Chapter 6

The Buṅgadyaḥ Chariot: Process of Construction, Materiality and Craftsmanship

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With drawings by Bijay Basukala

Used in religious processions throughout South and Southeast Asia, temple chariots have evolved, during centuries, from traditionally wheeled vehicles drawn by animals or people into elaborate, large, often towering and complex structures (cf. Hüsken and Michaels 2013). These festival chariots, such as the one prepared for Jagannātha Ratha Yātrā in Puri, India are typically hand-pulled by devotees, function as mobile temples, moving deities or their representations through streets lined with worshippers, blessing them in the process and enabling an encounter with the divine. The tradition of chariot processions, known as *ratha-yātrā*s, forms an integral part of Buddhist and Hindu religious and cultural traditions in countries such as India, Nepal, Myanmar (formerly Burma), and parts of Southeast Asia, and they often belong to a particular temple or monastic or sectarian tradition within Hinduism and Buddhism. These vibrant festivals showcase the region's rich cultural heritage, fostering community bonds and preserving ancient customs. In Nepal, chariot festivals like the Rāto Matsyendranātha Yātrā/Jātrā known historically as Buṅgadyaḥ Yātrā/Jātrā, are important events that reinforce social structures and reaffirm the relationship between the divine and human realms (Owens 2002).

The ritual practice of moving deities in processional chariots has deep roots in South Asia, where the periodic circulation of gods through

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the urban landscape has long functioned as a means of reaffirming social order, community identity, and divine presence. In South India, the tradition flourished during the Chola Empire (from ninth to thirteenth century), while in North India, festivals like the Purī Ratha Yātrā gained prominence by the twelfth century (Kulke and Schnepel 2001). As Indian cultural concepts and practices spread across Southeast Asia through trade, education and diplomacy, so did the practice of chariot processions. In Myanmar, Buddhist chariot processions became established during the Bagan period (from ninth to thirteenth centuries) (see Moore 2007). Cambodia's Angkor period (802–1431 CE) saw grand processions likely including chariots, as evidenced by temple reliefs (cf. Roveda 1997). In Nepal, the Buṅgadyaḥ chariot festival has been celebrated since, at least, the seventh century CE, blending Hindu and Buddhist elements in a unique formation of Newar culture (Locke 1980).

Chariot processions, often carrying deities or sacred relics, symbolize the movement of divine power through earthly space, linking the celestial with the mundane. These processions are not just religious events; they serve as public rituals that sanctify communal spaces and reinforce the cosmic order. By transporting sacred objects from temples to towns, these events allow participating devotees to receive and reconnect with divine forces, symbolizing the gods' presence and blessing in everyday life (Locke 1980) and on a sacred, often intangible, topography of the town or city.

At the same time, chariot processions reflect and maintain social hierarchies and political authority. Drawing on the studies by Locke (1980) and Owens (1989), the chariot's movement through public streets is considered to mirror the royal or political processions of kings, symbolizing their divine mandate to rule. This reinforces the legitimacy of ruling elites by visually and ritually affirming their connection to the divine. Such processions are thus not only religious but also political acts, expressing the community's collective submission to both spiritual and temporal authorities. Locke (1980) and Owens (1989) underscore the dual role of these processions as both religious and political performances. While they promote communal unity and devotion, they also function as a form of social control, reaffirming social order and the power of the ruling class. This dual role assigned to chariot processions makes them a crucial element in the cultural and political fabric of Southeast Asian societies.

The culture of "chariot-making" for these processions is a rich tradition, embodying centuries of craftsmanship and devotion. Specialized

artisans, often cultivating skills over generations of caste-based expertise, lead the construction process. This typically involves carpentry, carving, painting, textile work, and metalwork (Bundgaard 1999). The process is imbued with religious significance, accompanied by rituals and ceremonies that sanctify the work (Toffin 2008; see Chapter 4, "Constructing Identity with the Chariot of Buṅgadyaḥ: The Case of Bārāhī Guthi from Patan," in this volume). In Nepal, the construction of the Buṅgadyaḥ chariot is a complex undertaking that involves multiple specialized groups and adheres to strict ritual procedures (Owens 1989), including fasting. With the chariot being repaired every year and built anew every twelve years, community involvement is common, with different groups sponsoring or constructing various parts of the chariot (cf. Fuller 1984). Participation is executed along the lines of caste and *guthi* membership (see Chapter 4, "Constructing Identity with the Chariot of Buṅgadyaḥ: The Case of Bārāhī Guthi from Patan," in this volume). The design of festival chariots is rich in symbolism, often reflecting cosmic or theological concepts specific to each tradition (Tripathy 2015). While deeply rooted in historical trajectories and layers of mythological narration, chariot-making reflects ongoing dynamics and innovation. This underlines the ability to respond to modern aspirations and conditions, sometimes incorporating new materials or techniques for enhanced durability and safety, such as the case where iron braces are used to hold the segments of the wheels together, at other times also catering to new social and political agents, such as donors. In festivals like the Buṅgadyaḥ Yātrā, there is a strong emphasis on maintaining traditional methods, as the act of constructing the chariot is itself considered a form of worship and an integral part of the festival's religious significance (cf. Locke 1980) and the dynamic landscape of communal and other social relations (see Chapters 1 and 3, in this volume).

While there is notable research and literature on the Buṅgadyaḥ procession, including its cultural, socio-political, and religious aspects (see "Introduction," in this volume), there remains a significant gap in the detailed documentation of the chariot-making process itself. Scholars such as John Locke (1980), Bruce Owens (1989) have contributed invaluable work, exploring the festival's symbolic meanings, its role in Newar society and its historical transformations. However, these studies, along with the previous papers of this volume, primarily focus on the spiritual and communal functions of the festival. The architectural and technical aspects of the chariot's construction have seen little to no comprehensive exploration.

Despite the centrality of the chariot in this procession, the construction and assembly process of the Buṅgadyaḥ chariot, distributed over diverse sites in Patan and Bungamati, and spanning two weeks until the chariot is ready for the ascending of the deity, has been poorly documented in terms of its architectural features. The chariot is built by members of the Bārāhī Caste, who specialize in carpentry, and the Yaṃvāḥ caste, who work with vines to finalize the structure. The knowledge of how to construct the chariot is passed down orally and through hands-on experience within these caste-based communities (see Chapter 4, "Constructing Identity with the Chariot of Buṅgadyaḥ: The Case of Bārāhī Guthi from Patan," in this volume). With the exception of a few historic manuscripts—such as a rough sketch found in a seventeenth-century handwritten manuscript (Figure 1) in the possession of Mr. Dil Kumar Barahi, the current head of the Bārāhī clan—there are no formal manuals or material instructions detailing how the chariot is to be assembled.[1]

In recent times, the Bārāhī community has experienced a noticeable shift in the interests and priorities of their younger members with most of them being more inclined towards "modern" careers and formal education. This tendency represents a significant departure from previous generations where family traditions and caste-based occupations acted as the primary guiding forces that shaped their professional lives. A generation ago, younger members of the community would not have questioned much the inherited skills passed down through generations, such as carpentry, metalworking, and knowledge of other intricacies of chariot-making in their daily and communal lives. These crafts were seen not only as a livelihood but also as a cultural duty and a means of maintaining social bonds and forms of identification within their communities. However, as the Kathmandu Valley evolves into a bustling metropolitan region, these traditional forms of labor have become less attractive to younger individuals. Seeking more diverse, socially recognized and often more financially promising opportunities in urban sectors such as technology, business, and education, they also experience challenges in making different ends meet, even if they would like to continue maintaining community rituals and practices. The rapid urbanization of Nepal, along with the global exposure of labor and education as well as lifestyles, has led to

