Sourcebook for the Shahi Kingdoms

# Archaeological Evidence for a Climatic and Agrarian Crisis in Swat between 530 and 660: Possible Effects of the So-called “Late Antique Little Ice Age” (LALIA)

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# SOURCEBOOK FOR THE SHAHI KINGDOMS[1]

## Archaeological Evidence for a Climatic and Agrarian Crisis in Swat between 530 and 660: Possible Effects of the So-called "Late Antique Little Ice Age" (LALIA)

Luca M. Olivieri

The following notes are based on the evidence provided by the most recent excavations in Swat, in particular at the site of Barikot (Bazira/Beira) (Coloru and Olivieri 2020, with refs.). The site, later a major Śāhi center in Swat with palatial structures and a temple, is known as Vajirasthāna in a *śāradā* inscription dated to the reign of Jayapāladeva (r. c. 964-1002 CE) (von Hinüber 2020).[2]

Still today, archaeologists tend to unconsciously associate stratigraphy to the presence of material evidence. In this way, crucial phases like top layers of abandonments and interfacial periods go unnoticed in archaeological reports. Interfacial periods or 'interphases' are typically represented by layers of abandonment, flood evidence, slides, collapses, or by sterile soils with overwhelming evidence of vegetation in previously inhabited areas. Notwithstanding their ambiguity, interfacial periods have important implications for the periodization and reconstruction of the cultural sequence.

In Swat, where a substantial continuity of human occupation has been registered, interfacial periods are particularly striking. These periods apparently started abruptly, as if they were triggered by natural factors, like sudden climate changes. The earliest recorded case regards the interfacial period between the end of the Bronze age (c. 1400 BCE = Macrophase 0 at Barikot) and the beginning of the Swat Protohistoric Graveyards (SPG) and associated settlements (c. 1200 BCE = Macrophase 1a).[3] A second case occurred between 800 BCE,[4] when the SPG were abandoned, and c. 500 BCE, when archaeological evidence reappears throughout Swat (Olivieri and Iori 2019).[5]

Another important gap occurred between 500 and 700 CE (= Macrophase 7), which is archaeologically documented by a striking building crisis and abandonment of Buddhist monasteries and sanctuaries throughout Swat and its surroundings. Albeit in the absence of direct climatic data, the coeval collapse of the agrarian production registered by the sources, allows us to interpret the crisis as generated by a dramatic climatic change. Crisis of both Buddhism and agrarian production are closely linked. We have demonstrated elsewhere (Olivieri et al. 2006), that the agro-production in Swat was - in fact - firmly in the hand of the Buddhist monasteries.

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[2] Lahore Museum, n. 119; line 2: (meśvara) śrī jayapāladevarājye śrī vajira(sthā)ne (von Hinüber 2020).

[3] An early neo-glacial anomaly (ENA), with intensified severe winter monsoons, occurred in North India occurred between 2500 and 1300 BCE (Giosan et al. 2018).

[4] The SPG chronology is firmly established between 1200 and 800 BCE (Narasinham et al. 2019, with refs).

[5] In Kashmir archaeologists argued that "the thinness of the archaeological deposits of the [700–200 BCE] phases [...] indicates some form of population collapse during this period" (Spate 2019: 129).

The tentative dimension of the agrarian production in Swat ante-500 CE possibly exceeded the best crop production anywhere in the same region, with the exception of a few other double-crop pockets, among which we should list Kashmir and Kapisa (Olivieri, forth.). The approximately 1,000 sq km of Swat agro-land suitable for double cropping could have produced enough food to feed more than half a million people. According to different models (Schlingloff 2013; Smith et al. 2016), at the peak of the urban and monastic development, there might have been c. 250,000 inhabitants in Swat, with about 30,000 people living in the cities (only Barikot, with its 12 ha, had 6,000 inhabitants). According to British colonial sources, in 1907 Swat valley was inhabited by not more than 90,000 people (*Frontier and Overseas Expeditions from India* vol. 1). At the peak of the Yusufzai State of Swat, the 1954 census registered 300,000 people, 3/4 of them living in the Swat valley.[6]

Suddenly, from the mid-6th century, agrarian production and Buddhist centers enter a crisis period, whose effects were still visible in the first half of the 7th century. "[...] at the times of [Xuanzang] (he travels from 629 to 645) many of them were in ruins [...]. [Sungyun] (he travels from 518 to 523) speaks in high terms of the Buddhist community and does not anticipate the different statements of [Xuanzang]" (Tucci 1977: 67). Moreover, Chinese sources and diplomatic annals also clearly exclude Swat from the major trade routes after 538 CE (Kuwayama 2006). Interestingly, a similar gap between major archaeological phases is recorded in almost all the sites stratigraphically investigated to the West of the Khyber from Ghazni to Kapisa: Tapa Sardar I and II, Begram II and III, Tapa Skandar I and II. S. Kuwayama has dedicated one of his most concise and important contributions to this theme (2010).

On that question, a provocative hypothesis, generated by a discussion at the 2018 Shahi Project workshop with other colleagues, including Nicola Di Cosmo of the Institute of Advanced Studies, Princeton, suggests the possibility that the collapse of the agro-production in Swat followed the effects of the so-called "Late Antique Little Ice Age" (LALIA), a long cooling period which occurred between 536 and 660 CE. Scholarly studies have already attributed to LALIA regional collapses of imperial organizations, dramatic exoduses of populations across Eurasia, and connecting it even to Justinian's plague (Büntgen et al. 2016; see also Whittow 2019, 361-363).

As far as Swat is concerned, it is probably too early to advance a structured hypothesis in that sense. While waiting for new paleo-climatic data from Swat, the LALIA working hypothesis opens potentially new perspectives on the impact of climate changes on the ancient economy of the Himalayan double crop pocket zones. For example, it can possibly explain the rapid growth of mountain princely states, whose agro-economies were already adapted to low temperatures, like the kingdoms of Bamiyan and of the Palola Śāhi at Gilgit and Bolor-Chilas.

The Buddhist monasteries' crisis brought the fall of prestige of the Buddhist elites following the sudden climatic cooling, and the related collapse of the agro-production. Interestingly, after the end of the LALIA period, we saw the constructions of *deva* temples, like the one on the top of the acropolis of Vajirasthāna, which, on the basis of the radiocarbon dates, was built in the early Śāhi period (c. 700 CE) over the freshly demolished structures of a magnificent (but abandoned?) Buddhist sacred area.[7]

[6] The princely Yusufzai State of Swat (1917-1969) included in 1954 the then almost desolated Buner, and the hilly areas of Shangla/Puran. Both are now separated districts.

[7] Here excavations are in progress (Olivieri ed., forth.). Meanwhile, see Callieri et al. 1999-2000; Callieri et al. 2000. On the religious disputes related to land possession in late ancient Northwest India, see the explicit story narrated in *Rājataraṅgiṇī* (I 171-181). On these problematics, see Bronkhorst 2007, Verardi 2011.

A last note: we know that since 1200 BCE Swat knew a long phase in the continuity of human DNA at least until 1200 CE (Narasinham et al. 2019). Therefore, throughout that period in Swat, interfacial phases and climatic crisis resulted in a demographic contraction, but with no genetic changes.

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