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Preventing and protecting against underwater cultural heritage crime

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Akin to the activity on the high seas broadly, underwater cultural heritage below the surface of the high seas is beyond the scope of policing of any one state. As such, the historical, cultural, and financial value of shipwrecks is vulnerable to crimes such as looting, trafficking, forgeries, and then illicit sales, rather than providing cultural benefit to all, as articulated in the 1982 United Nations Convention on the Law of the Sea and the 2001 Convention on the Protection of the Underwater Cultural Heritage. The emergent United Nations High Seas Treaty provides some hope of unclouding this complex space and providing protections for these culturally rich, priceless, and often nationally contested objects. Shipwreck ownership is contested not only on the high seas. Shipwrecks found within a state's exclusive economic zone may be susceptible to questions of ownership, further challenging the questions of how crimes against underwater cultural heritage can be collectively prevented and protected. Drawing on a shipwreck example from Southeast Asia in which ownership was contested, the *Geldermalsen*, this article considers, within the framework of international law and increasingly available technology, that it may be possible to "design out" criminal vulnerabilities through a lens of situational crime prevention.

KEYWORDS

underwater cultural heritage, the high seas, antiquities trafficking, situational crime prevention, international law

1 Introduction

Underwater cultural heritage trafficking is challenging to prevent. It is estimated that there exist some three million shipwrecks globally, many of which are beyond any state's domestic waters (Joosse, 2022). Shipwrecks found in international waters are not a free-for-all, as established under the United Nations Convention on the Law of the Sea (UNCLOS) (United Nations, 1982: Article 149). Underwater cultural heritage is vulnerable to destruction due to conflict, infrastructure development, climate change, and looting, forgery, and trafficking, just as terrestrial monuments, archaeological sites, and objects of cultural heritage are. Crimes against underwater cultural heritage is a branch of blue criminology (Bueger and Edmunds, 2020), whereby source locations with economic or political instability may be particularly exploitable to shipwreck looting, and then objects

are trafficked transnationally to destinations facilitated by the opaque art market (Mackenzie et al., 2019). The maritime domain in which these activities take place is vast and exists within multiple dimensions of legal complexity, creating opportunities for organized criminals, and difficulties for law enforcement. Shipwrecks may also play an important marine environmental role too, as artificial reefs (Joosse, 2022). As such, apart from any cultural and financial gain, disturbing sunken shipwrecks may also cause environmental disruption. The environmental impacts of salvaging shipwrecks can be devastating to the sustainability of surrounding marine life. Understanding and preventing crimes involving underwater cultural heritage aligns with the United Nations Sustainable Development Goals (SDGs) 14, *Life Below Water* and 16 *Peace, Justice and Strong Institutions*, which seek to establish improved global outcomes against these goals for future generations (United Nations, 2012). The absence of well-articulated measures at the international level to prevent underwater cultural heritage crimes and protect the seascape in which they now reside creates a loophole, which capable criminals¹ may look to exploit.

The *Geldermalsen*, a major Southeast Asian shipwreck discovery and subsequent salvage, illustrates the issues encountered in the prevention of crimes against underwater cultural heritage and the need for bespoke international law to protect it. The sale of the *Geldermalsen* cargo—an eighteenth century ship that sank on route from Canton (Guangzhou) to Batavia (Jakarta)—at Christie’s Auction House in Amsterdam in 1986 inspired a “kind of international hysteria” that attracted over 5,000 bidders frantically outbidding each other and shattering every estimate on the auction list (Het Parool, 1986). The sale’s success galvanized treasure hunters looking to get-rich-quick but also raised important questions about the responsibility of states to protect heritage underwater and prevent ensuing crimes of looting, trafficking, and forgery. The sale sparked a heightened interest in Southeast Asian underwater cultural heritage and launched two decades of aggressive treasure hunting in the region, some of which was state-sponsored (as was the case in Indonesia, see for example Pearson, 2022). Indeed, the little national regulation that was put in place regarding underwater cultural heritage at that time promoted commercial salvage as a solution to treasure hunting to ensure that states were able to receive a cut of the sale of the shipwreck cargoes. Meanwhile, international legal frameworks were being developed, such as the 2001 *Convention on the Protection of the Underwater Cultural Heritage*, to address this legal gap to protect heritage physically and conceptually located in transnational spaces, which explicitly forbid commercial salvage. Yet it continues.

Given the complexity to protect these culturally and financially prized representations of history, consideration needs to be given as to how best to protect underwater cultural heritage objects from illegal activity both *in situ* and *ex situ*. A previously widely held belief that shipwrecks are “underwater free-for-alls” remains a challenge that requires a perception shift (Blakemore, 2022). Furthermore, Blakemore (2022) notes, “To truly protect the world’s amazing

underwater heritage, the public must shift its mentality from treasure-hunting to acknowledging the real value held at the bottom of the ocean: troves of cultural and historical riches”. Scant literature addresses the issue of preventing and protecting shipwrecks on the high seas, and as such here, we suggest an approach to “design out” underwater heritage crime, based on a situational crime prevention approach, drawing on the *Geldermalsen* shipwreck as a case study.