1 This manuscript is dated to ca. seventeenth century, and it is written in Nepāla (Newar) script.

Figure 1: Manuscript containing drawing of the various components of the Chariot, 2022, photo: Manik Bajracharya.

the weakening of many local practices such as the art of metallurgy, painting amongst many other practices. This puts the art of chariot making—and other age-old crafts—at risk of being lost or forgotten. It is interesting that this happens at a time when Kathmandu Valley witnesses diverse forms of traditional/cultural revivalism in recent years. This felt loss manifests in a time where one can also observe an increasing interest in reviving and preserving the region's cultural heritage, particularly among the Newar community, including members of the youth. Many Newars have begun to embrace their rich traditions with a renewed sense of pride, recognizing the cultural, historical, and spiritual value of practices such as chariot-making. This resurgence is not merely a nostalgic return to the past, but a conscious effort to integrate traditional knowledge with contemporary concerns. Young artisans, cultural enthusiasts, and academics are working to document and protect these practices, seeing them as vital components of Kathmandu's identity. This revival has also found expression in festivals, exhibitions, and workshops that encourage active participation from younger generations.

As noted above, previous attempts to document the assembly process have been rather limited. Notably, a sectional drawing including some architectural terms by Gutschow, Kölver, and Shresthacarya (1987) offers some insight into the structural components of the chariot. From April 12 to 25, 1992, the anthropologist M. Lobsiger-Dellenbach observed the chariot's construction, and had it documented by M. Ph. des Chastonay with six sketches, though these were not to scale (Lobsiger-Dellenbach 1953). Additionally, a sketch by Robert Powell presented the chariot without its final layer of juniper. While these efforts provide some reference points, the detailed process of assembling the chariot has not been fully documented, especially in recent times.

Coming from a lineage of architects and draftsmen who have been involved in heritage conservation and documentation and as a student of architecture, the existing descriptions were found lacking in providing an understanding of the intricate craftsmanship, design principles, and construction techniques involved in building the chariot. Given the chariot's importance not only as a religious symbol but also as a monumental architectural structure, the need for more thorough documentation was recognized. Thus, from April 8 to April 21, 2023, the opportunity to observe and document the construction process of the chariot was undertaken, spanning a period of thirteen days. This

preliminary documentation provides an overview of the assembly process, detailing the sequence in which the various parts of the chariot are conjoined to form the unique mobile structure. Additionally, the Nepal Bhasa terms used by the Bārāhī carpenters for the different parts of the chariot were recorded, contributing to a deeper understanding of indigenous craftsmanship. Architectural drawings accompany this documentation, adding a visual layer to the descriptive process. The drawings were made by Bijay Basukala, my father, after the measurements of all structural components were taken in April 2022, while the carpentry was prepared at Taḥ Bāhāḥ (DANAM id: LAL0050). As an outsider, he was not allowed to climb the chariot while it was being constructed. Prior to this, a section drawing had been prepared by Niels Gutschow in 1984, later published in the book *Newar Towns and Buildings: An Illustrated Dictionary Newari-English* (Gutschow, Kölver, and Shresthacarya 1987). In pursuing this task, the Nepal Heritage Documentation Project presented a unique opportunity to contribute to the underexplored architectural dimension of the Buṅgadyaḥ festival. It helped to provide a detailed account of the chariot's construction, thus ensuring that this traditional craft is documented for future generations.

The materials for building the chariot are sourced from various locations in Nepal. In this process, particular attention is paid to both practical and ritualistic considerations. The majority of the sal wood used in the chariot comes from the forests of the southern region of the country. It is chosen on the basis of durability and suitability. However, certain parts of the chariot, such as the shaft (*dhaḥmā*), hold particular religious meaning and are sourced from specific regional areas. The shaft is obtained from a forest in Godawari, located to the east of Patan. The selection process involves priests, who choose a tree to be uprooted and worshipped as part of a ritual before it is harvested. The chosen tree must meet specific criteria, notably having a curved root end, which is essential for forming the frontal part of the *dhaḥmā*. While the entire chariot is constructed anew every twelve years, as part of the Buṅgadyaḥ festival, parts of the chariot might be replaced as needed throughout the intervening years. This is the case especially when they become damaged or deteriorate. Parts like the wheels and the *dhaḥmā* are replaced with accompanying rituals to preserve the sanctity of the chariot. Wheels and *dhaḥmā* are stored in assigned *phalcā* (see Chapter 1, "Heritage Infrastructures as Urban and Sacred Placemaking: The Multifunctional Role of Arcaded Platforms (*phalcā*)

in Patan, Nepal," in this volume), while other materials related to the chariot are kept in the Bārāhī's *guthi chẽ*.

In 2023, the preparation rituals in the context of the upcoming journey of the chariot started on the full-moon day of the month Caitra (around March 2023). The processional journey of Buṅgadyaḥ's chariot around the city of Patan usually begins on the afternoon of the first day of the bright fortnight of the month of Vaiśākha. The statue of Buṅgadyaḥ is dethroned from his seat at the Taḥ Bāhāḥ Temple (DANAM id: LAL0050), placed on a palanquin and then carried to the chariot. In the company of thousands of devotees, the palanquin reaches Pulchok Square where the chariot had been assembled and the statue ascends the chariot. On the fourth day, which falls on the third of the bright fortnight of the month of Vaiśākha (also known as *akṣaya tṛtīyā*) of his ascent to the chariot, the Buṅgadyaḥ procession starts to move as the chariot is pulled by hundreds of devotees.

Components of the chariot

This section focuses on the construction of the Buṅgadyaḥ chariot, detailing its structural components and the traditional techniques used in their assembly. Built annually by craftsmen, the chariot is constructed with interlocked timber joints, rattan rope lashings, and time-tested methods passed down through generations. Each element—the main shaft (*dhaḥmā*), the wheels, the superstructure, and the deity's platform—is crafted from materials selected for their strength and ritual significance (Figures 2, 3). The making of the chariot is not merely a technical process but a cultural act, where construction knowledge is deeply tied to religious symbolism and community identity. Understanding these components provides insight into how architecture and ritual coexist within the tangible form of the chariot.

