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Beyond the Law: Ethical Voids and Actor-Network Misalignments in UAS-Based Archaeology

Sayumphu Ros [1*]

[1] Ph.D Candidate, School of Graduate Studies, Cambodia University of Science and Technology, Phnom Penh, Cambodia
* **Corresponding Author:** sr8024010001@camtech.edu.kh

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ABSTRACT

This article employs actor-network theory to investigate the use of Unmanned Aerial Systems (UAS) in archaeology. This article aims to raise concerns about ethical issues that should be addressed when using UAS for archaeological research. This article contends that human and non-human actors can contribute to ethical issues such as ethics dumping, invasion of privacy, and cultural insensitivity and ignorance of the local community. The article examines the status quo of existing legal and ethical frameworks and contends that the current rules are outdated and insufficient to address ethical concerns. The laws primarily concern security, safety, and flight operations rather than context-specific for archaeology. A clear guide to data and UAS ethics for archaeology should be addressed. Although they emphasize how human archaeologists should behave as professionals with ethics, they fail to address the technological aspect, which has created biases and raised ethical concerns. Understanding this relational network and power dynamics through ANT, the article suggests that to address the ethical concerns, both human and non-human actors should be considered, and the law and code of conduct should apply to both.

Keywords: Actor-Network Theory; Unmanned Aerial Systems (UAS); Archaeological Ethics; Data Governance; Human-Nonhuman Interaction.

INTRODUCTION

Digital technology has become increasingly pervasive and integrated into people's daily lives, for better or worse. Nuclear energy, for example, can be used to help generate energy or turned into a dangerous weapon of mass destruction (Vaynman & Volpe, 2023). The same holds for the aerial archaeological sector. Archaeologists have used digital technology to help them preserve cultural heritage. For example, the use of ground penetrating radar (GPR) for ground surveying beneath the earth's surface, an underwater drone to inspect underwater cultural heritage, or a drone and lidar to survey the topography of the land surface and map the archaeological complex (Frid & Frid, 2024). Although it is introduced as a supplementary or replacement for traditional archaeological survey methods, it remains an ethical question whether the technology provides neutral data and how it affects the human agency involved in archaeological research design (Sylaiou et al., 2025). These changes aid technological determinism, which implies that humans play a secondary role in data collection, interpretation, and dissemination. This may impact or reduce the authenticity or cultural appreciation and value of the subject of the studies, which is typically a local community in the developing world or a marginalized community. This issue will be discussed further in the following section.

With the understanding that being technologically dependent may result in ethical concerns and cultural misrepresentation and interpretation of one's community and society, the article will focus solely on the Unmanned Aerial System (UAS) because this technology is expanding. However, the ethical concerns directly addressed by this issue remain fragmented. In relation to the aerial survey, there are some synonyms that more or less refer to the technology, such as "unmanned aerial vehicle (UAV), remotely piloted vehicle (RPV), remotely

piloted aircraft system (RPAS), small UAV (SUAV), micro aerial vehicle (MAV), and of course drone (Campana, 2017)." Despite various terms associated, all of these can be classified as UAVs or drones, a type of aircraft that has no human on board and is operated remotely, or it can be autonomous with a fixed or rotating wink (Campana, 2017). However, this article examines aerial remote sensing as a system, UAS, which means that the aircraft or aerial plane must be connected to other technologies and systems such as GPS systems for ground control, sensors for data collection, and software such as hard discs for recording and post-data collection processing, hence the term UAS (Anderson, 2023).

It is important to note that the purpose of this article is not to examine how technology works in a technical sense but rather to understand the technology in order to highlight any potential ethical flaws caused by the technology or by the human agency that uses it. To better understand the ethical issue and ethical principle for UAS, the article will first examine drone laws in various countries such as the United States, European Union, Australia, China, Korea, Japan, and Southeast Asian nations to see how UAS are perceived and whether there is enough legal obligation to reinforce ethical misconduct. The article will then look at ethical codes from the European Association of Archaeologists, the Society of American Archaeologists, and other countries such as China, Korea, Japan, and Southeast Asian Nations to see if there is any reinforcement of ethical conduct to supplement the law in the case of legal loopholes. In other words, studying the law is necessary to understand how the formal rules regulate human behavior to establish a minimum standard for acceptable behavior. In contrast, ethics is a guiding principle for humans to act safely and responsibly. By examining the law and code of conduct, the article will determine whether the current system adequately protects human and cultural dignity and what can be done to promote a more ethical use of technology that is enforceable by law.

