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HARṢA vs PULEKEŚIN II: A Game of Stratagems

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Wars have played a critical role in shaping the annals of History. However, their analytical provenance is primarily limited to the examination of their causes and consequences. Elucidation of the course of action only enters the analytical narrative intermittently, especially as an abridgement between the two general core components of the discussion. It must be diligently realized that wars have deeply influenced the structuration of our hoary antiquity, and therein lies the centrality of their historical significance. Recent developments in Game theory, Economics, Military Science and Geopolitics provision us with much needed skillset to make informed forays in specific events of bygone eras, glean-out formative details of conflicts with precision, and comprehend the complex interactions amongst myriad variables involved and of relevant interest. This paper shall attempt to utilize the data and diction provided by these varied disciplines in throwing a flood of light on the mysterious but epigraphically sanctified, and historically significant clash of Harṣa and Pulekeśin II, as recorded tangentially in literary and inscriptional references, and also broadly comment upon the nature of organized conflict and institutional warfare between differing polities and States in the Early Medieval period of Indian History. The discussion herein shall illustrate novel features of pre-modern confrontations, unveil fascinating facets of Ancient Indian military knowledge, and will also complement the endeavor to broaden the horizons of Indian Historiography.

Introduction

Wars occupy a considerable portion of historical discourse, for a dedicated study of their causal machinations and aftermath often signify the clash of two opposing States, interests, policies or perspectives (Russell 1917: 12), the ramifications of which are usually not localized, and extend beyond the immediate vicinities to enter into the policy designs of territorial neighbors and political imperial competitors as *externalities* (Kolstad 2011: 17, Bhatia 1981: 6). The interconnected nature of political warfare, and its intimate linkage to State-building measures and

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Expansionist imperial endeavours shall together form our chief points of consideration, along with its burgeoning relation with Historiography of Early Medieval India.

Before we begin, a definitional outlook is essential to infuse complete comprehension into our analytical constructs. Clausewitz (1976: 90) looked at War from two perspectives: 1) as a *pure war*, 2) as a *fighting of States* (*ibid.* 1976: 95). The first, though idealist at best, helps us dearly in discerning the *Trinity of War*—passion, reason and chance, while the second permits us to measure the scope of war, which Clausewitz illustrates in his famous averment: ‘*War is nothing but a duel on a larger scale*’ – *a physical contest between people, each using force ‘to compel our enemy to do our will’*. What makes wars different from quotidian ruffling is the presence of two elements—

1) *Serious ends*, since wars delineate a furious confrontation between two or more States and are not fought by small-scale groups or individuals, and are envisaged to bring an end to squabble over resources, causing physical and psychological perturbation (*ibid.* 1976: 95), and

2) *Serious means*, for wars require an operable supply chain of men, who are *recruited, clothed, trained and deployed*, with weapons and arms to fight *at the right place, and at the right time*. This insight, for the Early Medieval world, requires some amendment, in order to accommodate the role of unorganized units and troops, most of whom were either from a tribal origin or were cultivators (Basu 2014: 51).

The second comment holds significance for our analysis, as the meticulous and methodical employment by Pulekeśin II of such troops sharply turned the tides of battle to his bidding. Proceeding further, while exploring the *functions of wars*, Clausewitz called into attention the principled effect of Wars on *Policies* and *Politics*. As an instrument of policy (Smith 2005: 26), Wars are conceived as the clash of two warring factions/States, using mutual force to either defend or deride the other (1976: 69). As wryly observed by Clausewitz, wars actually begin when the defender decides to fight in preference to simply surrendering to the aggressor. Both take up war as a means to differing ends. This unveils a crucial information; strategic policies continue to be framed even amidst wars, and chaos is only exhibited on battlefield, not in premeditative planning. The other effect asserts that since conflict is a constituent of status quo of humanity, a State must always be ready and alarmed to ward off a possible aggressor or war monger (1976: 606-49). With the basics at our disposal, we can proceed to give a tangible context to this theoretical apparatus.

In c. 618-619 CE, two hegemony from Northern and Southern portions of Indian subcontinent, Kings Harṣa (c. 606-647 CE) and Pulekeśin II (c. 610-642 CE) respectively, entangled by circumstances, juxtaposed by connivance, and threatened by considerable enhancement in mirth and might of the other, engaged

in a grievous battle sequence that not only internally changed their political outlook, but externally sculpted the *division, distribution and balance of power* in India of c. 6th-7th Century CE (Ramesh 1984: 32). This event, surreptitiously referred to in select copper plates of only Pulekeśin (Sohoni 2016: 253), and tangentially in the biographical testimony of Xuanzang (Devahuti 1970: 14) invites more attention due to its concealed and constrained details, and its phenomenal importance in Early Medieval Indian History (Panikkar 1951: 44).

Only crude, skeletal illustrations had been in the possession of historians to discuss and decide the course of two Empires (Puṣyabhūti and Early Chālukyas). The poetical allusions of Ravikīrti of Aihole Inscription (of c. 634 CE) fame assumed disproportionate sense and substance due to relative scarcity of other sources. Fortunately, in 2012, S.L. Bapat and P.S. Sohoni discussed a newly discovered copper plate Inscription of Pulekeśin II, dated to approximately April 04, 619 CE, that shreds even more suggestive and revealing light on this crucial juncture, while also giving allowance to the theoretical speculation about the strategies and tactics that would have found credible employment in Battle encampments of the two young and equally restless emperors (Kaniseti 2023: 18). The rough, superficial outline of the War is absolutely clear – Harṣa emerged on the Northern banks of River Narmadā /Reva, Pulekeśin II checked his advancements, while exponentially reducing his resources, pushing him trans-Narmadā further North, and subsequently invading Vindhyan tracts to his disadvantage, where he suffered a brutal reciprocation of the previous triumph from the hands of a denigrated monarch. Bapat and Sohoni (2017: 206-209) assert that Pulekeśin made the donation of interest probably during his sojourn back home. In the following sections, we shall elaborate upon the strategic nature of this precious grant, that was not only meant to appease the Brāhmaṇic community, which had ritual religious clout, but also to strengthen his holdings, both current and aspired for, whilst also securing his legitimacy and spreading his Imperial cult among the tribals there. While this rough narrative is sufficient to write political accounts, it is of imperative expedience to move beyond such narrow a vision, and study the possible stratagems of this phenomenal clash using both modern concepts and traditional Indian Knowledge. However, before commencing the proposed analytical enterprise, one must necessarily ground the discussion in discursive paradigms covering the socio-political evolution of kingship structures in conjunction with geopolitical patterns in Early India, from c. 1st-7th Century CE.

From Post-Mauryan Polities to Early Imperial Formations (c. 1st-3rd centuries CE)

The political history of the Indian subcontinent between the first and eighth centuries CE is characterized not by linear imperial continuity but by recurring cycles of consolidation and fragmentation. After the decline of the Mauryan

Empire, no single power exercised centralized control over substantial parts of the subcontinent for several centuries. Instead, the early centuries of the Common Era witnessed tumultuous coexistence of multiple regional and trans-regional polities whose authority rested on military control, revenue-extraction (Ghoshal 1929: 30), and the management of long-distance trade networks (Chandra 1977: 42). Indo-Greek rulers in the north-west, Śaka Kṣatrapas in western India, and the Kuṣāṇas across north India and Central Asia exemplify this pattern of 'layered sovereignty', where imperial claims coexisted with contentious powerful local elites.

The Kuṣāṇa empire in c. 1st–3rd centuries CE structured a particularly influential precedent – extending from Central Asia to the Gangetic basin, Kuṣāṇa rule was expansive yet regio-culturally flexible. Rather than standardizing uniform administrative practices, Kuṣāṇa rulers relied on tributary arrangements, monetized taxation, and military patronage (Jongeward 2020: 79). Control over trans-Asian trade routes linking India with Central Asia and the Mediterranean world was a central pillar of their power (Dalrymple 2024: 62). In the Deccan, the Śātavāhanas consolidated authority through agrarian revenue and maritime commerce along the western coast, while simultaneously negotiating power with local chieftains and guilds (Ray 1986: 15-19). These early imperial formations demonstrate that political authority in early historic India depended on a balance between coercion, economic extraction, and accommodation.

Yet such empires were structurally fleeting and fragile. Their territorial reach often exceeded administrative capacity, and succession disputes, fiscal pressures, and external incursions repeatedly destabilized incipient imperial formations. By c. 3rd Century CE, both the Kuṣāṇas and Śātavāhana polities had collapsed, producing a fragmented political landscape marked by smaller kingdoms and localized centers of power (Mahajan 2010: 250). This tension between expansion and fragmentation would remain a persistent feature of Indian political history.

Structural Legacy of the Gupta Empire (c. 4th–6th centuries CE)

The dawn of the Gupta Empire in c. 4th Century CE marked a renewed phase of political consolidation in northern India. At its height, Gupta authority extended across the Gangetic plain and into western and central India (Thaplyal 2012: 20-22). Gupta rulers articulated a powerful ideology of kingship grounded in Brāhmaṇical norms (Mookerji 1966: 50), numinous genealogy (Devahuti 1970: 26), and ritual sovereignty (Moin and Strathern 2022: 90), projecting themselves as rulers with universal prowess. This ideological vision was reinforced through inscriptions, coinage, and public acts of patronage (Bhandarkar 1981: 19-21). Administratively, however, the Gupta Empire relied on a somewhat decentralized structure (Thaplyal 2012: 80). The widespread practice of land grants to religious institutions and local elites transferred fiscal and administrative rights away from

the central state (Nandi 1978: 45). While this facilitated agrarian expansion and political integration, it also entrenched regional intermediaries whose loyalty was contingent rather than absolute. Military organization replicated similar patterns: although Gupta rulers maintained standing forces, they depended heavily on feudatories and regional militias for territorial defense and expansion.