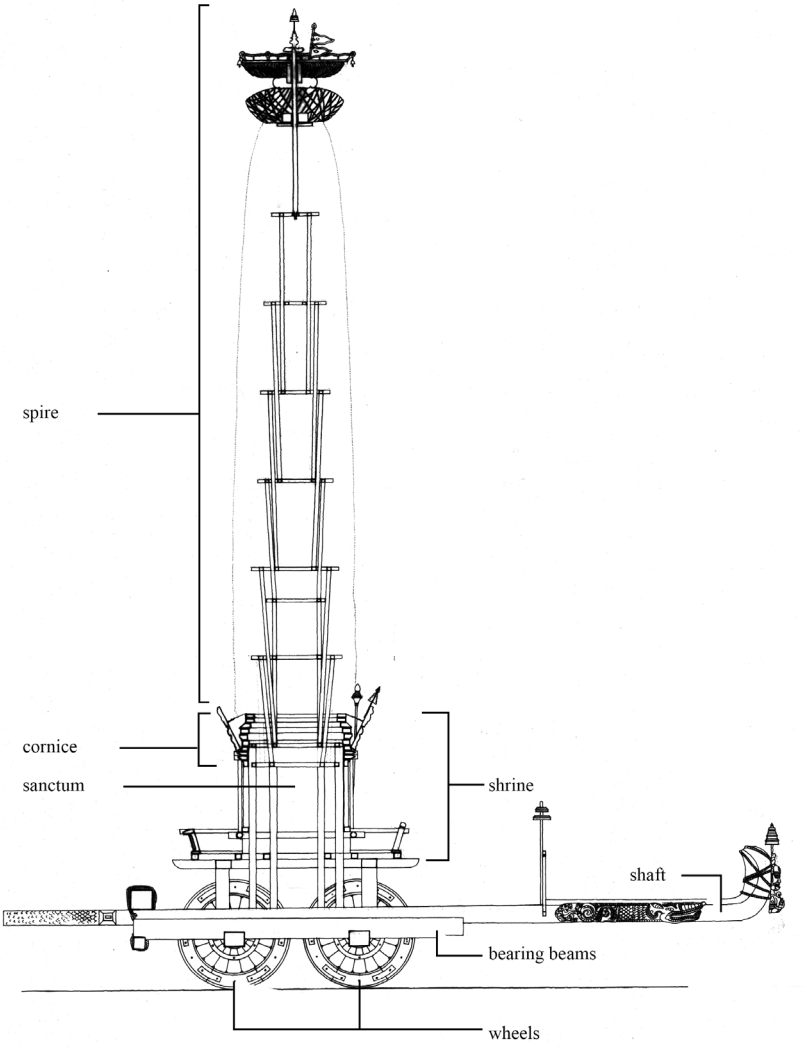

Figure 2: Components of the Chariot, drawing: Bijay Basukala, 2023.

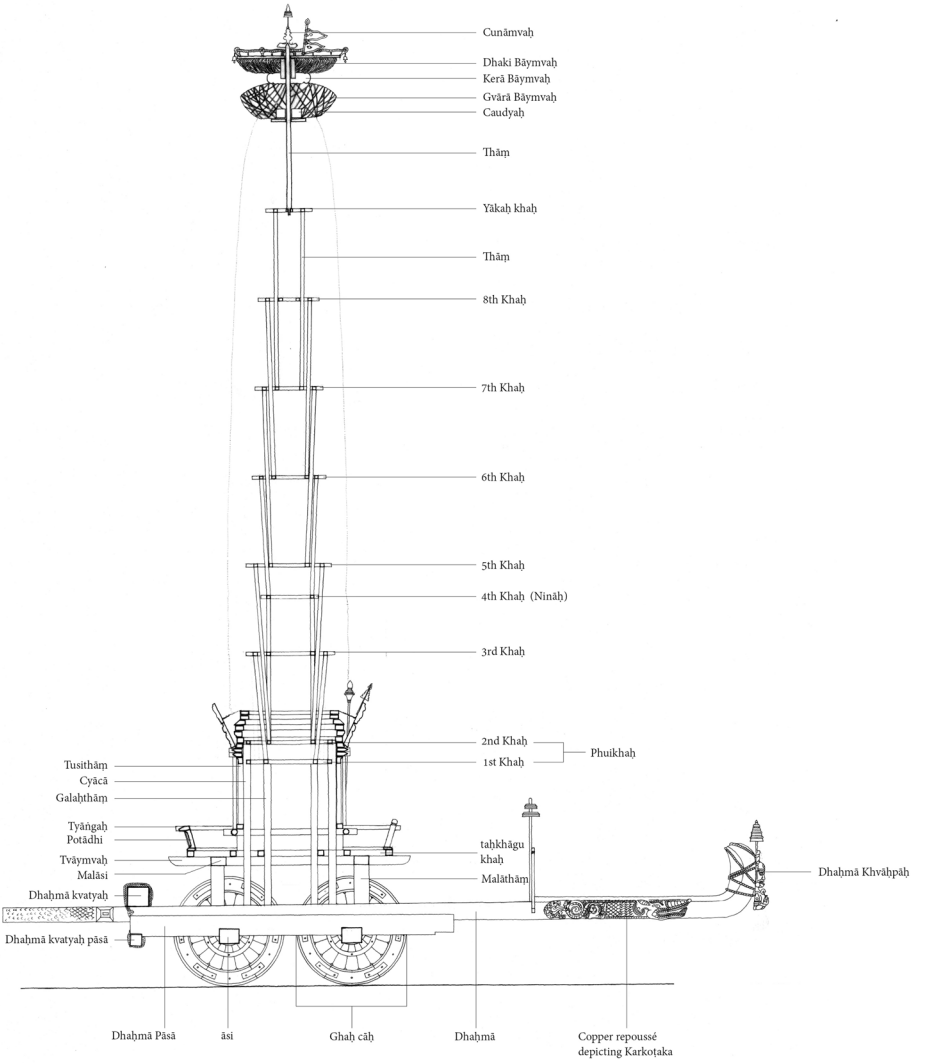

Figure 3: Longitudinal section with structural terms, drawing: Bijay Basukala, 2023.

The bearing elements of the base

*The wheels (*ghaḥcāḥ*)*

The wheels (New. *ghaḥcāḥ*) of the chariot (Figures 4, 5) comprise of six wooden arch segments, called *khāṃsa*, that serve as the wheel's outer radius, and eighteen inner longer spokes, called *haḥ*. These are arranged radially around a central wooden hub, called the *pvaḥcā*, into which the axle of the vehicle (*āsī*) is inserted. The four wheels, each representing different incarnations of Bhairava; Harisiddhi (front right), Luptasaṃhāra Lubhu Bhairava (rear right), Tyanka (Ṭīkā) Bhairava (front left), Kundi Bhairava (rear left) have three painted eyes, each arranged at an interval of 120 degrees around the central hub.

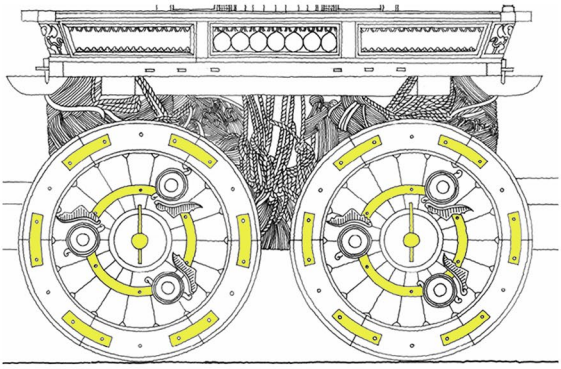

Figure 4: Buṅgadyaḥ chariot, detail of the wheels and the platform carried by the supporting frame (*tvāymwaḥ* and *malāsī*), the rattan vines tying the platform to the bearing beams (*dhaḥmā pāsā*), and the wheels with their six iron plates on the outer ring, the inner ring and the axle, rendered yellow, drawing: Bijay Basukala, April 2022.

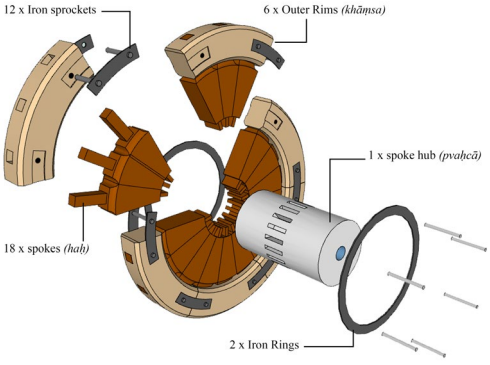

Figure 5: Exploded view of the wheel showing its various components, drawing: Bijay Basukala, 2023.

