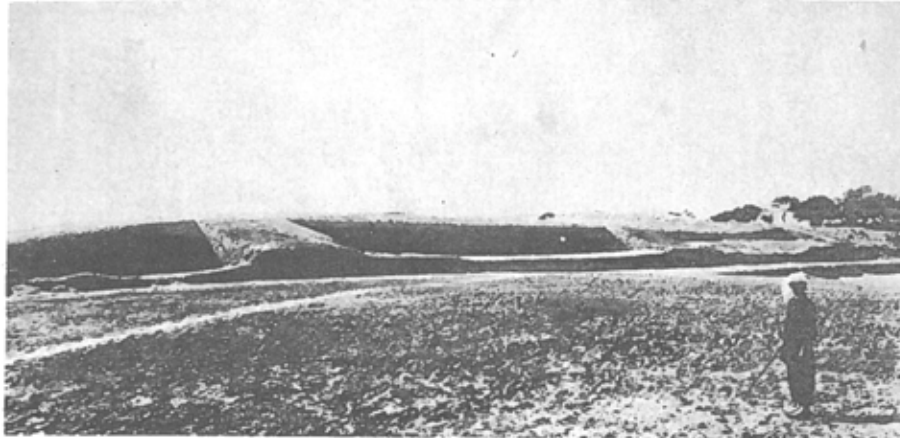


Fig. 39 — *Views of Sirkap at Taxila before full excavation*



Fig. 40— *A latrine well reinforced by a stack of clay vessels.*



Fig. 41— *A latrine well reinforced by a stack of clay rings.*

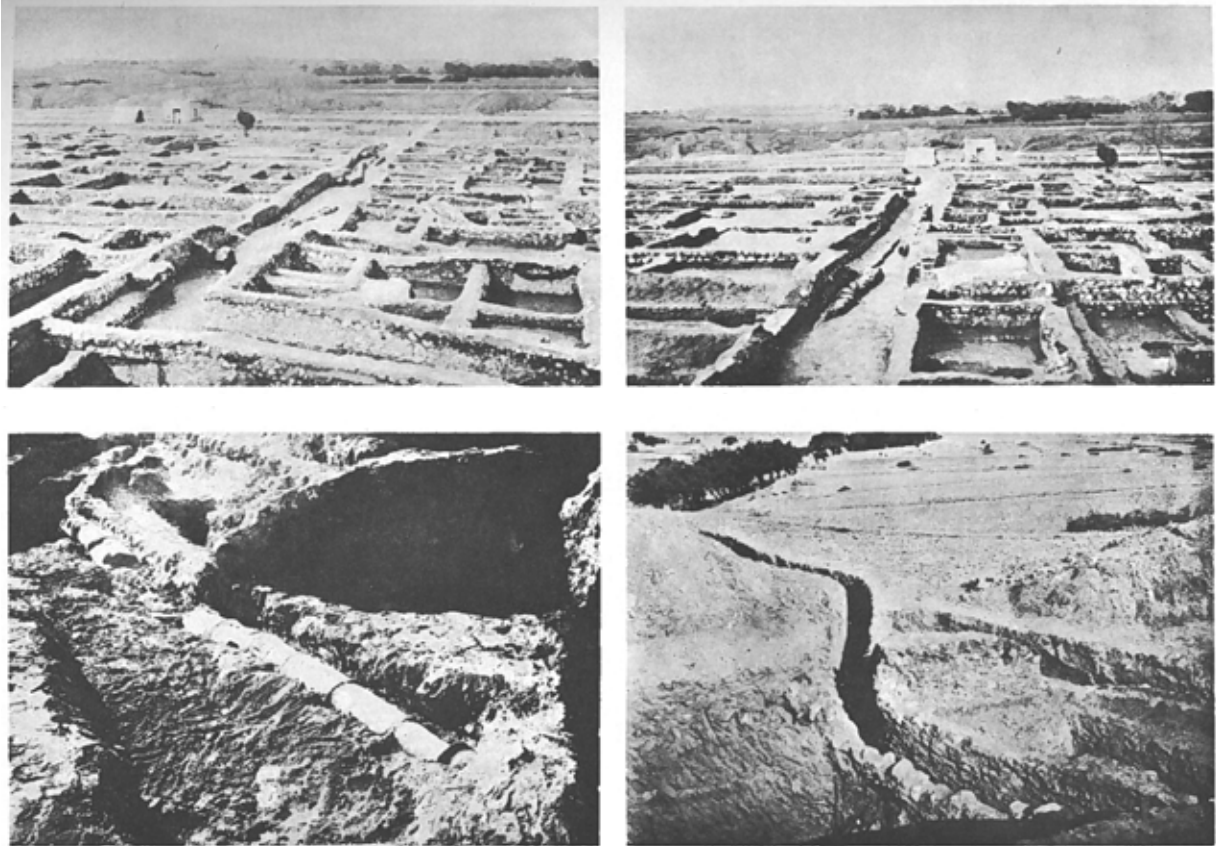


Fig. 42 — *Views showing the urban planning and water drains of the ancient city*



Fig. 43 — Aerial View of Sarai Khola, addressed by various names and interpreted through various historical and mythical narratives, constitutes one of the sites linked to the ancient city of Taxila.

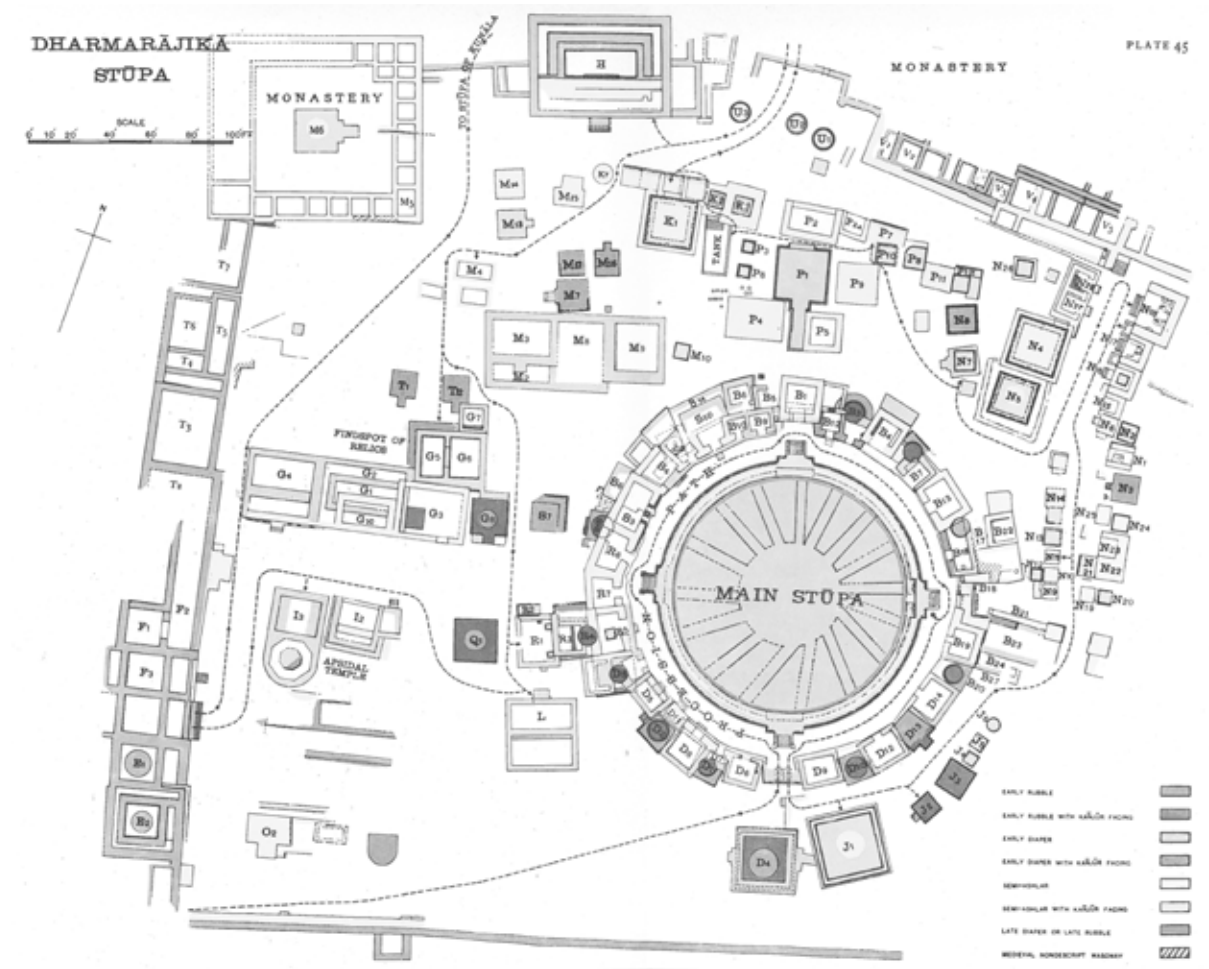


Fig. 44 — Plan of Sarai Khola showing the main stupa and parts of the monastery to the north east. The two buildings indicate different periods and an evolution in the ritualistic practise of the people here.

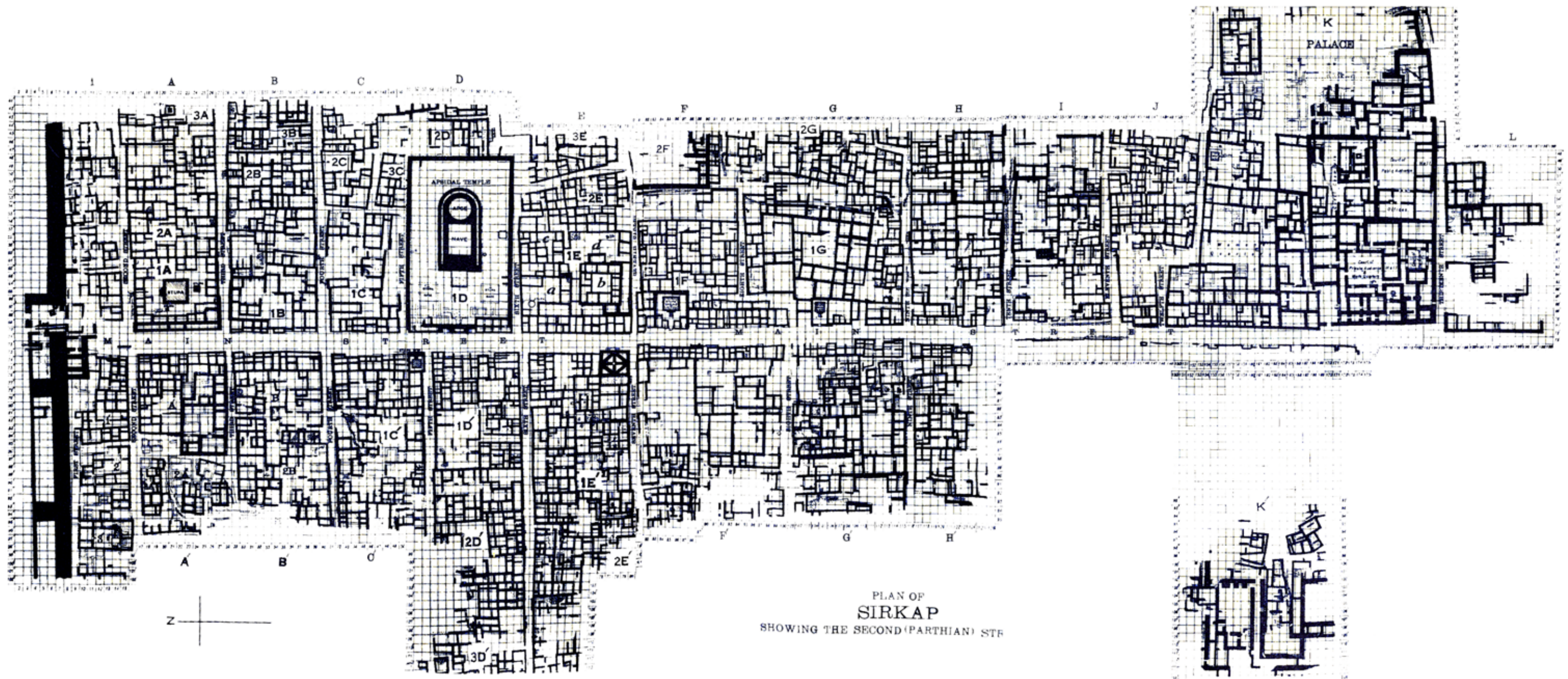


Fig. 45 — Extents of the excavation at Sirkap, one of three main archaeological sites at Taxila. The plan of the city is a curious hybrid between Greek and Buddhist design principles. The north-south axis is reinforced by the city's main street, off which smaller side streets branch to form a clean grid. A large stupa occupies a central block of the city, and smaller stupas sit at the heart of every other block, reinforcing the same principle across scales.