By late 5th-early 6th Centuries CE, Gupta authority weakened under the combined pressures of Hūṇa incursions, internal rebellions, and declining revenues (Thaplyal 2012: 312-16). The imperial core fragmented into successor states, including the Later Guptas of Magadha and Malwa, the Maukharis of the Gangetic plain, and the Maitrakas of Saurāṣṭra (Pires 1934: 28). The Gupta period therefore bequeathed an enduring political structure characterized by decentralized authority, land based revenue systems, and militarized regional elites – features that would shape early medieval polity (Chattopadhyay 1994: 42-48).

Emergence of Early Medieval Polities (c. 6th–7th centuries CE)

The sixth-seventh centuries CE witnessed not just a simple political collapse but a radical reconfiguration of socio-political authority. Across the subcontinent, regional kingdoms consolidated power by mobilizing military resources, forging alliances, and asserting ritual and ideological legitimacy. Political authority during this period was pragmatically negotiated rather than absolute, operating through networks of subordination, tribute, and alliance. In northern India, the Puṣyabhūti dynasty rose to prominence amidst struggles among the Maukharis, Later Guptas, and eastern powers such as Śaśāṅka of Gauḍa. Harṣavardhana (c. 606–647 CE) emerged as the most powerful ruler of this socio-cultural milieu, extending his influence across much of northern India. Yet his authority depended heavily on alliances, subordinate rulers, and symbolic dominance rather than direct administrative control (Devahuti 1970: 52-55). His empire exemplifies the strengths and vulnerabilities of early medieval kingship: impressive military mobilization paired with fragile territorial cohesion.

In the Deccan, the Early Chālukyas of Bādāmī developed a distinct but equally formidable political formation. Under Pulakeśin II (c. 610–642 CE), Chālukya power expanded across much of the western and central Deccan. Their success rested on effective military organization, strategic control of routes linking north and south India, and the integration of regional elites through feudatory arrangements (Dikshit 1980: 32-37). Deccan polities operated within a different ecological and political environment, shaped by plateau geography, riverine corridors, and entrenched local power holders (Kaniseti 2023: 18).

Toward the Harṣa–Pulekeśin Confrontation

A defining feature of early medieval Indian politics was the importance of frontier regions and buffer zones. Rivers, plateaus, and forested tracts did not merely separate polities; they structured political interaction by shaping routes of movement, supply lines, and zones of contestation. Among these, the Narmadā River emerged as an imperative boundary between northern and Deccan polities. While not an absolute frontier, it marked a zone where ecological differences, political traditions, and military strategies coalesced to separate geopolitical orbits (Chakraborty 1999: 465). Central India, encompassing regions such as Malwa, Lāṭa, and parts of Gujarat, emerged as a contested corridor linking north and south India through commerce and contests. Control over this region offered access to trade routes, agrarian surplus, and strategic depth. Consequently, these areas often became buffer zones or semiautonomous polities whose allegiance shifted according to dynamics of power balances (Tripathi 1959: 27). The competition for influence over such regions intensified in c. 7th Century CE, drawing major powers into direct confrontation.

By the early decades of c. 7th century CE, the political landscape of India was dominated by ambitious regional powers functioning within structurally constrained regio-political environments. Empires expanded through military force and alliance building, yet faced diminishing returns as territorial reach strained administrative and logistical capacities. The confrontation between Harṣavardhana and Pulekeśin II, an exemplary historical event, should be understood within this broader context of early medieval state formation. Their conflict was not an isolated clash of personalities but an effectual outcome of competing expansionist systems operating across a fragmented and contested political geography. This broader historical background provides the necessary context for analyzing the Harṣa–Pulekeśin conflict not merely as a military encounter but as a strategic interaction shaped by geography, institutional inheritance, and the limits of imperial power. Against this backdrop, this paper now turns to a focused, theoretical and systemic examination of war, strategy, and regio-specific politics in early medieval India.

Conception: of Plans and Wars

Basu (2014: 72ff.) lists the factors of consideration proposed by scholars of Military Science in Ancient India; the list proposes an eclectic admixture of diplomacy, strategy, administration and management, since any battle is usually a combination of these elements (Thapliyal 2021: 76). A brief survey of factorial concepts shall elucidate the cerebration of chief military strategists of the time, along with highlighting the choices that were possibly available with limited resources and information. We shall utilize these factors, in corroboration with

epigraphical and literary sources, to infuse alacrity into the movements and methods of the two enterprising monarchs.

KĀLA (Time). This factor denoted day, night, month, hour, season and arrangement of constellations and planets, making it partly geographical and partly astronomical (Thapliyal 2021: 109). *Mahābhārata*m considers the full moon periods of months of *Chaitra* and *Mārgaśīrṣa* the best to initiate combat against rivals, as the harvest is ripened, and any logistical challenge of food supply can be augmented amiably (*Śānti Parva*: 101-09.10). The *Śukranīti* avers that *Śarada* (Autumn, mid-September to mid-November), *Hemanta* (Pre-winter – November – end to December), and *Śiśira* (Winter, or late winter, from mid-January to mid-March) seasons are the best seasons for waging a war, *Vasant* (Spring, March to April) is middling and *Grīṣma* (Summer, mid-May to mid-July) the worst. *Varṣākāla* (Monsoon, June/July to mid-September) too was considered most unsuitable (*Śukra*: 04.07.224-5). Taking the Kopparam grant of Viṣṇu-Vardhana I of his 8th regnal year and Hyderabad plates of Pulekeśin of his 3rd regnal year into account, Bapat & Sohoni date the battle in winter of c. 618-619 CE. Here, we may sense a strategic decision of King Harṣa, who probably intended to launch his assault to cope up with the humid, warm weather of the Deccan, obeying the *Arthaśāstra* (Abv: AS), which avers – 4. *March in winter against a country which is very hot and has little fodder, fuel and water* (AS: 09.01.37). It is possible that Harṣa had planned a precisely articulated, but sufficiently shattering *tour de force* against his Chālukya adversary, with special emphasis on disrupting communication channels, resource supply. Deccan Plateau is a known supplier of cotton, jute and other textiles, and a home to industries that furnished the treasuries of Deccani Kingdoms with wealth and pleasure. Attacking in November – February period would have decimated the Chālukyas not just politically, but economically as well.

DEŚA (Place). The terrain factor evaluated the qualitative aspects of the contested territory and chosen battleground, in relation to the type and quantity of force deployed (Thapliyal 2021: 112). The *Kāmandakiya Nīṭisāra* illustrates the importance of this factor by saying that “a dog can overpower a crocodile when it is on land, while a crocodile can overpower a dog when it is in Water.” (vide Basu 2014: 122), while counseling that elephants may be deployed when the terrain in marshy, damp or heavily forested, while cavalry is suited to flat land, and infantry verily befits operations on an undulating terrain, closely following *Arthaśāstra* (Gautam 2018: 42). The *Śukranīti* categorizes all battlefields into three types: *uttama*, *madhayama* and *adhama* respectively, based on the space it allows for own troops in relation/comparison to enemy’s troops (vide Basu 2014: 123). While most battle theorists are muted on the nature of a river as a battleground, we can glean off their possible comments by considering the aqueous battlefield as a

marshy land with more *action of space* for Pulekeśin than for Harṣa, a feat which strongly acted in his favor, and worsted any gratuitous advancement of Harṣa, since the logistical challenge, when coupled with inveterate hostilities of regional nobles, made the famous battle quite difficult for Harṣa before it's initiation.



Figure 1. A Glimpse of the undulating terrain of Vindhyan Hills (Source: Wikimedia Commons, Creative Attributive License, CC-BY-SA, 3.0).

SENĀ-BALA (*Troop-strength*). While an objective measure of judging military mirth of any armada is usually the numerical supremacy of any side (Boulding 1962: 25), a fair attention to strategic detailing would negate the utility of the traditional accounting, when hierarchical chain-of-command, administrative machinery and equipment-supply becomes deranged or disavowed (Henderson 1985: 24). Morale and motivation to fight, group integration, leadership skills, command legitimacy etc. matter significantly. Ancient Indian strategists rightly emphasized prudence of Kings to delegate authority to *trusted* and *popular* commanders, timely disburse soldier salaries, lead by example, intermingle with all echelons in evenings, assure safety of relatives etc. (Basu 2014: 58). The legitimacy of Harṣa was questioned by his subjects, especially after the cold-blooded assassination of his elder brother Rājya-Vardhana, hinted in conniving hagiographical account of Bāṇabhaṭṭa (Goyal 2006: 56), while his troops were handled by family elites, who were mostly related to Puṣyabhūti Dynasty either through marriage or subordination (Devahuti 1970: 104). Meanwhile, Pulekeśin was a political outsider, who had to personally lead and commandeered a revolt against his uncle Mangaleśa (c. 592-610 CE), who himself had meticulously crafted a distinguished Imperial cult with such poise and puissance that even Pulekeśin

faced difficulty in epigraphically obscuring his feats (Kaniseti 2023: 38), which made it nigh impossible for Pulekeśin to rely on incumbent governors and ministers, whom he replaced with men of favor with utmost vigilance. This *elite circulation* (Pareto 1896: 294) permitted him to appoint a more socio-culturally diverse administrative machinery (Ramesh 1984: 202), which integrated different populations to the imperial court, while the elite exclusivity of the Puṣyabhūti court created some *political distance*, if not outright alienation.