*The axle (*āsĩ*)*

The wheels are fixed onto a solid iron axle, the *āsĩ*. These two solid iron axles allow the entire chariot's weight to be transferred to the ground through the wheels. All elements running along the horizontal axis of the vehicle rest on these solid iron axles.

*The shaft (*dhaḥmā*)*

The shaft (*dhaḥmā*) is the longest element running along the axis of the chariot and has a slight curve on its frontal end. This curve is achieved by careful selection of the tree from which it is made. The timber comes from a fibrous tree called *saur* in Nepali, which is likely identified botanically as *Samanea saman* although it is to be noted that the term "Saur" is used rather ambiguously in Nepal for many types of wood.

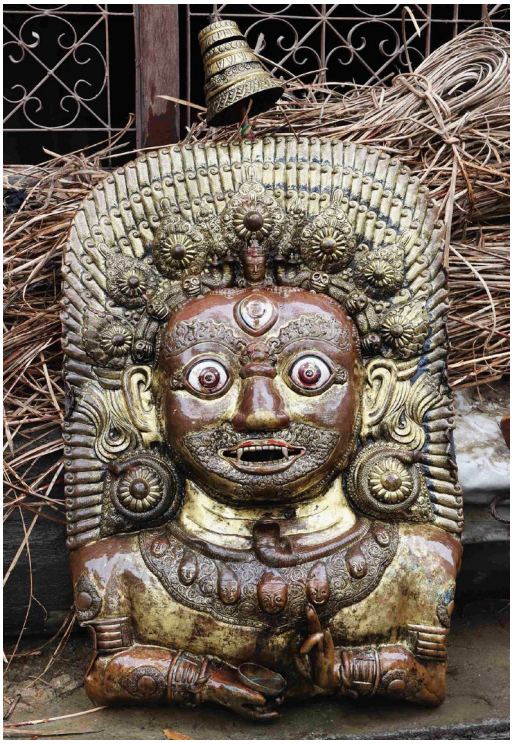

Figure 6: Dhaḥmā khvāḥpāḥ, the mask of the shaft, 2022, photo: Yogesh Budathoki (NHDP).

Figure 7: Painting on the front end of the shaft representing a *makara*, 2022, photo: Christiane Brosius.

The craftsmen have to find a tree with a slightly curved root system so that they can carve out the required curve. The curved front end boasts the *dhaḥmā khvāḥpāḥ,* literally the mask of the shaft (Figure 6).

The bend is followed by a painting of a creature, which has some similarities to the *makara* (an aquatic creature promising water and rain) (Figure 7). The craftsmen, however, refer to the creature Karkoṭaka, a *nāga* (serpent deity) mentioned in the myths surrounding Buṅgadyaḥ.

This is followed by a framed wooden structure where the priests (*pāneju*) of the Buṅgadyaḥ lean on while coordinating the pulling of the chariot. Then, comes the section of the shaft directly above the axles of the chariot. This is where it rests on the axles (*āsĩ*). On the posterior end of the shaft, two wooden blocks are tied to it running across the shaft. The upper one has a section of 45 × 45 centimeters and is called *dhaḥmā kvatyaḥ,* whereas the lower one is approximately 10 × 10 inches and is referred to as *dhaḥmā kvatyaḥ pāsā* (*pāsā* is the Nepal Bhasa word for friend).

*The bearing beams (*dhaḥmā pāsā*)*

Two shorter wooden beams run parallel to the shaft right above the wheelbase and these also rest on the axles. This pair of wooden beams are called *dhaḥmā pāsā* (Figure 8, right).

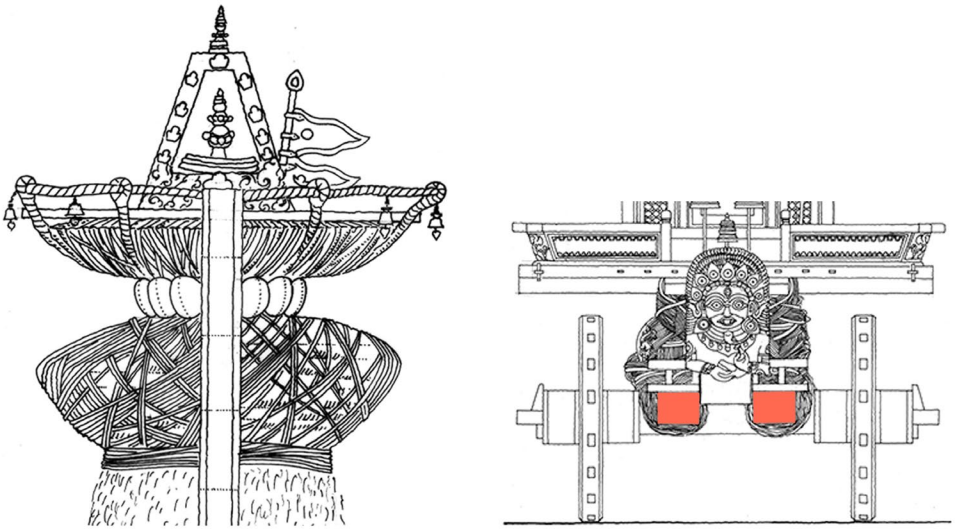

Figure 8: Left: detail of the finial with the ovular shaped base (*gvārā bāymvaḥ*), the ring of *amalaka*, the basket shaped platform (*dhaki bāymvaḥ*), and the pinnacle (*cunāmvaḥ*) at the very top. Right: detail of front elevation with the pair of supporting beams (*dhaḥmā pāsā*), rendered red. The central shaft (*dhaḥmā*) with its curved end bearing the mask of Bhairava has no bearing function, drawings: Bijay Basukala, April 2022.

The shrine

The elements above the shaft (*dhaḥmā*) builds up to a structural form analogous to the traditional shrines of the valley. This volumetric form can further be segmented into three parts,

Structural support and the platform

The platforms and the structures above are supported by the bearing beams and the axles upon which four thick primary structural pillars, called the *malāthāṃ*, and smaller ones, called *galaḥthāṃ* are nested. These stout pillars rest on the pair of bearing beams, which transfer the load onto the axles.

A horizontal wooden lattice border, that defines the perimeter for the shrine, is then built upon these foundational pillars. Wooden frames formed by the interlocking of more than four wooden beams that act as platforms or frameworks for other parts to attach to are called *khaḥ*.

However, we should note that chariots in other parts of the Kathmandu Valley are also called *khaḥ*.

On top of the wooden lattice border made up by the *malāsĩ* and the two *tvāymvaḥ* rests sixteen pieces of wooden beams interlocked to one another forming a platform. This is called *taḥkhāgu khaḥ*, which translates to the biggest *khaḥ*. This platform formed by sixteen interlocking beams acts as the main platform for the sanctum of the deity to be built upon.

The central four pillars, called the *galaḥthāṃ*, extend from the supporting beams to the first *frame* level and continue to rise up to the cornice of the shrine.

The sanctum

The main shrine (Figure 9) is defined by its four columns these are referred to as *tusithāṃ*. This further acts as a framework upon which the *laḥsĩ* can be tied to. *Laḥsĩ* are unworked tree trunks that run along the spire of the chariot up to the cubical wooden block, at the tip of the spire (*caudyaḥ)* and gives the spire its roundness.