This article believes that the various legal and ethical codes of conduct listed above have yet to adequately address aerial remote sensing and the ethical quandary it raises. It is simply because formal law and ethical codes do not capture or may not comprehend the reality of these technologies, which are not working in silos but are connected to different actors such as researchers, local communities, local authorities, and actors such as UAVs, GPS, and software, and this does not aid in the governance of actual research or even reflect the actual research network. In other words, persistent ethical imbalances and ethical issues exist because the law has not been fully implemented in practice.

With that said, the article will use a two-layered analysis. The first layer is the examination of the emergence of laws and code of conduct that affect or aim to govern how UAS is used as a benchmark. The article will then use actor-network theory (ANT) to bring about or unearth the black box of social-technological relations of UAS, reflecting that current law and ethical codes may still be limited. In other words, ANT is critical to shifting the discussion of how the law and ethics are used and explaining how the UAS network works to answer why the law and ethics code is not sufficient.

The article will begin with a literature review, then draw on the gaps and point out the loopholes in the laws and ethics. It will move on to the methodologies used, discuss the actual network and legal loophole, and conclude in the last section.

LITERATURE REVIEW

As previously stated, the section will examine the laws and ethics that appear to have jurisdiction over aerial archaeology from various published works. Examining this framework aids in mapping how a stable network or order is perceived and understanding how current law and ethical code are limited, fragmented, outdated, and do not adequately address the use of UAS, particularly in archaeology. The growing gap between active research practice and the law or code that is supposed to govern the research is concerning.

EU's UAS Law and Archaeological Research Code of Conduct

To begin, O ' Keefe (1993) discussed the Valetta Convention 1992 or the European Convention on the Protection of the Archaeological Heritage that set out rights and obligations regarding the protection of archaeological sites, how to excavate, and highlighting the roles of actors involved in cultural protection. The convention has been adopted by 42 of the Council of Europe's 46 member states (Council of Europe, n.d.). The convention stated in Article 1 that archaeological heritage refers to objects that are moveable or immovable underwater or on the ground (Council of Europe, 1992, Art. 1). According O'Keefe (1993), the convention is state-based, with the state as the central authority in ensuring archival inventories, mapping, presentation, and dissemination of information. As noted by Cleere (2014), the convention also emphasized the importance of community involvement in promoting awareness and finding. It should be noted that the Valletta Convention is only an overarching legal framework, and states must still determine the specific procedure on their own. One

thing to take away from this article is that it demonstrates cases in which states plan an important role, as part of a network explained by ANT, to moderate and govern behavior related to archaeology activities. It should also apply to the currently muted use of UAS for archaeology. Furthermore, while the article and law discuss data storage, they do not address how data is collected or governed because the law grants member states the authority to determine national law.

Specifically, regarding the UAS, Anderson (2023) and Truxal and Scott (2024) explains that the Commission Implementing Regulation (EU) 2019/947 on the rules and procedures for the operation of unmanned aircraft is the law that governs how UAVs are used in the EU. This regulation was adopted in 2019 by EU members and countries that accepted the European Union Aviation Safety Agency standard. Particularly, Truxal and Scott (2024) mentioned that UAVs can be used for various purposes, including leisure, commercial, and professional, but did not mention archaeological use. According to Truxal and Scott (2024), UAV operations can be classified into three tiers: open, specific, and certified categories, indicating low, medium, and high risk to humans, property, and airspace. The article says that the weight and height limits for open categories are under 25kg and 120 meters, respectively, and that the aircraft must fly away from people and restricted space. Specific and certified categories, on the other hand, specific and certified categories require flight plan approval and risk assessment, as well as certification and licensing to ensure no risk. On the other hand, the law does not address the archaeological context, but it refers generally for activities that is not for leisure, so it may be linked to medium and certifies categories that is subjected to restriction.

Kurtpınar (2024) and Anderson (2023) raised that although the drone law in the EU discussed the right to privacy, it did not explain much about data privacy. However, it is linked to the EU's General Data Protection Regulation (GDPR), which states that UAV operations can capture images or videos of humans and may result in trespassing on personal property, necessitating consent from the people in addition to government authorization of the flight plan or certificate. That being said, it is clear from the articles that the implications of the legal concern are only limited to individual privacy but not thoroughly include cultural or Indigenous community disturbance of their ancestral land, for example.