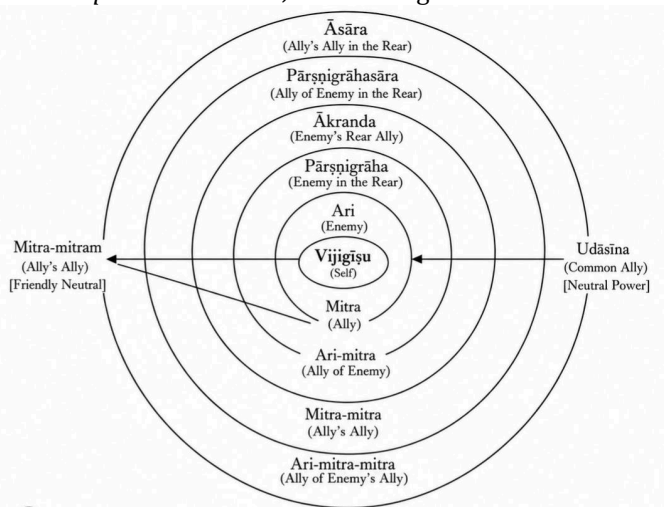


Figure 2. A diagrammatic representation of the *Mandala* theory of Kautilya (Trautmann 1971: 59).

MAṆḌALA (rings of action). This factor visualized every decision, action of a King in relativity to other rulers in a strongly bounded circular arrangement. The *Vijigīṣu* (conqueror) lies at the hub/centre, while surrounding him are the *Ari* (enemy), *Mitra* (ally), *Ari-mitra* (enemy's friend), *mitra-mitra* (friend of the ally), *ari-mitra-mitra* (friend of enemy's friend), *pārṣṇigrāha* (the heel catcher), *ākrandā* (seeking help), *Pārṣṇigrāhāsāra* (supporter of pārṣṇigrāha), *ākrandāsāra* (supporter of ākranda), *Madhyama* (middle king) and *udāsīna* (neutral). Kāmandaka details the following operations to be performed inside the *rājamaṇḍala*.

1. Through his own agency and through that of the *mitram*, the *Vijigīṣu* should exterminate his enemy (*ari*) and through the agency of the *mitram* assisted by his *mitram* (*mitra-mitram*) he should crush the ally of his enemy (*arimitram*).

2. Through the agency of the common ally (*udāsīna*) and of *Mitra-mitram* a king should crush the ally of the enemy's ally (*arimitra-mitram*).
3. Having caused his enemies in the rear (*pārṣṇigrāha* and his *Āsāra*) to be engaged in war with his friends (*ākrandā* and his *āsāra*) and compelling his enemies in the front (*ari* and *armitram*) to be engaged with his friends (*Mitra* and *Mitramā*).
4. King should march out for contest after paralyzing the ally of enemy's Ally (*arimitram mitram*) through *udāsīna* who has been won over.
5. Vijigīṣu united with *ākrandā* should crush *pārṣṇigrāha* and through *ākrandā* assisted by his *āsāra* crush *āsāra* of *pārṣṇigrāha*.

Rigorously adhering to these principles either exterminated, annihilated or enveloped the rival from all sides, leaving him vulnerable to defection or disintegration (Thapliyal 2021: 80). Pulekeśin employed a number of these stratagems to irritate the political supremacy of Harṣa, and left him vulnerable in many regions, prompting the Vijigīṣu (conqueror) of North to launch a preemptive invasion.

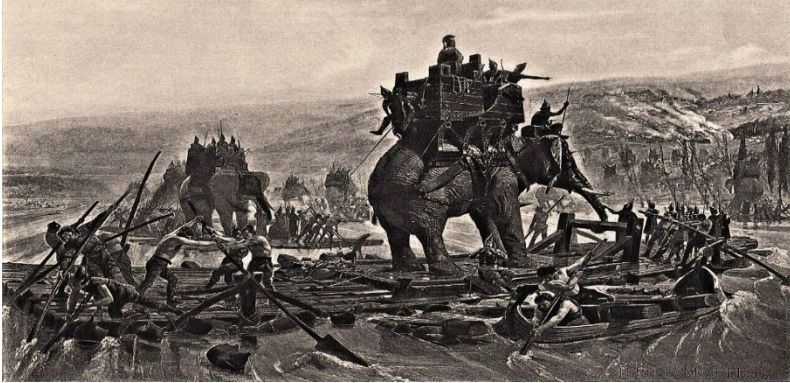


Figure 3. A visualization of Elephantine confrontations in the pre-modern world—*Traversée du Rhône par Hannibal Barca* (1878), by Henri-Paul Motte (Courtesy- Wikimedia Commons, Creative Attributive License, CC-BY-SA).

BALA (Arms). Chiefly, this precept factored in the quantity and variety of troops (cavalry, infantry, elephantry, chariots, navy), along with their placement and position within the battle formations. The selection of troops was done on the basis of terrain analysis and primary objective, Kāmandaka avers that a right choice of troops can turn the course of wars (08.09.45). Elephant troops were generally required to cross rivers, carry materials, act as rides of Emperors and nobles etc.,

while horses were deployed for swift action and mobile maneuvering (Basu 2014: 76). Harṣa had a biased inclination towards the use of elephants, reflected in commentary of Bāṇabhaṭṭa about Darpaṣṭa, '*the darling of Harṣa, his heart outside his chest*.' (Beal 1884: 564), and gravely in Aihole Inscription, where it is referred how Pulekeśin '*Melted the joy of Harṣa, who rescinded by witnessing his scores of Elephants fall to death*.' (Padigar 2006: 29f.). While this troop helped to secure a high ground in battle array, it also made the enthroned rulers susceptible to arrow volleys, reduced motility, low recoverability and psychological tensions (Digby 1971: 30). Tribal subjects were experts in exploiting these fissures, a prowess put to good use by Pulekeśin during the Battle of Narmadā.

With this, we have a glimpse of the inner workings of the minds of ancient strategists. Probably, these factors would have been diligently taken into account by scheming and tactful aspirational conquerors, while also considering the scope and effectivity of their Military Organization. Chariot troops have been a point of consternation for many scholars. In his *Madhuban* and *Banskhedā* copper plate Inscriptions, Harṣa does not refer to the use of chariots in armed forces. However, Nalanda grant of Deva-Pāla of c. 820 CE, and Cave No. 15 Inscription of Dantīdurga Rāṣṭrakūṭa (c. 735-757 CE) refer to the use of chariots in defeating rivals. As a general note, chariots were fast losing their popularity, but were considered indispensable in some special forms of affronts. Battling along the banks of Narmadā was, since the beginning, not an enterprise meant for chariots. However, they could have seen employment by Pulekeśin II, who helmed the *ground*, and needed swiftness of fleeting movement to counteract any advancement along the elongated river shoreline.

Causation: Why and for What

Finding the right and singular causation for a large scale warfare is a futile exercise, for every confrontation stem from a constellation of causes and contexts (Smith 2004: 31). In his masterly treatise, Kāmandaka refers to multiple causes of battles, such as:

- 1) *Maṇḍala duṣaṇa* (disaffection of *prakṛti* maṇḍala),
- 2) *Rājya apaharaṇa* (usurpation of the kingdom),
- 3) *Deśa apaharaṇa* (seizure of territory).
- 4) *Mitra-artham* (for the sake of a friend).
- 5) Śakti *vighāna* (loss of power) and *Artha vighāta* (loss of wealth).
- 6) *Vaiṣayikipīḍa* (disorder in the kingdom).

A combination of factors was probably responsible behind the eventual onslaught. Before the discovery of the coveted grant, scholars mostly realized on

informed speculation, literary references and inferences derived therefrom. Consequently, while Devahuti (1970: 78) affixed the onus of causation on the diplomatic political alignment of Harṣa and Maitraka monarchs and subsequent upsetting of the delicate balance of power, Saletore believed that Harṣa's thirst for power was primarily responsible (Heras and Saletore 1930-31). Dikshit asserted that the political proximity of Saurāṣṭra to Deccan, and overwhelming dependence of Central Indian Kingdoms upon their hegemonic southerly neighbor irked Harṣa, but what in reality acted as the *spark of fire* was the act of Pulekeśin giving residence to Devagupta (II), the murderer of Graha-Varmana Maukhari (1980: 92). Majumdar, however, concluded that the battle was a belligerent manifestation of a decadal struggle between two enthralling power centers; although Bāṇabhaṭṭa refers to Prabhākara-Vardhana as the Lord of Lātas, Mālavas and Gurjaras, these three never actually formed the component of Puṣyabhūti Empire, and were only *within its sphere of influence*. However, the Imperial ambitions of Mangaleśa and Pulekeśin were bringing these states into the fold of Chālukya Empire, converting them into *dependencies*, from *Buffer States*. Harṣa's brutal annexation of Maitraka territory was about to flush the happy consequence of Pulekeśin's tactics, which incited him to swing into action, and thus stand responsible for the confrontation on banks of River Narmadā (2009: 208ff.). While assertions of Majumdar reach near truth, his dating of the battle to c. 632-33 CE impels us to rectify his analysis, which can be simply done by establishing that the battle was fought in c. 618-619 CE, and was possibly the consequence of political machinations initiated by Pulekeśin. This will be forcefully established through the following points.

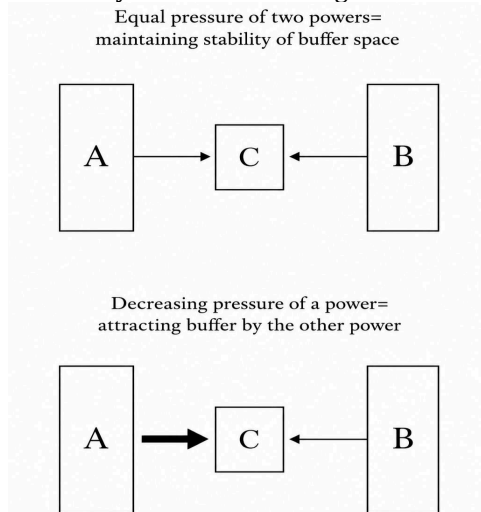


Figure 4. A Diagrammatic rendition of Buffer State Concept (*After* Hafeznia 2013: 56).

