On the chronology and use of timber in the palaces and palace-like structures of the Sasanian Empire in “Persis” (SW Iran)

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A B S T R A C T

Timber in an archaeological context can be used to establish chronologies, to understand the history of architecture and to reconstruct cultural landscapes and natural vegetation in the past. In this study, we use the xylological identifications and radiocarbon dating results of five timber fragments recently discovered in three palaces or palace-like structures in Fars (SW Iran) dating back to the period of the Sasanian Empire (224–651 CE). We show that Qal’a-ye Dokhtar, a fortified palace to the north of Firuzabad, was constructed during the power transition from the Parthian to the Sasanian period. On the other hand, the so-called Palace of Ardashir I besides Firuzabad, was accomplished after the power takeover by the Sasanians and the political stabilisation of SW Iran under the reign of Ardashir I (224–240 CE) and his son Shapur I (240–270 CE). We also demonstrate that the ‘Palace of Sarvistan’ was mainly used right after the fall of the Sasanian Empire during the first centuries of Islamic domination over Iran. The discovery of timber in stone-dominated Sasanian architecture adds information on timber use in the Late Antique Near East. Mediterranean cypress (Cupressus sempervirens L.) was the only timber found in Sasanian palatial architecture, and its use suggests that the tree was one of the major cultivated elements in ancient ‘Persis’ most probably for its shade, beauty and building timber, but possibly also for its symbolic significance and sacred status to the Zoroastrians. Cypress trees may have played a major role in Persian gardens since antiquity, along with plane trees.

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1. Introduction

The Sasanian Empire (224–651 CE) was the most powerful political and economic rival of the Roman Empire for about half a millennium. The Empire was established by Ardashir I (224–240 CE) in 224 CE, after he had defeated the last Parthian King Ardawan (Artabanus IV) in the plains of Hormozgan in Southern Iran (Frye, 1983; Wiesehöfer, 2001; Daryae, 2013). Similar to the Teispids and the Achaemenids in the plains of Hormozgan in Southern Iran (Frye, 1983; Wiesehöfer, 2001; Daryae, 2013). Among the most famous of these buildings are the fortified complex of Qal’a-ye Dokhtar and the ‘Palace of Ardashir I’ (or the so-called ‘Ateshkadeh’ or ‘Ataškada’) near modern Firuzabad, both generally dated to Ardashir I’s reign, and the ‘Palace of Sarvistan’ (hereafter ‘Sarvestan’), near the modern town of Sarvestan, a building of uncertain function dated to the Late Sasanian-Early Islamic period (Fig. 1) (Bier 1986; Huff 2009; Askari Chaverdi 2011). Particular architectural features of these structures are the chahartaq (also châhârtiq), a dome built on squinches above a square hall. These can be considered as the major Sasanian architectural innovation contributing into the later Middle Eastern architecture. Furthermore, the oyvan (also avyan and iwan) also developed in the area, this is a large vaulted hall walled on three sides and open at the front (Huff, 1986; Huff and O’Kane, 1990; Callieri, 2014). Sasanian architecture certainly influenced the Early Islamic palatial architecture and urban design in Southern Iran, in Iraq and to some extent also in Syria; however the nature and degree of this influence is still a matter of debate (Fontana, 1986; Huff, 1986; Bier, 1993).

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Although a chronology has been suggested for Ardashir’s palaces, which was mainly based on the coins discovered during the excavations at the sites (Huff, 1978), there has been, until now, no absolute dating available to confirm the suggested chronologies. The situation is even more complicated for the Palace of Sarvestan, for which a date encompassing the Sasanian and Early Islamic period has been attributed by archaeologists (Bier, 1986; Askari Chaverdi, 2009).

Another problem concerning the aforementioned three buildings and Sasanian architecture in general is that, to date, there have been no archaeobotanical data available on the use of timber in the palaces and other Sasanian structures. Fortunately, wood samples have recently been discovered in the excavated materials and wall structures of some Sasanian monuments of Fars and the Palace of Ardashir I. These samples are of great importance in order to shed new light on the history of tree cultivation in ancient Iran.

2. Material and methods

Five wood samples were collected from three monuments: the Palace of Ardashir I to the north of Firuzabad (28°53′ 51.44″N, 52°32′ 20.46″E, 1364 m), Qal’a-ye Dokhtar on the road from Shiraz to Firuzabad (28°55′ 14.79″N, 52°31′ 47.10″E, 1490 m), and the Palace of Sarvestan situated to the east of Lake Maharlu (also Maharlou) in the plain of Shiraz (29°11′ 44.20″N, 53°13′ 51.85″E, 1547 m). Fig. 2 displays the exact position of each wood fragment in the architectural plans of the buildings. Here are the descriptions of the studied wood fragments:

- QD-1 Wood fragment cut from a timber in the western part of southern wall of room 16 of Qal’a-ye Dokhtar (Fig. 2a).
- Ar-1 Wood fragment from the archaeological debris in the northeastern corner of room 10 of the Palace of Ardashir I (Fig. 2b).
- Sarv-1 Timber section from the wall located in the southwestern corner of room 9 of the Palace of Sarvestan (Fig. 2c; Fig. 4a).
- Sarv-2 Wood fragment from the debris in the northeastern corner of room 10 supporting the large dome at the same place (Fig. 2c).
- Sarv-3 Timber section from the wall in the northeastern corner of room 10 supporting the small semi-dome at the same place (Fig. 2c; Fig. 4b).

All five samples were AMS-radiocarbon dated in the Poznan Radiocarbon Laboratory (Table 1). For samples Sarv-1 and Sarv-3, which display almost complete series of tree-rings (Fig. 4a and b), only the outermost ring representing the date of the tree felling was subsampled for dating.

3. Results and discussion

3.1. Chronology of construction and use of Sasanian royal palaces

As reported in Table 1, the radiocarbon datings provide ages ranging from the 2nd to the 3rd century CE (Qal’a-ye Dokhtar and the Palace of Ardashir I) at the very beginning of the Sasanian Empire, and from the 7th to the 9th century CE corresponding to the centuries of domination of the Arab conquerors and the subsequent Iranian dynasties in the Islamic period (Fig. 3). These datings provide the first absolute ages from the Sasanian and early post-Sasanian palaces of Fars and help to shed some light on the history of the construction and use of the buildings in the Sasanian and post-Sasanian period.

3.1.1. Qal’a-ye Dokhtar and the Palace of Ardashir I

As illustrated in Fig. 3 (also reported in Table 1), the probability distribution curve of radiocarbon age for the Qal’a-ye Dokhtar sample points to a definitive absolute age older than 246 CE for this fortress-palace structure. This strongly suggests that it was constructed in the transitional period from the Parthian to the Sasanian rule over Persis. It seems that this absolute dating is in line with the historical events and the available archaeological remains. The Sasanian campaigns against the Parthians started in Persis at about 205–206 CE, when Pabag of the ‘house’ of Sasan, Ardashir I’s father, dethroned the local ruler of the city of Istakh (Weber, 2016). After succeeding his father, Ardashir I continued to conquer Parthian territories and finally defeated the last Parthian king on 28th April 224 CE. In 226 CE, he was crowned in
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