The Capital City

Ayub Khan quickly became Pakistan's second president following a military coup d'état and initiated plans for the construction of a new capital, away from Karachi and its politicians. The mass migration and rise of unplanned settlements did not suit military rule, and Khan wanted to be closer to the military headquarters in Rawalpindi. Constantin A. Doxiadis, a renowned urban researcher and the former Chief Planner of Athens, had already been travelling around Pakistan as a researcher when rumours of a new capital began spreading in 1954. Doxiadis was a Housing and Settlement consultant with an advisory group from Harvard funded by the Ford Foundation to draft the nation's first five year masterplan. Doxiadis leveraged this relationship to convince Khan of hiring him as the designer for his new capital, incentivizing the President by billing his fees as part of the research mission with the Ford Foundation.

In an attempt to move urban design from an art to a science, Doxiadis used the term *ekistics*⁹⁰ for the scientific study of human settlement. Islamabad would be full-scale test of his theories. Blocks and floorplans were neatly organized in hierarchies denoting political rank and income level. Arranged in sectors, each sector was further stratified into finer income and class-based social-spatial distinctions. Doxiadis and his team settled on a strategy of "gradual integration" for the classes, whose wide income gap posed planning challenges.⁹¹ A consistent sector design ensured that communities were equal in some sense. All housing and neighbourhoods also shared a similar orthogonal design—the main difference being that higher ranking members of society got more of everything. For a "scientific" approach to the problem of settlement, Doxiadis' work in Islamabad is a failed experiment in several aspects.

The hard, impervious surfaces of the modern city increase flood vulnerability by interfering with the site's natural hydrology. Islamabad has exacerbated flooding issues in Rawalpindi, as land that would naturally serve as a sink for flood water and its deposits has been replaced with large boulevards that divert the water into the downstream city.⁹² Despite his appeal to science, Doxiadis, like Ayub Khan, was mostly focused on history.

Doxiadis took credit for locating Islamabad on the Potohar Plateau, a repose along the historic Grand Trunk Road situated a stone's throw from the ancient city of Taxila. He understood the history of this spot, writing: "It was quite clear that there was only one strip of land on which most of the successful capitals existed for centuries, and this was along the Grand Trunk Road... Tehran, Kabul,

Peshawar, Lahore and Delhi...Geographic and historical forces placed the capitals on the same line.⁹³ Doxiadis wrongfully claimed Taxila as Alexander's capital,⁹⁴ although reports on the conqueror's journey to Taxila often conflict.⁹⁵ Not unlike Alexander's invasions, Doxiadis' capital and other modern settlements took over farm and village communities and replaced cultures across the plateau and the riverbanks.



Fig. 46 — *Doxiadis examining vernacular houses during an early research trip to Pakistan.*

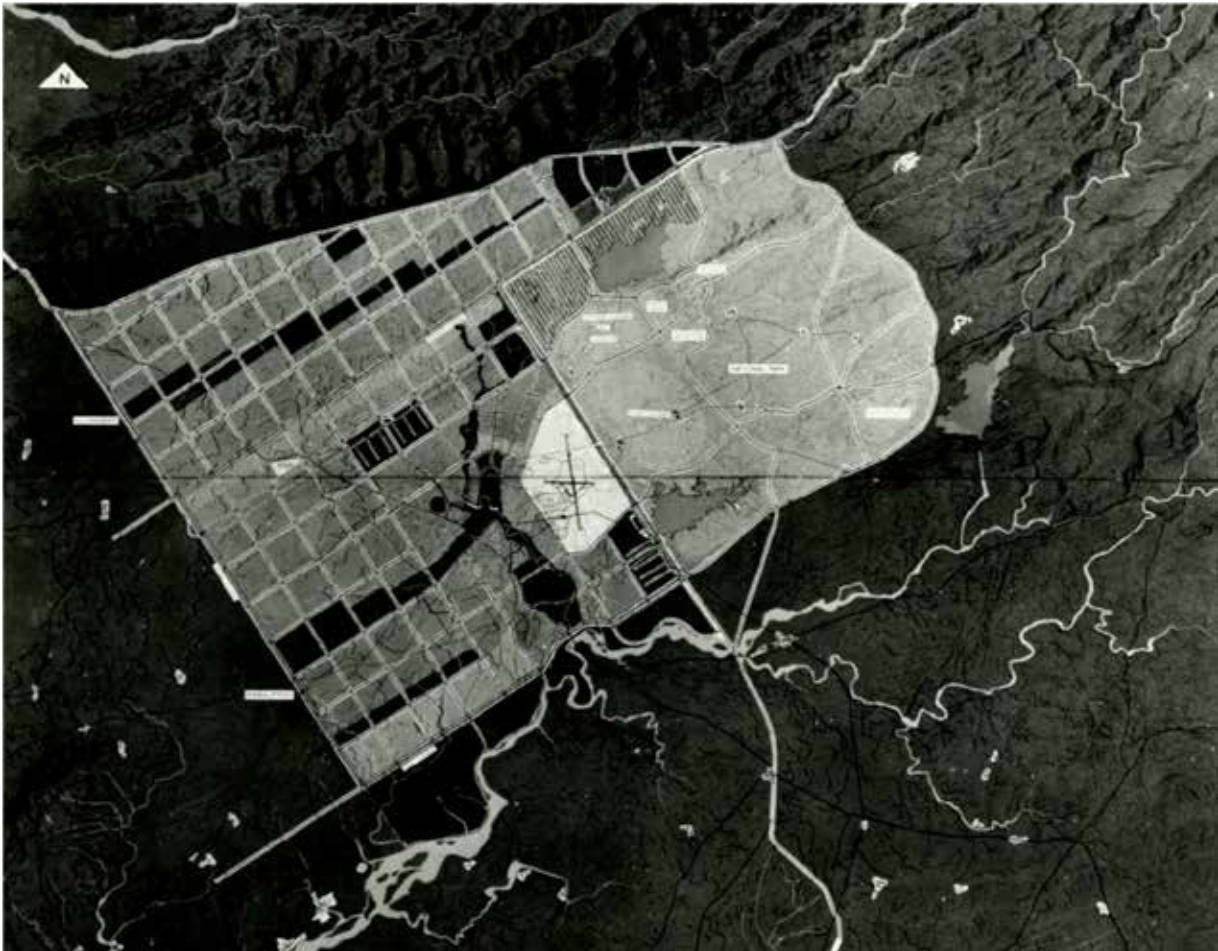


Fig. 47 — *Masterplan of Islamabad showing an over-sized, relentless grid that dominates the landscape and implies infinite growth towards the south and west into the neighbouring city of Rawalpindi, home to the nation's military headquarters.*



Fig. 48 — *Aerial image of Islamabad during construction.*



Fig. 49 —*An example of a planned block from Doxiadis' plan for Korangi, near Karachi. A very similar scheme was used in Islamabad, but without the distinctive windcatchers.*



Fig. 50 —Original low-income housing from Doxiadis' plan for Islamabad in its current state.

Unplanned Settlement

Doxiadis' Islamabad failed to account for those who would actually build the city. The construction of Islamabad had drawn a border between the builders and the residents, with all neighbourhood and house plans focused around the hierarchy of the capital's military and political systems. This oversight in planning occurred despite Doxiadis' understanding and conviction that a capital city should ideally represent the demographics of the nation.⁹⁶ The city's builders, left unaccounted for in the master plan, remained in their informal work camps at the edge of the city, building homes there and forming Islamabad's first slums, unplanned settlements, or "katchi abadis" (translation: raw housing).⁹⁷ Today, Islamabad has at least 24 katchi abadis, housing close to 85,000 residents consisting mostly of laborers, servants, sanitary staff, and beggars.⁹⁸ The katchi abadis fall under the jurisdiction of the Capital Development Authority (CDA); the CDA is not authorized to develop illegal slums,⁹⁹ so removal is their only option. Of the 24 neighbourhoods, 21 are in Islamabad's core urban area, and only 10 are recognized by the CDA in formal plans. A relocation plan was developed for the residents of the other four recognized slums—Dhoke Najju, Esa Nagri, Haq Bahu and Muslim Colony, to be moved to Farash Town, though no plan has been implemented yet.

The slums are a major issue for the city as their presence poses a constant threat to Islamabad's established order. A police report highlighting crime in the abadis mostly mentions the sale and purchase of drugs and alcohol.¹⁰⁰ The most notorious drug-dealing centres are located in the nine abadis in the City Zone, consisting mainly of sector F, sector G, and Bari Imam. The city's largest katchi abadi also houses the most serious criminal activity, with 256 cases reported in the Mera Jaffar slum in Saddar Zone. The slum's abundance of road connections from all directions makes it impossible to control entry in and out of the neighbourhood in case of an emergency.¹⁰¹ Afghan settlements in the Industrial Zone, sectors H and I, are considered hazards due to the NESCOM and railway tracks passing through. Two other abadis in the Rural Zone, Ghorri and Dhoke Pathana, "are mostly crime free but pose threats due to frequent VVIPs movement on the Islamabad Expressway".¹⁰² The police report suggests the removal of eleven abadis immediately, with the remaining thirteen to be fenced off. Informal settlements are generally placed in low-value lands on the peripheries of the city; in the case of Islamabad, the lowest income neighbourhoods are informal settlements that sit below the city's topographical datum. The most vulnerable settled areas are thus in the immediate floodplain of the Nullahs, or river tributaries, facing imminent disaster.¹⁰³ Whether by state removal, relocation or flood, the days of Islamabad's 24 katchi abadis are numbered.