We approach these challenges through two prongs. In the first section, we contextualize the demand for underwater cultural heritage artefacts through the *Geldermalsen* shipwreck auction example and show the potential for the trafficking of looted artefacts on the art market. We then explore the challenges faced due to the lack of specifically designed underwater cultural heritage laws to protect shipwrecks found in international waters, drawing on the complexities surrounding the *Geldermalsen* shipwreck, a Dutch vessel said to be found on the high seas but contested to be within Indonesian waters. We discuss existing international law designed to address contestation, and its shortcomings. In the second section, drawing on situational crime prevention, we suggest an approach to address underwater cultural heritage crimes on the high seas, both *in situ* and *ex situ*. We draw on expanded application of international law, welcoming the emergent *High Seas Treaty* as a potential vehicle to provide greater protection for underwater cultural heritage *in situ*, and suggest the use of available technology to “design out” looted and forged artifacts that illicitly make their way onto the (il)legitimate art market.

2 Claiming ownership of underwater cultural heritage: treasure hunting within the international law context

2.1 Establishing demand for underwater cultural heritage

The 1986 *Geldermalsen* shipwreck objects sale, labelled by Christie’s Auction House as “The Nanking Cargo Sale”, due to the auction scale and effective marketing strategy, enthralled shipwreck adventurers and treasure hunters keen to purchase part of the salvaged history (Robinson, 2020). Dutch newspapers reported each of the 5-day auction frenzy where the objects fetched “absurd” prices (Het Parool, 1986; Sitniakowsky, 1986b). The 5,000 lots auctioned raised well over what was expected, with one porcelain figurine sold for over 18 times its original estimate, due to bidding hysteria (Robinson, 2020). “The Nanking Cargo” sale brought the idea of shipwreck hunting in Southeast Asia to the forefront of the public’s imagination. This increased demand and limited supply positions opportunistic criminals to look outside legal frameworks to profit.

2.2 Contestation of ownership

The sale was however not without controversy. Since the discovery of the wreck by marine salvor Michael Hatcher in

¹ In addition to criminals, corporate treasure hunters who are not necessarily criminals may also look to exploit legal loopholes.

January 1986, Dutch media began debating property rights. Despite the wreck not confirmed as *Geldermalsen* at this time, both Hatcher and Christie's publicly identified the shipwreck as a *Verenigde Oostindische Compagnie* (VOC), or Dutch East India Company wreck (Van Der Hoek, 1986). As such, the Netherlands could claim the wreck's cargo as the VOC's lost property. The Dutch government entered into a contract with Hatcher as the purported rightful owners of the cargo, to receive 10% of sale proceeds (Haenen, 1986; Van Der Hoek, 1986).

The auction, and the Dutch government's support for it, was heavily criticized by the Dutch public, particularly the academic community based on the excavation lacking scientific grounding causing heritage destruction and loss of knowledge (Van Gelder, 1986). In protest, the *Rijksmuseum* in Amsterdam boycotted the sale by refusing to purchase any objects recovered through commercial salvage failing archaeological ethics codes (Miller, 1992). Criticized for “pocket[ing] an estimated 1 to 2 million [guilders] by doing nothing”, the Dutch government appeared to encourage shipwreck looting, rather than studying and protecting them (Van Gelder, 1986). Others criticized the government for not providing financial support to enable Dutch museums to acquire objects, in favor of foreign museums and collectors (Sitniakowsky, 1986a). The *Geldermalsen* example shows a strong sentiment favoring heritage preservation over sales.

While the vessel originally belonged to the Dutch, Indonesia claimed the *Geldermalsen* and its cargo based on its find spot. Following the auction announcement in early 1986, Indonesia launched an investigation to determine if the ship had been found in Indonesian waters and if it had been salvaged lawfully (Van Der Hoek, 1986). The investigation determined that the *Geldermalsen* was found within Indonesia's 200 nautical miles of exclusive economic zone (United Nations, 1982: Article 57) and therefore rightfully belonged to Indonesia, not the Netherlands (Rachmana, 2015). Furthermore, the investigation concluded that Hatcher salvaged the wreck without legal permits, concluding that the cargo was stolen from Indonesia (Rachmana, 2015). The Indonesian government launched an unsuccessful lawsuit against both Christie's and Hatcher (Miller, 1992; Rachmana, 2015), which failed as it revealed exploitable gaps in Indonesian law, a legacy of the colonial era that did not confer state ownership over wrecks in territorial waters (Pearson, 2022). The *Geldermalsen* case prompted modernization of Indonesia's underwater cultural heritage legislation over the next two decades; however, the law prioritized profit over protection (Pearson, 2022; Polkinghorne et al., 2024).

The exact location of the *Geldermalsen* shipwreck has never been publicly revealed, fearing that treasure hunters would desecrate the site, but also avoids questions about permits and counter-claims (Van Der Hoek, 1986). To allay salvage legality questions, Hatcher maintained that the site is “very definitely in international waters” (Van Der Hoek, 1986). Further noting, “Do you think the Indonesians, who have a good navy, would otherwise have left us alone all these months during the salvage?” (Van Der Hoek, 1986). According to international law (United Nations, 1982), the wreckage was outside the control of any state and therefore permission to salvage was not necessary. Indeed, international waters—or the high seas—are, beyond state borders and thus beyond any state's control (United Nations, 1982: Article 86),

demarcating the high seas as a “place that refuses to submit” and “a realm that remains radically free” (Langewiesche, 2004:1). The high seas appeal as the domain of pirates, adventurers, and freedom-seekers, increasing the desire to collect underwater cultural heritage artefacts (United Nations, 1982, Article 87).

