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Remote assessments of the archaeological heritage situation in Afghanistan

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ABSTRACT

Analysis of spatial and temporal patterns in looting and destruction at archaeological sites using satellite imagery has become a focus of multiple research groups working on cultural heritage in conflict zones, especially in areas controlled by the Islamic State in Syria and Iraq. In this paper, we apply similar methods to investigate looting and destruction at archaeological sites in the Islamic Republic of Afghanistan, where Taliban-related cultural heritage destruction events have also frequently made international headlines. Using the time depth provided by high-resolution, time-stamped DigitalGlobe satellite and BuckEye aerial images as well as CORONA and other historical satellite images and maps, we quantitatively document spatial and temporal patterns in destruction from looting, agricultural activity, military occupation, urban growth, mining, and other kinds of development at over 1000 previously known archaeological sites across Afghanistan. This analysis indicates that several common narratives about cultural heritage destruction in Afghanistan may require revision. Specifically, we conclude that significant amounts of systematic looting of archaeological sites in Afghanistan already occurred before Taliban-related conflicts, that there has been little increase in systematic looting in Taliban-controlled areas post-2001, and that the most pressing threats to Afghanistan's heritage sites come from development activities, including agricultural expansion, urban growth, and future mining. The analysis demonstrates that the situation in Afghanistan both parallels and contrasts with that seen in the post-Arab-Spring Middle East.

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1. Introduction

In recent years, the study of the relationship between conflict, the destruction of archaeological sites, and the black market has been defined by the cultural heritage crisis in Syria and Iraq. The performative destruction at iconic sites like Nimrud, Hatra, Nineveh, and the Mosul Museum by the Islamic State has understandably captured the attention of archaeologists, policymakers, and the public [1]. Satellite images of systematically looted sites in Syria like Dura Europos, Mari, and Apamea, as well as art market data and other forms of evidence indicate a thriving illegal trade in stolen antiquities [2–4]. Parallels have been drawn between the situation in Afghanistan and that in Syria and Iraq, with both providing examples of similarly organized looting as a possible funding source for Islamic terror groups [5]. The destruction of the Bamiyan Buddhas and other sites in Afghanistan by the Taliban in 2001 provides

very direct foreshadowing of the actions more recently taken by the Islamic State [6: 1, 7: 229]. These destructions were filmed and distributed all over the world, and they were justified as the destruction of pre-Islamic idols [8–11].

The cultural heritage of Syria, Iraq, and Afghanistan has frequently been a topic of international media reports because of these attention-grabbing incidents. But the overwhelming focus on such events paints a biased picture of the fate of cultural heritage in these nations, where a multitude of factors result in heritage destruction. The media and some sectors of the cultural heritage community draw on the shock and performativity of destruction events to highlight the urgency of cultural heritage problems and to argue for Western intervention in the form of funding and other resources for cultural heritage work. The predominant public narrative holds that looting and destruction specifically by extremist groups – the Taliban in Afghanistan and the Islamic State in Syria and Iraq – are currently the most pressing and dangerous threats to archaeological sites in these nations. Through systematic, critical research of various kinds, it is becoming increasingly apparent that many media and even academic reports have inflated and otherwise

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mischaracterized the role of the Islamic State in the cultural heritage crisis in Syria and Iraq [12–16]. A quantitative assessment of spatial and temporal patterns in looting and other forms of site destruction in Afghanistan is essential in order to provide the broader picture needed both for cultural heritage efforts and for research into the funding of international criminal activity.

Unlike in Syria and Iraq, the academic archaeology community has not responded to the recent phases of the heritage crisis in Afghanistan with the creation of multiple collaborative projects to quantitatively and systematically document looting and destruction. Academic researchers have assembled a considerable body of diachronic data on looting and other forms of destruction at sites across Syria and Iraq using satellite imagery. A large volume of Syria/Iraq publications cover peacetime heritage destruction [17–19], conflict-related looting and destruction since the beginning of the Iraq War in 2003 [20–27], and especially conflict-related looting since the 2011 Arab spring [2,7,28–32]. By contrast, the situation in Afghanistan has been reported only anecdotally and primarily by the international media [33–38], as well as through reports from officials or heritage NGOs [39–43] with few systematic analyses (but for analyses of the sites of Jam and Lashkari Bazar, [44,45]). Contradictory statements concerning the archaeological heritage situation in Afghanistan, especially regarding the relative importance of looting and other sources of revenue for the Taliban, discussed further in the next section, highlight the need for data on looting in the country.