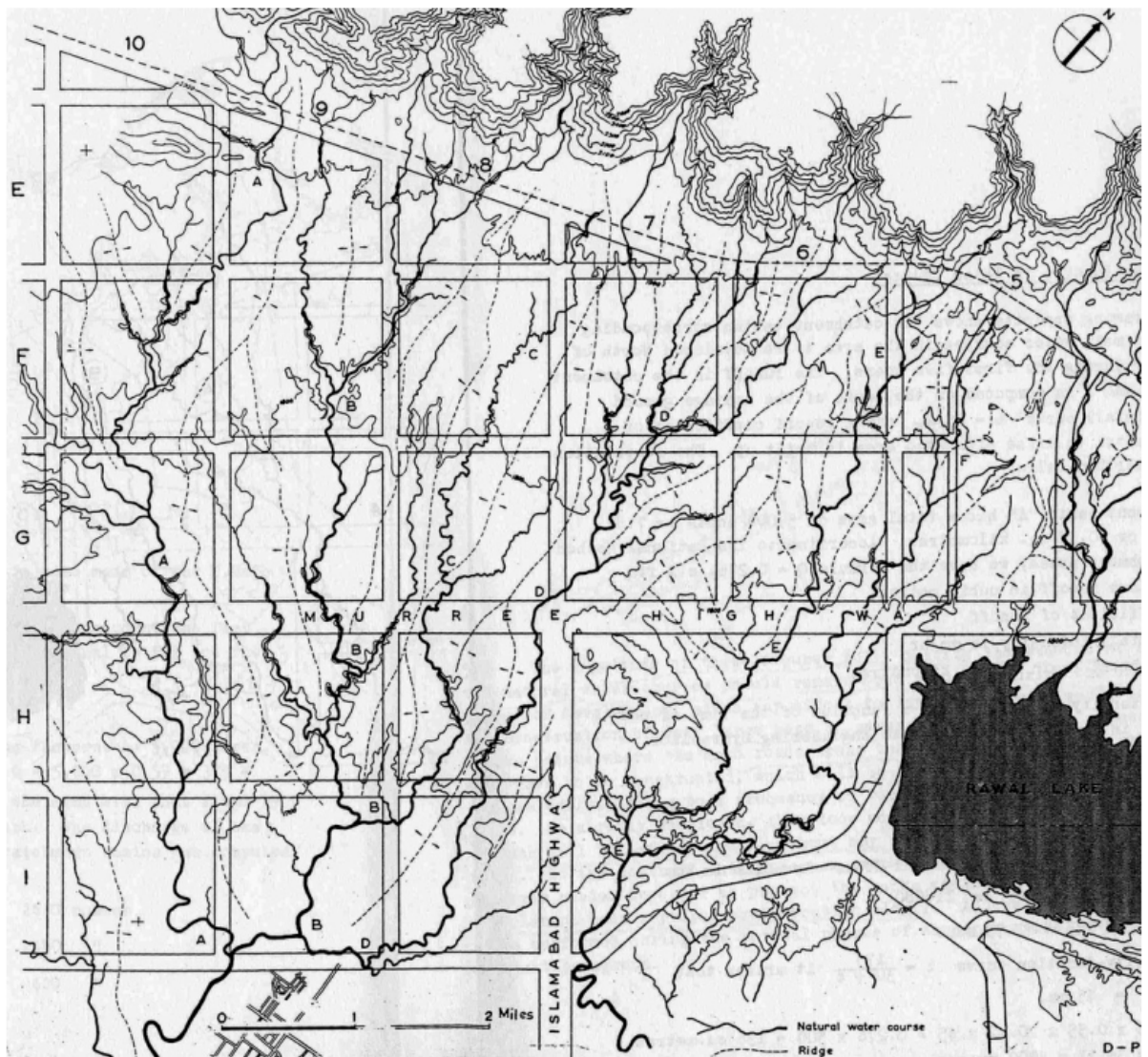


Fig. 51 —A map of the Nullahs, or streams running through the grid of Islamabad. Initially intended as “green fingers” which would extend an armature of natural landscape and park across the city, these undeveloped, flood-prone areas instead attracted informal settlement and the formation of so-called slums.

The Ruined City

The ancient city of Harappa first came to the attention of archaeologists after a collection of seals engraved with a curious image of a unicorn and marked in an entirely unknown pictographic script were uncovered. Before being considered an important archaeological site, the city was already connected to a station of the North Western Railway by a service road.¹⁰⁴ At the height of the Harappan culture, the area was likely much more fertile.

The Ravi River consisted of two separate streams that converged at the site of Harappa, with the ancient bed of the Beas River cutting across the two streams perpendicularly. Floods which inundated the surrounding land would deposit the rich alluvium for which the Ravi and its tributary the Deg were especially known.¹⁰⁵ Furthermore, this relationship to several waterways provided means of transport and communication with a string of other settlements dotting the ancient river's course. Any trace of Harappa's ancestry is long lost, buried deep below the Indus water table or excavated for the railroad.

When General Cunningham first visited the remains at Harappa, he was surprised to find the ruins almost completely cleared out. Nonetheless, he carried forth with several archaeological excavations, although he found little worth preserving.¹⁰⁶ The bricks at Harappa were taken for railroad ballast; they were ground into fragments and laid under a hundred miles of the Lahore-Multan line.¹⁰⁷ The ruins of Harappa thus leave much to be imagined; with its remnants scattered across a hundred miles of railroad, there are few answers to the mysteries of the lost culture. "...The little that has actually survived is a perpetual puzzle which at every step baffles the excavator. Only once in awhile can one hope to find anything more than a complete room..."¹⁰⁸ Just as the modern dam destroyed the cultures and customs of the pre-modern villagers, the industrial railroad destroyed the history of Harappa. We can only know the city through its fragments.

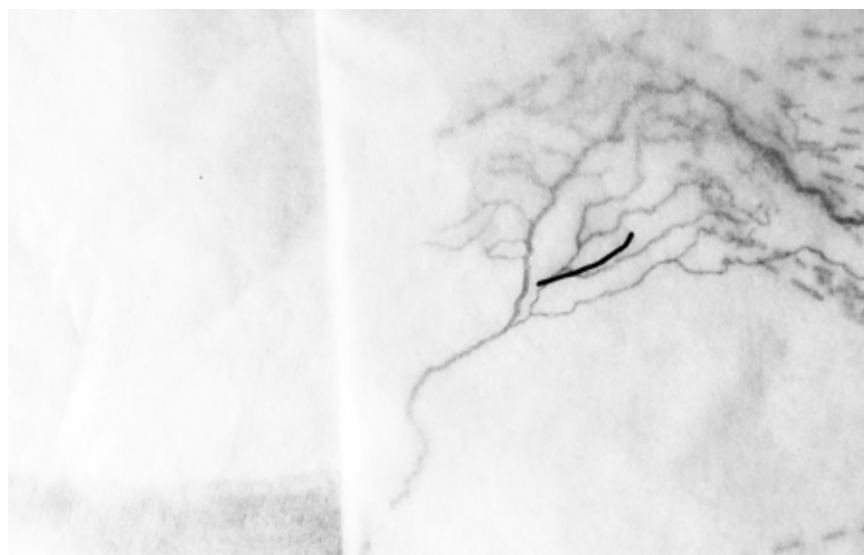


Fig. 52, Fig. 53 — *Over one hundred kilometers of the Lahore-Multan Rail is laid on a bed of crushed brick which once formed the remnants of the ancient city of Harappa.*

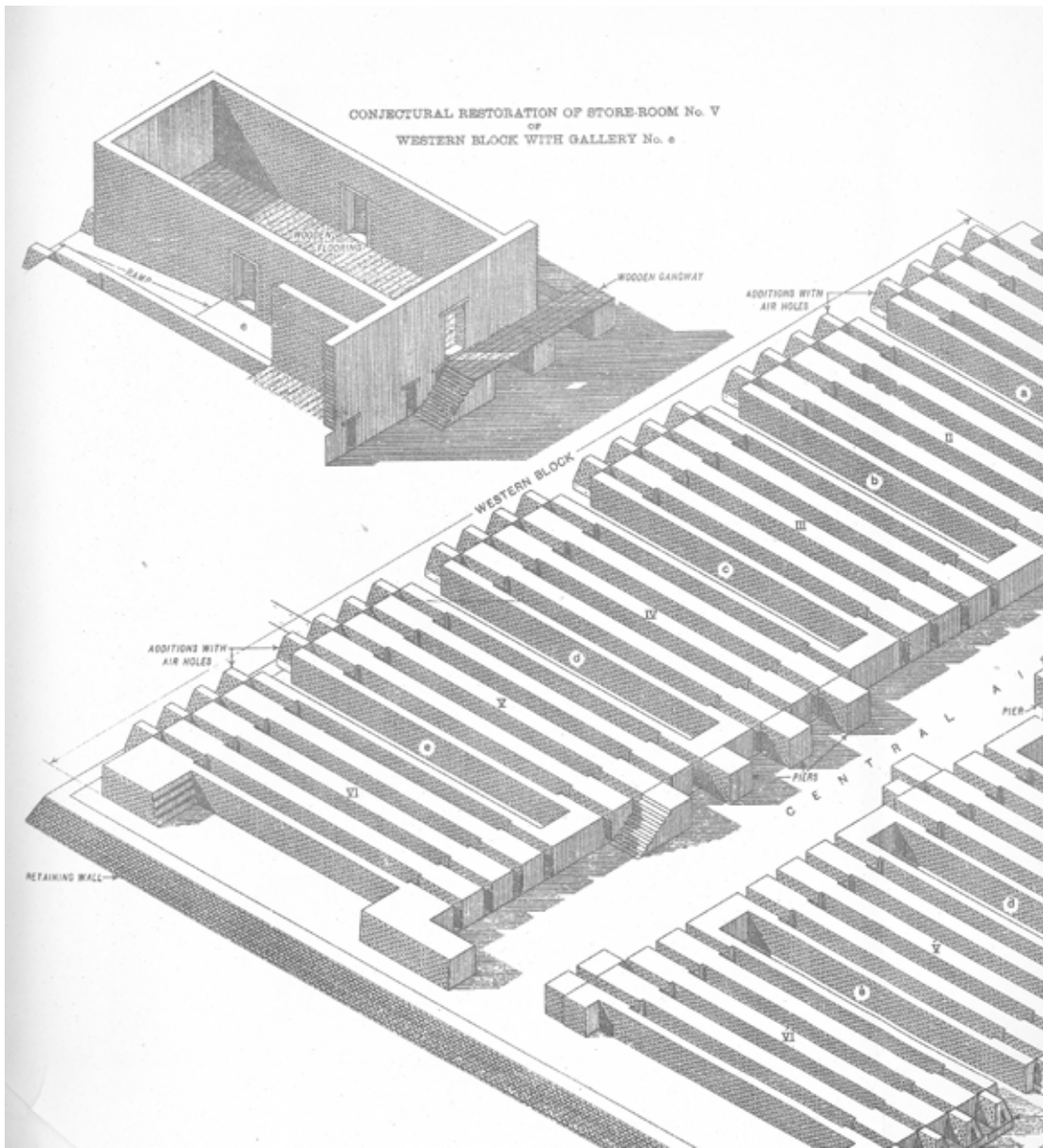


Fig. 54 —An axonometric reconstruction of Harappā's greatest known building, the Great granary.



(a) THE GREAT GRANARY, PANORAMIC VIEW, LOOKING SOUTH.

Fig. 55 —A scan from the official excavations of Harappa shows a clearly doctored image of the great granary. Upon close inspection, a cutout image is lazily placed with scotch tape to cover the original photograph for whatever reason. This unfortunately marred photo is a reminder that any historical claim presented here should be taken as story, not fact. In fact, all we seem to have are stories.

The Lost City

As places get broken down and renewed, the lens of history goes out of focus, we see the blurred edge between history and myth.

...this most ancient city looks strangely modern...it certainly has a surprisingly rational and utilitarian aspect.¹⁰⁹

The discovery of Mohenjo Daro revealed that the Indus Valley could be the earliest cradle of civilization. In terms of city planning, the people of Mohenjo Daro seemed to be “decidedly superior to their contemporaries in Egypt or Sumer”.¹¹⁰ It is the oldest record of a grid city and one built with a rigorous plan. It is only after the civilization disappeared that we see architectural renovations encroach onto the public space.¹¹¹ The city was occupied by relatively small bands of travellers and vagrants following the mysterious disappearance of its founding civilization. The extent of the city plan and its original foundations are still unknown. Mohenjo Daro was buried in almost forty feet of sediment, and much of the city is far below the water table,¹¹² proving problematic and costly to research. Still, the buried ruins of Mohenjo Daro paint a clearer picture of the ancient Indus culture than the fragments of Harappa. The streets are lined with shops, and the city holds a handful of “grand marketplaces”. Compared to the Harappans, Mohenjo Daro seems more prosperous as almost every house has a bath, is connected to a sewage drain, and is serviced by a garbage disposal system. Wells can be found throughout the city, which once served both public and private functions. No temples, palaces or tombs have been discovered; the greatest building seems to be a great watertight public bath, ingeniously plumbed and heated by an underground hypocaust. The ‘Great Bath’ is perched at the top of a mound held in place by a perimeter of baked brick, complete with changerooms indicating ritual practices centred around water and cleanliness. The scale of Mohenjo Daro’s bath is significant enough to have been a likely site of pilgrimage.

