

An Architectural Form Sustaining a River Landscape in Varanasi, India

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The image of Varanasi is closely associated to the architecture of its riverfront composed of *ghats*¹ (Fig. 1). The ghats are made of steps and landings that allow easy and clean access to the varying levels of the river's water level. They correspond to a particular hydrology with great variations in the water level which is low in summer and high during the monsoons and therefore facilitates access to the water at all seasons. The *ghats* exist all over South Asia, bordering lakes, ponds, water bodies and rivers. However, the city most renowned for this water architecture is Varanasi. They are the longest here, covering 6 km in length. They are also the highest: covering the west bank of the river for more than 20 m high between the city level and water level. The *ghat* is a public space open to all. It corresponds to a segment on the riverbank, varying from 10 ft – 50 ft (30 m to 180 m), constructed individually at different periods. The oldest ghats still present on the riverbank were constructed at the end of the 16th century and the more recent ones are today still under construction. How did this riverfront of *ghats* develop and extend along the river in such a monumental way? And most importantly how did this architectural device adapt to the characteristics of the topography, the specific fluvial environment and in association to the culture of the place? In this paper, I argue that this architectural device sustains a river landscape. Sustainability is understood here not just in terms of economic growth but also in relation to the preservation of an environment and the maintenance of the social and cultural diversity of a place. We shall examine how this riverfront composed of *ghats* maintains equilibrium between these different aspects of the site so as to keep alive traditions associated to the city and the river Ganges. Can we put forward the fact that the construction of *ghats* keeps alive the activities that require proximity with the river's water? In this paper, I shall first present the importance of this architecture in a city considered sacred by Hindus and foremost among pilgrimage sites in South Asia. Secondly I will show the links that exist between the *ghats* and Varanasi's specific river environment and characteristic site. I shall describe the architectural elements that compose the ghat and show how these elements relate to the topography, to the river, to myths and to sacred practices related to the culture of the place. I thus put forward the fact that the construction of *ghats* today is a way to sustain the bonds that exist between the city and the waters of the river

Ganges.

1. Varanasi Built along the Ganges

The sanctity of the banks of Varanasi, like many other pilgrimage sites arises from its location along the Ganges, considered the most sacred river in South Asia. The city is situated mid- way along the Ganges (Fig. 2). The Ganges rises in the western Himalayas in the north west of India, flows south and east across the Gangetic plain and falls in the Bay of Bengal. In Varanasi the river forms a meander and like in any meander, carves into one bank and deposits silt and sediment on the opposite bank. The concave side is carved and the convex side receives the silt deposition. The river separates two distinct banks, and two very different domains: a high river bank that remains above the level of the river floods, and the opposite low bank, a floodplain that gets completely submerged during the monsoons. The city developed on the high concave side constituted of six hills that stretch between two tributaries of the Ganges: the river Varuna in the North and the river Asi in the south. There exists a strong dichotomy between a bank covered with constructions, urban in character, where *ghats* are constructed and the opposite bank, which is to this day mostly agricultural land.

Ghats facilitate the immersion and ablutions in the waters of the Ganges – an everyday practice for Hindu devotees as well as for pilgrims who walk down the steps of the ghats to bath and to carry the water to temples or to homes for worship and purification rituals. The form of the *ghats*, these steps and terraces that lead to the Ganges reveal the importance and the value given to a river in a society and in the daily occupations of the inhabitants. If this architecture has thrived it is because the river is central to the urban lay-out of the city. The relation established between the city and the river through the *ghats* is at the heart of the city's identity, its traditions, as well as its cultural, social and religious institutions. Built by patronage of wealthy devotees – kings, bankers or merchants – for the benefit of the public, the *ghats* were initially constructed for religious purposes, even though they were subsequently used for mundane activities, water being vital not only for sacred rituals, but also for domestic and professional use: such as daily bathing, washing clothes, drawing water or cleaning the cattle. Furthermore, as the city's water management is a major problem, coming to the Ganges for various domestic activities is a necessity for many of the city's inhabitants, and this despite the high levels of pollution in the water. The arrival of tap water in the city did not prevent the inhabitants from going to the riverside to bathe in its water, nor does its polluted water deter the devotee from believing in its purifying power or from performing ablutions in it. (Kelly D. ALLEY, *On the Banks of the Ganga, when wastewater meets a Sacred river*, University of Michigan Press, Ann Arbor, 2002).