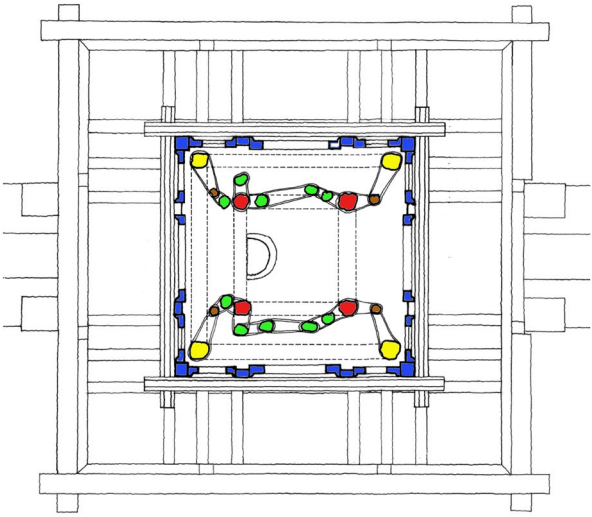

Figure 9: Buṅgadyaḥ chariot, horizontal section of sanctum (*dyaḥkhaḥ*) indicating the four pillars (*galaḥthāṃ*) rendered red, the four pillars (*cyācā*) supporting the second level rendered brown, the eight tree trunks that extend up to the finial rendered green, the four pillars supporting the cornice rendered yellow, and the pillars and door frames defining the outer shell of the shrine rendered blue, drawing: Bijay Basukala, April 2022.

The cornice

Eleven levels of wooden frames stack up to resemble a cornice and add detail to the façade of the sanctum. These rest around the pillars (*tusithāṃ*) that defines the area of the sanctum. Each of the eleven levels of these cornice are made up of singular wooden beams bound together with lap joints around the first two internal lattice frameworks (*phui-khaḥ*). The facade of this cornice is plated with gilded copper sheets in repoussé work.

The spire

Four central inner pillars (*galaḥthāṃ*) rise up to the level of the cornice of the shrine. These central pillars are braced along the interlocking of the cornice, and provide sufficient structural support for the long vertical spire that is to be built on top of it.

Several wooden lattice frames serve as horizontal load bearing and skeletal structures along the spire. Long wooden posts (*thāṃ*), arranged at a slight angle, act as supports for the spire and are tied to the corners of the frames. These *frames* progressively get smaller in size as we go up the spire with the ninth one being the smallest.

The first *frame* supports the columns of the third *frame* and are further braced by thicker wooden posts, called the *sohra hāta*, that run up from the *dhaḥmā pāsā* and are held in place together by a smaller frame called the *nināḥ*. The columns skip the frames directly above it to support the next lattice frame. The last *frame* must be placed by a single person as the structure cannot yet hold the weight of multiple people, and thus acquires its name *yākaḥ khaḥ* (*yākaḥ* means "alone" in Nepal Bhasa).

This uppermost frame supports a wooden post, which holds the elements of the upper segment of the tower (a similar technique is used in Nepalese temple architecture where a wooden post is used as the skeletal structure for holding the finial of a temple in place).

The first element, as we rise up this spire, is a cuboidal block of wood, called the *caudyaḥ*, which is placed as a representation of Cāra Nārāyaṇa, who provides the Kathmandu Valley with its spatial order. A toroidal shape is woven around the block using a rattan vines (*pau)* (rattan is a climbing palm belonging to subfamily calamoideae). This is called the *gvārā bāymvaḥ* and atop this another smaller toroid made out of brass, called the *kerā bāymvaḥ*, is placed around the central spire.

A large, circular platform (*dhaki bāymvaḥ*), is woven above it and on it sits the pinnacle of the chariot (*cunāmvaḥ*).

Assembly of the chariot

This section presents observations from the two-week-long construction process of the Buṅgadyaḥ chariot, focusing on the architectural aspects of its assembly. Traditionally constructed using manual techniques and inherited craftsmanship, the chariot's construction this year saw the integration of modern machinery such as cranes and power tools—a notable departure from past practices. The sequence of structural operations, methods of timber handling, and adaptations in joinery and lifting techniques were closely observed and documented through field visits and photographs. These observations reveal how evolving logistical needs and efficiency concerns are influencing the execution of what is historically a craft-based construction process. The account highlights the dynamic interaction between traditional knowledge and contemporary interventions in the making of this iconic mobile structure.

Day 1 (April 8, 2023)

On the first day, the assembly of the chariot is initiated by bringing the chariot wheels from its storage in Jawalakhela to the assembly site in Pulchok. All other wooden components are also brought to site, on the first day, and assembly of the frames, which make up the chariot, are assembled and checked on site.

The axle is positioned over a pit on the site of construction where the chariot is to be built. Four points lying directly under the axle are dug out to accommodate four wooden pillars, called *hāmvaḥ kī*, which lift the whole superstructure above the ground. The *dhaḥmā pāsā*, which is also stored along with the wheels in Jawalakhela, is brought to the site and placed on top of the axles. Earlier, this used to be done manually. But since 2020, the municipality of Patan (Lalitpur) has helped in easing the construction using mechanized cranes. The *dhaḥmā pāsā* and the axles have half laps that fit in perfectly with each other. Once the pair of bearing beams have been installed, the four inner columns of the chariot (*galaḥthāṃ)* are fitted into the mortises on the *dhaḥmā pāsā*.

Day 2 (April 9, 2023)

On the second day, larger structural columns (*malāthāṃ)*, supporting the platform on which the shrine is to be built upon, are put into place (Figure 10). The tenons from these two structural elements extend all the way through the pair of bearing beams, and snugly clamp the covering of the axle (*āsĩ khola*) between them. After the installation of the structural columns*, the beams that define the perimeter of the shrine are arranged on top of the columns, interlocked with mortise and tenon joints*. Meanwhile, the nine lattice frames that make up the volumetric upper part of the chariot are assembled and checked on site by the carpenters who make changes to the frames where necessary.

After the main structural system of the base has been assembled, the framework for the base of the shrine, called *taḥkhāgu khaḥ*, is assembled on top of the *beams that that define the area of the shrine*. The frame is composed of sixteen wooden beams that interlock around the inner structural columns and are bound together using mortise and tenon joints. Once the platform is established, the wheels are removed from the structure manually in order to ease the work of the rattan vine workers, who will come in the next day to work on the rattan vine support structure of the chariot.

Figure 10: The assembled base of the Chariot at the end of Day 2, the bearing beams and the structural columns have been fixed, April 9, 2023, photo: Yogesh Budathoki (NHDP).

After the removal of the wheels of the chariot, four columns (*tusĩthāṃ)*, are locked onto the platform along the second wooden beam from the inner structural columns (*galaḥthāṃ*). For this, a variation of lap joint technique is used. These columns define the area of the shrine that houses the icon of the deity. Four of these are installed on four corners and tied in place to the platform using ropes. The upper parts of the *outer structural columns* are interlocked in the same way to the two frames, called the *phuikhaḥ*, which are made up of wooden beams and dictate the height of the deity's shrine. After this has been done, four smaller columns (*cyācā*), are slotted into grooves in each of the *perimeter defining beams* reaching all the way down to the pair of bearing beams. The first wooden frame (*phuikhaḥ*) is locked in place to the inner structural columns and *cyācā* using lap joints and tied to the *outer structural columns* using similar lap joints and ropes. To place the second wooden frame, a spacer, in the form of a short wooden column, is placed into the mortises of the first wooden frame (first *khaḥ*) and to this the second *phuikhaḥ* is slotted into the tenons of the *cyācā*. Once every element is in its place, the structure is tied with ropes to make it stable.