The process of the city’s urban development is as unknown as the cause for its disappearance. The current excavation shows a city with fixed streets that seems to have been rebuilt seven times without significant change. The city is therefore likely to exist well into the fourth millennium BCE, and could possibly be the world’s earliest city. The rigour of Mohenjo Daro’s plan certainly indicates a sophisticated civic administration. Even the less formal alleys dividing residential



Fig. 56 — *The mound of Mohenjo Daro and airport at the northern edge of the ancient city.*

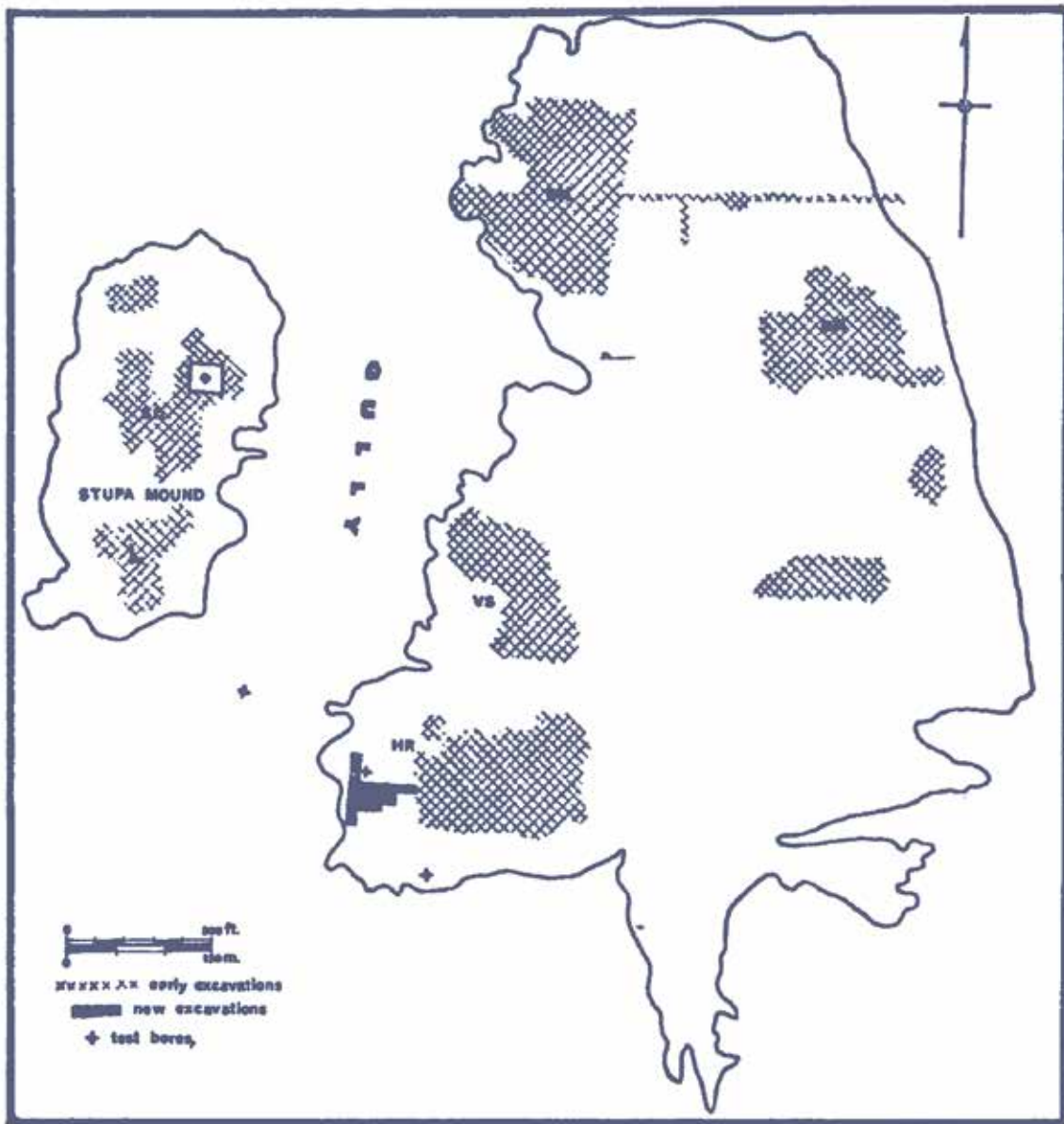


Fig. 57 — Outline of Mohenjo Daro with hatched regions showing areas excavated.

Fig. 58 —Plan of a block in DK Area of Mohenjo Daro at different periods indicates an urban society that maintained its plan for seven hundred if not much longer.



DK AREA C Section,



DK AREA C Section,
Intermediate II
DK AREA C Section,
Intermediate I



DK AREA C Section,
Intermediate III
DK AREA C Section,
Intermediate II



DK AREA C Section,
Late Period
DK AREA C Section,
Intermediate III



DK AREA C Section,
Late I & II Periods
DK AREA C Section,
Late Period

blocks show signs of regulation; though seemingly free of pattern, even the informal alleys were conserved once established.¹¹³ Furthermore, every house usually had two sources of water as well as sewage and garbage removal, something lacking in Sumer and Akkad at the same time. The subsequent adoption of a rectangular plan in Babylonia could be attributed to their contact with the ancient Indus culture. Interestingly, the mysterious Indus script and seals have been found at Ur, but evidence of the Mesopotamians has yet to surface in the Indus valley.

The silt layers of Mohenjo-Daro suggest a succession of great floods upon the city. The amount of soil deposited would indicate either an unbelievable recurrence of catastrophic flooding, or a much earlier dating of the city. Mohenjo Daro is estimated to have been inhabited for 1000 years, during which thirty feet of silt were deposited atop the city. During the subsequent 3500 years, a negligible amount of silt has been deposited.¹¹⁴ The soil deposits at Mohenjo Daro are extremely fine sediments which indicate slow-moving lake-like flood conditions. It seems hard to believe the city was submerged by a lake in several instances, though abundant evidence of natural and human-made dammed reservoirs place it in the realm of possibility. Some have explained the sediment as wind-borne deposits,¹¹⁵ but the truth remains a mystery.

Indian palaeontologist M.R. Sahni was the first to suggest ancient tectonic upheavals to explain the formation of the required lake-like conditions.¹¹⁶ He observed silt deposits near Hyderabad that suggested greater floods in ancient times, and proposed that land movements could have blocked the Indus for decades to gradually form lakes upstream¹¹⁷ Sahni identified an area about 150 kilometres downstream of Mohenjo Daro as the most probable location of damming, correlating to similar stillwater deposits dotted between Mohenjo Daro and Sehwan. The area's geologic history depicts clear signs of large scale rock faulting,¹¹⁸ and tectonic movement in this area is still known to release pressure from underground gases causing large mud extrusions.¹¹⁹ It is very possible that the ancient Indus Valley experienced catastrophic earthquakes that reshaped its watershed. Tied to the river, every city and village would have been affected, instigating a slow but inexorable migration from the valley. Tectonic activity is the most likely reason for the disappearance of the Sarasvati and Second Ravi rivers, and the most likely explanation for the mud extrusions and flood deposits at Mohenjo Daro. As Harappa lost its source of water, some of its flow was diverted to the Indus river and Mohenjo Daro would receive noticeably more water and worse flooding. As the water changed course, people across the valley experienced flood or drought, and had no option but to migrate out of the watershed.



Fig. 59 — *The Great Bath at Mohenjo Daro*

The only remnants of the culture after abandoning their major cities, was in the Ganges watershed, at Saurashtra and in central India, although the presence of wares does not confirm the presence of the ancient Indus people. In the face of such catastrophic changes in the valley's water, the ancient Indus people would still have faced various obstacles in migrating. There are signs that vagrant groups stayed in and around both Mohenjo Daro and Harappa before slowly dying off. Land-based movement was poorly developed because of the convenience of the waterways, making migration all the more daunting. Perhaps the entire culture did disappear slowly, having no plan for migration and no local answer for their displacement. In any case there has long been a need to further investigate the Ganges Plain and central India for evidence of Harappan resettlement. More evidence might confirm whether the ancients were indeed successful in migrating and resettling in India, and were in fact the ancestors to the later Vedic culture.

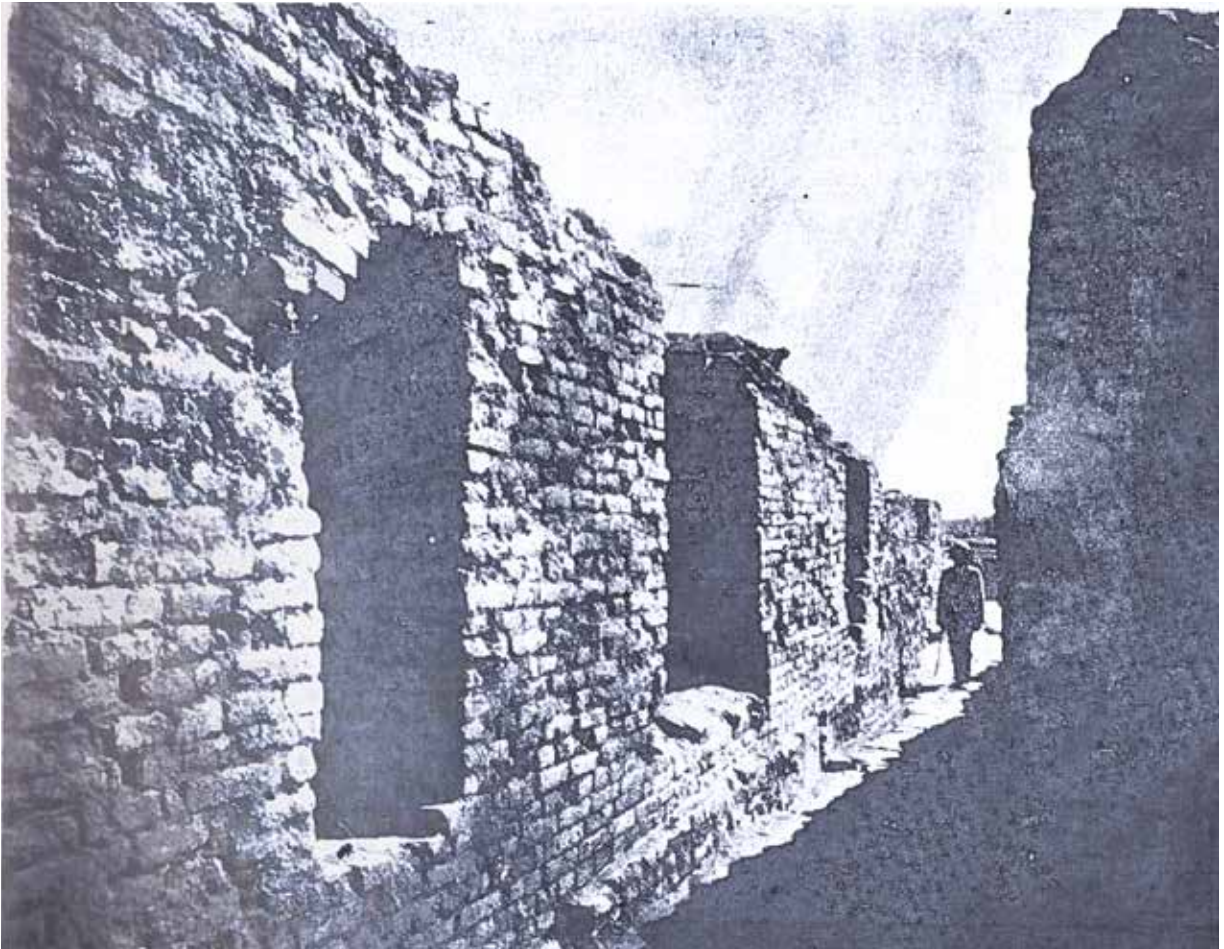


Fig. 60 — *Stone Wall at Mohenjo Daro showing standardized bricks, and deep openings placed in steady rhythm.*