The EU has some laws that protect human privacy. However, they do not address the ethical research process, which may impact human privacy or violate individual rights. Hence, Cleere (1997) explains that the European Association of Archaeologists has developed a code of conduct that can be used as a guideline for archaeologists working in Europe or elsewhere to ensure that responsibility, accountability, and integrity in archaeology are maintained. The author pointed out that the EAA code of conduct emphasizes the importance of cultural heritage, which is fragile and, if not handled carefully, will be lost forever. As a result, as Mina (2024) pointed out, the archaeologist must be both creative and a guardian of this valuable object. The author continues to demonstrate that EAA prioritizes engagement with local communities and stakeholders related to archaeological work, emphasizing the importance of multiple perspectives on cultural heritage interpretation. The article also states that archaeologists must try to share their knowledge and learn from the local community in a bidirectional manner. Although the laws and codes of conduct mentioned in these articles so far explain that there are, to some extent, principles governing research conduct and archaeological conduct, as well as some aspects of UAV, it is insufficient to guide on who owns the archaeological data and how the archaeologist should approach people's consent when the remote survey is used, nor do the laws and codes so far fully address the cultural sensitivity caused by UAV.

US's UAS Law and Archaeological Research Code of Conduct

In the United States, MacEwen (2023) stated that UAV activities are governed by federal law and the Federal Aviation Administration. The FAA regulates and ensures the safety of the US airspace. In the United States, UAV activities are divided into recreational or leisure and commercial. According to the article, both purposes require the flight operator to pass a test. Brown (2021) explain further that the height limit for recreational use is 400 feet. In contrast, commercial or research use requires a certificate in addition to registering the UAV with the FAA and flying a plane. The author furthers that the law is also an overarching framework for the US states, but each state handles the issue differently under different laws. The federal law does mention the protection of people's privacy, but it does not detail the informed consent of the subject being captured by the UAV. More or less similar to the EU standard, the law focuses on general flight behavior rather than the ethical considerations of archaeological sites.

However, McNie (2005) refers to the Society for American Archaeology's (SAA) ethical principles, which serve as professional archaeologists' guidelines. The code also reflects the need to engage and respond in front of the stakeholder regarding the cultural heritage being examined, the importance of public engagement and outreach, and the need to share findings widely. Pruski et al. (2021) discussed about the SAA's ethic that it extends beyond scientific responsibility to include the subject of study and local community involved. Again, while

this code of conduct emphasizes the importance of upholding ethical conduct, it does not clearly explain how it intends to address the new technology survey, how local communities can access the data collected, or a data ethics protocol to guide the researcher. It is concerning that the ethical code does not address this new development and that legal authorities do not address local communities' cultural and legal challenges.

China, Japan, Korea, India Law and Code of Conduct

Other regions, including China, Aposporis (2024) also discussed the strict UAV laws. The author explains that Chinese laws, such as the Civil Aviation Administration of China (CAAC) rules, the Cybersecurity Law (2017), and the Interim Regulations on the Management of Unmanned Aircraft Flights (2023), require real-time drone tracking, registration, and licensing. The drone operation also requires approval from the authorities. Additionally, Chai and Li (2019) explains that archaeological work requires state approval under the Law on the Protection of Cultural Relics (1982, amended 2017), while the foreign entity must conduct a joint project with a Chinese partner. However, there is minimal discussion about ethics and ethical reviews precisely.

In India, however, Anderson (2023) mentioned that the regulation is simple to understand, no permission, no takeoff. Under the drone rules in 2021, UAV operations must obtain authorization. The classification also includes the weight and zoning of aerial space. Registration or green zone, drones weighing less than 250g, or a mandatory certificate for the red and yellow zones. Furthermore, Pal (2024) confirmed that in order to carry out archaeological work, a permit from an Indian institution dealing with heritage issues is required.

For Japan, Kim (2019) stated that UAV operations are weight-required and subject to regulation if they weigh less than 200g and are not permitted in urban areas or special zones such as airports, government buildings, or nuclear sites. The operation must be reviewed, and permission must be requested before the flight is over people or beyond the line of sight. In addition, Ishikawa (2017) mentioned that Japan established the Japanese Archaeological Association (JAA) to maintain academic collaboration among Japanese archaeologists.