2.3 Prioritizing ownership: commercial salvage as a model for protection

Commercial salvage has been presented as a solution to underwater treasure hunting. Arguably, “responsible commercial salvors” would provide financing, equipment, and experience necessary to excavate shipwrecks, often beyond the capacity of developing countries (Flecker, 2002). To incentivize commercial salvors requires promise of a portion of the artefacts sales (Flecker, 2002). Proponents argue that, without commercial salvors, states would lose the shipwreck to looters, who would fail to document or disseminate information of the find as a legal salvor would be required to.

Several Southeast Asian states adopted the commercial salvage approach, pioneered by Indonesia in response to the *Geldermalsen*, including Malaysia, the Philippines, and Vietnam. These approaches favored joint public–private arrangements. Examples of shipwrecks salvaged under this model show that it is not a sustainable solution.² The promise of well-documented and published archaeological work has rarely materialized; instead, heritage objects are dispersed on the art market, never to be consolidated or studied again. Incentivizing sales inevitably prioritizes shipwrecks that carried valuable cargoes, rendering other underwater cultural heritage unprotected. Evidence to confirm that the approach has curbed treasure hunting is notably scant; rather, shipwreck looting in international waters continues to be a problem.³ Resultantly, unidentified shipwreck ceramics appear on online marketplaces with no indication of where or when they

2 Numerous examples exist, such as the *Diana*, *Tek Sing*, or *Wanli* shipwrecks. The most egregious example is perhaps that of the so-called “Hoi An Hoard”, whose salvage team included Oxford archaeologist Mensun Bound. Bound promised a two-volume porcelain typology of the shipwreck's massive cargo, which would have been an important addition to the study of Vietnamese pottery manufacturing. Almost 30 years later, it still has not seen the light of day. See: <https://traffickingculture.org/encyclopedia/case-studies/hoi-an-shipwreck/>.

3 Many countries continue to report widespread looting of shipwrecks (see, for example, <https://www.theguardian.com/environment/2023/aug/01/baltic-sea-swedish-coastguards-saving-shipwrecks-from-looters>). Indeed, even the site of previously salvaged shipwrecks such as *Tek Sing*, which was commercially salvaged in 1999, continue to be looted: <https://example.comhttps://www.kompas.com/global/read/2022/08/19/180200370/pemerintah-australia-serahkan-artefak-bersejarah-kepada-indonesia?page=all>.

were found⁴, whereas World War I and World War II wrecks in the Pacific are being stripped for metals (Holmes et al., 2017). If anything, legalized commercial salvage has likely only encouraged treasure hunters, galvanized by dozens of high-profile international auctions on the art market, but this time with states' seal of approval.

Although many Southeast Asian states now have moratoriums in place on commercial salvage and are developing maritime archaeology departments within the government, national museums, and universities, they lack underwater cultural heritage regulatory frameworks, or they are ambiguous, and contradictory. Ownership remains a key law and policy question, a result of heritage's long entanglement with the nation-state. Heritage has long been conceptualized as part of a nation's fabric, often in a literal sense in that the monuments, sites, and objects that are physically connected to the nation's land and territory are prioritized for protection and promotion (Anderson, 2006; Byrne, 2022; El-Haj, 2001; Hamilakis, 2007). Indeed, as (Strati, 1991: 860) points out, within the 1972 *UNESCO Convention for the Protection of the World Cultural and Natural Heritage*—the most widely adopted international heritage convention—the duty to protect heritage “lies primarily upon the State in whose territory it is situated”. As a result, underwater cultural heritage's often transnational nature is awkwardly addressed in regulatory and intellectual frameworks. Shipwrecks in particular speak to ambiguous histories of exchange and mobility that are inherently transnational and extraterritorial. What is one then to do with a Dutch shipwreck found carrying Chinese porcelain in Indonesia waters? Whose shipwreck is it? Whose heritage? These questions have long guided law and policymaking, resulting in regulation that prioritizes ownership over responsibility, and thus cannot adequately protect underwater cultural heritage.

2.4 Common heritage of humanity: underwater cultural heritage and the high seas

The idea of a “common heritage of humanity” first appeared in the preamble of the 1954 *Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict* (Hague Convention), considered the first widely adopted international treaty addressing cultural heritage (United Nations Educational Scientific and Cultural Organization, 1954). The Convention's preamble states that “damage to cultural property belonging to any people whatsoever means damage to the cultural heritage of all mankind, since each people makes its contribution to the culture of the world” (United Nations Educational Scientific and Cultural Organization, 1954). Although the term can be misinterpreted to mean that there is a “type” of heritage that represents all of humanity, according to (Strati, 1991: 860).

It should be viewed in terms of the universal importance of culture that symbolizes the unity of humanity. It is a principle, a guiding line, a moral duty of humanity to consider the cultural heritage of the twentieth century as “belonging” to all peoples in the sense that it must be preserved and protected.

Indeed, the concept of a common heritage of humanity appears in both the 1982 *United Nations Convention on the Law of the Sea* (United Nations, 1982: Article 149) and the 2001 *Convention on the Protection of the Underwater Cultural Heritage* (2001 UNESCO Convention) (United Nations Educational Scientific and Cultural Organization, 2001: Preambular para 2), the two most relevant international instruments relating to the protection of underwater cultural heritage.