The expansion of Varanasi's riverfront of *ghats* should be understood in a cultural context that requires close proximity with the waters of the river. The river Ganges is a religious and

cultural symbol in India. It is considered to have purifying properties and Hindu devotees from all over India and the world come to Varanasi to immerse themselves in its flowing waters with the belief to purify themselves. Varanasi is one of the most important pilgrimage sites in India and the city is believed to be one of the oldest continuously inhabited city. It was already important as a cultural and religious site in 800 B.C as is evident from archaeological researches. Gautama Buddha is supposed to have given his first sermon in the 6th century BC in nearby Sarnath and numerous pilgrims of different faith, Buddhist, Hindu, Jain and even Muslim pilgrims have been coming to Varanasi. Actually, there are many more pilgrims coming to the city today than ever in Indian history, “not because Hindus today are more devout but because mass transportation facilities permit it” (Surinder Bhardwaj, 1973). This trend has increased in recent years and with the constant arrivals of pilgrims and tourists the riverbank is more and more constructed with solid masonry *ghats*.

The development of this architecture in Varanasi may be explained in relation to the myths associated to the city. Varanasi is called the sacred city of the Hindus, one of the most venerated places in India. The city is presented as the grand site of pilgrimage – the Mahatirtha.³ *Tirtha* from the Sanskrit verb meaning “to cross over” designates a passage or a ford. Cities constructed along rivers were often positioned where one could easily cross over to the other bank/shore. Varanasi was such a place, an important crossroad, at the junction of the east west route along the Ganges, and the north-south route connecting the Kathmandu valley to the south of India. The city enjoyed thus a strategic position and was a major trading center (C.A. Bayly, *Rulers, Townsmen and bazaars*, Cambridge University Press, Cambridge, 1983). In a religious context, sacred places symbolize a passage or an access to the divine. The city of Varanasi represents this symbolical passage. Pilgrims embark on a pilgrimage to Varanasi at least once in their lifetime or are brought here at death (the ultimate passage) to be cremated on the riverbank. It is thought to be auspicious to come to die in the city. It is said that by dying or being cremated in the city one gains liberation from the cycles of reincarnation. The body of the dead is brought to two particular *ghats* on the river to be cremated, and the ashes are thrown in the waters of the Ganges.

In the history of its development, many ancient rivulets flowing towards the Ganges have marked successive boundaries of the city. At the place of their confluence with the Ganges, these rivulets situated at the periphery of the city represented the separation between the interior or sacred domain and the exterior, a separation between the pure and the impure. It was here that cremation would take place- as confirmed by the cremation today at two of these places, situated now no more in the periphery but at the heart of the city. On those *ghats* that are no more cremation grounds today, marks and symbols present give evidence of places for cremation. These rivulets slowly became drains, and were progressively associated to the underground sewer system of the city, covered by streets. Streets that often connect to some

of the most important places on the riverbank, where ablutions by pilgrims are principally performed, and the drains they cover discharges the urban sewer directly into the river at those particular places.

So we see that the myths concerning the sacred space of the city are interwoven with the topography even long after its transformation. However most of the traits of the sacred city celebrated in the mythical texts have disappeared; trees have long been cut down, lakes of fresh water were dried up and covered by the city's dense urban structures, rivulets as we have just seen transformed into sewer. In this context the river and its banks are maybe the only elements that still echo the city's idealized landscape. The topographical and hydrological specificities along the *ghats* are glorified as exceptional and are celebrated in a cyclic manner. The design of the waterfront follows the fluctuations in the water level that distinguishes areas that are flood-prone from those that are flood-free. The religious rituals are linked to the movement of the river's waters. The changing seasons accompany the festivals celebrated on the ghat space. Each season has its festivity. For example, after the monsoons, when the water subsides, the thick layer of clay deposited on the ghat steps by the receding waters are used to shape the statues of divinities that are celebrated during this season. The steps are then cleared, freshly painted and the ghat are decorated so as to welcome a series of rituals. Ghats allow all these rituals to take place, rituals that are linked to the landscape, to the seasons and to the movements of the river water.