Kim (2019) also explains that South Korea also requires the drone to be registered if it weighs more than 250g, and commercial drone users need a license or certificate. At the same time, flight restrictions include airports and government buildings. Lee (2011) also explained that like the other countries mentioned, South Korea requires approval for archaeological activities, but the detailed code of ethics is limited.

Ethical concerns for UAVs appear to be considered less than UAV governance and flight paths in this part of the world mentioned in this section. While ethical codes and concerns remain broad in principle, in reality, the advancement of digital technology necessitates sound ethical guidelines so that researchers and practitioners have a direction to look for rather than assuming and justifying that it is good enough; doing so may also lead to "over-researching" and "ethic dumping," a phenomenon that will be discussed further.

Southeast Asian's UAS Law and Archaeological Research Code of Conduct

Gohari et al. (2024) stated that for Southeast Asia, UAV-related laws remain under the jurisdiction of individual countries and are not uniform. The authors also mentioned that registration and permission are required, subject to the purpose, zones, and weight. Furthermore, there is no proper uniform code of conduct about archaeological activities and UAVs explained by Halcrow et al. (2019). Along these lines, a specific case from Cambodia, Ministry of Interior, Ministry of Agriculture, Forestry and Fisheries, and State Secretariat of Civil Aviation (2025) has also just issued an inter-ministerial order on February 14, 2025, to govern UAV operations in Cambodia. Similarly to the other nations mentioned, UAV operation requires reporting to the local authority and registration if it weighs more than 2kg. Furthermore, the inter-ministerial directives stated that UAV operations around temples are only permitted with the approval of relevant authorities and cannot be conducted over people. However, the procedure remains uncertain, as does the extent to which the relevant authorities question ethical conduct.

Halcrow et al. (2019) further discussed a case from Cambodia where they are subject to oversight by relevant institutions such as the Ministry of Culture and Fine Arts or government-run cultural heritage institutions such as APSARA National Authority in Cambodia in regards to drone usage and research ethics. However, previous brief examinations by Ros (2025), such as those conducted by the APSARA National Authority in Siem Reap, have revealed that the research code does not explicitly mention data ethics or provide clear guidelines for how technology should be used ethically.

There is evidence that UAVs and their use in archaeology, in Southeast Asia, are rising, but legal information is limited. Codes of conduct remain generally broad, creating a void as to how this new technology will reconcile its relationship with the local community and new ethical and potentially legal concerns about the subjects' cultural rights. Although it can be agreed that a comprehensive UAV guideline for use in archaeology remains limited, the purpose of this article is not to expound on the legal loopholes in a legal technical sense but to encourage consideration. The article argues that the use of UAVs for archaeology is not simple and a matter that

should be addressed by ethical codes and laws to reinforce operation, particularly in the issue of ethics duplication, over-research, or colonial research that affect particularly marginalized communities and developing nations, generally as a target of experimentation or unethical work that is breaking not only the research code of conduct but also the law via violating human rights and cultural rights.

METHODOLOGY

The article will use qualitative methods and a desk review to examine the literature on UAS laws and the archaeological research code of conduct. The primary sources will be reviewed, including laws from various regions and codes of conduct, to understand the current state of ethical conduct and misconduct concerning UAS in archaeology. The article will use actor-network theory (ANT) to investigate how UAS, as a new technology, not only serves as a tool but, changes the entire system of archaeological practice and outcomes when integrated.

ANT sees humans and non-humans as relational rather than separate, and they have formed a network that influences each other (Latour, 1999). The purpose of this article is to investigate how the network was reconfigured. This reconfiguration is unquestioned, normalized, and has become black boxes. Blackboxes is important because, if not addressed by law or code of conduct, the acceptance of the unquestioned and normalized result will further impact the power relationship between those actors and machines (Garcia et al., 2018). In the case of UAS, ethics or law is not only justifiable or moral but also infrastructural and procedural, ensuring that UAS are used or appropriately structured.

In other words, technology is not neutral, and the results produced are not neutral (Boullier, 2018). Human actors in the research process included researchers, local communities, authorities, and ethics boards (Fernandez-Diaz et al., 2018). In contrast, non-human actors included UAVs, LiDar, GPS systems, software, laws, and ethics, each with their own set of power dynamics (Fernandez-Diaz et al., 2018). ANT, in particular, can explain that ethics is shaped and embedded with technology rather than being solely influenced by humans or compliance.

RESULTS AND DISUSSION

Why UAS's Data is not Neutral?