UNCLOS is the most important international instrument relating to the world's oceans with near universal membership and therefore guides how states navigate tricky contestation of potential ownership of underwater cultural heritage (United Nations, 2024c). Broadly, UNCLOS established a legal framework for governing the seas, creating jurisdictional zones including the territorial sea (Article 3); the contiguous zone (Article 33); the exclusive economic zone (EEZ) (Article 57); the continental shelf (Article 76); the high seas (Article 86); and the Area, as it relates to recoverable resources *in situ* (Article 133). According to Article 136 (United Nations, 1982), “the Area and its resources are the common heritage of mankind”. Under UNCLOS (1982: Article 87), states enjoy freedom from oversight by any specific nation on the high seas, and access to these shared commons (United Nations, 1982: Article 136). Expectedly, in practice, surveillance over shipwrecks beyond national boundaries would be low.

UNCLOS notes underwater cultural heritage in only two articles. Article 303 is the most explicit yet remains frustratingly vague, stating that States have a “duty to protect objects of an archaeological and historical nature found at sea and shall cooperate for this purpose” (United Nations, 1982: Article 303). It specifically protects heritage found within a State's territorial waters but also gives precedence to “the rights of identifiable owners, the law of salvage or other rules of admiralty, or laws and practices with respect to cultural exchanges”. Under UNCLOS, underwater cultural heritage is treated as an exploitable resource—the result of lobbying by powerful treasure hunter groups during the drafting of the Convention (Aznar, 2021). As such, the only other time it is mentioned is in Part XI, which deals with the exploitation of resources in the Area. Thus, UNCLOS Article 149 states:

All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State of country of origin, or the State of cultural origin, or the State of historical and archaeological origin.

It took 20 years for a more comprehensive underwater cultural heritage convention to be drafted. The 2001 UNESCO Convention uses the jurisdictional divisions set out in UNCLOS, providing different guidelines based on whether underwater cultural heritage is located in the territorial sea, contiguous zone, EEZ and continental shelf, and in the Area, as identified previously. Like UNCLOS, the 2001 UNESCO Convention acknowledges “underwater cultural heritage as an integral part of the cultural

⁴ See for example: <https://www.liveauctioneers.com/price-result/chinese-song-ming-dynasty-bowls-shipwreck-finds/>.

heritage of humanity” (United Nations Educational Scientific and Cultural Organization, 2001: Preamble). Furthermore, the 2001 UNESCO Convention Article 19 encourages all states party to the convention to cooperate and assist each other in the protection of underwater cultural heritage.⁵ The activities directed toward underwater cultural heritage described in the 2001 UNESCO Convention, its Annex, and the 2013 Guidelines to the Annex, relate to research and information sharing. Despite this, to the best of our knowledge, scant examples exist of UNESCO-led initiatives relating to underwater cultural heritage in the high seas or the Area to date (see for example United Nations Educational Scientific and Cultural Organization, 2022). However, in December 2023, training coordinated by UNESCO focused on the management of underwater cultural heritage in the Caribbean (United Nations Educational Scientific and Cultural Organization, 2023). Relevantly, Rule 2 of the Annex on rules concerning activities directed at underwater cultural heritage, notes (United Nations Educational Scientific and Cultural Organization, 2001):

The commercial exploitation of underwater cultural heritage for trade or speculation or its irretrievable dispersal is fundamentally incompatible with the protection and proper management of underwater cultural heritage. Underwater cultural heritage shall not be traded, sold, bought or bartered as commercial goods.

This Rule specifically rejects underwater cultural heritage looting and illicit sales of any artifacts recovered *ex situ*, yet there is little guidance offered on enforcing this rule. The challenge is then, how can un-policable zones be policed?

It is within this complex legal, political, and economic environment that underwater cultural heritage becomes subject to potential illegal salvage and trade. Economically driven oversights at the point of salvage and sale deny social and cultural value, failing to protect heritage. Despite efforts through international instruments and domestic laws, gaps and subjectivity in interpretation, as well as aggressive marketing campaigns by auction houses, intersect to create opportunities rife for criminals to take advantage in favor of profit over heritage. The approach to protecting underwater cultural heritage may require a fresh take.

3 Protecting underwater cultural heritage

Acknowledging the complexities of the international legal and regulatory seascape, it is necessary to look to alternate approaches

⁵ Interestingly, in the case of underwater cultural heritage discovered in the *area*, any State Party may declare “its interest in being consulted on how to ensure the effective protection of that underwater cultural heritage” but this must “be based on a verifiable link to the underwater cultural heritage concerned,” although what constitutes a “verifiable link” remains undefined (United Nations Educational Scientific and Cultural Organization 2001, Article 11). The 2013 Guidelines to the Annex of the UNESCO 2001 Convention make this somewhat of a moot point as they explain that “verifiable links exist everywhere as heritage is the result of the complicated and thoroughly intertwined history of humankind” (Maarleveld et al., 2013: 57).

and prioritize responses to prevent and protect underwater cultural heritage crimes. From the criminology discipline, situational crime prevention seeks to provide an approach that assists in crime prevention by focusing on the vulnerable environment, either the shipwreck sites *in situ*, or the art market where the illicitly gained artefacts circulate *ex situ*, rather than attempting to understand, alter, and ultimately deter specific offenders (Clarke, 1980). Seeking to alter motivations among criminals and deter them from engaging in underwater cultural heritage crimes is challenging given the market size; variety of current, or future availability of pieces; global movement of pieces; intentional anonymity of buyers and sellers; and shifts in demand, among other challenges, and therefore limits the ability to effectively prevent crimes against cultural heritage objects. Rather, “designing out” underwater cultural heritage trafficking, looting, and forgery can be logically achieved in two ways: first through collective regulation starting at the international level, and second, through innovative technology. Capitalizing on collective buy-in through a public (international organizations, museums, domestic law enforcement)–private (galleries, auction houses, technology companies, online marketplaces) mix of resources to address this complex issue to prevent and protect crime against underwater cultural heritage may also be a more sustainable approach.