Day 3 (April 10, 2023)

On the third day of the chariot-making process, the work of creating the spire of the chariot begins. The *inner frames of the cornice*, which had been established the previous day, aid in supporting the other seven frames of the spire above the shrine level. The first two frames are supported by long wooden columns (*thāṃ*) which rest on the *inner frames*. Once these two levels have been established, four long wooden columns, called *sohra hāta* (sixteen cubit), made out of whole tree trunks, about ten centimetres in diameter and sixteen cubits long, are put in place (Figure 11). These columns act as the main support for the elongated spire.

They pass through the two installed wooden frames, the *inner frames*, and through the platform (the *taḥkhāgu khaḥ)*, to rest on the mortises on the pair of bearing beams that rest on the axles of the chariot and adds much needed structural support to the structure. These columns are too heavy to be hoisted up completely and so the workers thread their upper ends through the gap in the frame of the spire, above the *level of the cornice*. Then, they raise the lower end completely until it can be put into place through the two frames that define the height of the shrine. In order to raise and hoist these columns, the fifth frame that has already

Figure 11: The 16-cubit long columns after being fixed to the superstructure of the chariot, 2023, photo: Yogesh Budathoki (NHDP).

been installed is used as an anchor point to rest the ropes so that the people who are pulling these columns up do not have to work against gravity and can pull it horizontally. Once the sixteen-cubit long (*sohra hāta*) column rests on the beams, at the base of the chariot, it is hammered and pushed into place. The flexibility provided by the thin frame aids in the placement of the columns. Were the frames to be too stiff and large, the placement of these columns would be close to impossible as there would not be much space to work with them. As the second column was being installed, the ropes, which are used to hoist them up, snapped unexpectedly and a new batch of ropes were ordered. The second column was successfully installed but then again during the hoisting of the third one, the pressure exerted by the weight of the columns snapped a wooden piece resting on the first frame (*phuikhaḷ*) causing the structure to collapse. The work was halted and a crane was called to dismantle the structure and rebuild it. This mishap caused sixteen wooden beams and columns, already installed on the structure, to be damaged.

Day 4 (April 11, 2023)

After the incident, the entire structure above the shrine height of the chariot had been repaired and the four [*sohra hāta*] columns had also

been installed. The *sohra hāta* come together above the first frame to be interlocked by another internal wooden lattice frame called the *nināḥ*. On this day, the vine workers (Yaṃvāḥ) start their work on weaving the rattan structures (Figure 12).

The Vine Workers Trust, the Yaṃvāḥ Guṭhī, consists of a total of twelve families, with a minimum of one representative/worker from each family present on site during the building of the chariot. Each of these representatives bring two friends as helpers along with them who are paid by the trust for the construction of the chariot. With twelve representatives from each family and two helpers that each representative brings along, the vine workers group consists of a total of thirty-six people that are involved in this part of the chariot-making process.

A pond located near the construction site (*Situṃgāḥ Pukhū*) is used to soak the rattan used by the vine workers for the construction of the chariot. The rattan vines are made workable by soaking it in water so that it can be bent into the required shape. The older among the vine workers, who are not fit enough to climb the structure, stay on site preparing the rattan vines by cutting the fauna into two pieces and bundling

Figure 12: The inner and outer columns linked by vines and the apex of the outer columns tied with rattan vines with decorative motifs, 2023, photo: Yogesh Budathoki (NHDP).

them together. Two types of rattan are used in the building of the chariot. Rattan vines of smaller diameters are used by tying up bundles of them together to make a cable of a bigger diameter while rattan of a larger diameter (approximately one inch) used for ropes to tie the structure or to lift up the wooden beams and posts.

The vine workers working on the chariot start by binding the two bearing beams to the axle cover using ropes made out of the smaller rattan. Two rounds of these ropes made out of rattan are arranged in a criss cross pattern to secure the two bearing beams and the axle cover. While this is being done, the apex of the outer columns (*tusĩthāṃ*) that define the area of the sanctum is decorated using rattan vines woven in a decorative fashion. The posts are also strengthened using the rattan vine bundles to increase the stiffness of the structure. Then, in a process, called *thāṃ chīgu*, the corners of the two upper frames that make up the base of the spire of the chariot, are tied down on each corner using jute ropes and rattan of a larger diameter to the bearing beams at the base of the chariot in order to add structural stiffness.

Day 5 to 7 (April 12–14, 2023)

On the fifth day of construction of the chariot, work starts by folding up a bundle of smaller rattan vines to create a bundle called a *macā*. The vine workers' team use these rattan parcels to create dampers around the wooden post (*nināḥ*) that support the beams (*tvāymvaḥ)* of the platform. Several of these parcels are stacked around the wooden post and these are then constricted around it using thick rattan vines. This helps to bind the beam of the platform to the bearing beam below and with around seventeen people tugging at the ends of the vine to tighten the hold on the structure, the process joins the parts of the chariot firmly together and makes it act as a whole. This helps to absorb some shock and prevent any direct stress to the structural system within it. Special attention is given to the winding of the ends of the *nināḥ* to the *tvāymvaḥ* and the *dhaḥmā pāsā* (Figure 13). This technique used to bind the two elements together results in a woven overlapping pattern of rattan.

Over the next three days, all of the components constituting the lower part of the chariot are bound together using the same technique. The vertical columns of the chariot's lower half are braced by the rattan stacks and bound to the structure tightly by thick rattan vines. By April 15, 2023, the bracing for the lower part of the chariot had been completed.

Figure 13: The bearing beams and the columns of the structure wound in rattan vines, 2023, photo: Yogesh Budathoki (NHDP).

During these days, the older among the vine workers are busy preparing a thick cable made out of rattan vines, which is then wound around a cubical block of wood (*caudyaḥ*) on the topmost wooden post of the chariot to create an oval volume called the *gvārā bāymvaḥ*. Preparations for this process start by peeling off the pith of the rattan vine from its outer epidermis. The pith is discarded, and the epidermis of the vine is used to create the cable. Couple of the prepared rattan vines are bundled up together and are tied firmly at the ends to other bundles of the vine to create a long rope. Another length of a single vine is wound around it throughout the length of the rope. First, three ropes of this kind are created and then braided together to create a strong thick cable. Additional vines are tied to the ends of the individual ropes that make up the cable and continuously braided to achieve the desired length for the cable to be wound around the shaft of the chariot.

Day 8 (April 15, 2023)

By noon, on the eighth day of the construction process, the vine workers tighten the final vine that supports the lower part of the chariot. At this point, the first frame of the spire has been braced diagonally with the lower frames (*phuikhaḥ*) using the rattan parcels, on the

Figure 14: The skeletal structure of the chariot after the installation of the ninth and last lattice frame, 2023, photo: Yogesh Budathoki (NHDP).

sides facing the front and back of the chariot. After this part is completed, the carpenters (Bārāhī) can now further work on the chariot's assembly. At midday, after a worship and offering by the head of the carpenters, work promptly begins with the re-installation of the wheels, which had been removed on the second day of construction to ease the rattan-tying process, back on the chariot. The heavy wheels are levered using a wooden post, they are rolled to the axles and installed on to it manually. The process starts by attaching the front right wheel followed by the front left wheel. The rear wheels are then placed in the same order with the right one going in first, followed by the left one.