As stated in the introduction, the aerial archaeology to be examined in this article is the UAS, which consists of an aircraft, a ground control system, and data processing software (Campana, 2017). In other words, the UAV does not work in isolation. As ANT argues, it does not involve other actuators and actors to produce an outcome, which is a relational outcome mediated by a network (Latour, 1999). This understanding is critical because, without it, data collection and research design are not neutral, may be unethical, and may violate the cultural rights of the community that is the subject of archaeological research due to technological use (Ros, 2024).

Before addressing the ethical issues raised by technology, all three components, namely the aircraft, ground control system, and software to process data, will be examined because even if one aspect changes, the entire network will be affected. First, the aircraft and sensors influence the outcome because a drone can be programmed to survey a specific area, unlike traditional approaches such as flying a kite or a balloon. Some UAVs have fixed wings, while others have multi-rotor wings, which affects stabilization differently (Tsiamis, Efthymiou, & Tsagarakis, 2019). In other words, the more stable the UAV, the better the data collection. The sensors also influence the outcome of the data, whether it is a passive sensor, which captures data from the light source reflected from the surfaces without the need to send out any signal, such as a thermal infrared camera, or an active sensor, such as LiDar, which shoots laser pulses to the surface and measures it by the time it takes to be received back by the sensor (Abdelmajeed & Juszczak, 2024). When a researcher selects a sensor, the result should be determined. A passive sensor will target heatmaps or photos of the status but cannot remove tree cover, whereas an active sensor can remove tree cover and create a 3D map of the structure (Rodríguez-Puerta et al., 2022). However, it is important to note that the weather can have a different effect on the sensor, particularly light sources, which can affect the results generated by passive sensors., while, rain and fog can cause moisture absorption on the leaves or dense areas, making data collection less clear (Karim et al., 2025).

Second, the ground control system can direct the UAV's movement. UAVs can be linked to basic GPS and other equipment, such as Real-Time Kinematic (RTK) or Post-Processed Kinematic (PPK), which are also linked to the remote controller to ensure proper flight (Atik, Arkali, & Atik, 2025). How the UAV is handled will affect the data result, which can be off by 1 to 5 meters using GPS or 2-3 centimeters using PRK and PPK. However, RTK requires a strong network to ensure data accuracy and a correct flight path (Atik, Arkali, & Atik, 2025; Liu et al., 2022). At the same time, the operator must be trained appropriately because if the flight plan does not create enough photos that overlap, flies too fast, or is at the wrong altitude, it will miss or generate inaccurate data

(Seifert et al., 2019). As a result, data accuracy is also affected by the flight path and the ground control system that directs it.

Third, the outcome also depends on the software used to process the data, such as Agisoft Metashape and ArcGIS (Quamar et al., 2023; Campana, 2017). The former is best for creating 3D models and photographs (Casella et al., 2020), whereas ArcGIS is better suited to terrain mapping (Quamar et al., 2023). In addition, issues are linked to how the data processing procedure is like, whether the researcher decides to sacrifice high accuracy of data for fast results or if the researcher does not check the quality of raw data and processes data straight away without removing problematic or blurred photos (Campana, 2017), choosing a different coordinate system and georeferencing, such as mapping on the WGS84 vs. UTM, which link to different outcomes (Abdullah, 2009). This demonstrates how data is not neutral and may be subject to interference.

This network relationship is clear at different stages, demonstrating and confirming the black boxes and hidden configured networks of various technology and human agencies in producing an outcome as explained by ANT. Understanding that the outcome should not be considered normative or objective helps to understand how the process works and how to prepare an ethical and legal framework better. Finally, the goal of the research and the code of conduct is to be transparent and accommodating to the community while encouraging responsible data collection and processing and careful, culturally sensitive interpretation of UAS data.

Why UAS Creates Ethical issues?

According to ANT, the introduction of UAS reshapes and reconfigures the relationship between places, data, knowledge, and people because the actors and actants are being moderated, and the practices and activities involved change (Ros, 2025). UAS enables faster and more precise data collection and automated processing of data, primarily 3D data, which is frequently perceived to be objective, numerical, and scientific, as opposed to traditional surveying and sketching by hand, which is only 2D and may be lacking in detail (Campana, 2017). Although it is praised for assisting in precise data collection and processing, it is also important to note that if not thoroughly examined, these changes impact ethics.