3.1 Overview of situational crime prevention

The situational crime prevention framework provides 25 techniques that seek to explain and prevent crime opportunities (Clarke, 1980). The techniques sit within five broad categories of prevention that seek to alter an offender’s decision-making to deter from crime, namely, *reducing rewards*, *increasing risks*, *increasing effort*, *removing excuses*, and *reducing provocations* (Cornish and Clarke, 2003). In the context of underwater cultural heritage crime, looking to the relevance of the 25 techniques within the five overarching categories most likely to have the greatest deterrent effect on those who are likely to engage in crimes linked to underwater cultural heritage might include *increasing risks*, achievable for example, extending guardianship by strengthened public–private oversight and policing of known wrecks, via law enforcement and marine tourism vessels and *increasing the effort*, achievable for example, target hardening by adopting technologies to identify wrecks and prevent its exploitation to control access if, and when it enters the art market. By increasing the risk and effort, resultantly *reducing the rewards*, disrupts markets and denies benefits by limiting potential financial profit (for the illegitimate sellers) and desire for ownership at any cost (for the buyers) will also likely reduce as a by-product.

A rational choice consideration of situational crime prevention is that of spatial and temporal location of underwater cultural heritage crimes. Times and spaces may be relevant in policing underwater cultural heritage; for example, criminals may determine sympathetic borders to cross with looted objects; times to loot when surveillance and physical patrols are absent or limited; shipwreck locations that may be least likely to have any controls; or

marketplaces that are least regulated, such as online. Engaging in noncompliant activities is not random but based on the situational opportunities available to the offender. By applying a situational crime prevention-based response, it may be possible to limit the illegal entry of ill-gotten artifacts onto the legitimate art market by *increasing the risk* and *increasing the effort*, effectively *reducing rewards* for the supply.

3.2 Increasing the risk: *in situ* underwater cultural heritage crime prevention

3.2.1 Gaps in international law

The 2001 UNESCO Convention provides member states a common and legally binding framework to better identify, research, and protect their underwater heritage while also preserving it sustainably (United Nations Educational Scientific and Cultural Organization, 2001). While the 2001 UNESCO Convention is still the most relevant international instrument in response to underwater cultural heritage crime, it entered into force in 2009 and, at the time of writing, has garnered only 76 signatories (United Nations Educational Scientific and Cultural Organization, 2001, 2024). As with any international instrument, the 2001 UNESCO Convention is only as effective as its membership; adoption of the convention and implementation of its obligations is imperative. Absent from the list of signatories are many key states from the Global North, such as the United States, United Kingdom, Russia, Australia, and New Zealand, potential destination states of artifacts, as well as many states from the Global South including within the regions where many shipwrecks are found, such as Southeast Asia (United Nations Educational Scientific and Cultural Organization, 2001; Braff and Nelson, 2022). Lack of membership limits the potential to protect underwater cultural heritage items effectively *in situ*; however, this is only part of the issue.

Without making specific mention of shipwrecks, the 2001 UNESCO Convention sets out a framework to protect cultural heritage that has been underwater for at least 100 years (United Nations Educational Scientific and Cultural Organization, 2001: Article 1). Given the sheer number of shipwrecks less than 100 years old, the 2001 UNESCO Convention fails to provide a suitable framework for protection of younger vessels that may still be of uncalculatable cultural significance. This presents a gap in the legal framework that may also be exploitable by criminals. While legal reform is a likely avenue to close this loophole, it can be time consuming to generate agreement among ratifying states; meanwhile, the problem continues. Furthermore, the broader challenge lies in the limited ratifying states of the 2001 UNESCO Convention. That said, without near-universal membership of the 2001 Convention, buy-in among supply, transit, and destination states to prevent and protect against illicitly obtained cultural heritage objects circulating the art market is improbable and thus the challenges in addressed underwater cultural heritage trafficking will likely continue.

Alongside the 2001 UNESCO Convention, ratifying states must also consider UNCLOS. While states may enjoy freedom of

navigation afforded to them under UNCLOS, it also implies that no state is responsible for surveilling the high seas (United Nations, 1982: Article 87), but some level of control and protection must occur (United Nations, 1982: Article 303). Disappointingly, UNCLOS does not articulate how the protection should occur. Drawing on situational crime prevention, the risk of illicit salvage must be increased, compliant with UNCLOS. It is incumbent on ratifying states, especially those in the Global North destination locations, to consider logistics of surveilling known shipwrecks as common heritage that sunk below the high seas, within the guidelines of UNCLOS. When determining such logistics, consideration may extend to who is responsible (based on vessel heritage, for example) and the necessary technology required above and below the water to suitably surveil or alert relevant law enforcement in the event of attempted looting. Typically, the use of drone and satellite technology, as well as underwater remotely operated vehicles, or autonomous underwater vehicles may be used, but this approach also requires the location of shipwrecks be known. Many wrecks are still yet to be discovered, although as technology of underwater vehicles advances, more shipwrecks will no doubt be uncovered. While technologies support more effective and efficient surveillance, they may also be costly; require staff trained in operating and analyzing the results; require ongoing maintenance and upgrades; have limited breadth of scope; and require consistent and adequate power sources to support them. Many of these factors limit some states' involvement due to the associated on-costs. Challenges in obtaining, using, and maintaining such technologies will remain an issue especially for states in the Global South, where many wrecks are located; instead, such states should prioritize their scarce resources to other public needs (Joosse, 2022).