Fig. 61 — *Excavation on eastern side of Stupa, showing constructions of Indus period, from the south-west*

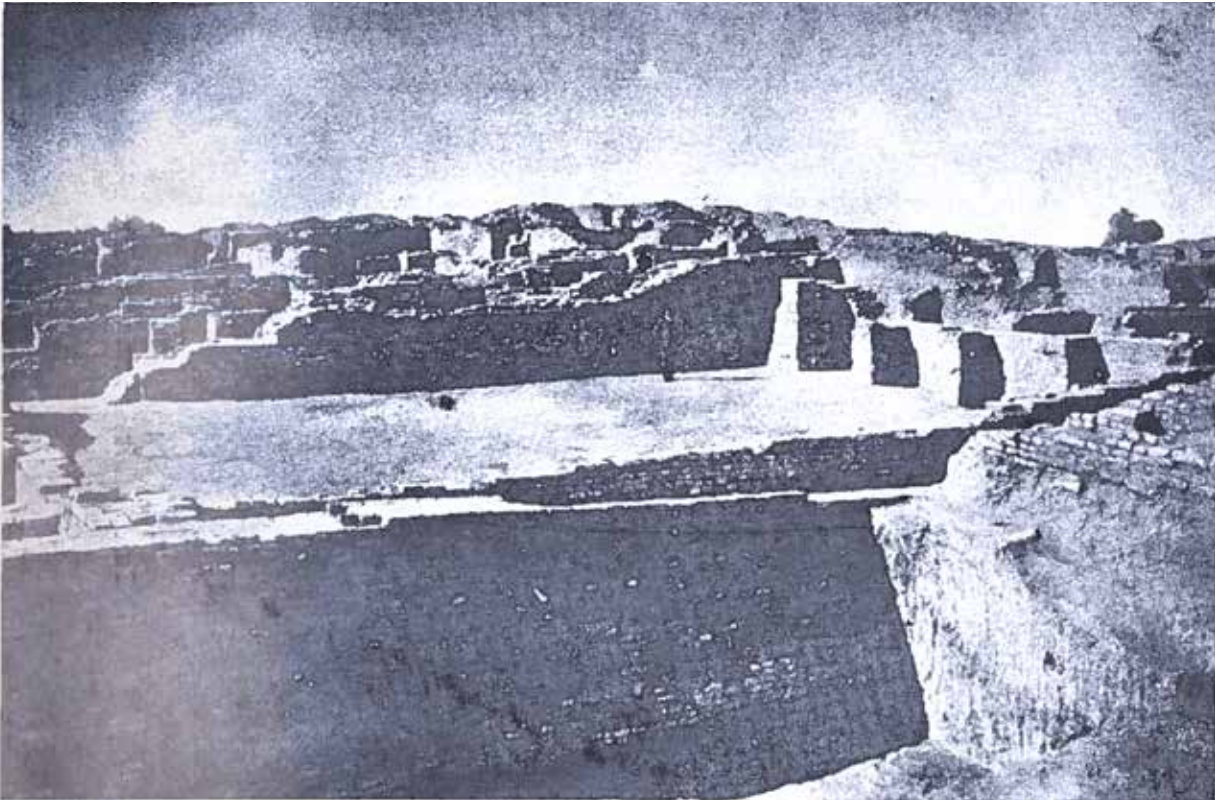


Fig. 62 — *Block 2, Building V: Court 70, looking south*



Fig. 63 —*Drain running through a street of Mohenjo Daro*

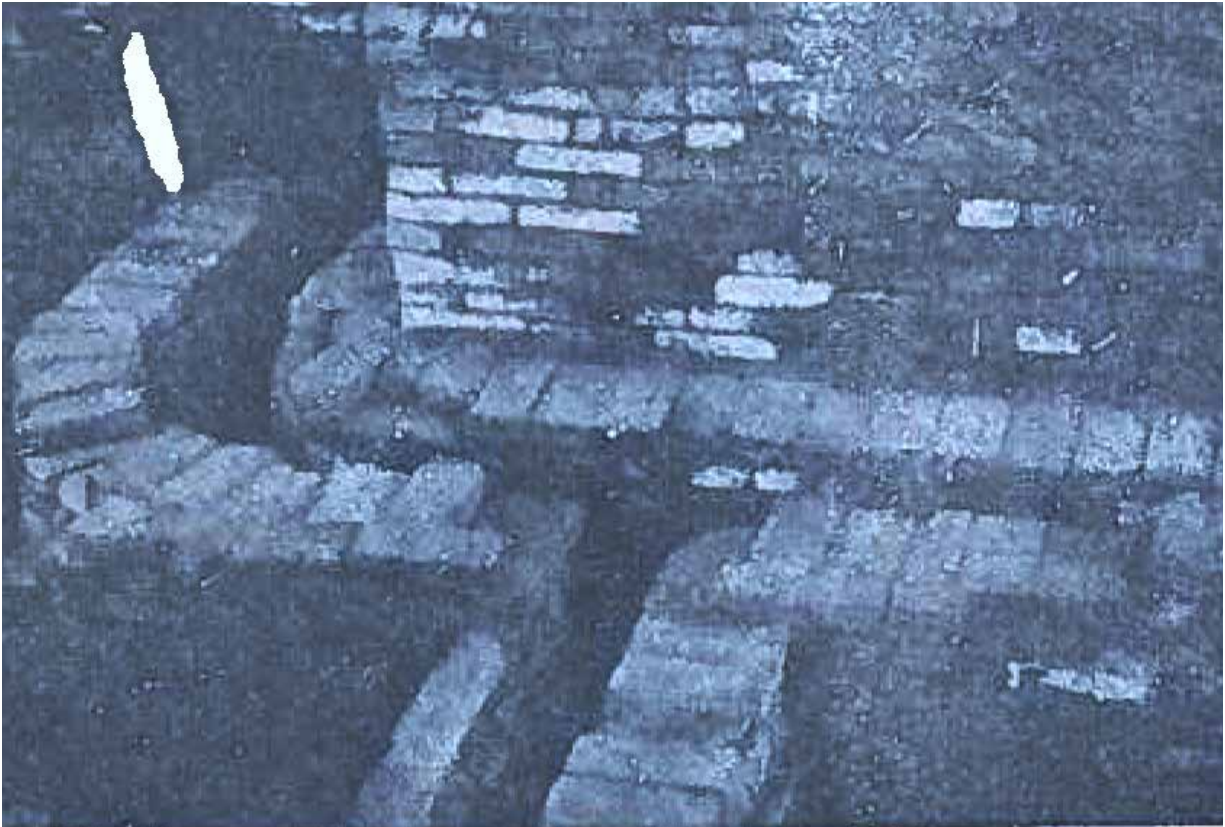


Fig. 64 — *Brick drain at a house in Mohenjo Daro*

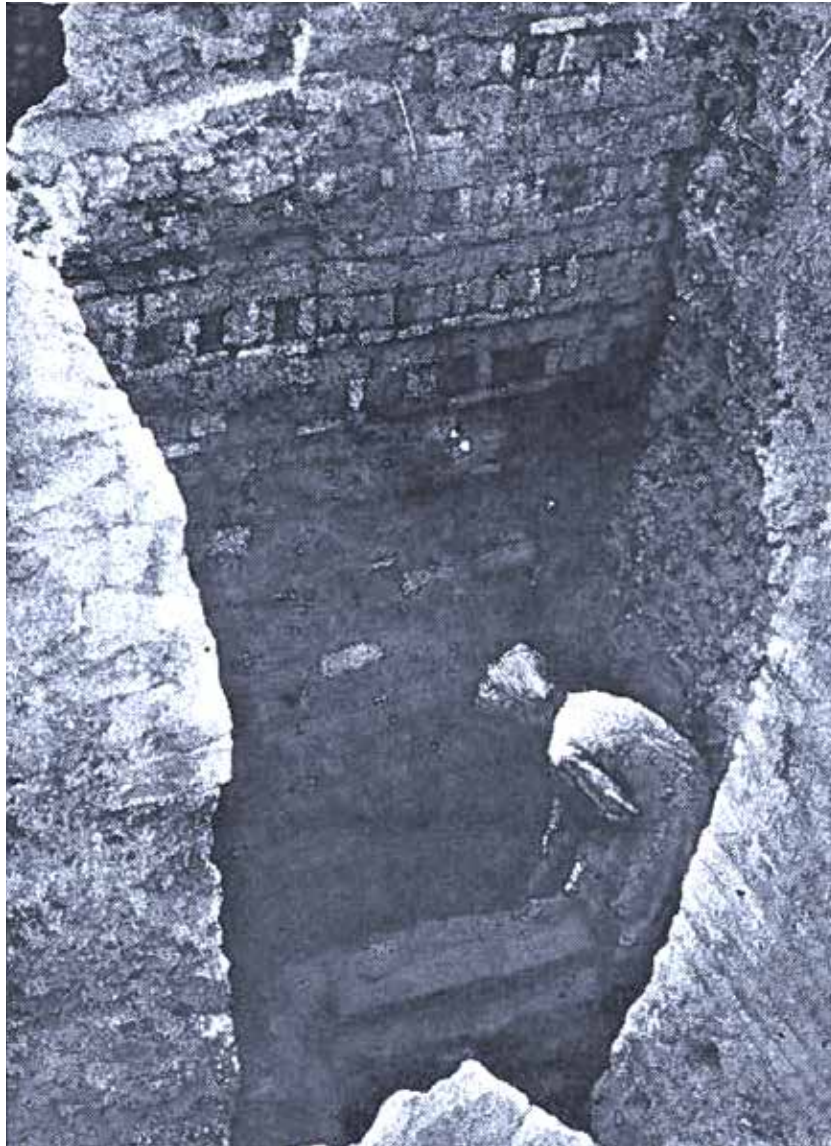


Fig. 65 —An excavated section of Mohenjo Daro showing consecutive strata of the city's development.