2. A Sustainable Device

Ghats allow and facilitate the connection between different realms: the urban, the sacred and the natural landscape. They link the urban domain and the natural landscape, and in a certain way form an integral part of these two domains, that do not have well defined borders which change with the seasons and the different levels of the river. Each year, rainwater as well as the melting of Himalayan snows increases the river's water volume considerably. The water level climbs up at the end of the monsoons between 15 to 30 ft (5 to 10 meters) high with extraordinary floods of 60 ft (20 m.) and the width of the river nearly doubles, from the usual 500 m to nearly one 1 km in length. Depending on the seasons, *ghats* are either submerged and part of the water domain or an open public space (Fig. 3). When submerged *ghats* are considered blessed by the river water. The river is adored as a mother and as a goddess and the river flood is welcomed as her waters are believed to purify whatever it touches. Flood waters are not considered a menace; they are welcome even though the waters of the Ganges, beneficial for a multitude of reasons, may be devastating and destructive. Thus the *ghats* adapt to the dual role of protecting the bank and preserving the alluvial terrain that borders the river, preventing it from being washed away and allowing the water to spread onto it. There is a continuity between the city and the river: the *ghats* do not create a barrier, do not separate one space from another, the inner part from the outer part: on the contrary they unite both domains

and allow free flow of the river.² Coming to the riverbank in Varanasi one is immediately in direct contact with the earth's soil, the river's water, the morning sun light, the air and their distinct features that are believed to be sacred, purifying, generating, creating, life-giving. It is the constant contact with these elements that is at the heart of the design of *ghats*. The natural setting takes a concrete form, a solid structure and a meaning. Its particularities are not erased by the construction of the *ghats*, on the contrary, they are emphasized or highlighted. The steps of the *ghats* easily adapt to the relief of the river bank, accompanying its ascending or descending movement and modeling the entire landscape. Between the steep slope of a hill and the gentle slope of a thalweg, several degrees of inclination face the river. According to the topography of the site, the steps of the ghat are high or gentle, direct or deviated, discreet or imposing. They may penetrate deep into the city before arriving at a summit symbolized by a temple or a square, or, rise abruptly leading to temples or palaces that overlook the river.

Covering a riverbank with a varied topography each ghat is different in height, breadth, or direction. Each of its flight of stairs is separated by landings or plazas that are once smaller then larger. The steps of the ghat follow the slope of the terrain, formalizing the topography like "contour lines of natural terrain without copying the curves themselves" but composing with them. This reflection on the slope has been approached by Dominique Rouillard, in her analysis of the architecture of Alvar Aalto and its relation to a slope: "the Aaltien terraces are like constructions of cartographic representations, representing contour lines, except that, and what matters here is that, they never retain the curves (...) they are rigorously rectilinear, breaking at sharp angles, protruding or re-entrant. They do not mime the site's representation (...) the site is transformed, instituted here by the passage from the curve to the straight line".⁴

The steps of each ghat easily adapt to different situations and propose a variety of appropriations. Alone, a step on the ghat might be used as a place to sit on or rest, the series of steps create a staircase or a path, if the step is too large it becomes a landing or a plaza and if it is too high, a plinth, a base or a wall. When the slope is too steep to climb, there are retaining walls that separate the top of the terrain from the river. It creates a base for hanging gardens, temples or palaces built as close to the river as possible. Ten to twelve meters in height, these bases always remain above the level of the highest flood level, while corresponding approximately to the level of the street behind where they have their entrance.