The difference in the academic archaeology community's response to these two heritage crises reflects two factors: the difference in availability of satellite imagery for monitoring threats to heritage between 9/11 and the Arab spring, and the history of foreign involvement in fieldwork in these nations. First, at the time of the American invasion of Afghanistan in 2001, free public access to modern high-resolution satellite imagery did not yet exist. Google Earth was launched in 2005, and many areas were not covered with high-resolution imagery until considerably later. This made it impossible for the archaeology community to affordably track destruction to heritage sites for years following the invasion and subsequent occupation. By the time of the Arab Spring and the commencement of the Syrian Civil War in 2011, free access to high-resolution satellite imagery had greatly expanded, enabling various spatial and temporal analyses of newly commenced looting in Syria and Iraq of a detailed type that never occurred for old or new looting in Afghanistan. However, the unavailability of free high-resolution imagery at the beginning of the Iraq War in 2003 did not prevent the proliferation of looting studies, which instead used purchased imagery [19,23,25], so other reasons must also explain the observed discrepancies in the amount of academic attention devoted to Syria/Iraq versus Afghanistan. Whereas many foreign archaeological teams worked in Syria before the Arab Spring in 2011 and in the Kurdistan region of northern Iraq from roughly 2010 onwards, few foreign archaeologists outside of the *Délégation Archéologique Française en Afghanistan* (DAFA) have worked in Afghanistan since the Soviet invasion in 1979, and constant conflict has prevented local archaeologists from conducting excavations or surveys [37]. As a result, the archaeology of Afghanistan remains significantly less known than that of Syria/Iraq. Further, the 2001 invasion of Afghanistan came only after two decades of conflict and widespread looting. While the post-2011 crisis in Syria and northern Iraq as well as the post-2003 (post-second American invasion) conditions in southern Iraq have been seen as a shift in the cultural heritage situation in those countries, post-2001 reports of looting in Afghanistan are viewed as continuous with the situation before the American invasion. Whether correct or not, such a view shapes reactions toward the situation in Afghanistan.

Here, we provide the first quantitative countrywide assessment of ongoing and potential damage to archaeological sites in

Afghanistan. This work draws on GIS and satellite imagery methodologies that allow us, first, to track past damage to sites over time and, second, to calculate threats to sites in the future. In a first assessment, we drew on visual inspection of time-stamped series of high-resolution satellite imagery and other datasets to evaluate temporal and spatial patterns of looting and other forms of site destruction. While the assessment began with a focus on looting, it soon became apparent that sites in Afghanistan have been recently affected by many different processes, and we expanded our assessment accordingly to include damage caused by agricultural expansion, military activity, urban growth, and mining. Damage to archaeological sites from looting, agricultural expansion, and military activity were assessed for a group of over 1000 previously known archaeological sites that were examined in modern high-resolution satellite images of all available dates. In a second assessment, we integrated datasets drawn from historical and modern satellite imagery, Soviet-era topography maps, and the US Geological Survey (USGS) Afghanistan website to quantify ongoing and potential future damage to archaeological sites from urban growth and mining.

On the basis of this remote analysis of sites, we draw three conclusions about the fate of archaeological heritage in Afghanistan. First, a significant amount of systematic looting in Afghanistan took place decades ago, and not during the post-2001 conflict. Second, areas controlled by the Taliban have not experienced increases in looting after the American invasion, particularly when compared to the rest of the country. There are areas that have experienced continual looting at a dramatic scale since 2001, especially in the northern oases like Balkh, but these are not representative of the situation across the country. Third, outside of these hotspots, the major threats to archaeological sites are instead from urban growth, other forms of development, agricultural expansion, and potential future mining. These conclusions show that the looting and archaeological heritage situation in Afghanistan both parallels and contrasts with that documented in Syria and Iraq.

2. Afghanistan's archaeological heritage and history of conflict

The archaeological heritage of Afghanistan is rich over a long chronological span from the Bronze Age through recent periods [46]. This richness is in large part due to the country's location along the cross-continental trade routes that are now referred to as the "Silk Roads" and to its position at a number of environmental interfaces (Fig. 1). The northern foothills of the Hindu Kush were one of the early centers of plant and animal domestication in the Neolithic; the steppes, oases, and river valleys both to the north and south of these mountains were for millennia the meeting point of Iranian, Indus Valley, Central Asian, and Chinese civilizations. The mountains of Afghanistan are geologically diverse and rich in deposits of gold, silver, iron, copper, tin, and precious stones. Trade networks dispersed these resources across Eurasia as early as the fifth millennium BC. Afghanistan's role as a source of minerals and its position on trade routes meant it played an important role in the transmission of technology, materials, and culture, from silks and spices to glass and ceramics to the Zoroastrian, Buddhist, and Islamic religions.

However, Afghanistan has endured more than three and a half decades of war, which has resulted in the degradation of state institutions, including those involved in heritage management. The situation also has made it impossible for state authorities to enforce laws such as those that would prevent the destruction of archaeological sites and the trafficking of antiquities. At the same time, the destruction of large parts of the agricultural and pastoral subsistence base during and after the 1979 Soviet invasion

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