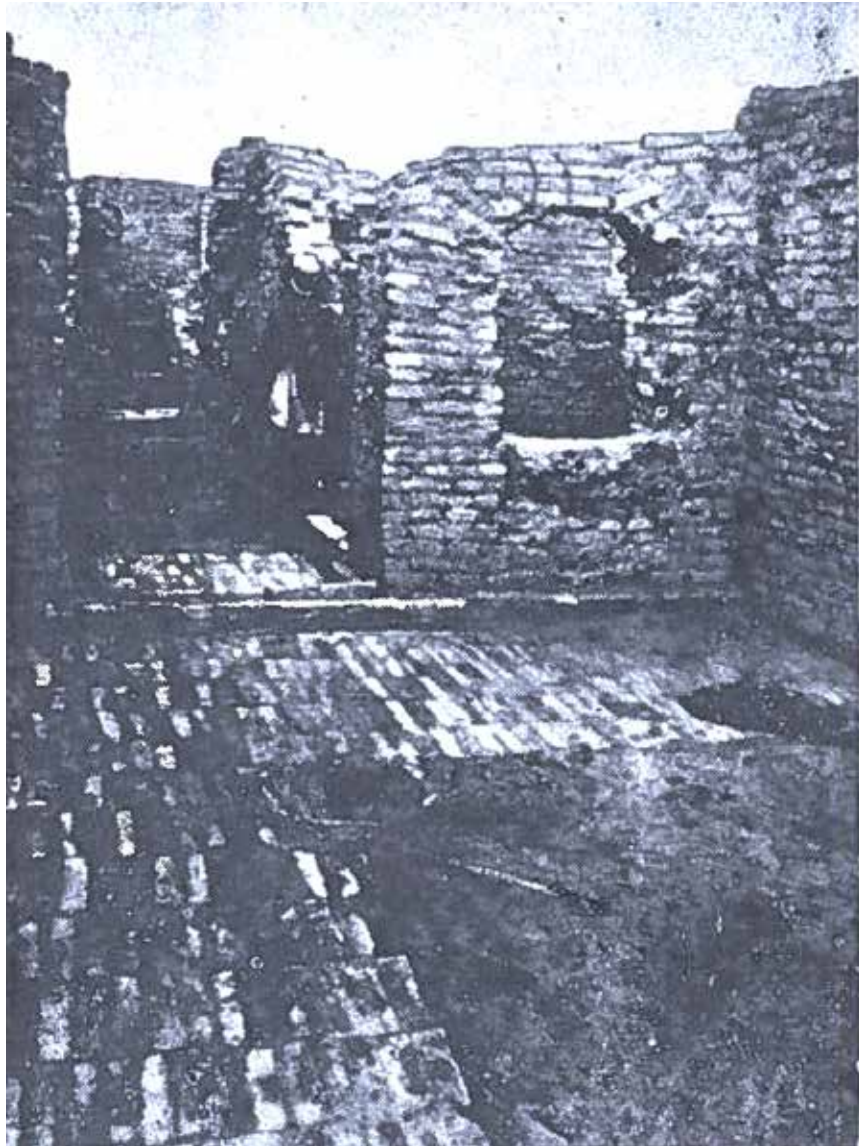


Fig. 66 — *A home, a room, a well in the ancient city.*



Fig. 67 — *A primitive arch opening for a drainage chute*



Fig. 68 — *A small opening for a drain, disposal chute, and ventilation.*

The Garden

Jallianwala Bagh is a walled garden in the Punjabi city of Amritsar. On Baisakhi, a harvest festival in April, Punjabis of all religions came together to honour the first offerings from the rising water. The day involved bathing in the river, dancing, singing, drumming, flying kites and sharing a feast in the garden. Jallianwala Bagh has a long, narrow entrance that opens onto the vast, oddly shaped garden. Eighteen foot walls surround the perimeter, with a handful of shops and apartments fortifying its outer edges. A well is situated along the northern edge of the garden, behind a few trees. In 1919, anywhere between fifteen and twenty-five thousand people had gathered at Jallianwala Bagh to celebrate Baisakhi.

A few days earlier, on April 13, following Indian nationalist protests, British Colonel Reginald Dyer ordered a curfew and ban in Amritsar on parties larger than four. Upon hearing of the mass gathering at the garden, Dyer closed off the single entrance leading into the walled space and instructed his men to march down the narrow corridor and indiscriminately open fire onto the crowd.¹²⁰ He originally planned to use two machine guns, but both were mounted atop vehicles unable to access the garden,¹²¹ later admitting he wanted to teach the Indians a lesson for their disobedience. Upwards of 1000 men, women and children are estimated to have been killed, with countless more injured. The official British tally was 379 dead and 200 injured, although they also neglected to list any dead women (337 men, 41 boys and a six-week old baby).¹²² This was likely to veil the hypocrisy of their own violence against women, when just a few days prior a British teacher was attacked on her way to the school, leading Dyer to implement the infamous Crawling Rule. The area where Miss Sherwood was beaten was armed with guarded checkpoints, and all citizens made to crawl in order to enter or leave their homes. Dyer effectively shut down the neighbourhood as punishment for the attack on Miss Sherwood, and over the course of the next several days, the conflict only compounded.

During the massacre over one hundred people jumped into the garden's well to their deaths, desperately trying to save themselves.^{123,124} Countless others were traumatized, and the atmosphere in Punjab was changed forever. Lahore, the Pakistani capital of Punjab, is the closest major city lying just fifty kilometres east of Amritsar, along the Grand Trunk Road. The cities were once highly connected, and Punjabis from Lahore or Amritsar were hardly distinct. Today, Amritsar lies on the Indian side of the line of control, which exponentially increases the spatial divide between the Bagh and Lahore. The border has left the Bagh in its shadow. Jallianwala Bagh massacre has been thoroughly investigated as the beginning of the fall of the British Empire. The attack also initiated a minimal force policy in the British military.

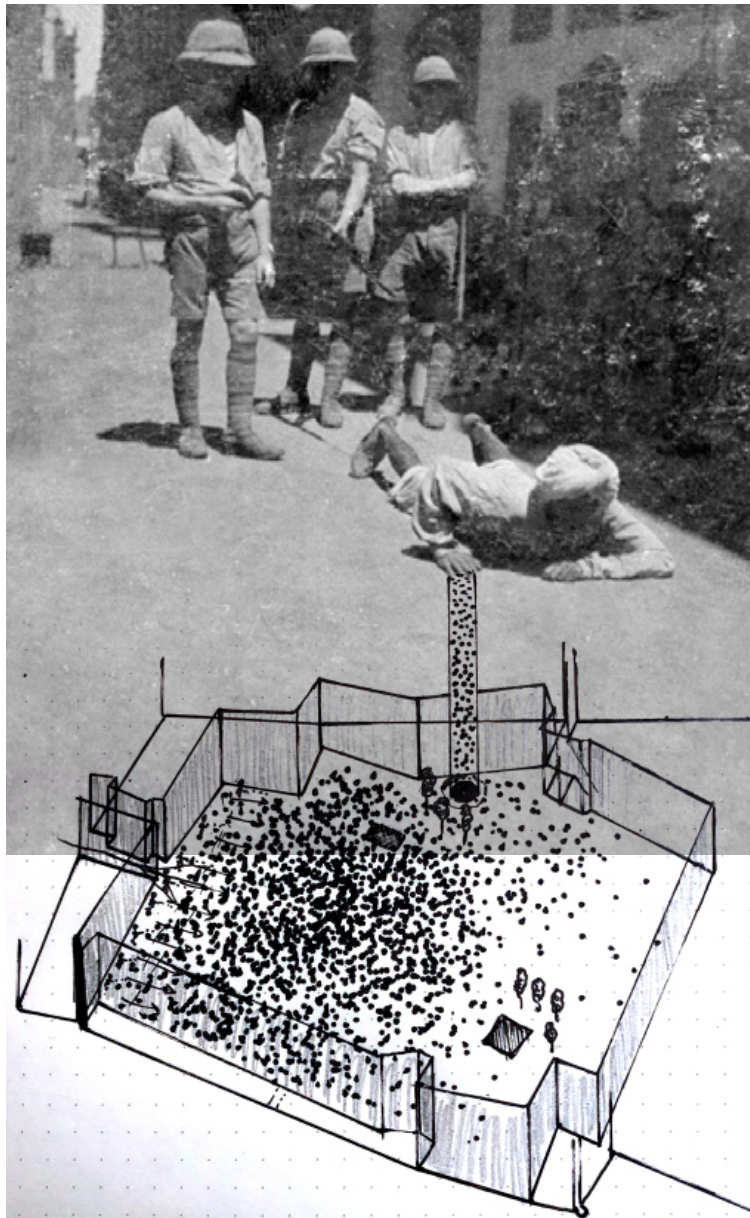


Fig. 69 —Amritsar during the infamous *Crawling Rule* over an axonometric sketch of the *Jallianwala Bagh* massacre, one dot placed for every human life lost.

The concept of development first entered international policy with the signing of the Covenant of the League of Nations on April 28, 1919, just two weeks after the regrettable events of the Jallianwala Bagh massacre. The covenant begins:

*To those colonies and territories which as a consequence of the late war ...are inhabited by peoples not yet able to stand by themselves under the strenuous conditions of the modern world, there should be applied the principle that the wellbeing and development of such peoples form a sacred trust of civilisation and that securities for the performance of this trust should be embodied in this Covenant.*¹²⁵

The covenant's principle of "well-being" is applied and measured economically. Any developed country responsible for the administration of a foreign territory must also secure economic opportunities for other Members of the League.¹²⁶ The Covenant also established an early system of shared surveillance through annual reports on each territory to be delivered to a permanent Council.¹²⁷



Fig. 70 — Men pointing out bullet marks in the wall at Jallianwala Bagh the day following the massacre.

The Well

The predecessor of the well was likely the latrine dug for human waste rather than for clean water, dug into high mounds about a kilometer from the banks of the river. These latrines were initially reinforced haphazardly by ceramic pots thrown down a hole. This technique was later refined, most notably at Taxila where earthenware rings are stacked and mortared to create lasting latrine pits. Once water was discovered beneath the ground, the practise of digging a latrine transitioned into one of digging a well.

Although there are incredible consistencies across the ancient Indus culture, including unified scripts, seals, coins, measurements, bricks and architecture, Harappa and Mohenjo-Daro indicate different relationships with the well. At Mohenjo Daro, wells are abundant and private, with most houses having two, and a vast bath serving the public and likely pilgrims. Only seven wells have been recovered at Harappa, all of which were public, used most likely for cooking and drinking water for both residents and wayfarers, ready with large public water jugs. This public water stall, or Piau, is the earliest known predecessor to the great stepwells of India, which transcended cultural and religious boundaries before their use was banned by the British as the water, now used for bathing as well as drinking, posed several health hazards. In pre-modern times public wells provided shelter and sustenance for nomads and early caravans travelling through the Indian subcontinent. As a point of refuge within an oftentimes harsh journey, the public well was a space of compassion and offering at a scale rarely found in our striated, metered space of surplus. The well is a space independent of the state, existing as a link between the land, water and our collective thirst.

The stepwell was a space that more explicitly embraced the mystical qualities of groundwater, where the well became a temple to embody the ritual of descending into the Earth's womb. The well became a space where Heaven, Earth, water and human could meet, holding transcendent qualities that resonated across cultural divides. The stepwell was maintained as an important public and ritual space by Buddhists, Hindus and Muslims, regardless of who built them and the stories engraved on their walls.¹²⁸ A string of stepwells were erected along major trade routes to encourage travel and exchange across the Indian subcontinent and its desert; the well connects rather than divides. Protected stores of cool water offered refuge in the pounding heat, allowing these wells to transcend religious division until the British banned use of stepwells in India for fear of the water quality after widespread use for bathing and drinking. Many of the stepwells of Gujarat and Rajasthan have since fallen into disrepair.

In 1919, after the celebrations at Jallianwala Bagh had been cut short, over one hundred bodies were pulled from the well along the edge of the garden.

The well was the last refuge for the pre-developed human, soon forgotten under the shadow of the dam. A man displaced at Tarbela explained life after resettlement: "...It's like throwing a man into a deep well and making it impossible for him to climb out..."¹²⁹

The dam and reservoir imply the opposite spatial experience to the stepwell, indicating a radical difference in society's relationship with water. The society of the stepwell and piau is one where water is a basic right, whereas the dam indicates a culture where water is a commodity. Imagining the piau as a contemporary urban space translates into spaces of pure inclusivity, sharing and equal access. The piau as a concept is present as much in drum circles as in the library, where the space is one of sharing upheld not by investment but by the social expectations that the space engenders. The piau works because there is a trust that the wayfarer will not steal the communal jars. Both the dam and well also serve as metaphors and monuments of our relationship with place. The dam simultaneously implies the wall, the border, the battle, and so forth. The well implies the hearth, the womb, the road, or the garden.



Fig. 71 — *A well at Mohenjo Daro*

III

Reflections

For the whole question is this: What exactly is the nature of the anomalous? The anomalous is neither an individual nor a species; it has only affects. ... It is ... a phenomenon of bordering. ... A fiber stretches from a human to an animal, from a human or an animal to molecules, from molecules to particles, and so on to the imperceptible. Every fiber is a Universe fiber. A fiber strung across borderlines constitutes a line of flight or of deterritorialization. . . .