The issue of shipwreck ownership no doubt has a role in determining the responsible protector. As previously noted, this is a complex area of law, made more complex by the lack of universal buy-in. An alternate approach to navigate around the issue of ownership and collectively work to protect underwater cultural heritage may be achieved through combining public and private capability strengths to fill limited state capacity gaps. Aligned with UNCLOS's Article 87, for example, non-profit organization OceanMind (<https://www.oceanmind.global/>) draws on satellite and artificial intelligence technologies to assist authorities to carry out effective enforcement on high seas. Specifically, it works to prevent illegal, unreported, and unregulated fishing; however, there is potentially a role in providing oversight of known shipwrecks to limit looting. This technology cannot protect shipwrecks that are yet to be discovered but having additional oversight in areas of known shipwrecks will increase the risk of looters around known wrecks.

The emergence of a new legally binding international instrument might be an avenue to explore state-based responsibilities further. Drawing on situational crime prevention, expanded legal frameworks tightens the weave of regulation and therefore increases the risk of traffickers being intercepted. The *Agreement under the United Nations Convention on the Law of the Sea (UNCLOS) on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction*—known

as BBNJ or the High Seas Treaty—was adopted on 19 June 2023, at UN headquarters in New York. This has been a long-anticipated instrument; after more than a decade of discussion, in 2015, the UN's General Assembly agreed to adopt an international legally binding instrument under UNCLOS, commencing the progress toward the High Seas Treaty (United Nations, 2015). At the time of writing, 83 states had ratified the Treaty (United Nations, 2024b).

While the High Seas Treaty does not specifically mention how it can protect and prevent complexities linked to underwater cultural heritage, its focus is on conservation and sustainability in areas beyond national jurisdiction, relevant when shipwrecks are found beyond national borders (United Nations, 2023: Article 2). More specifically, Article 27 outlines the need for environmental impact assessments in order to prevent, mitigate, and manage significant adverse impacts in the marine environment (United Nations, 2023). These assessments require member states to actively consider the potential threats, which could extend to artifacts looting salvaged from shipwrecks. This would no doubt link to the Area, as identified in UNCLOS Article 133, and extend to common heritage in Article 136 (United Nations, 1982). Furthermore, Article 40 of the Treaty provides guidance for capacity building and the transfer of marine technology (United Nations, 2023). Shared knowledge will assist developing states, and small island developing states enhance their responses to shipwreck looting (United Nations, 2023). This provides a framework in which states can achieve mutual understanding and harmonize their approaches to deal with the recovery of shipwrecks. With this major success since UNCLOS, the High Seas Treaty has the potential to operationalize a more overt system to protect underwater shipwrecks and the provenance of recovered artifacts, and limit the damaging impact on the surrounding marine environment, although time will tell as to whether it can be successful in increasing the risk of illicit salvage of underwater cultural heritage artifacts.

3.3 Increasing the effort: *ex situ* underwater cultural heritage crime prevention in the (il)legitimate art market

Locating a shipwreck and surfacing its artifacts is a complex and challenging task. For some, however, the potential profit from selling looted underwater cultural heritage items may be worth the effort. Increasing efforts, a situational crime prevention approach, may limit the likelihood of illicitly gained items from entering the (il)legitimate art market. The United Nations Office on Drugs and Crime reported that “2022 could potentially offer a turning point in tackling crimes against cultural heritage” (United Nations Office on Drugs and Crime, 2022). The United Nations General Assembly adopted Resolution 76/16 on “Return or restitution of cultural property to the countries of origin”, calling for comprehensive measures to step up the fight against illicit trafficking in cultural property. It will also appear on the agenda of the 79th (2024) session of the General Assembly. This acknowledgement and prioritization by inclusion onto the 2024 Assembly agenda confirms the need to find improved measures to prevent and protect against (underwater) cultural heritage

trafficking, aligning with SDGs 14 and 16. Alongside the new High Seas Treaty, this is a welcome addition to the international agenda that highlights crimes against cultural heritage as a concern that requires collective, international responses. Through a situational crime prevention lens, developing effective responses to increase effort and risk and reduce rewards by removing opportunities for underwater cultural heritage traffickers to offload the ill-gotten artefacts would be a positive flow-on effect for the prevention and protection of recovered objects.

Given the opaqueness of the art market in general, bringing together a mix of actors to prevent illegal art entering and (re) circulating the market is logical. Despite this opaqueness, it is also true that within the art market, strong personal connections are formed based on trust, particularly around a specific genre of art (Bianchi, 2015; Li et al., 2022; Oosterman et al., 2022). While these personal connections can also be a downfall leading to scandals such as bribery, corruption, and other nefarious activities, the network is relatively small and thus less likely to be traceable. Ways to circumvent the potential for crimes to penetrate the art market are in the interest of all parties.