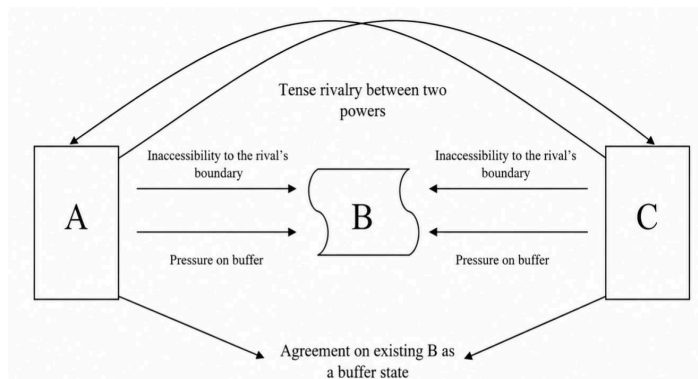


Figure 5. Diagrammatic figuration of Satellite States Concept; A & B are Superpowers; C is a Buffer State on the verge of becoming a Satellite State. Above, A and B exert equal pressure on C. below, that exerted by A exceeds B [Source: Wikimedia Commons].

BUFFER STATES. Hafeznia (2013: 58ff.; see fig. 04) illustrates the conditions required for any State to be called as a buffer between two powerful neighbors: *Geographical contiguity* (it is usually located midway through two rival Kingdoms), *Capability distribution* (it is relatively weaker than either of its neighbors, and susceptible to projection of control), *Spherical Overlapping* (it lies in areas having Cultural-political sphere of influence of neighboring Great Power), *Interactional Vortex* (it possesses numerous crossroads and channels that connect the two Great Powers), *Neutral Orientation* (policy designs do not favor any neighboring State-rivals), and *Independent Sovereignty* (it maintains an independent political existence). When examined closely, Lātas, Mālavas and Gurjaras satisfy all conditions, and thereby can be considered as Buffer States. Located within the triangle of Mālava Plateau, they were susceptible to hostility from all sides (Bhatia 1981: 12). They separated Deccan Kingdoms from their Northern counterparts, while being trapped themselves in a push-pull dynamic. Prabhākaravardhana (c. 580-606 CE) attempted to bring them under his lordship, in which he probably scored some success, while being aided by Later Guptas of Mālava (Devahuti 1970: 62). However, with the rising political clout of the Chālukyas under Pulekeśin I (c. 550-567 CE), their eyes turned to the resources and riches of Malwa, a policy actively pursued by Mangaleśa and tactically formulated by Pulekeśin, through socio-economic networks, marital alliances with local nobles, gift-exchange, art-patronage and Brāhmaṇic socio-ritual support (Kaniseti 2023: 68).

SATELLITE STATES. Earlier, Satellite States were regarded as a differing type of Buffer between entangled Great Powers, of the Cold War-era *Iron Curtain* (Lowe 2014: 278). Such states are marked by *Limited sovereignty* (constrained and

lacking in exclusivity and internality), *Military dependence* (circumcision on use-pattern and maintenance of troops), *Economic dependence* (resources controlled/regulated by Great Power) and *Policy inclination* (explicit biasedness towards Hegemon State, see fig. 05). The Puṣyabhūti influence over Malwa Plateau decreased after the political turbulence of c. 606-608 CE, the period after which Harṣa put up some semblance of an Empire, and took the throne in c. 611-12 CE (Mahajan 2010: 455). Simultaneously, Mangaleśa around c. 594 CE commenced the sanguine Chālukya-Kalachūrī Wars, through which the Kalachūrī power received a massive bolt of defeat. Pulekeśin II further led the Chālukyas to military success, ending the Kalachūrī Kingdom in c. 612-615 CE (Dikshit 1980: 69). This ostensibly gave the Chālukyas free reign to extend their territorial holdings in Malwa, much to Harṣa's chagrin, and achieve secured assurance by compelling Malwa States to become Chālukya satellites. Geographical proximity also played a role here; Gurjaras of Rajasthan and Lātas had their supply lines intimately integrated with Narmadā tracts, which were under the whim and control of Pulekeśin II, who could had blockaded or dampened trade routes, or even put an embargo in face of any possible displeasure (Chandra 1977: 70).

WARLORD COMPETITION. Our conception of a pre-modern Kingdom is of an orderly, organized geopolitical entity with distinctively marked out boundaries. Truth can only be so far. Kanisetti (2023: 122) refers to *pockets* and *networks of power*, where the flow of *power* (in a strict *Weberian* sense) was concentrated, maintained through regular interaction or principled subordination. Wallerstein (1919: 16) referred to a somewhat similar dictum in his *pivotal-peripheral* arrangement of Kingdoms. Stein (1988: 89) refers to the *tax-tribute-plunder paradigm*, with the order maintained from core of an Empire to its periphery. The application of force by an external sector (3rd power) can either annul or amplify the warlord menace, through *subduction* (officially incorporating the territory within administration proper) or *induction* (intentionally positioning more Warlords to make resource-scrabble even more disdainful). Skaperdas (2002: 455 ff.) illustrated this notion mathematically by taking *alpha* as producer's grain gained through extortion, coercion etc. *beta* as the payment rendered to warriors appointed for defense and deterrence, *l* denotes limited range (since warlords in localized competition are located in vicinity; $l=2,...,L-1$ are warlords $l-1$ and $l+1$, warlords 1 and L respectively are neighbors, and have 2 and $L-1$ as neighbors), P as the total number of producers, T shows the proportion of extortion. In a circular setting, akin to our *Mandala* arrangement, a warlord at the center can compete with his immediate neighbors (interaction that determine security scenario are shown by *lambda*) in two directions (+ and - act as directional indicators), where rent-surplus ($T + \alpha P/L$) are evenly distributed in circular-setting, and each warlord (W_i) can hire warriors (W_{i-1}) to contest surplus and guard borders. A *localized type*

competition incorporates communication disruption, transportation difficulties, geographical peculiarities etc. Using Tullock contest-function (1980: 67), the mentioned variables produce the following equation of interest. Using this, the revenue-potential that laid on the fertile grounds of Malwa can be estimated, using the equation (eq. 1) given below —

$$\begin{aligned} V'_\lambda &= \frac{w_{l-1}^l}{w_{l-1}^l + w_l^{l-1}} \frac{T + \alpha P}{L} - \beta w_{l-1}^l \\ &+ \frac{w_{l+1}^l}{w_{l+1}^l + w_l^{l+1}} \frac{T + \alpha P}{L} - \beta w_{l+1}^l \\ &= \left(\frac{w_{l-1}^l}{w_{l-1}^l + w_l^{l-1}} + \frac{w_{l+1}^l}{w_{l+1}^l + w_l^{l+1}} \right) \\ &\quad \frac{T + \alpha P}{L} - \beta (w_{l-1}^l + w_{l+1}^l) \end{aligned}$$

We can almost sense why the territory held significance in the reign of Harṣa, and was passionately yearned for by courtiers of Pulekeśin. However, since this vast but unrealized treasure also warmed the pockets of local Warlords, they only glazed at external imperial support in conditions of extreme anarchy, disorder or, in order to get an *edge over other competitors*. The fiddling of Pulekeśin inside Malwa was meant to acerbate the level of crisis, and make it difficult for Harṣa to both *spread his sphere of influence southwards*, and *also to ignore a grim face-off* with his Southern equal.

POLYCENTRIC INUNDATION. Here, we shall utilize the mathematical model by Ronald Findlay (2017) to elucidate an implicit expansionist policy actively pursued by Pulekeśin to encircle, and suffocate Harṣa through entanglement. Let N be total populace, comprising A (army) and L (production labor). Thence, total labor $N = A + L$ (i). Then, let production function $Q = f(L, T)$, which has constant returns to scale and diminishing returns to either factor. Territory acquired/defended from enemies then is $T = 2\pi r(A)^2$ (—eq. ii), where r is circle-radius centered around home-base, and $r'(A) > 0$ [larger-army has greater sphere of influence], but $r''(A) < 0$ brings diminishing effect, for every movement away from the mainland (like a band around circle; territorial increment from base is proportional to circumference) makes guard defense weaker.

Since area of circle (around home base) is a convex function of radius, territory acquired could still act in proportion to army size. However, like Findlay, we assume that absolute-value of negative derivative of $r''(A) < 0$ could give T as a concave-function of A , such that $d/dA(dT/dA) < 0$ (ii). To gain politico-economic power, the expansionist has to maximize Q subject to N , which comes with a trade-

off: induction of extra labor into army adds economically valuable output, but withdraws a man from labor force that works on land; in other words, army induction should occur only when the marginal returns brought about by them through conquest equals, or is greater than their marginal productivity. Because of (ii), extra land added by expansionist army declines at margin, while marginal productivity of numerically falling labor force increases.

The optimal size of empire is situated where marginal productivity of warriors and workers is equal, for which the first order condition will be $-\partial Q/\partial L = (\partial Q/\partial T) dT/dA = \partial Q/\partial T 2\pi r' A^2$, where left hand side denotes marginal productivity of workers, and right that of army men. It can also be interpreted to mean that marginal rate of substitution between land labor is equal to marginal product of warrior in territorial terms, which is $2\pi r'(A)$. The model can be further expanded by adding different sectors like manufacturing etc. With absorption of more land, more producers, workers and recruits enter the Empire and offer their services. The marginal productivity of workers rises, as their proportionate share in total subjected population decreases, while the category of army recruits sees a monotonic rise, due to the large scale induction of new recruits to maintain administration and security of the swollen regime. This is subsequented by a graduated decline, as depicted in the fig. 06.