. . . It is evident that the Anomalous, the Outsider, has several functions: not only does it border each multiplicity, of which it determines the temporary or local stability ... not only is it the precondition for the alliance necessary to becoming, but it also carries the transformations of becoming or crossings of multiplicities always farther down the line of flight.¹³⁰

Endurance

Fur traders in Kashmir live humble lives in the harsh mountain landscape of Northern Pakistan. Here they raise goats known for producing the world's softest wool— cashmere, named after the fertile plateau where the goats roam and the conflict between India and Pakistan concentrates. In order to bring the wool to the town of Skardu for sale at the market, a makeshift raft is built using the skin of the same goats. These leather balloons keep the raft afloat, and have to be re-inflated by mouth throughout the treacherous journey upstream against mountain rapids. They trek, climb, and row hundreds of miles, before returning home downstream. The capacity to endure is one of our most important attributes.



Fig. 72 — *Wool being shipped on a raft of inflated skins of the same goats.*

Since the anomalous moment that humans first branched off from our shared lineage with the great apes, it was the most utilitarian anomalies that would dictate our future success: tools that would extend our physical abilities, and shelters that would extend our bodies. The home was both. Here we could dwell, and search for a story amongst the chaotic wilderness outside, which would repeat itself in fractal, fractured cycles. As the home developed, human life switched from a wild game of survival to one where we searched for answers and meaning. In the course of doing so, we transformed human life. Soon the chaos we believed had been relegated to the outside returned in evermore complex forms as the urban environment emerged.

Home

Anything we might discover to answer a question will only displace our uncertainties, as an anomalous work will create value and carry its own force. Firstly, the anomaly holds an intrinsic value through its utility or the desire it generates; the new possibilities it implies. Secondly, by nature of being outside any current paradigm, the anomaly creates social value which extends and divides society in its alien presence. The residual values of an anomalous human work ripple into renewed religious, philosophical and social beliefs; economic and political structures; and social conflicts. The cycle of displacement, migration and resettlement is therefore intrinsic to humanity, and no step forward can come without reproducing these in some form. We must think carefully *how will we proceed with architecture?*

Discipline

A series of anomalous forces have carried and established global society as it exists today. The anomaly may present itself in countless media: physical storms, economies, politics, borders, roads, invasions, tribes, war, migration, development etc. There is an equivalent anomalous force that architecture needs to embrace, given the transformative nature of our environments and the great unknowns we face in the near future. This indicates a counter-practise to the status quo belief in resilience, where instead the transformative nature of our world holds primary importance, and the anomalous enters back into architectural practise. This architecture carries force that can shape and evolve a culture rather than be subject to it.

The following timeline registers anomalous events since 6 million years ago, roughly when the ancestral lineage of humanity split from the great apes.

1. Timeline of the human being

2. Timeline of economy, or exchange

3. Timeline of major religious work

4. Timeline of warfare and conflict

5. Timeline of politics and governance

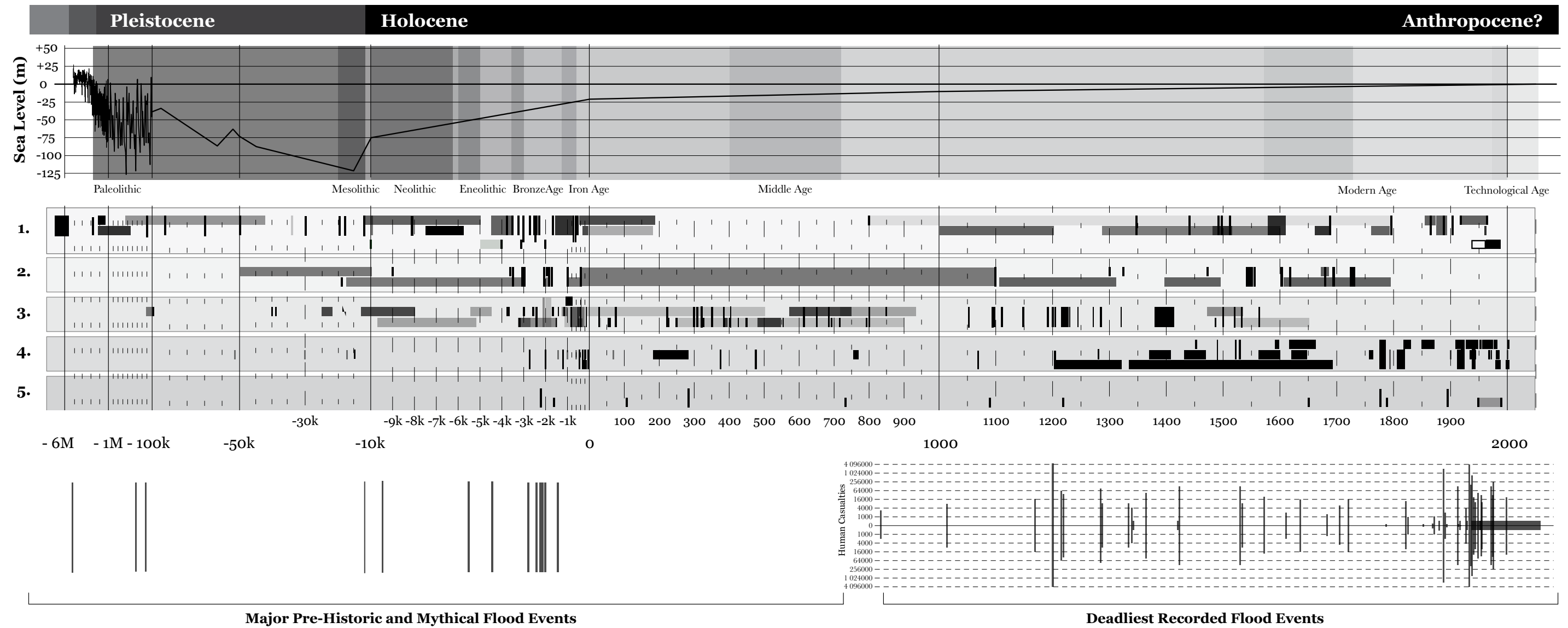


Fig. 73 — A timeline of human history since our split from a shared ancestor with the other great apes around 6 million years ago, measured against major flood events, geologic periods and sea-level rise.

End Notes

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14. Brian Walker, C. S. Holling, Stephen R. Carpenter, and Ann P. Kinzig.
Resilience, Adaptability and Transformability in Social-ecological Systems.
Ecology and Society 9, no. 2, Article 5 (2004): pg. 1
15. Ibid. pp. 2-8.
16. John Boyd, *Destruction and Creation* (Ft. Leavenworth, Kansas:
U.S. Army Command and General Staff College, Sept. 3, 1976), pg. 2.
17. Ibid, pg. 3.
18. Gregory L. Possehl. “Radiocarbon Dates for the Indus Civilization and Related Sites” in *Ancient Cities of the Indus*. ed. Gregory L. Possehl (New Delhi: Vikas Publ. House, 1979), page 359

19. Giovanni Botero and Geoffrey Symcox. “*On the Causes of the Greatness and Magnificence of Cities: 1588*,” (Toronto: University of Toronto Press, 2012) pg. 52.
20. The Durand Line is named after a 1883 agreement between Sir Henry Mortimer Durand, foreign secretary to the Government of India and the Amir of Afghanistan Abdur Rahman Khan outlining the border between Afghani and British territory. Following partition, Pakistan inherited the Durand Line as its border between Afghanistan. Both nations contest the Durand Agreement, and the border remains unsettled. The Pashto, or Pathan culture is stuck straddling this border.
21. Barry Buzan and Gerry Segal. “*Anticipating the Future*,” (London: Simon & Schuster, 2000) pg.184-5
22. Jean Fairley, “*The Lion River: The Indus*” (Lahore: S.I. Gillani, 1979), pg. 84.
23. Ibid. pg. 85.
24. “*Records of the Geological Survey of India, Volume 61*,” (Calcutta: Government of India, 1929), pg. 330
25. The Rig Veda speaks of *Sapta Sindhavah*, the land of seven rivers, likely alluding to two missing rivers in the Punjab region.
26. Michel Danino, “*The Lost River: On the Trails of Saraswati*” (New Delhi: Penguin Books India, 2010), pg. 11
27. Posschl, *Ancient Cities*
28. For further research, this idea is also known as the river continuum concept. The dynamic equilibrium of major river systems is hindered by hydro-infratructure and development, leaving severed fragments of the river to form micro-systems.
29. Giorgio Agamben, “*What is an Apparatus? And Other Essays*,” Translated by David Kishik and Stefan Pedatella, (Stanford: Stanford University Press, 2009) pg. 2

Agamben turns to an interview with Foucault for his definition and insights into the term Apparatus, summaraized in the following quote:

“a thoroughly heterogeneous set consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral, and philanthropic propositions—in short, the said as much as the unsaid . . . The apparatus itself is the network that can be established between these elements . . . a kind of a formation... that at a given historical moment has as its major function the response to an urgency. The apparatus therefore has a dominant strategic function. . . . which means that we are speaking about a certain manipulation of relations of forces, of a rational and concrete intervention in the relations of forces, either so as to develop them in a particular direction, or to block them, stabilize them, and to utilize them. The: apparatus is thus always inscribed into a play

of power, but it is also always linked to certain limits of knowledge that arise from it and, to an equal degree, condition it. The apparatus is precisely this: a set of strategies of the relations of forces supporting, and supported by, certain types of knowledge." (Foucault)

30. Aloys Arthur Michel, "*The Indus Rivers: A Study of the Effects of Partition*," (New Haven: Yale University Press, 1967), page 5
31. Ibid. pg. 6
32. Ibid. pg. 7
33. Azad Kashmir translates to Free Kashmir, and is a sliver of land under Pakistani administration right at the break in the line of control. The name itself implies the remainder of Kashmir is yet to be liberated.
34. Rahmat Ali Choudhary, "*Now or Never, Are we to Live or Perish Forever?*" (Cambridge: Pakistan National Movement, 1933), page 1
35. Majed Akhter, "*Infrastructure Nation: State Space, Hegemony, and Hydraulic Regionalism in Pakistan*," *Antipode* 47, no. 4 (2015): pg. 858.
36. Wayne Wilcox, "*Pakistan: A Decade of Ayub*," *Asian Survey*, Vol. 9, No. 2, *A Survey of Asia in 1968: Part II* (University of California Press: Feb., 1969), pp. 87-93
37. Kent Flannery, "The Cultural Evolution of Civilizations" in *Ancient Cities of the Indus*, ed. Gregory L. Possehl, (New Delhi: Vikas Publ. House, 1979). pg. 30
39. "*The Indus Waters Treaty, 1960*", signed September 19, 1960, United Nations Treaty Series Vol. 419, no. 6032, <https://treaties.un.org/doc/Publication/UNTs/Volume%20419/volume-419-I-6032-English.pdf>
40. "*Indus Basin Development Fund Agreement*", signed September 19, 1960, World Bank Documents, <http://documents.worldbank.org/curated/en/239781468100481033/pdf/Loan-0266-Pakistan-Indus-Basin-Project-Development-Fund-Agreement.pdf>
41. Michel, *The Indus Rivers*, pg.12
42. Ibid. pg. 13
43. Olivia Bennett and Chris McDowell. *Displaced: The Human Cost of Development and Resettlement*. (New York: Palgrave Macmillan, 2012), pg.50
44. Michel, *The Indus Rivers*, pg 10-11
45. *Conference of the International Commission on Large Dams (I.C.O.L.D.)* Montreal: ICOLD, 1968.
46. Walter A. Fairservis Jr., "*The Harappan Civilization: New Evidence and More Theory*." in *Ancient Cities of the Indus*, ed. Gregory L. Possehl, (New Delhi: Vikas Publ. House, 1979), page 51
47. Ibid. pg. 52
48. Colonel S. L. Jacob, "*Report of the Indian Irrigation Commission, 1901-1902: Part I, General*", *Parliamentary Papers: 1850-1908, Volume 66*, Great Britain Parliament House of Commons, pg. 48
49. Angus Paton, "*The Eighth Royal Society Technology Lecture: Dams and Their Interfaces*," *Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences*, Vol. 351, No. 1664 (London: Oct. 8, 1976), pg. 9
50. Bogumil Terminski, "*Development-Induced Displacement and Resettlement: Causes, Consequences, and Socio-Legal Context*," (Stuttgart: Ibidem, 2015), pg.50
51. "*The Pakistani Muslim Community in England: Understanding Muslim Ethnic Communities*," (London: UK Department for Communities and Local Government, 2009), pg. 26