While situational crime prevention looks to the environment rather than the specific offenders to prevent crime, broadly understanding the profile of typical cultural heritage traffickers can assist in targeting responses. It is well understood that much of the underwater cultural heritage trafficking is either conducted by, or linked to, transnational organized crime groups (Campbell, 2013; Bueger & Edmunds, 2020). Thus, the international legal seascape broadens, expanding out to include the law enforcement and prevention toolkits provided in the United Nations Convention Against Transnational Organized Crime (CTOC) (United Nations, 2004). In its preamble, CTOC defines its scope as to seeking to prevent “terrorists, criminals, drug dealers, people traffickers and others who undo the good works of civil society” (United Nations, 2004: preambular para 11). The transnational and organized⁶ nature of cultural heritage crimes will therefore likely be within the scope of CTOC (United Nations, 2004). Given the extensive international acceptance of CTOC, this is a welcome approach to assisting the prevention of underwater heritage crimes.

At the time of writing, 147 Member States signed CTOC with a total of 192 Member States party to it (United Nations, 2024a). With almost universal adoption of the instrument, overlaying the existing CTOC responses to the 2001 UNESCO Convention and UNCLOS enables Member States to cooperate effectively on cultural heritage crimes. To facilitate cross-border cooperation and coordination of responses, the United Nations Office on Drugs and Crime works with member states to harmonize definitions and legal frameworks and to adopt law enforcement responses provided in the CTOC toolkit (United Nations, 2004).

6 Applying a CTOC perspective in response to (underwater) cultural heritage crimes necessitate it is considered a serious crime, articulated in domestic legislation by member states of CTOC, as defined in Article 1. CTOC Article 1 articulates: “a serious crime to attract a penalty of over four years of incarceration within domestic legal frameworks of its Member States”.

The CTOC toolkit encourages stakeholder engagement to inform domestic and regional responses by harmonizing and bolstering responses through access to model laws, and guidance on developing domestic laws and applying international laws; knowledge hubs, case repositories, and databases; law enforcement and judicial training manuals and modules; support to establish cross-border agreements on issues such as mutual legal assistance and extradition; and in-country supports to develop expanded understanding of cultural heritage crime methods. Collectively, the toolkit contributes to and builds on existing knowledge and available information to enable best practice to be applied universally. Presently, most data held on underwater cultural heritage artefacts are disparate, limiting ease of access to a centralized knowledgebase. To enhance the existing frameworks, CTOC could enable a cultural heritage crime toolkit repository to centralize public access to up-to-date shipwreck artefacts provenance alongside cases of contested ownership, and their outcomes, as well as other relevant information available to all law enforcement organizations and relevant stakeholders. Application and testing of CTOC within the underwater cultural heritage trafficking space requires domestic legislation to operationalize law enforcement.

To address cultural heritage crimes, responses must be equal to the sophistication and coordination employed by the criminal syndicates operating in this space. CTOC can unite states to support mobilization of law enforcement as cross-border crimes can overwhelm even the most capable domestic police forces. Aided by agreements set within CTOC, joint policing arrangements can smooth operational challenges and logistics when time is critical (United Nations, 2004: Art 19). International policing organization, Interpol may also have an important role to play as a conduit. Interpol has an established Cultural Heritage Crime unit and partners with agencies, such as UNESCO as well as UN member states. Its Stolen Works of Art database is a useful tool to address cultural heritage trafficking (Interpol, 2024). Additionally, the Organization for Security and Co-operation in Europe's Heritage Crime Task Force is enhancing cross-border partnerships to strengthen law enforcement, customs, and border control responses to cultural heritage trafficking (Organization For Security and Co-Operation in Europe, 2023).

As criminal groups embrace sophisticated technologies and take advantage of open economies and free markets, domestic weapons of crime prevention may be rendered nigh obsolete. This is of particular concern in locations where domestic laws are already weak and enabling crimes such as rife corruption not only increase the likelihood of being targeted by criminals but also worsen the potential impact suffered. With greater public awareness of cultural heritage crimes, for example through its inclusion on the 2024 General Assembly agenda, and innovative approaches, positive steps forward can be made to suppress and prevent organized criminals involved in underwater cultural heritage crimes and enable prosecution.

Technologies exist that can safeguard legitimate artifacts, leaving those improperly registered queried as to their legitimacy, determined as either forgeries or looted. While available to determine a real from a forged artwork or object, art

authentication technologies are often reserved only to confirm masterpieces, due to the high cost of the tests (Lindley, 2020). Furthermore, authentication may only be called on at transfer of ownership, such as a sale; however, in many instances, artworks that transfer ownership may not have a public transaction but rather may be bequeathed. As such, (il)legitimate movement of art is shielded by secrecy enabling illegitimate pieces to continue to circulate. Relevant to shipwreck artefacts, looted items would therefore not undergo the same authentication process, which would not only equate to a loss of cultural heritage and knowledge, but could in fact reduce their value, rendered as a worthless replica. As such, adopting a centralized approach to design out potential crime is critical.

Authenticating technologies are useful to retrospectively confirm the origin of past artworks. Conversely, proactive technologies enable greater transparency of the complete catalogue going forward. While a range of technologies exist, such as big data and embedded tagging (see for example Lindley, 2020), blockchain is a well utilized and reliable technology that could remove questions of legitimacy and provenance if adopted at the point of discovery for underwater cultural heritage, or for new pieces, upon their creation. The usefulness of blockchain has been tested to confirm and legitimize items from a range of realms and supply chains, from its original use in cryptocurrency, to luxury fashion (Herinckx and Ghislain, 2022), food (Lindley, 2022), and increasingly legitimizing art and its provenance (Kampakis, 2019; Whitaker, 2019; Lindley, 2020). From a situational crime prevention perspective, blockchain could essentially *design out* looting and forgeries of illegitimate underwater cultural heritage artefacts and shutdown access to the legitimate markets (James, 2000).