Various elements closely follow the topography of the place. These different elements define and organize the ghat space and are used differently according to their position: high up on the river bank – as on a belvedere, descending gradually towards the river, along the river, close to the river, surrounded by the river's water, in the river and increasingly into its waters to be finally submerged by it. Steps and stairs follow the terrain, merge with its spatiality. Platforms on the other hand stand out from the environment, demarcating a particular space with their volume and verticality. They offer a flat horizontal space, above the general movement and

passage on the ghat steps. They serve to consolidate the masonry, accommodate priests officiating on the *ghats*, support religious symbols, statues of gods and goddesses or sacred plants. They are frequently submerged by the river believed to purify and endow them with divine energy. These various elements mark sacred points on the ghat space. These “focal points”, to use the words of Kevin Lynch,⁵ are the many places where residents gather on the ghat space to worship or to meet.

Tunnels are dug up to link underground temples to the Ganges water. *kuṇḍ*s (basins) are hollowed out in the space of the ghat. Several galleries open onto the river along the ghat look like original caves in the topography of the slope that have been preserved. Located closest to the river, these cavities, galleries, basins or niches are flooded during each monsoon season and have to be “reclaimed”, cleaned from the alluvial deposit and repainted when the subsiding water leaves behind it thick layers of alluvium. Many trees punctuate the ghat space, sacred trees used for worship and celebrations such as the *banyan* and the *pipal* both belonging to the family of the *figus*. These are huge trees, often centuries old and sheltering in their shadow big assemblies.⁶ Terraces are designed around these trees. It is not the tree that is planted in the middle of a terrace, but the construction that has been adjusted to the reality of the tree. Depending on the location of the tree, these terraces are situated at different heights on the bank forming small plazas, gardens or *akharas* (wrestling ground).

Conclusion

Ghats are composed in relation to the topography incorporating a number of elements—arranged in multiple combinations, which result in different ghat configurations. The ghat incorporates the spatial and seasonal variations because of its plasticity: they are always the same and always different. Steps describe the natural slope of the bank, the paths ancient waterways, the base a cliff, the platform a large stone or rock along the river, the niche or the gallery a hole or a cave in the cliff. This topography persists in the built-up landscape of the riverbank and each of its specificities carries a religious symbol that is reinterpreted differently in each ghat. There is no uniformity, instead the steps adapt to each particular trait where the architecture reveals the site, enhancing, protecting and exalting its original meaning. The *ghats* incorporate the abstract or invisible potential of a *space* and are also distinct *places* that one can identify or relate to, what is historical, specific and concrete.

Notes and References

- 1 The word *ghāt*, derived from the Sanskrit *ghāṭa*, signifies a wharf, a ford, a landing and generally any bank natural or man-made. For further reading on the *ghāṭs* and water architecture in South Asia, the reader might wish to consult Jan Pieper, “Water in Hindu Urban Architecture”, in *Art and Archaeology Research Papers (AARP)* N°15, London, June 1979; Klaus Rötzer, « Wells, *pokhara*, *ghāṭ* and *hammam* », in Couté and Léger, eds., *Benares : an architectural voyage*, ed. Créaphis, Paris, 1989, pp. 89-98; Julia Hegewald, *Water Architecture in South Asia : a study of types, development and meanings*, Leiden, 2002 and “Ghats and riverside Palaces”, in G. Michell & R. Singh, eds., *Banaras: The city revealed*, Marg Publications, Mumbai, 2005, pp. 67-77; Morna Livingston, *Steps to water : the ancient stepwells of India*, Princeton Architectural Press, New York, 2002; Savitri Jalais, “A riverfront structured to keep traditions alive ?” in *The myth of tradition – Traditional Dwellings and Settlements Working Paper Series 2012-2013*, International Association for the Study of Traditional Environments, University of California, Berkeley; Savitri Jalais, « Les ghat de Bénarès, une architecture de berge s’adaptant à son fleuve », dans *Projet de Paysage – Revue scientifique sur la conception et l’aménagement de l’espace*, TOPIA, Versailles, 2012.
- 2 The ancient system of Irrigation in the east of India followed the same principle of welcoming flood waters to spread in the fields. Floods were not only a symbol of purification but an indispensable element for the economic prosperity of the country. For further reading see, William Wilcocks, *Lectures on the ancient system of irrigation in Bengal and its application to modern problems*, Calcutta University readership lectures, University of Calcutta, 1930; Rohan D’Souza, *Drowned and dammed, Colonial Capitalism and Flood Control in Eastern India*, Oxford University Press, New Delhi, 2006; Savitri Jalais, « Protéger la rive, protéger la ville : le rôle structurel des ghat de Bénarès », *Sciences de l’environnement/Environnement et Société*, Hal, Paris, 2012.
- 3 Varanasi (Kāśī, Benares) is one amongst the many pilgrimage sites in India. « Far from standing alone, Kāśī, like a crystal, gathers and refracts the light of other pilgrimage places. Not only are other *tīrthas* said to be present in Kāśī, but Kāśī is present elsewhere. This kind of *transposition of place* is a common phenomenon in Indian sacred topography”, in Diana Eck, *Banaras : City of light*, Alfred A. Knopf, New York, 1982, p. 40.
- 4 Dominique Rouillard, *Building the slope, California Hillside houses (1920-1960)*, 1999 (1st published in french, *Construire la pente, Los Angeles 1920-1960*, Ecole d’Architecture Paris Villemin, Paris, 1984), p. 107-109. Another study in these lines is that of Florence Lipsky, *San Francisco, La grille sur les collines or The grid meets the Hill*, ed. Parenthèses, Marseilles, 1999.
- 5 Kevin Lynch, *The Image of the City*, MIT Press Massachusetts, 1960.
- 6 It was under one of these trees that Gautama Bouddha in the 6th century is said to have attained illumination.