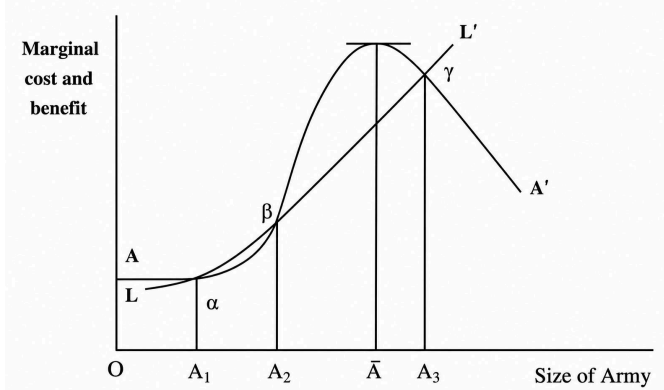


Figure 6. As army-size increases, number of workers declines, so $\partial Q/\partial L$, i.e. marginal productivity of labor [mpL], denoted by $L-L'$ curve monotonically increases, while mpA of army ($= (\partial Q/\partial T) dT/dA$) declines, as shown in $A-A'$ curve. At A_1 , mpA is low, as conquest capacity is not mature, alpha denotes suboptimal militarization, while beta is where mpA reaches near to mpL , and army induction compensates labor displacement at A_2 . Gamma is overexpansion, where $mpA > mpL$. A' is inflection point, which shows diminishing marginal returns of conquest, A_3 is where territory gained cannot be effectively governed.

Since potential of circular expansion was theoretically limited, and also seriously impacted labor organization inside empire, alternatives had to be sought

out. With the optimal size of the army decided after considering all relevant trade-offs, a Vijigīṣu may attempt to consolidate his novel holdings, and apply further force to broaden the precincts of imperial structure, which was difficult, given the fleeting nature of *optimal equilibrium*. Doyle (1986: 22) asserted that, in order to counter the variegated political economic networks of an opponent, the rival empire may use *anomalous expansion*, i.e. segmenting into regional edifices linked to the operative center, from where simultaneously coordinated expansionist actions can be launched. Usually, a movement to enemy territory is captured in models using the dynamics of *Heartland (H)-Rimland (R)*, where $dH > 0$ and $dR < 0$ (for a visualized model, see fig. 07), both showing that diminishing results are obtained with every marginal increment in territory-size, leading to establishment of equilibrium with limited conquests.

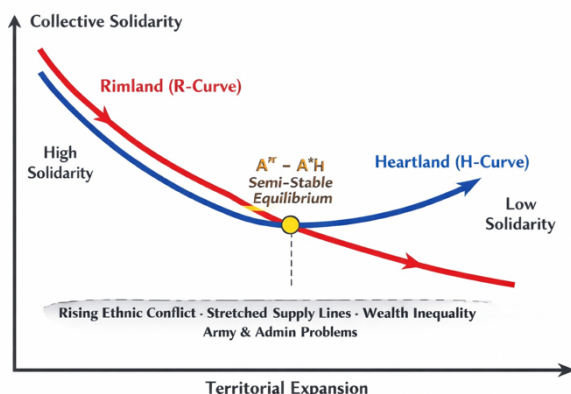


Figure 7. $A^R - A^H$ is the point where declining null-clines of Rimland (R -curve) and Heartland (H) curve are in temporary semi-stable equilibrium. Collective solidarity is high when a king (say, Pulekeśin), moves into territory of the rival king, where heartland collective solidarity is low. With every territorial increment, solidarity alongside declines due to ethnic conflicts, stretched supply lines, wealth inequality, problems of army discipline and administrative efficiency, and renewed resolve of rival to guard core. At equilibrium, rimland pressure stabilizes, and heartland does not collapse.

However, by placing his brother Vijaya-Varman in Southern Saurāṣṭra (Dikshit 1980: 65), and by negotiating tactfully with Malwa States, Pulekeśin attempted to dislodge the incursive effect of two factors upon which the H - R movement relies the most *Relative Military Efficacy* and *Way of Life-system*, a total cultural construct (Findlay 2017: 122). With greater geopolitical synergy, Pulekeśin could had felicitously deprived the Puṣyabhūtī Empire of its existence.

Thence, Pulekeśin meddled with the Malwa States, which were once under the hegemonic control of Puṣyabhūtī Dynasty, who had a natural ally in the personage

of Later Guptas. With usurpation and rebellion of Devagupta II, his alliance with Śaśāṃka (c. 695-728CE), and the dangerous convergence of the territories of Śaśāṃka and Pulekeśin, Harṣa was irrevocably aggrieved. However, wasn't there a peaceful alternative to the conflict? As our Game-theoretic model would pronounce – None. We shall rely on Spaniel (2010: 26ff.) for the structuration of this model-

Let $P(H)$ be probability of Harṣa winning the battle, and $P(L)$ of Pulekeśin. The side which wins the battle acquires score of 1, while losing side gets 0. Also, let $C(H)$ be Harṣa's battle costs, and $C(L)$ be Pulekeśin's, with EU denoting 'expected utility'. Also, let X represent Harṣa's share of a possible settlement, i.e. percentage share of a good (say, territory) Harṣa earns. Then,

$$EU(H) = P(H)X1 + P(H)X0 - C(H) = P(H) - C(H) \text{ —(eq. iii)}$$

$$EU(L) = P(L)X1 + P(L) - C(L) = P(L) - C(L) \text{ —(eq. iv)}$$

Now, theoretically, Harṣa will enter the war only when,

$$X > P(H) - C(H)$$

For Pulekeśin, the reverse condition would be,

$$1 - X > P(L) - C(L) = X < 1 - P(L) + C(L)$$

We get,

$$P(H) - C(H) < X < 1 - P(L) + C(L) \text{ —(eq. v)}$$

But we know that

$$P(H) + P(L) = 1 = P(L) = 1 - P(H)$$

Substituting the derivative in eq.(v),

$$P(H) - C(H) < X < 1 - 1 + P(H) + C(L) = X < C(H) + C(L)$$

For bargain,

$$C(H) + C(L) > X$$

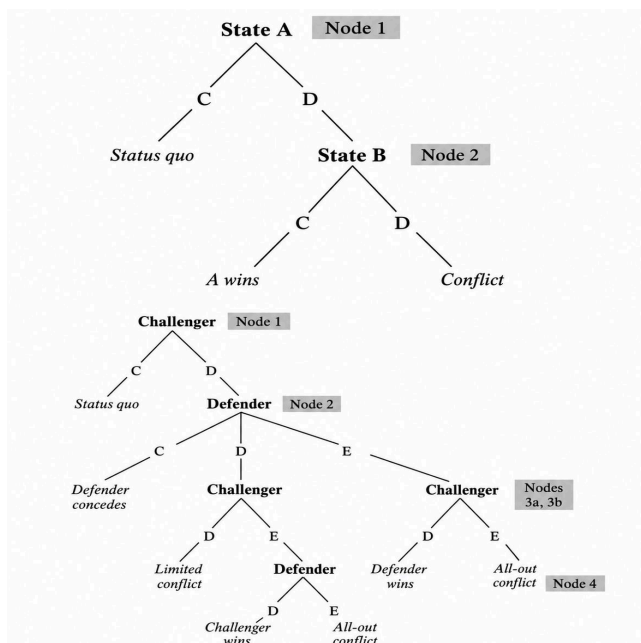


Figure 8. Backward-induction model showing imminence of War (modelled after Spaniel 2010: 56).

If the combined costs of fighting are greater than the expected territorial gains, than a rational peaceful negotiation still remains a valid option. However, such conditions get worsed in cases of preventive war and incomplete information. In absence of perfect information, it is hard to contemplate the action of the rival state. Classical deterrence theory worked on the assumption of *conflict avoidance* and *rational decision making*. When we use backward induction (see fig. 08) to analyze results, we see that State B (of Harṣa) would end up being politically berated by State A (of Pulekeśin) in every sequence. This could also reflect the necessity of commitment of Harṣa to full-fledged warfare. Abstaining from waging wars could had nourished political stability, resource saving and prevention from dint in cult prestige (Goyal 2006: 126).

However, this option could also had possibly led to intense political competition, trade deflection, hostile neighbors and gargantuan deduction in size of the sphere of influence. Hence, it became geopolitically rational for Harṣa to exhibit politico military mirth and bring the entangled deadlock to Node 04 (of escalation), while defending his core territory, and preventing further fallout.

The diversion of Malwa States was a chess of Pulekeśin (Kaniseti 2023: 18) to drag Harṣa into a deadly struggle. Harṣa decided to launch an invasion to prevent

further peripheral disintegration. Keeping in mind both past and present battle payoffs, the following equations shall make the necessity of waging a preventive war clear – Let δ be discount factor; the greater this factor is, the more the States are willing to temporally prolong struggle.

$$EU(H) = P(H) [1 - C(H) + \delta \{1 - C(H)\}] + 1 - P(H) [-C(H) + \delta \{-C(H)\}] = P(H) - C(H) + \delta [P(H) - C(H)] \quad (vi)$$

$$EU(L) = P(H)[-C(L) + \delta\{-C(L)\}] + 1 - P(H) [1 - C(L) + \delta \{1 - C(L)\}] = 1 - P(H) - C(L) + \delta [1 - P(H) - C(L)] \quad (vii)$$

From Pulekeśin's side, it was essential that territory endangered by the upcoming onslaught of Harṣa was less than Chālukya battle-payoff function. However, loss of influence over Malwa States could have resulted in a massive reduction in revenue, clout, network-control, while opening the Narmadā front for Harṣa. This was hardly affordable to Pulekeśin, especially at a juncture when Kadambas and Pallavas in deep South were threatening to shatter designs of an aspirant monarch, making the upcoming contest inevitable.

HARṢA'S BLOOD – of Elephants and Rivers

A direct military interaction is a costly affair, in terms of soldier lives, equipment, tactical-schematics and eventual execution (van Creveld 1991: 2). Why did Harṣa begin the Battle, in its physical and explicit form? First mover's advantage could be a credent suggestion, but terrains and turmoil can make such sequential orders a mere fluke (Spaniel 2019: 45), and thereby constrain the sole effectivity of this stratagems. It must be backed by another valid and *theoretically consistent* model. A somewhat better solution lies in the Game-theoretic concept of *Strategic Dominance*, which discusses a particular strategic move favored by one player/side, regardless of the move selected by others. This conceptual construct assumes vast importance due to the communicative-disability of pre-modern warfare (Basu 2014: 68), along with time-space contexts, within which a ruler was expected to make decisions and pursue actions before it was too late; together, the two positive points make strategic dominance a befitting analytical tool. Consider the following payoff-matrix, where two players are arranged row columnwise. Both have nearly similar *military capability, weapon efficiency, combat experience and resource-supply*, making the most preferred strategy is <attack, attack> (Spaniel 2019: 14f.).