Once the wheels have been placed, the construction of the chariot's spire continues. Three of the *khaḥ,* including the frame (*nināḥ*), which locked the four sixteen-cubit long columns in place, had already been installed. The remaining four frames are then installed. With the width of these frames getting smaller with each consecutive frames that is placed, the eighth frame is not wide enough to support the weight of multiple people on it yet, and thus the last and ninth frame must be placed by a single person and thus acquires its name *yākaḥ khaḥ* (*yākaḥ* is the Nepal Bhasa term for "single") (Figure 14).

Days 9 and 10 (April 16–17, 2023)

On the ninth and tenth day, after the spire has acquired its structural form with the placement of its last wooden frame, the vine workers get to work to secure the four corner ends of these wooden frames with vines and jute ropes that drop all the way down to the shaft. There itself, it is tied down to the two main bearing beams, a technique that adds to the integrity of the structure. Each frame is braced down to the bearing beams by four vines and four jute ropes (Figure 15). Within a span of two days, the meticulous process of securing each of the seven frames above the shrine is carried out.

Figure 15: The skeletal frame of the chariot being covered and bound with paddings of rattan vines, 2023, photo: Yogesh Budathoki (NHDP).

Days 11 and 12 (April 18–19, 2023)

On the eleventh and twelfth day, once the spire's skeletal structure had been stiffened by the rope and vine bindings, a wooden post, which has a cubical wooden block revered as *caudyaḥ* (a representation of Cāra Nārāyaṇa) slotted into it, is installed on to a mortise on the last frame. The wooden cubical block is further braced by slender columns resting on the eighth frame. These columns are then wound together by vines throughout the length of the post below the *caudyaḥ*.

The framework that makes up the spire is further braced by diagonally weaving the rattan between the levels of the frames. On each side of the spire's skeletal structure, the opposite corners of two frames are bound together by thinner vines and these are in turn braced by numerous

Figure 16: Tree trunks (*laḥsĩ*) being installed onto the spire and the shrine, April 20, 2023, photo: Yogesh Budathoki (NHDP).

bundles of rattan, which are tied to the slender posts that support the frames.

On April 18, sixteen pieces of unworked tree trunks (*laḥsĩ*) were also delivered to the site and were shaved down on site to the required circumference of approximately 18–20 inches.

Day 13 (April 20, 2023)

On the thirteenth day, after the diagonal bracing of the frames had been completed, work on the chariot continues by the placement of eight of the tree trunks (*laḥsĩ*) (Figure 16). The trunks are hoisted manually using ropes until the lower ends of the trunks reach the level of the shrine. These are then inserted through the gap between the lattices of the two frames that define the interior top of the shrine and are braced on the level of the platform. The trunks are firmly tied to the inner columns and alongside each of the frames on the spire's framework. A slight tilt of the chariot's spire became visible by this stage of the construction process.

Day 14 (April 21, 2023)

On the last day, eight remaining trunks are added to the structure, bringing the total number of tree trunks used to 16. These, however, do not run all the way to the base platform and instead rest on ends of the first wooden frame. With all sixteen tree trunks having been fixed to the chariot, the braided vine cable is brought to the site and wrapped loosely around a bamboo pole. One of these vine cables is tied with a rope and hoisted to the top of the chariot's spire where it is wound around the wooden block to form an ovular volume (*gvārā bāymvaḥ*). Once one end of it has been fixed to the spire, a team of four people circumambulate the chariot clockwise, with two of them hoisting the cables on a bamboo pole while two others lead the procession of winding the cables managing the cables the best way possible. This cable, made out of vines, also acts as a belt tying the upper ends of the trunks to the spire. With the winding of the vine cables, the internal structure of the ovular volume is completed by meticulously weaving the smaller rattan vines around the volume that has been created by the cables.

Once the ovular volume has been completed, jute ropes are tied around the sixteen pieces of trunks along the entire length of the spire up to the shrine of the chariot (Figure 17). The winding process is the same as the winding of the ovular volume, with the ropes being held on a bamboo pole held by two people who circle the chariot clockwise while a team of workers on the spire of the

Figure 17: Jute ropes tied around the 16 tree trunks surrounding the skeletal frame of the spire, the ovular volume (*gvārā bāymvaḥ*) is visible at the apex, 2023, photo: Yogesh Budathoki (NHDP).

chariot work on placing the ropes in regular intervals working from the top down.

The constituents of the chariot's façade, which comprised of twenty-four pieces of gilded copper repoussé, and forty pieces of copper repoussé, that made up the cornice of the shrine, along with all decorative outer elements of the chariot, are also delivered to site and installed on the platform as the spire is being completed. Simultaneously, a team of carpenters tug the shaft from its place of storage to the assembly site for installation. The finial of the chariot, along with a woven platform, is also hoisted to the top of the spire and installed. Finally, the shaft of the chariot is manually slotted into the gap between the pillars that held the weight of the entire chariot and locked in place with a wooden peg. Two large blocks of wood, called *dhaḥmā kvatyaḥ* and *dhaḥmā kvatyaḥ pāsā*, which act as crossties establishing a counterweight so that the shaft does not tip over, are then placed and tied to the posterior end of the shaft thus marking the end of the construction process of the chariot.

Conclusion

This documentation of the structure of Buṅgadyaḥ chariot gives valuable insights into the numerous components of the chariot, providing their original names in Nepal Bhasa, and the detailed process of assembling the chariot for the Buṅgadyaḥ festival. The study of the construction process has been done to highlight the complementary and meticulous processes, also in order to document the elaborate knowledge of these steps, the architectural details and their respective functions. This detailed documentation intends to highlight the craftsmanship and technical expertise required to bring this monumental and robust religious structure together. By paying attention to the terminology used by the artisans, this paper helps to set up a cultural lexicon essential for understanding the traditional methods that have been passed down through generations of the respective parties associated with the cult of Buṅgadyaḥ. Additionally, the documentation of the assembly process illustrates the careful planning and coordination that is necessary to unite all the numerous elements of the Buṅgadyaḥ chariot, ensuring its functional and symbolic integrity. While this paper primarily addresses the technical aspects of this traditional artwork, it could also serve as a vital resource for future generations, ensuring that the art of chariot-making is preserved and appreciated in both its cultural, social and architectural dimensions.

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Drawings of the *ratha* (chariot)

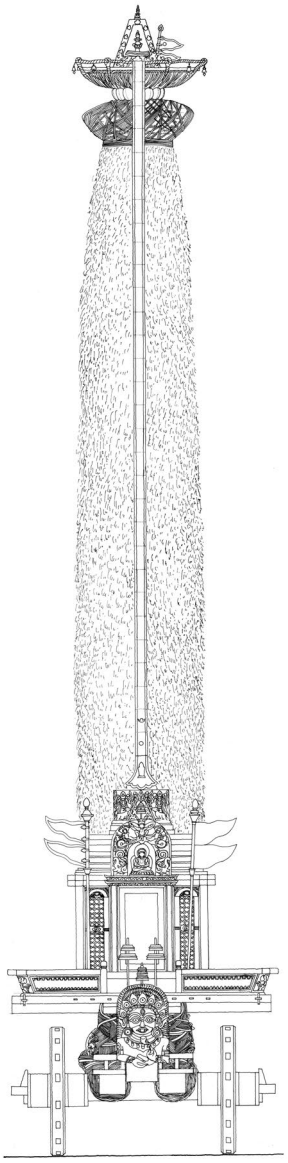

Figure 18: Buṅgadyaḥ chariot, front elevation, drawing: Bijay Basukala, April 2022.