Blockchain works by digitizing secure transactions or *blocks* along the supply chain (Braeken et al., 2020). These blocks are unique, encrypted identifiers that are non-manipulable and therefore transparent and traceable through the entire supply chain, from the point of origin and at every change of hands through its lifetime. These digital fingerprints legitimize the item and enable collectors, galleries, and museums to confidently transact. It also ensures that the artists, or in the case of underwater cultural heritage discoveries, the marine salvor and the government claiming ownership, can receive true profits, limiting access of artefacts to illegitimate markets. Without access to these grey and black markets, looters and forgers will have no demand, thus designing out opportunities for supply.

Use of blockchain therefore can protect the supply chain from being further muddied by the existing opaqueness of the art market. The ability for blockchain to securely catalogue items to a register enables confidence for a buyer and potentially increases the value of the artwork, benefiting the artist and all actors along the supply chain. The use of blockchain technology also removes the need for intermediaries, such as expert authenticators, who are potentially corruptible or may, on occasion, get it wrong. This is particularly useful for deceased artists who entrust their artwork collection legacy with experts (Lindley, 2020), and indeed necessary for underwater cultural heritage recovered long after the vessel sinking. Presently, the use of blockchain is increasingly common within the art industry; however, it is not regulated or normalized for artworks (Whitaker,

2019; Abiodun, 2023). It makes sense for all involved parties to adopt a framework; however, due to the potential cost, time, and effort involved to register artworks, a long process is inevitable. An introduction of international regulatory requirements to mandate all newly discovered underwater cultural heritage onto a centralized blockchain register would establish a phase-in timeline whereby provenance can be confirmed.

Blockchain can be an incredibly useful tool for tracking provenance, protecting and securing artworks, and easing liquidity of artworks; however, the use of the ledger, or indeed blockchain itself, is not without challenges and imperfections (see for example Whitaker, 2019). For example, as with any collection of cultural significance, completeness of shipwreck collections is unknown and works naturally surface at various points in time, such as shifts in familial ownership due to deaths of collectors, uncovering of artworks during property searches owned by criminals, or artworks simply lost over time—the origin and provenance of artworks come into question. In such instances, these items may then require authentication, which as noted previously, may be fraught with complexity and inaccuracy, particularly if there are no living or available experts. Financial and human resource limitations, regulation to mandate the digital recording, and consistent use of one centralized ledger, among others, are challenges that would need to be addressed if completeness in records is sought. Like any new technological advancements and requirements, solutions to challenges presented would need to be overcome if a harmonized solution is sought.

Designing out crime within underwater cultural heritage artefacts requires regulation to encourage compliance. Artwork registers already exist and are gaining popularity; however, to ensure normalization and trust, a centralized platform would be appropriate. To facilitate a truly centralized artwork register, the international community would need to develop, maintain, and absorb the cost of the platform to oversee and limit concerns about commercialization and potential corruption of the register and ensure the platform is legitimized. This will also limit any financial burden for buy-in and lack of trust in the platform, common to the art market which thrives on opacity (Abiodun, 2023). Of course, not all collectors would enjoy the transparency of such a public platform, and it may encourage savvy criminals to turn to other innovative activities for profit; however, transparency could also benefit collectors by establishing provenance and potentially increasing the value of artworks. As such, mandating the adoption and use of a centralized register at the international level could be a suitable approach to design out opportunity for crime by preventing looting and forgeries and deterring trafficking of future underwater cultural heritage discoveries.

4 Conclusion

Through the example of the *Geldermalsen*, measures for greater international control to prevent and protect underwater cultural heritage crime require focus, to enable and support local responses. Aligning with SDG 14 and 16 and through the lens of situational crime prevention, we suggest improved efforts to protect

underwater cultural heritage items at all points along the supply chain to design out crime. Protecting provenance, however, can potentially boost price and demand for legitimate items, rather than accepting trafficked forged, and looted artefacts may be circulating the legitimate market. Protecting underwater cultural heritage requires international buy-in *in situ* and *ex situ*, and we suggest looking to international law and technology to prevent and protect it. *In situ*, building on existing international law, we eagerly anticipate enhanced approaches to address cultural heritage trafficking and forgery, as identified in the UN's General Assembly agenda for 2024, as well as the emergent High Seas Treaty, an arm of UNCLOS which may be as a potential vehicle to provide greater protection for underwater cultural heritage from looters. Furthermore, salvaged artefacts already on the market may require technology to “design out” looted, forged, and trafficked artifacts *ex situ*, guided by the CTOC toolkit. Technology such as blockchain is well established in other supply chains but is still slow to gain momentum in the art industry; however, it shows capability to prevent and protect against enabling looted and forged items (re) circulate the legitimate market. Drawing together approaches while reflecting on the *Geldermalsen* as a case study seeks to guide through the complexities present within the underwater domain to assist in the forward navigation toward sustainable preservation and protection of heritage and the environment it rests within. Collectively, these avenues can provide stronger frameworks to bolster regulation of the seascape, in seeking to prevent and protect cultural heritage from crime.

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