	Defend	Attack
Defend	3, 3	1, 4
Attack	4, 1	2, 2

From the repetitive references to Elephantine infatuation of Harṣa in *Harṣa-charita* (Kaniseti 2023: 29), it is absolutely probable that the gargantuan creatures played a central role in the Deccan campaign, and were deployed in large quantities as a show of *fiscal power* (Daud 2001: 49), and *psychological domination* (Digby 1971: 26), a position most suited to the humongous creature. Elephants in Imperial Armies were trained for numerous functions (Thapliyal 2021: 98):

1. *Upasthāna* — drills, such as rising, bending, and jumping over fences, Ropes, etc.
2. *Samvartana* — turning, such as lying down, sitting and leaping over Pits and lines drawn.
3. *Samyāna* — advancing, such as going straight and traversing or making serpentine movements.
4. *Vaodhāvadha* — trampling down and killing the chariot force, the Cavalry and the infantry.
5. *Hastiyuddha* — fighting with other elephants.
6. *Nāgarāyaṇa* — assailing forts and cities.
7. *Sangrāmika* — fighting in battles.

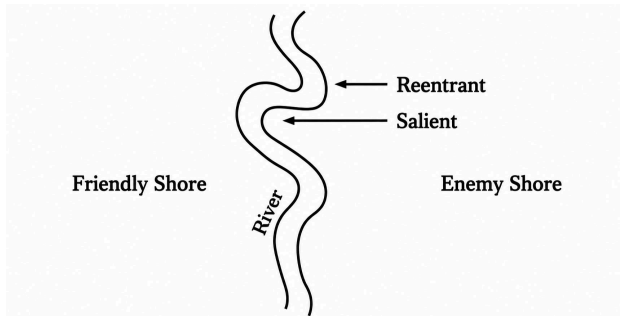


Figure 9. Diagram of strategic positions along a river-bank (Source: FM 90-13/FMFM 7-26).

In the ravenous currents of Narmadā, with a *Trellis Drainage Pattern* (Wadia 1926: 14), an Elephant troop could have proved their mettle by acting as bridges across shores. Harṣa would have probably examined the *Mission, Enemy, Terrain and Troops*, while Pulekeśin strategically focused on putting *Width of River, Means of Crossing* and *Size of Enemy-forces* to good use. Dormancy was a blessing, as

surprise recruitments were stationed at key *avenues of action*. The true challenge for Harṣa laid in *crossing the river*, and *launching the offensive* on enemy shore (see fig. 09). While he succeeded in one, decimating defeat awaited him in the other. Using FM-90(13) methodology, we shall unveil the speculated phases of this Battle.

ADVANCE. Puṣyabhūti forces moved through rafters and boats, with Elephants sharing some load. The currents, charge and depth slackened their pace, which they counteracted through *formative coordination* (see fig. 10), using islands and elevated lands along the waterway. Pulekeśin possibly furthered some of his troops to inflict *beginners' casualty*, utilizing *distance damage measures*, such as arrow volleys, fireballs, stone pelters, spear throws etc. However, Chālukya forces probably had not intended to halt Harṣa's advance here.

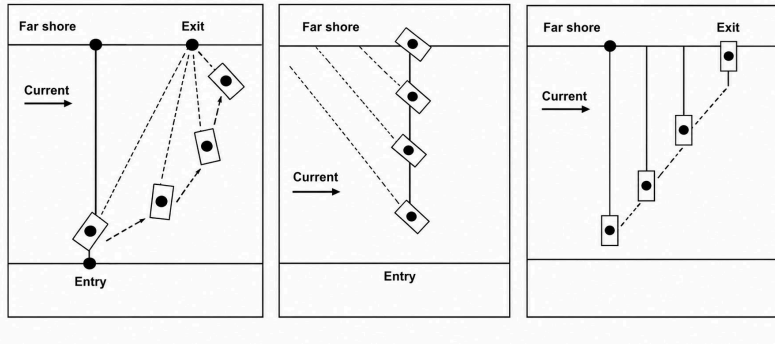


Figure 10: Strategic positioning of aqua-vassals in the river-water (Source: FM 90-13/FMFM 7-26).

ASSAULT. Complete troop movement in river water could have disrupted the *Megaplan*, while also making Chālukya shore vulnerable to any latent maneuvers. To make preparations for a breakthrough, it was essential to gather the *collective offensive* into a singular, concentrated troop formation, while taking river dynamics into account. These requirements befit the Vyāla/Sarpa tactic of Ancient Period (see fig. 11), which offers polycentric leadership, diffused chain of command, dynamic edge and offsets loss of straight charge troop multiplier through surprise and serpentine splashes (Basu 2014: 96). While this allowed Harṣa to gain some limited triumph on waters, the aqueous conflict was far from over. Epigraphical testimony indicates that olden literature was minutely studied in Chālukya court, for real time references and possible inspirations (Sastri 1997: 108). Pulekeśin too had some tricks up his sleeves.

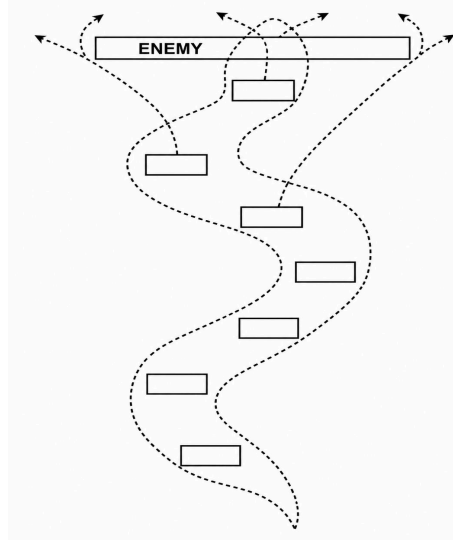


Figure 11. *Sarpa-vyuha* (serpent formation), the method (probably) deployed by Puṣyabhūti troops for moving across banks (Source: Basu 2014: 102).

SECURE. Any trans-shore attack must receive reinforcements from land/water to recharge further momentum. Use of Elephant troops already slackened Puṣyabhūti speed, giving Chālukya power time to concentrate all remaining aqueous forces on shore, while re-equipping them with arms and ammunitions. Harṣa had dangerously overstretched his supply lines, giving Pulekeśin opportunity to break his *interior* from sides and entrap the entire terrestrial Puṣyabhūti force fighting ashore. The answer to Vyāla tactic was *Sarvatobhadra* (see fig. 12), which called in enemy, isolated core component, separately ragged sidelines, and decimated entire structure. The Surprise element from side margins also accentuated Chālukya offensive, with tribes launching the *latent offensive* from well covered battle stations. Rapid reinforcement could have saved the day for Puṣyabhūti, but this proved their *Achilles' heel*.

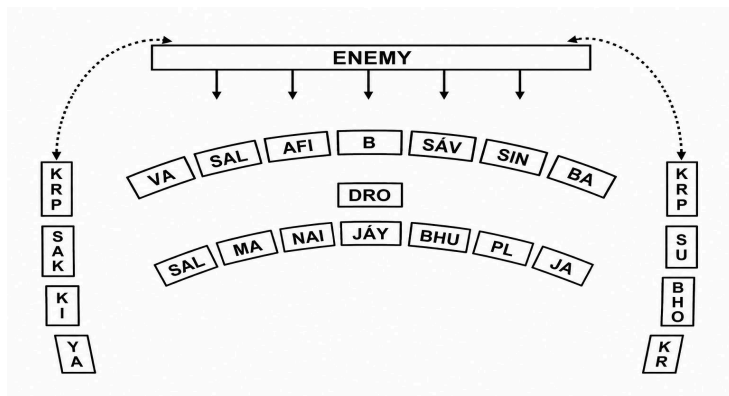


Figure 12. *Sarvatobhadra-vyuha* (omni-directional formation), used by Chālukya forces (Source: Basu 2014: 105; abbreviations are veiled references to the positioning used by warriors originally in the *Mahābhāratam*).

EXIT. With elephant troops harangued, infantry made ineffective, rafters tattered by infinite onslaughts from veiled enemy lines, and morale rock bottom, the need to withdraw probably dawned upon Harṣa, whose *joy was melted* beyond despite. Harṣa was probably somewhere in between when he saw his forces fall, therefore compelled to rally remaining troops for a hasty retreat (see fig. 13), which gave further stimulation to Chālukya victors.

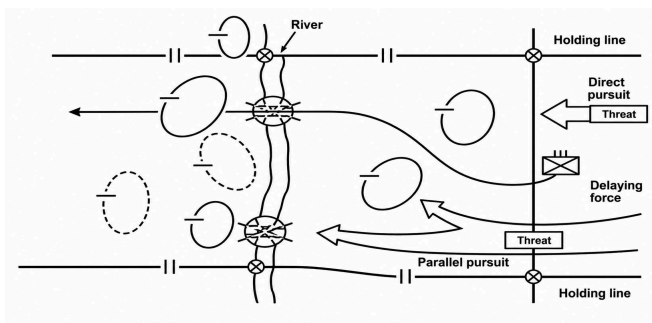


Figure 13. Exit strategy from a marine/riverine skirmish (Source- Wikimedia Commons, CC-BY-SA 4.0).

Troops squared on enemy-shore were timely eliminated, in order to annihilate any chance of recuperation. However, this strategic blockage also provided time for others in Puṣyabhūtī army to safely retreat. Soldiers fighting on the first front disengaged, followed by their rapid retirement to rear station, with side troopers

providing support and coverage from enemy-assaults. Delay tactics would have been definitely entrusted task of diffusing maneuvering of Chālukyas, and buy sufficient time to let Harṣa reach breathing distance from the battlefield.