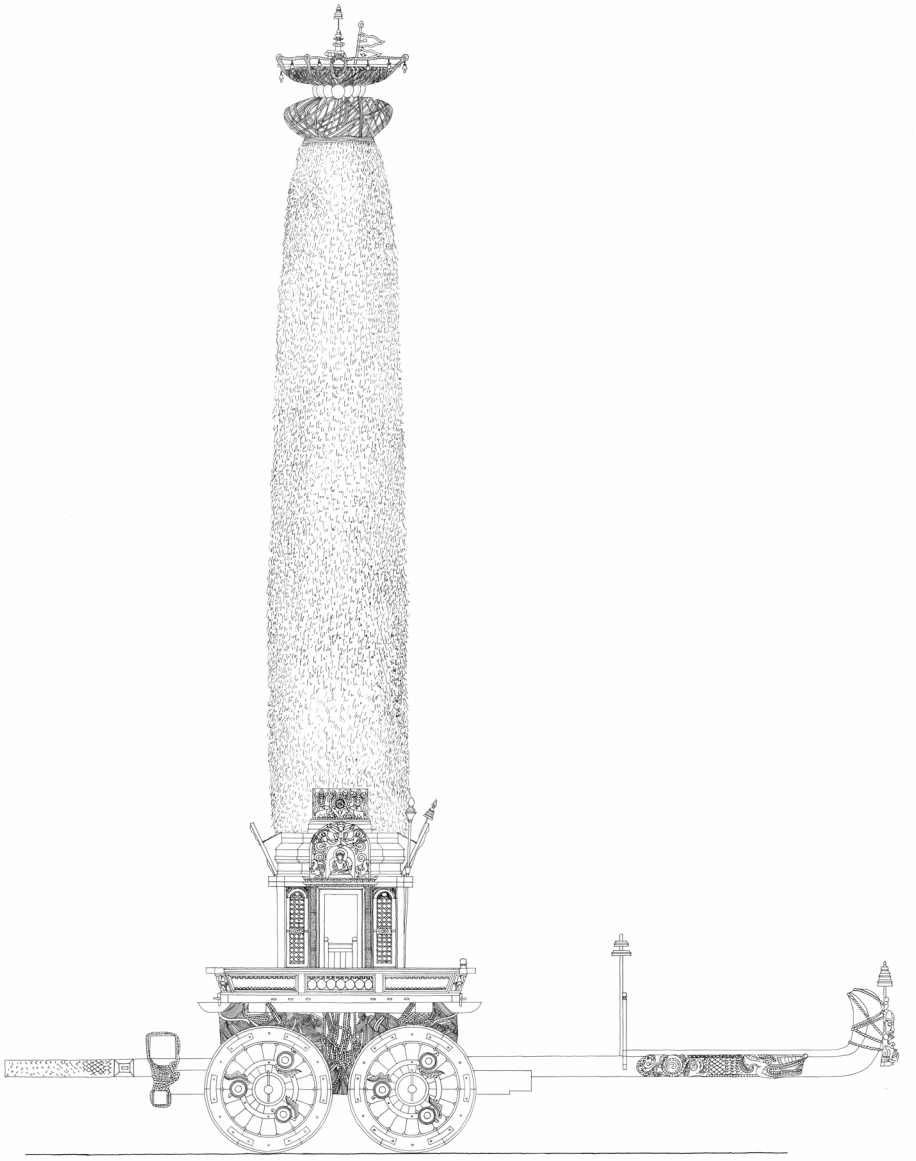

Figure 19: Buṅgadyaḥ chariot, elevation right side, drawing: Bijay Basukala, April 2022.

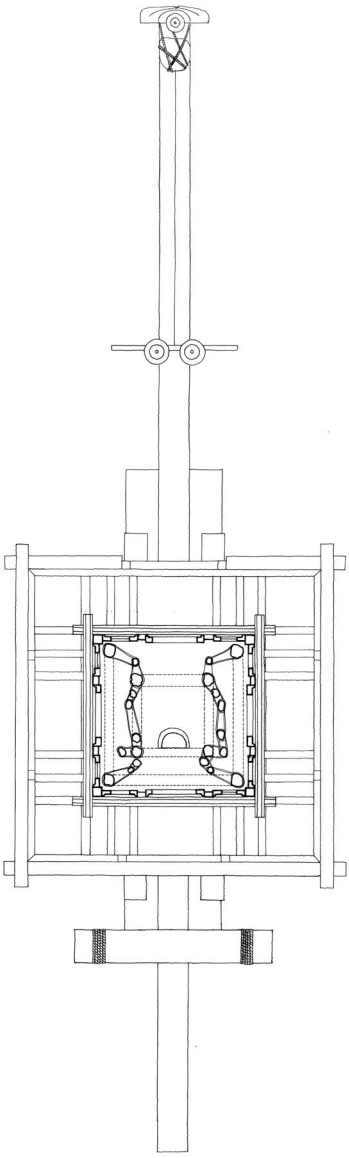

Figure 20: Buṅgadyaḥ chariot, horizontal section of sanctum (*ḍyahkhaḥ*), drawing: Bijay Basukala, April 2022.

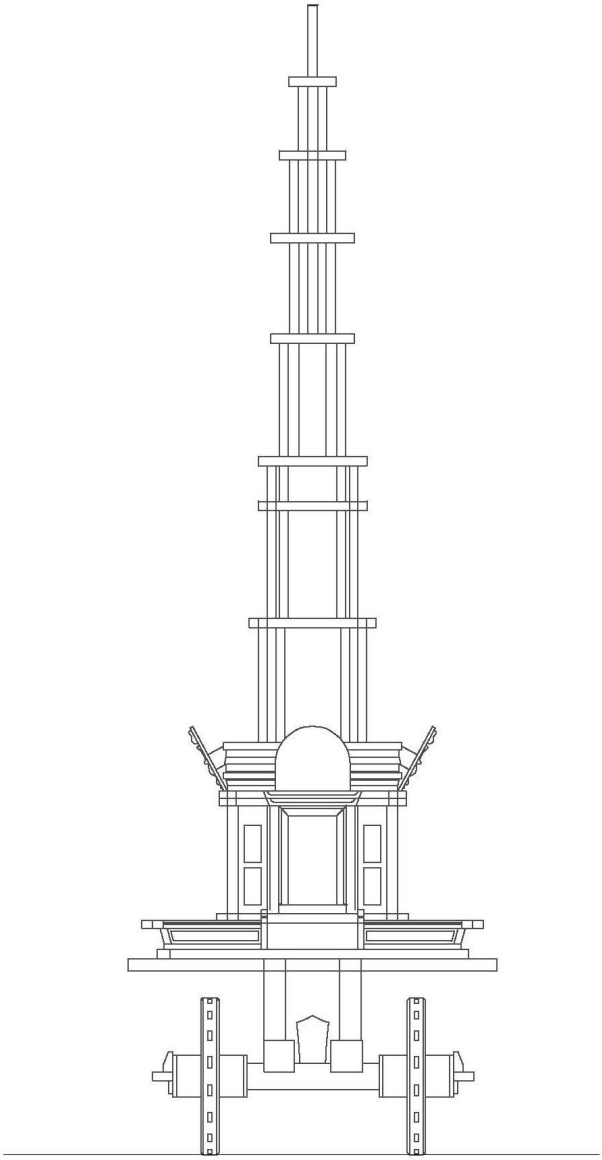

Figure 21: Buṅgadyaḥ chariot, cross section, drawing: Bijay Basukala, April 2022.