52. Archived News Article in *Punjab District Gazetteers, Part 1*, (Lahore: Punjab Government, 1932), pg. 31
53. Shah F. Khan, Muhammad Asif Khan, Ulrich Kamp, and Lewis A. Owen. "Earthquakes and Associated Landslides in Pakistan" in *Natural Hazards: Earthquakes, Volcanoes, and Landslides*, ed. Ramesh Singh and Darius Bartlett, (Boca Raton: CRC Press, 2018). pg. 305-333
54. Paton, *Dams and Their Interfaces*, pg. 7
55. M. Roca, "Tarbela Dam in Pakistan: Case Study of Reservoir Sedimentation," River Flow September 2012, HR Wallingford, Wallingford. pg. 1-10
56. Shiv Visvanathan, "*Development: Between Cliché and Creativity.*" Lecture, Azim Premji University Public Lecture Series, Bengaluru, India, October 8, 2011.
Available Online: https://www.youtube.com/watch?v=p_wdd7D2iQk
57. F. M. Burdekin, "Sir (Thomas) Angus Lyall Paton, C.M.G. 10 May 1905 - 7 April 1999: Elected F.R.S. 1969," in *Biographical Memoirs of Fellows of the Royal Society* Vol. 47, London: Royal Society, (Nov., 2001): pg. 423
58. Paton, *Dams and their interfaces*, pg. 6
59. Ibid.
60. Ibid.
61. Ibid.
62. Bennett, *Displaced*, pg. 42
63. Bennett, *Displaced*, pg. 39
64. Ibid.
65. Ibid. pg. 49
66. Ibid. pg. 47
67. Ibid. pg. 50
68. Ibid. pg. 45
69. Ibid. pg. 52
70. Ibid. pg. 50
71. Muhammad Sadaqat, "On brink of paralysis: Khalabat Township faces financial crisis," *The Express Tribune*, Pakistan, (November 26, 2015)
72. Bennett, *Displaced*, pg. 44
73. Ibid. pg. 41
74. Shiv Visvanathan, *From the Annals of the Laboratory State*.
Alternatives: Global, Local, Political 12, no. 1 (1987): pg.37-59.
75. Bennett, *Displaced*, pg. 50
76. Long-chan Wang, Shakeel A. Anjum, Lan-lan Xue, Muhammad F. Saleem, Guo-xin Wang and Cong-ming Zou. *Desertification in Pakistan: Causes, impacts and management*. *Journal of Food, Agriculture & Environment* Vol.8 (2010): pp. 1203-1208

77. The locals referred to ruins around Taxila as Sarai Khola, eventually leading Marshall to the ruins of Sirkap, a nearby city of unknown origin. Marshall assumed the locals were referring to this site, although there are several archaeological sites in the area, each with distinct urban plans. Influenced by his love for Alexander's travels into India, Marshall linked the scattered ruins of Sirkap to the great conqueror, though local accounts leave a great level of indeterminacy to the distinct origins of the various cities that now fall under the collective banner of "the ancient ruins of Taxila". Sirkap, Bhir Mound, Sarai Khola, and other sites indicate distinct histories and cultures, which are relatively unexplored due to the dominant narrative surrounding the mythical Taxila.
78. William W. Brickman, "*The Meeting of East and West in Educational History*," *Comparative Education Review* 5, no. 2. (Chicago: The University of Chicago Press, 1961), pp. 82-89.
79. John Hubert Marshall, "*Taxila: An Illustrated Account of Archaeological Excavations Carried out at Taxila under the Orders of the Government of India between the Years 1913 and 1934*," Vol. 1," (Cambridge: Cambridge University Press, 2013), Preface page 'i'
80. Takshashila— the founder of Taxila, upon hearing of Alexander's imminent arrival from across the river, instructed his army to build a bridge of boats to offer a crossing for Alexander and his army. The group of outside conquerors were greeted to an incredible feast on the other side of the river. Unable to be outdone, Alexander presented his own offerings to the people of Taxila in return. As the story goes, the imminent conflict was avoided by a gesture of kindness.
81. Marshall, *Taxila*, pg. 2
82. Ibid.
83. Ibid. pg 5
84. Muhammad bin, Naveed. "Taxila" in *Ancient History Encyclopedia*, (July 23 2015).
Accessed Online: <https://www.ancient.eu/taxila/>
85. Marshall, *Taxila*, pg.5
86. Brickman, *The Meeting of East and West*, pg. 83
87. The Kharoshthi script was originally deciphered through the study of bilingual coins of the Indo-Greek Kingdom. There is still disagreement on whether the script was invented by a single scribe or evolved gradually, and an indeterminacy in the origin of the ancient language. As no intermediate versions of the script have been found, Sir John Marshall asserted that the reliance in modified Aramaic symbols confirmed that Kharoshthi was developed following the Archaemenid governance over the Indus River. Interestingly, the oldest Buddhist manuscripts discovered were also written in Kharoshthi on birch bark found near Hadda, Afghanistan. Much like Taxila itself, the Kharoshthi script outlines the struggles of history, and the role of communicative media for interpreting an indeterminate origin, for many distinct narratives may be true at the same time, but history often searches for one by virtue of not being able to speak about everything else. This was the struggle of the thesis: how might I tell the story of such interwoven narratives?
88. Marshall, *Taxila*, pg. 5
89. Brickman, *The Meeting of East and West*, pg. 83
90. Ekistics was first coined in 1942 by the famous Greek urbanist Constantin Doxiadis, in an attempt to turn the study of human settlement into a science, though he hardly employed any

science in his development of a subsequent method. Nonetheless, Doxiadis' concept of ekistics continues to be referenced in contemporary discourse as a means to alleviate the future stresses of urban life on the greater environment. I find it important to consider the ways in which 'ekistics', 'resilience', 'sustainability' and 'development' work together to paint a picture of how we must consider the future city. Furthermore, it is important to consider alternative views, and understand the ways in which urban life, the home, or the person cannot be treated scientifically by the architect or designer. What one chooses to measure is itself an art.

91. "Islamabad the Capital of Pakistan," Project publication, (Athens: Doxiadis and Associates), pg. 9
92. Daanish Mustafa, "The Production of an Urban Hazardscape in Pakistan: Modernity, Vulnerability, and the Range of Choice," *Annals of the Association of American Geographers* 95, no. 3 (2005): pp. 566-86.
93. C. A. Doxiadis, "Islamabad, The Creation of a New Capital," *Town Planning Review* 36, no. 1 Liverpool: Liverpool University Press, (1965): pg. 9
94. Ibid.
95. There are differing account of Alexander the Great's involvement with the city of Taxila. Some claim that Taxila (specifically the ruins at Sirkap), were build by Alexander to serve as his capital in the Indian subcontinent. Others claim that Alexander and his men attacked the city and its people, taking control of the site through war.
96. Doxiadis, *Islamabad, The Creation*, pg. 5
97. Annie Harper, "The Idea of Islamabad: Unity, Purity and Civility in Pakistan's Capital City," Order No. 3415018, Yale University, (2010): pg. 173.
<http://search.proquest.com.proxy.lib.uwaterloo.ca/docview/618701766?accountid=14906>.
98. "Islamabad Targets Slums After Suicide Bomb Attack," *The Guardian*. March 19, 2014. Accessed May 26, 2018. <https://www.theguardian.com/world/2014/mar/19/pakistan-targets-islamabad-slums-after-terror-attack>
99. *Slum Survey: Over 80,000 People Living in Capital's Katchi Abadis, Says Report*. The Express Tribune. February 27, 2014. Accessed May 26, 2018. <https://tribune.com.pk/story/676555/slum-survey-over-80000-people-living-in-capitals-katchi-abadis-says-report/>.
100. Ibid.
101. Ibid.
102. Ibid.
103. Mustafa, *Hazardscape*, pg. 571
104. Madho Sarup Vats, "Excavations at Harappa: Being an Account of Archaeological Excavations at Harappa Carried out between the Years 1920-21 and 1933-34. Vol. 1.," (New Delhi: Director General, Archaeological Survey of India, 1999), pg. 2
105. Ibid. pg 4
106. Ibid. pg5.
107. Ibid. pg 6
108. Ibid. pg. 2-3

109. Hans Blumenfeld, “*On a Peculiar Feature of the City Plan of Mohenjo - Daro*,” *The Journal of the American Society of Architectural Historians* 2, no. 1 (1942), pg. 23
110. Ibid.
111. Possehl, *Ancient Cities of the Indus*, pg. 287
112. George F. Dales, “*The Decline of the Harappans*” in *Ancient Cities of the Indus*, ed. Gregory L. Possehl, (New Delhi: Vikas Publ. House, 1979), pg. 308
113. Blumenfeld, *On a Peculiar Feature*, pg. 24.
114. Robert L. Raikes, “*The End of the Ancient Cities of the Indus*” in *Ancient Cities of the Indus*, ed. Gregory L. Possehl, (New Delhi: Vikas Publ. House, 1979), pg. 300
115. H. T. Lambrick, “*The Indus Flood Plain and the ‘Indus’ Civilization*” in *Ancient Cities of the Indus*, ed. Gregory L. Possehl, (New Delhi: Vikas Publ. House, 1979), pg. 319
116. Lambrick, *The Indus Flood Plain*, pg. 315
117. Dales, *The Decline of the Harappans*, pg. 309
118. Ibid.
119. Ibid.
120. The violence of the Jallianwala Bagh Massacre left a palpable sense of trauma in Punjab for decades afterwards. In fact the culture never fully recovered from the event, forgotten under the shadow of the religious nationalist debate which would soon overwhelm the land and initiate the creation of Pakistan and India. An incredibly important moment in the shared history of the Punjabi culture, a story which transcended religious bounds quickly faded into the background without much thought as rhetoric began focussing on divisions between the victims, a shared space which was never quite rebuilt after the massacre. Rather than address the trauma together, it was easier for the cultures to divide, and rebuild separate worlds.
121. N. A. Collett, *The Butcher of Amritsar: General Reginald Dyer*. London: Hambledon Continuum, 2007. pg. 258
122. Richard S. Bell, *The Amritsar Massacre: The Origins of the British Approach of Minimal Force on Public Order Operations*. Thesis (Masters), U.S. Army Corps, 2009.
123. Collett, *The Butcher of Amritsar*, pg. 258
124. “*Amritsar: Minutes of Evidence taken before the Hunter Committee, 1919*”, signed November 13, 1919, United Kingdom Parliamentary Archives, Evidence taken before the Disorders Inquiry Committee, Volume III, Part I, Minutes of Evidence, Amritsar, Catalogue No. DAV/123, <https://www.parliament.uk/about/living-heritage/evolutionofparliament/legislativescrutiny/parliament-and-empire/collections1/collections2/amritsar-hunter-commission/amritsar-hunter-commission/>
125. “*The Covenant of the League of Nations, 1919*”, signed June 28, 1919, United Kingdom National Archives, FO 371 - Foreign Office: Political Departments: General Correspondence from 1906-1966, Reference: FO 371/4310, <http://discovery.nationalarchives.gov.uk/details/r/C2761975>
126. Ibid.
127. Ibid.

128. Victoria Lautman, and Divay Gupta. *The Vanishing Stepwells of India*. London: Merrell Publishers, 2017.
129. Bennett, *Displaced*, pg. 52
130. Gilles Deleuze, and Félix Guattari, trans: Brian Massumi. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 2014. pg. 244-9

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Fig. 74 — *A grave burial found at Kalibangan, a city of the ancient Indus Valley Civilization*



Fig. 75 — *A pot burial found at Kalibangan, a city of the ancient Indus Valley Civilization*