PULEKEŚIN'S DEBACLE: of Attrition and Ambush

The Bijapur-Mumbai grant culminates the discussion of Battle of Narmadā with triumph of Pulekeśin, the sequel to the grandiose Chālukya victory is narrated slightly in Aihole Inscription, which refers to *the Elephants of Pulekeśin trampling Vindhyas* (Padigar 2010: 37). Barring the former grant, no other makes any allusion to the riverine confrontation, consequence of which was verily in favor of Pulekeśin. Thereby, absence of inscriptional allusions seems puzzling. In this section, we shall construct a theoretical reason for the same through *Lanchester ODE Models* and *Ambush strategies* (see fig. 14).

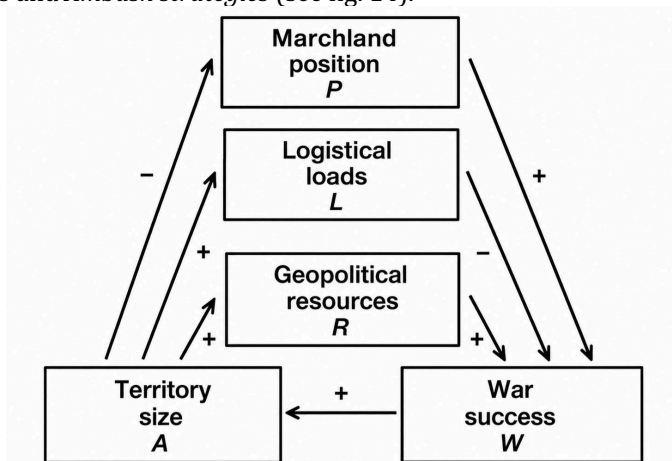


Figure 14. Block Diagram of Military Ambush (Modelled after Boulding 1962: 62).

To sketch roughly, with boasted and newfound confidence, Pulekeśin mustered resources to carve out a prolonged warfare tactic to take the *struggle of Empires* to Puṣyabhūti Heartland. While the geopolitical planning was enthralling, an alarming facet of this imperial dream was the tumultuous logistical challenge. Collins' Geo-political Model (1995:115f.) represents this issue illustratively through differential equations based on *functional forms* and *feedback loops* 1) $\dot{A} = c_1 W$ (A & W for Area and War success respectively, c_1 is a proportionality constraint which translates war victory into sq. kms of territory-gained); 2) $\dot{R} = c_2 A$ (R for resources, c_2 shows constancy of population density, which implies that greater area shows greater population base to pay taxes and provide potential recruits); 3) $\dot{W} = c_3 R - c_4$ (c_3 and c_4 are self and opponent-resources translated to

power). A summative equation- $\dot{A} = cA - a$ ($c = c_1c_2c_3$ & $a = c_1c_4$) —(eq. viii); latter to get rid of unnecessary parameter combinations) – (I). Using *distance logistic multiplier* (Boulding 1962: 245-247), from power center P_0 , Imperial projection in Marchland becomes $P_0L(r)$, and eq. (I) transforms into $\dot{A} = cA \exp[-\sqrt{A}/h] - a$ —(eq. ix). These first-order equations succinctly state that feedback effects fail to function effectively with overstretching of supply lines. Empires with few frontier enemies can manage the crisis efficiently, but those with many cannot. South of Narmadā tract, Pulekeśin was secure to exhibit prowess. In North however, he had surreptitiously entered a region with more rivals than allies (see fig. 15). While the setback of previous confrontation aided him to some extent, logistics was about to take its toll with further calibrations from an aggrieved emperor.

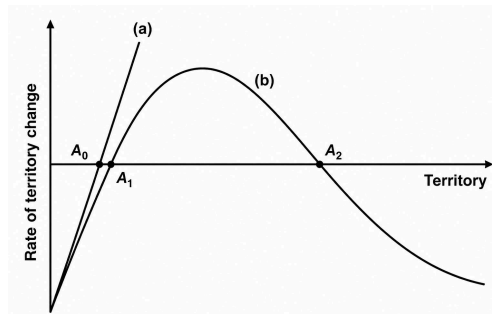


Figure 15. Relationship between rate of territory change, and territory; (a) territory-size, and (b) territory-size and distance. It shows variegated dynamics of imperial expansion. To state from perspective – at A_0 , their presence in northern political landscape is minimal, thence every increment exponentially enhances imperial might (a is steep). A_1 shows point of maximal power accumulation, beyond which, as the presence-scale grows, expansion-potential begins to decline, as rival frontiers and regio-specific resource clash grow.

With exactitude, the only melody to join this rhythmic faultline was *Attrition warfare*, which could had potentially reduced both strength and morale of invading forces, and also inspire defection and dissension within. Excessive prolongation and injurious infliction of logistic loads in Rimland was the prime intention of hardened Puṣyabhūti force, with focus upon deducting numerical strength (see fig. 16). Here, we utilize the innovative model of Schaffer (1997).

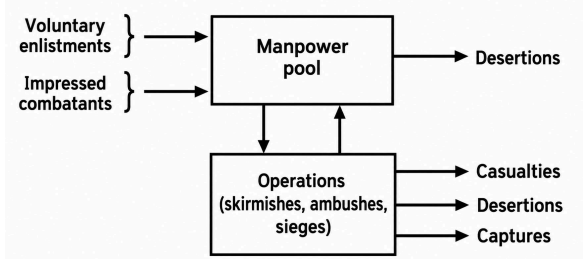


Figure 16. Block diagram of Troop structure before and during combats (Source: Schaffer 1997: 12).

Direct conflicts acted in two capacities as *strength reduces* and *morale reducers*. A pre-ambush attrition strategy could be easily pursued in uneven mountainous terrain of Vindhya, with hidden routes and secret tunnels (Chandra 1977: 142, see fig. 16 and 17). Attrition struggle supposedly preceded Ambush, as the latter works well with a constrained, drained and entrapped force. Loyal nobles and enticed Warlords became useful. Entanglement and rupture were now the guiding principles, as direct face-off was to be avoided to gain maximal positional advantage. Attrition struggle equations are (l, j are support-coefficients and K stands for defensive-attrition parameter. Here, W_i denotes the strategic weight assigned to the i -th political actor, while w_j represents the payoff weight associated with the j -th strategic outcome. Indices i and j range over discrete sets of actors and outcomes respectively, while the index d refers to decision stages within a finite strategic sequence rather than continuous time. Moreover, since the model operates over discrete strategic intervals rather than continuous time, differential notation is replaced by finite differences over successive time steps. Accordingly, h and p show the respective dynamics for forces of Harṣa and Pulekeśin, while time t is treated as an index of sequential decision intervals rather than as a continuous variable—

$$(\Delta h/\Delta t) = -Kp(t, h)p \sum E(t, h) w_i(t) \text{ —(eq. x)}$$

$$(\Delta p/\Delta t) = -Kh(t, p)h \sum E w_j(t) \text{ —(eq. xi)}$$

Accounting for skirmish loss and desertions, (b and c for troop motivation and discipline, respectively), we have equations (eq. xii) and (eq. xiii), respectively—

$$(\Delta h/\Delta t)_{s+d} = a_h - [b_{h1}((\Delta h/\Delta t)_c + b_{h2}((\Delta h/\Delta t)^2_c + \dots) - [c_h(p/h - 1) + c_{h2}(p/h - 1)^2 + \dots]]$$

$$(\Delta p/\Delta t)_{s+d} = a_p - [b_{p1}(\Delta p/\Delta t)_c + b_{p2}(\Delta p/\Delta t)^2_c + \dots] - [c_p(h/p - 1) + c_{p2}(h/p - 1)^2 + \dots]$$

Putting two sets of equations together will give us the attrition rates of *ambusher* (Harṣa) and *ambushee* (Pulekeśin), we get- (in self-policing troops, *a* can be assumed 0).

$$(\Delta h/\Delta t) = -(1 - b_h)K_p(t, h)p - c_{h1}(p/h - 1) - c_{h2}(p/h - 1)^2 - (1 - b_h) \Sigma(t, h) w_i(t) \text{---(eq. xiv)}$$

$$(\Delta p/\Delta t) = -(1 - b_p)K_h(t, p)h - c_{p1}(h/p - 2) - c_{p2}(h/p - 1)^2 - (1 - b_p) \Sigma(t, p) w_j(t) \text{---(eq. xv)}$$



Figure 17. A painting battle-scene along mountains, provisioned herein for illustrative purposes (Painting—“*Suvorov Crossing St. Gotthard Pass, 13 September, 1799*”, by Alexander von Kotzebue; Courtesy: Wikimedia Common, Creative Attributive License, CC-BY-SA 3.0).

Assuming similarity of armament and logistic complexity, Chālukya forces would experience lesser puissance and greater erosion rate of security and accentuation of vulnerability as they will proceed more towards Marchland, with blundering re-provisioning opportunities and narrowing escape routes. This definitely reduced weapon efficiency and morale level. Depleting resource base can become perfect recipe for intra group rivalry and hostile dissensions (Mullainathan & Shafir 2013: 96).

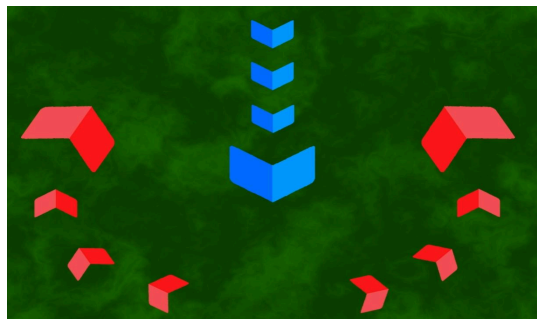


Figure 18. Arrow-diagram depicting Blitzkrieg Battle strategy (Source: Wikimedia Commons, CC-BY-SA 3.0).