First and foremost, as evidenced by the laws of various regions and countries mentioned above, privacy is a significant concern (Tsiamis, Efthymiou, & Tsagarakis, 2019). In particular, the UAS operator is not permitted to fly over people unless they have their consent and the authority allows it (Anderson, 2023). Although this is a step forward, privacy should be extended to the deceased as well because collecting data without the consent of a relative or community member can be disturbing or culturally sensitive (Ros, 2024). It is also about a religious or sacred site that cannot be filmed or scanned; this is part of cultural rights (Sanger & Barnett, 2021). Without a straightforward procedure for how UAS operations are carried out, it is possible to conduct surveillance without accountability and extradition of data without local and authority knowledge (McTegg et al., 2022).

Second, data extraction is also subject to data protection laws. It is important because the local authority and community can sift through the data set and determine what can and cannot be kept. According to the EU GDPR, if the drone recorded human faces inadvertently, the data must be deleted, and the subject may also request that the operator delete it. It is also related to how data is shared with the research subject. Aside from that, an ethical issue should be highlighted here due to the phenomenon of "over-research," in which foreign scholars treat local communities as test subjects and repeatedly study the subject without progressing. Focusing on taking data without giving it back or using data to improve the communities being worked on is also an important aspect of community engagement and stewardship.

Third, there is the issue of ethical dumping if it is not adequately protected by law or an ethical code of conduct for the host country being researched (Schroeder et al., 2019). Foreign researchers relocate their research from their home countries to another country with fewer obligations and standards to follow (Uvais, 2022). In other words, operating and engaging in illegal activities outside of their home countries may be easier. For example, taking blood samples from various participants in the host nation for their research is prohibited in their country, and they do not share the benefits with the blood donors (Marwick, Pham, & Ko, 2020). In the case of UAS, because the host nation lacks a proper code, law, or standard, the researcher can exploit a loophole to collect data and return, allowing them to avoid data-sharing obligations, accountability, or concerns about data privacy when conducting the survey (Ros, 2025).

Finally, it limits the rights of locals to participate in data interpretation and narrative if the data collection and UAS processes are not carefully monitored (Robinson et al., 2023). For example, relying on the UAS to collect and process data would result in oversimplification and a lack of cultural and environmental awareness on the researcher's part, especially when the UAS is told to do a precise task and collect data from a precise location, the data does not reflect the surroundings and its meaning concerning the environment (Ros, 2025). On the contrary, traditionally, the research performs a 2D scan while also noting the surroundings, making the data more circular

and linked to the surrounding environment (Campana, 2017). All in all, the data generated by the UAS is either meaningless or reflects what the community has.

That being said, the following are the critical issues challenging the law and ethical codes as archaeological research expands. UAVs should be viewed as more than just technological tools; they are a system that transforms archaeological practices into capitalized speed, precise data collection, and long-distance coverage, but they are not intended for local community engagement (Themistocleous, 2020, Ros, 2025). Through ANT, it is clear that the researcher's relationships with the local community, UAS, ethical code, and law reveal a pressing need for precise guidelines. In other words, the law is broad and procedurally unclear, and the ethical framework requires strengthening.

CONCLUSION

Based on this examination, it can be argued that current UAS laws and ethical codes are insufficient to properly address issues such as culturally sensitive privacy, data protection and sharing, ethical dumping from developing nations, and limiting the host nation's involvement in data curation and interrelation. So far, the regulations and framework have intended to govern UAS based on security, safety, and operational purposes rather than data ethics, consent, or interaction. With the limitations of the rules and codes being ignored, it is also critical to emphasize that not only human factors cause these ethical challenges, but the UAS also plays an equal, if not greater, role. ANT has been useful in assisting this article in identifying that the network relationships between humans and machines are genuine and have been formed into a network that does not conceal the power relationships or the hidden network. However, the blackboxes challenge how ethical research should be, resulting in a phenomenon in which the research benefits the researcher rather than the community due to "over-researching" or "ethic dumping" and the belief and acceptance that data generated by technology, in this case, UAS, is objective and neutral. That being said, the article believes that a clear guideline is essential for UAS operators and archaeologists from an archaeological standpoint rather than just security and operations. It would be beneficial for the existing code of conduct to specify how data ethics should be addressed, as well as procedural matters and disclosing in all data processes and collection, which should be co-shared and examined between the researcher and the host nation and authority to ensure that no legal or ethical misconduct occurs.

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