Figure 1. Varanasi’s riverfront composed of ghats forms a public space that extends more than 6 km, © S. Jalais

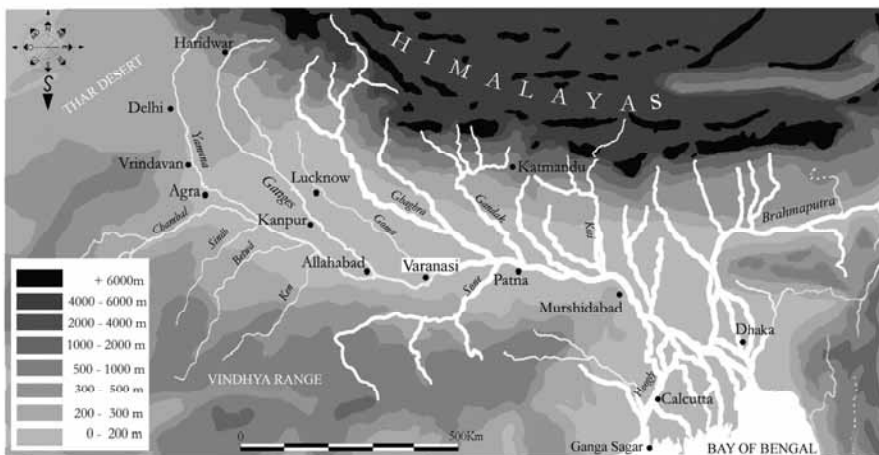


Figure 2. Varanasi is situated midway along the Ganges in the north of India, © S. Jalais

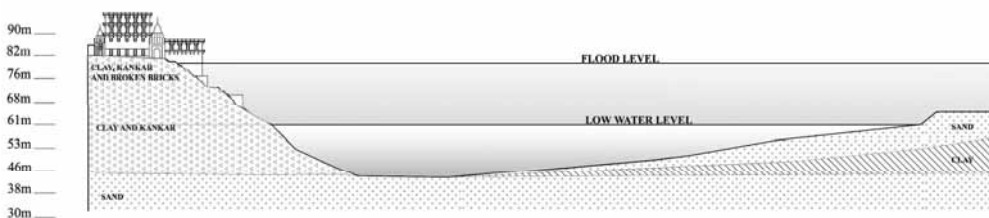


Figure 3. Diagrammatic section on the river – not to scale, showing the varying levels of the river’s water level, © S. Jalais