The key to defeat and deter Pulekeśin was to Inflict heavy damage to his armada. Epigraphical evidence does not testify how Harṣa accomplished this feat, while Aihole Inscription speaks of Chālukya invasion upto Vindhya, but not further; while chiefly poetical, a more Northward furthering would have only added glory to the decorated military career of Pulekeśin. It is safe to assume that Harṣa did not let Pulekeśin cross Vindhya. But, reeling under a massive negative shock and hasty retreat, Harṣa had limited options to delegate command or seek alliance in a fledging political landscape. The Year 23 Kurukṣētra-Vārāṇasī grant of Harṣa gives significant importance to Mālava kings, like Mādhava-Gupta (c. 622-655 CE), which might be a tacit indication of the role Malwa Guptas played in Puṣyabhūti-Chālukya conflict, by acting in synergy with his embattled Puṣyabhūti Overlord, and assaulting the Chālukya forces in a *double-pincer movement* (see fig. 18), with periodic positioning and permissible breakthrough(s), to lead enemies to even greater testing waters.

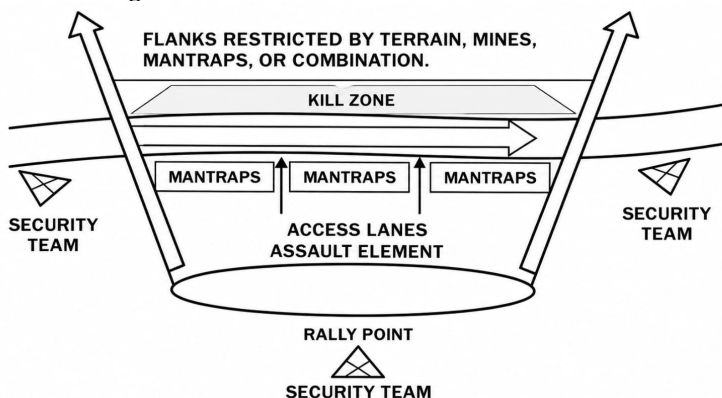


Figure 19. Flow-diagram of ambush-strategy (Source: Wikimedia Commons).

The geologically antiquated terrain of Vindhya offered a perfect venue to Harṣa for ambush-engagements (see fig. 19), as suggested strongly by prehistoric evidence (Pandey 2012: 227). With concealment, emplacements, extraction, deployment, encircling and enveloping received favor, with mobile command-posts. With deliberative strategy, it was not difficult to venture into berserk-mode for an already psychologically rinsed, physically tired and politically injured Army. The flat-surfaces located at key junctions proved their mettle as excellent Kill-zones, while helping the Puṣyabhūti to continue such melee attacks for long due to incessant replenishment of resources from newly re-consolidated political allies, who all were equally threatened by emerging political scenario. Establishment of new hegemony would have resulted in exponential increase in *menu costs* (in serving new Emperor) and *shoe-leather costs* (rescheduling of old tax-tribute institutional arrangements).

Conclusion: of Summations and Stratagems

Pulekeśin possibly desired a stronghold in the North, but the ill-fated consequences of never-ending cycles of ambush, deep state political pressure, along with the twin dangers of the South and court politics emerging in his absence dawned upon him, prompting him to seek an ultimatum to *haggling and hustling*, and revert to his beloved Kingdom. Perhaps, tired from his resolute bearing to keep his pivotal peripheral arrangements secure, Harṣa embraced opportunistic peace for the moment, only to break stale in c. 628 CE by invading Saurāṣṭra, possibly a response to Pulekeśin's assault in Andhra and acquisition of Andhra from Viṣṇukundina Dynasty between c. 621-626 CE. This highlights the interconnected nature of Indian history. Furthermore, the tools of analysis herein assuredly testify to the strategic concepts which received credence and consideration from masters of warfare. An epigraphical discovery undoubtedly adds to our data and diction. But, with theoretical rigor and some speculative calibration, more can be gleaned out of it. New discoveries will enlighten us further, and help us configure the *Games of Stratagems* that were played in our hoary antiquity, and that should rightly and timely enter the historiographical discourse of our historical tradition.

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[https://www.academia.edu/34011338/The Bijapur Mumbai copperplate gr](https://www.academia.edu/34011338/The_Bijapur_Mumbai_copperplate_gr)

[ant of C%4%81lukya ruler Pulake%C5%9Bin II dated April 04 619 CE mentioning his triumph over Emperor Har%E1%B9%A3avardhana.](#)

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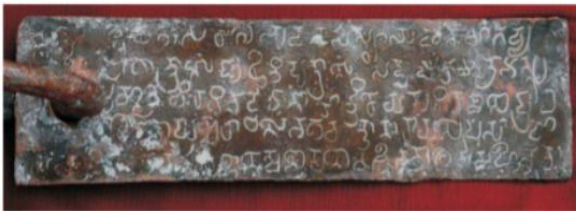
Appendix

Plates:

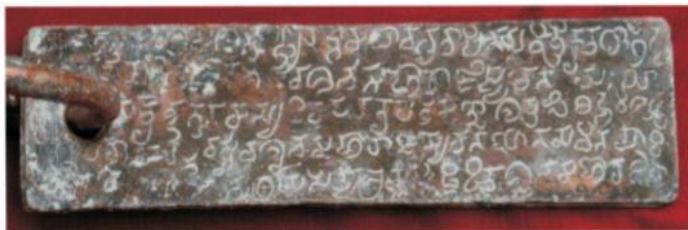
- 1-A Bird's eye view of the newly discovered copper-plates.
- 2-All three plates sequentially arranged.
- 3-Translation of the grant in Sanskrit language and Devanagari script.



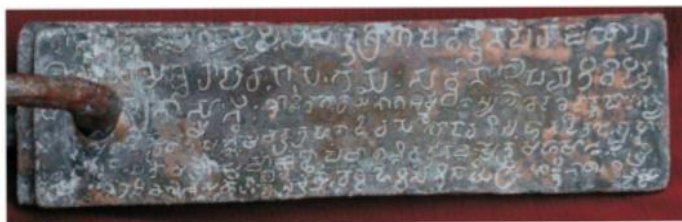
Photoplate 3a:
Bijapur-Mumbai Copperplate Grant of
Cālukya Ruler Pulakeśin II: Full set



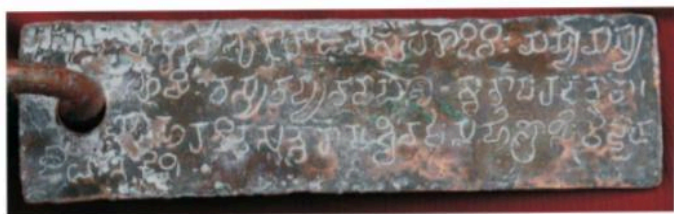
Photoplate 3b: Plate 1, side 2



Photoplate 4a: Plate 2, side 1



Photoplate 4b: Plate 2, side 2



Photoplate 4c: Plate 3, side 1

*Text*⁷

Plate 1, side 2 —

- १ [स्वस्ति] श्रीमता सकलभुवनसस्तूयमानमानव्य
- २ सगोत्राणा हारीतीपुत्राणा सप्तलोकमातृभिस्स
- ३ समातृभिरभिवर्द्धितानां कार्तिकेयपरिरक्षणप्राप्त
- ४ कल्याणप[र]म्पराणां भगवन्नानां रायणप[प्र]सादा
- ५ त्समासा[दितव]राह[ला]ञ्छनेक्षणक्षणवशीकृताशेषमहीभृता(तां)

Plate 2, side 1 —

- ६ चलिक्पानां कुलमलंक[रि]ण्णोरश्वमेधावभृता(थ)[स्त्रा]नपवित्रीकृतगात्रस्य
- ७ सत्याश्रयश्री[पु]लिकेशिवल्लभमहाराजस्य तनयः परा
- ८ [क्र]माकान्तवनवास्य(स्या)दिपप"रनूपतिमण्डलप्रणिबद्धविशुद्ध
- ९ [कीर्त्ति]पता[क]स्य [कीर्त्ति]वर्म्मवल्लभमहाराज[स्त*]स्य तनयो नयविनयावि(दि)
- १० [गुण]विभूत्याश्रयसत्याश्रयः प्रि(पु)थिवीवल्लभमहार(रा)जा(ज) ए

Plate 2, side 2 —

- ११ राज(जः) समरसंघटोर्मिसंसक्तश्रीहर्षवर्द्धनपराजयोप
- १२ लब्धपरमेश्वरापरनास(म)धेयः सर्वानाज्ञापयति विदित
- १३ मस्तु वो[ऽ*]स्माभिः कौशिकगोत्राय¹⁰ नागशर्म्मणे[ऽ*]स्य वेदवेदाङ्गपारगस्य¹¹
- १४ [न]वमे वर्षे वैशाखपूर्णिमे¹² चन्द्रग्रहणदिवसे गोदावरीमहानदीतटे ब्राह्मण
- १५ वटवीयन्ना(ना)मग्रामे चा(च?) उञ्छा पंचाशन्नवर्त्तन(नं) च क्षत्रमहामानेन श्री
- १६ मता पुलिकेशिवल्लभमहाराज्ञान¹³ ..तुवैश्वदेवीसत्रिसयज्ञगोचिना@+ति¹⁴ दत्त[म*]

Plate 3, side 1 —

- १७ [व]हु[भि]र्वसुधा भुक्ता राजभिस्सगरादिभिः यय्य(स्य) यस्य
- १८ [यदा] भूमिः तस्य तय्य(स्य) तदा फलं स्वा[द*]त्ता(त्ता) परदत्ता वा।
- १९ यो हरति वसुन्धरां षष्टिवर्षसहस्राणि विष्टा(ष्टा)या(या)
- २० जायते कि(कृ)मिः